

IVI Foundation Meeting Summaries

Feb. 9-11, 2009

Dallas, TX

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Chapter 1 Meeting Attendees

Last Name	First Name	Company	Email
Bellin	Jon	National Instruments	jon.bellin@ni.com
Cone	Evan	National Instruments	evan.cone@ni.com
Essner	Don	DRS Sustainment Systems	dessner@drs-ssi.com
Fertitta	Kirk	Pacific MindWorks	kirk@pacificmindworks.com
Gorringe	Chris	EADS Test & Services	Chris.Gorringe@eads-ts.com
Harvey	John	Agilent Technologies	john_harvey@agilent.com
Helsel	Bob	IVI Foundation	bob.helsel@comcast.net
Lopes	Teresa	Teradyne, Inc.	teresa.lopes@teradyne.com
Maumary	Yves	Agilent Technologies	yves_maumary@agilent.com
McCarthy	Alex	National Instruments	alex.mccarthy@ni.com
Mueller	Joe	Agilent Technologies	joe_mueller@agilent.com
Purser	Rob	MathWorks, Inc.	Rob.Purser@mathworks.com
Rohacek	David	National Instruments	david.rohacek@ni.com
Rust	Scott	National Instruments	scott.rust@ni.com
Ryland	John	Keithley Instruments	jryland@keithley.com
Valois	Hugues	Pacific MindWorks	hugues@pacificmindworks.com
Wolle	Jochen	ROHDE & SCHWARZ	Jochen.Wolle@rohde-schwarz.com

Chapter 2 Technical Committee

General Meeting Info:

Date of Meeting: February 11, 2008
Location: Dallas, Texas
Chairperson: Scott Rust
Minutes Prepared By: Scott Rust

Topics To Be Discussed:

- Review Agenda
- Review Voting Members In Attendance
- Patent Call
- Approve minutes from the October 2008 Technical Committee Meetings
- Review outcome of recent eVotes, IPR Declarations, Editorial Changes, and Reviews
- Review Action Items from Previous Meeting
- Review Spec Status Document
- Working Group Topics
 - IVI Switch Issues - Kirk
 - Vote to Approve the IviDigitizer specification
 - Vote to approve 64-bit specification updates and related work
 - VISA WG Status Update
 - 64-bit Support in VISA
 - Separating Installation Content from IVI 3.1 into a separate specification
 - Proposal to change working group chairperson of the Data Conversion WG
 - IVI Counter Update
- New Business
 - Windows 7 Support
 - Discussion of byte and float datatypes
- Discuss Upcoming Meetings

Voting Members In Attendance

Present	Organization Name	Name
X	Agilent Technologies	Joe Mueller
X	Keithley Instruments	John Ryland
X	National Instruments	Scott Rust
X	Rohde & Schwarz	Jochen Wolle
	Aeroflex Corporation	Marv Rozner
	BAE Systems	Wade Lowdermilk
X	DRS Sustainment Systems	Don Essner

Present	Organization Name	Name
X	The MathWorks, Inc.	Rob Purser
X	Pacific MindWorks, Inc.	Kirk Fertitta
	Pacific Power Source, Inc.	Eric J. Lord
	Phase Matrix	Michael Granieri
	Rockwell Collins	Jason Schares
	Tektronix	Paul Nelson
X	Teradyne, Inc.	Teresa Lopes
X	TYX/EADS	Chris Gorringer
	Vektrex Electronic System	Jeff Hulett
	VTI Instruments	Steven Ross
	Ametek Programmable Power	Kevin Lam

There are 9 voting members in attendance, which satisfies the requirements for a quorum of 5 of Voting Members. (Quorum is 25% of Voting Members. There are currently 18 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 which 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 October 2008 Technical Committee Meetings

The minutes from the October 2008 Technical Committee Meetings are posted on the IVI Foundation web site.

No issues were brought up with the minutes. The TC chairman accepted the minutes.

Review outcome of recent IPR Declarations, eVotes, and Reviews

Editorial changes to VPP9 for Registering Vendor Prefixes

The editorial change to VPP9 for registering vendor prefixes was discussed at the October 2008 IVI Technical Committee Meeting. On 1/13/09, Vesna Jadric (NI) sent out the following email to announce the review period for the editorial change.

From: Vesna Jadric/AUS/NIC
To: list@ivifoundation.org
Date: 01/13/2009 10:34 AM

Subject: Editorial Review: VPP9: registering vendor prefixes (6-day review)

Greetings:

During the October IVI Foundation meeting in Portland, OR, National Instruments was tasked with creating an editorial change document to update VPP-9: Instrument Vendor Abbreviations with more explicit instructions on how to register a new vendor prefix.

The change document is now posted to the VXIplug&play Working Group web site. The review period for this editorial change is January 13 - January 23, 2009.

VPP-9 Editorial Change - vendor prefix

Please contact me with feedback.

Thanks,

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

On 1/23/09, Vesna Jadric (NI) sent out the following email to announce the conclusion of the review period.

From: Vesna Jadric
To: list@ivifoundation.org
Date: 01/23/2009 01:55 PM

Subject: End of Editorial Review: VPP9: registering vendor prefixes (6-day review)

Greetings:

The review period for the VPP9 specification updates has now ended without objections.

Best Regards,

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

The editorial change to VPP9 for registering vendor prefixes has been completed. The web site has been updated.

Vista & 64-Bit Specification Changes

Noel Adorno (NI) sent out the following email on 11/17/08 to announce the start of the final review for the Vista and 64-Bit changes.

From: Noel Adorno <noel.adorno@ni.com>
To: list@ivifoundation.org
Date: 11/17/2008 04:59 PM

Subject: Posted review: 64-bit bit specification updates and related work

Greetings:

I'm pleased to announce that the Vista and 64-bit working group has completed the 64-bit updates and other related work. The proposed specifications and related change documents are now ready for formal review.

All the review documents are available for down load from the Vista and 64-bit Working Group web site. A summary of the updates are detailed in a Summary of 64-bit Specification Changes presentation document. This review impacts the following specifications:

1. IVI 3.1: Driver Architecture Specification
2. IVI 3.2: Inherent Capabilities Specification
3. IVI 3.3: Standard Cross-Class Capabilities Specification
4. IVI 3.4: API Style Guide
5. IVI 3.5: IVI Configuration Server Specification
6. IVI 3.14: Primary Interop Assemblies Specification
7. IVI 5.0: Glossary
8. All class specifications that define repeated capabilities. Edits noted in a Class Driver Change Document.

The proposed specifications and change documents documents are available in a zip file.

These changes is considered to be a major change with a 45-day review period. However, due to the upcoming holidays, I'm allowing for an additional 10 days. Therefore, the review period will end January 12, 2008.

Many thanks to all the working group members that contributed to this effort.

Please send feedback to me.

Noel Adorno
National Instruments

On Noel Adorno (NI) sent out the following email announce the conclusion of the final review for the Vista and 64-Bit changes, document the feedback that was received, and to announce the working group's intention to vote on the specifications at the February IVI Technical Committee meeting.

From: Noel Adorno <noel.adorno@ni.com>
To: list@ivifoundation.org
Date: 01/20/2009 10:22 AM

Subject: End of Review: 64-bit specification updates and related work

Greetings:

After receiving the last minute feedback, I'm happy to report that all issues are resolved and the review for the 64-bit updates is now complete. The plan is to vote on the specification updates at the February IVI Foundation meeting.

The feedback items and resolution are noted below. Updated versions of IVI 3.1 and IVI 3.2 have been posted to the 64-bit and Vista Working Group web site. The edits to IVI 3.14 will be incorporated in the final specification post.

Regards,

Noel

IVI 3.1: Driver Architecture Specification

1. Duplicated text in revision history

Change: Deleted duplicate entry in revision history

2. Visual Basic should be included in the list of ADEs in Section 2.17, Target Application Development Environments,

Change: Updated Section 2.17, Target Application Development Environments to include both Visual Basic 6.0 and Visual Basic .NET.

[Note: It was not our intent to completely drop Visual Basic 6.0 as we explicitly list Microsoft Visual Basic 6.0 in other places in the specification (e.g., in reference to default interfaces in Section 4.1.11.5 and in reference to allowed data types in Section 5.14.)]

3. Incorrect product name listed in Table 4 1. Target languages and ADEs for IVI-COM drivers.

Change: Replaced "Microsoft Visual Tools for Office" with "Microsoft Visual Studio Tools for Office (VSTO)".

IVI-3.2: Inherent Capabilities Specification

1. Clarify distinction between properties and attributes in revision history entry.

Change: Updated the revision history to be:

Added a requirement that 64-bit drivers include a specific string (identifying the driver as 64-bit) in the values for the following property/attributes:

IIviComponentIdentity ~Description~ property for IVI-COM,
CLASS_DRIVER_DESCRIPTION attribute for IVI-C,
SPECIFIC_DRIVER_DESCRIPTION attribute for IVI-C.

Editorial change to update the IVI Foundation contact information in the Important Information section to remove obsolete address information and refer only to the IVI Foundation web site.

IVI-3.14: Primary Interop Assembly Specification

1. Incorrect file name. In section 2.8 and 3.8, TlbImp.exe should be changed to TlbImp.exe.

Change: Replaced TlbIMP.exe with TlbImp.exe

IVI-3.4: API Style Guide

1. Request to move the "8.1 Absolute Time" details from this spec to the IVI-3.3: Standard Cross-Class Capabilities Specification

No change.

[Note: Absolute Time should not be moved to 3.3 - we do not think it will ever be used in a class spec, since many instruments regardless of class will not be able to support that level of resolution.]
Noël Adorno | National Instruments | noel.adorno@ni.com | 512.683.5071

Review Action Items from October 2008 Meeting

Owner	Action Item	Status
Scott Rust	Track whether working groups have put their previous spec versions in the Membership area of the web site.	(5/2/08) Noel has done this for NI' owned specifications. (5/15/08) Scott to remind all spec owners to maintain previous version of specs on web site. (10/16/08) Need to check again. Can be rolled in to setting expectations for working group chairman with regard to web site. (2/10/09) Complete
Kirk Fertitta	Kirk to setup WebEx meeting to discuss use policies for FogBUGz. Tom Gaudette, John Harvey, Zulfiqar Haider wish to participate.	(10/16/08) Not done. (2/11/09) FogBUGz has not been used. IVI has spent ~\$200 in fees to use the tool. Kirk will follow up with John Harvey on how/if to use the tool in the future.
Scott Rust	Scott Rust to notify all specification owners of new specs that are currently in development to have both the simple and the fully qualified repeated capability names. The simple repeated capability name needs to be retained for the case where two classes share the same physical repeated capability names.	(2/11/09) This is being rolled into the changes necessary as a result of completing the Vista and 64-Bit changes and will be taken care of as part of the action items resulting from the vote to approve the changes.
Scott Rust	Scott Rust to post minimum and recommended web site requirements for WG chairpersons to TC web page and notify all working group chairpersons of the expectations	(2/10/09) Complete.
Noel Adorno	Noel Adorno to run editorial change process to update VPP-9 with more explicit instructions on how to obtain a 2-letter abbreviation.	Complete

Owner	Action Item	Status
Evan Cone	Make sure the repeated capability names in Upconverter, Downconverter, and Digitizer specifications are in the appropriate form.	Complete

Review Spec Status Document

The group reviewed and edited the Spec Status Document.



IVI_Spec_Lifecycle_Status.xls

Working Group Topics

IVI Switch Issues - Kirk

Serge added a couple items in a DRAFT version of the IVI Switch.

- One was regarding the physical names that can be included in a path can be physical names or virtual names. (Major Change)
- The other clarification was regarding Form C switches and what it means to disconnect a Form C switch (Minor Change)

Noel and Serge believe that this was added in a Draft and never voted on. This pre-dates the IVI Spec Lifecycle document.

Action Item: Serge to create a change document with regard to iviSwitch changes and propose the work at the next Technical Committee Meeting. The Technical Committee can then vote to start the work.

Vote to Approve the IviDigitizer specification

The IVI Digitizer Working members decided to withdraw their recommendation to vote on the specification. They received feedback during their final review that they feel they will need more time to address.

Vote to approve 64-bit specification updates and related work

Resolution (2009-02-11:#01) Jon Bellin moves that the Technical Committee approve the changes to the following specifications as part of the 64-bit changes.

- IVI 3.1: Driver Architecture Specification
- IVI 3.2: Inherent Capabilities Specification
- IVI 3.3: Standard Cross-Class Capabilities Specification
- IVI 3.4: API Style Guide
- IVI 3.5: IVI Configuration Server Specification
- IVI 3.14: Primary Interop Assembly Specification

- IVI 5.0: Glossary

Resolution Seconded by Joe Mueller. 8 Yes Votes. 0 No Votes. The resolution passes.

These Vista and 64-bit working group changes are now ready for approval by the BoD.

Discussion regarding the changes class spec owners must make with regard to repeated capability names:

- There was some confusion on the exact changes to be made. The group agreed to two Editorial Changes to clarify the issue to better explain the changes:
 - Editorial Changes to IVI 3.1 to clarify the issues regarding repeated capability names in the config store and disambiguating physical identifiers
 - Editorial Changes on the Class Driver Changes – Physical Names.docx to better describe the changes that class spec owners must make.
- There is a desire to post the changes all at once.
- Logistically this will be difficult as there are several different owners.
- Group agreed to a deadline of May 1st for the Specification Owners to make and post these changes to the public IVI website.
- Use the spec owners as identified by the .NET WG as the owners for this activity.
- Scott Rust to manage and monitor the status of the changes. If it looks like a spec change is not being made by the deadline, Scott Rust will solicit a new specification owner.

Action Item: Vesna to run editorial change process on IVI 3.1 clarify the issues regarding repeated capability names in the config store and disambiguating physical identifiers.

Action Item: Vesna to run editorial change process on the “Class Driver Changes – Physical Names.docx” to better describe the changes that class spec owners must make.

Action Item: Vesna and Scott to manage class specification changes for repeated capability names.

VISA WG Status Update

Jim Piotrowski (NI) sent prepared the following slides with regard to the status of the VISA WG.



VISA 64-bit Shared
Component Work - Fe

The group reviewed the presentation.

John Harvey believes that 1 minor bug in a header file may have been found. Will handle thru a normal defect track/fix process.

64-bit Support in VISA

Kirk Fertitta discussed the issue. With recent updates to VISA for 64-bit, there doesn't seem to be a way to read/write 64-bit integers on devices other than register-based devices.

viPrintf/viScanf doesn't support 64-bit modifiers. This came up during the Digitizer working group. They want to handle 64-bit data sizes, offsets, and waveform sizes in that spec. They don't see a convenient way to implement such a driver on anything but a register based devices. It doesn't appear like there are many current devices (if any) that need this capability, but the group believes that there will be in the future. The Digitizer group wants to support this. The group noted that printf and scanf support 64-bit modifiers and believe that viPrintf/viScanf should be consistent. This also applies to 1588 times.

Action Item: Jim Piotrowski to take issue to the VISA Working group to create a response and report back to the IVI Technical committee.

Separating Installation Content from IVI 3.1 into a separate specification

Jon pointed out IVI 3.1 spec is getting large and unwieldy. Proposes that we separate the installation section out into a separate spec. Group agreed that this is an editorial change and that if NI wants make the change, that they can do it.

Action Item: Vesna (NI) to run editorial change process to pull installation content from IVI 3.1 and place in a separate specification.

Proposal to change working group chairperson of the Data Conversion WG

Agilent proposes that Yves Maumary become the new chairperson of the Data Conversion WG.

The group agreed.

IVI Counter Update

The API seems to have stabilized. Group believes that they need a few more meetings. They are doing their final walk-thrus. The WG believes they will post for a final review and may vote on the spec prior to the next face-to-face meeting.

Discussion of byte and float datatypes

IVI 3.1 section 5.14 regarding allowed datatypes doesn't allow byte and float datatypes (with the exception of an array of floats and a few others).

We need to form a small group to make a proposal with regard to this issue

Action Item: Kirk to draft a proposal to allow scalar viByte, arrays of viByte, and scalar viReal32 in IVI Instrument Drivers. There needs to be some style guidance for when to use them. Dan Mondrik, Zulfiqar Haider, Jon Bellin, John Harvey, and Joe Mueller volunteered to review the proposal.

New Business

Windows 7 Support

John Harvey discussed that Windows 7 is coming. How do we go about proving support for Windows 7?

We need to create a Windows 7 WG to propose spec changes and manage the testing process for the IVI Foundation to support Windows 7. Rob Purser volunteered to chair the working group.

Resolution (2009-02-11:#02): Joe Mueller moved that we create a Windows 7 WG with Rob Purser to chair the group and present charter to the Technical Committee meeting. Rob Purser Seconded. 8 Yes Votes and 0 No Votes. The motion passes.

Several action items were recorded for the group. They will be tracked by Rob Purser

Action Item: Zulifiqar to test the Shared Component Installer and the C Shared Components on Windows 7 and report back to the new WG

Action Item: John Harvey to test the Shared Component Installer, IVI COM Shared Components, and VISA Shared Component Installer on Windows 7 and report back to the new WG.

Action Item: Dan Mondrik to test the VISA Shared Component Installer and VISA Shared Components on Windows 7 and report back to the new WG.

Discuss Upcoming Meetings

Tentative dates for next meeting are May 18th – 22nd.

- Group agreed to the week May 18th – 22nd.
- Group agreed to return to Dallas for the next meeting.
- IVI will run Wednesday – Friday, 20th – 22nd.
- If LXI wants to meet during the same week, they will meet Monday – Wednesday, 18th – 22nd.

Working Group	Time
.NET (Track 1)	1 day
Windows 7 WG (Track 1)	¼ day
Technical Committee Meeting and BoD (Track 1)	½ to ¾
Marketing Committee and Web site review	½ to ¼
Shared Components Management	¼
AC Power Supply (Track 2)	TBD
Counter/Timer (Track2)	0 or ½
VISA (same day/track as 64-bit)	TBD

Working Group	Time
Data Conversion	½
Frequency Translation	0
Instrument Capability Discovery (Track 1)	¼
FGen Class API Revision (Track 1) John Harvey	¼
Totals	

Action Item: All WG Chairpersons are to post completed action items and detailed agendas for the upcoming meeting by May 4th.

Action Item: All WG Chairpersons to submit minutes for the October meeting to Bob H in two weeks – February 25th.

Tentative dates for October meeting. Some discussion of Munich for the October meeting. Last time we met in Munich was May of 2008. LXI met there in October of 2008. Discussed keeping the meetings in the US, but waiving the meeting attendance fee for the International travelers.

NOTE: (3/19/09 – Joe, Scott, and Bob decided to waive meeting fees for both the May and October meetings based on the discussion above for international attendees. This will only apply to 2009, and is not intended to be an ongoing policy for IVI Foundation. See email from Bob Helsel on 3/19/09 documenting this decision.)

Group decided that the October 2009 meeting would be in Denver, Chicago, or Dallas. Tentative date is the week of October 19th

February 2010 will be Dallas or Orlando

Decided Munich would be best in May of 2010

Summary of Action Items Created at the February 2009 Technical Committee Meeting

Owner	Action Item	Status
Kirk Fertitta	Kirk to setup WebEx meeting to discuss use policies for FogBUGz. Tom Gaudette, John Harvey, Zulfiqar Haider wish to participate.	(10/16/08) Not done. (2/11/09) FogBUGz has not been used. IVI has spent ~\$200 in fees to use the tool. Kirk will follow up with John Harvey on how/if to use the tool in the future.
Srdan	Create a change document with regard to iviSwitch changes and propose the work at the next Technical Committee Meeting. The	

Owner	Action Item	Status
	Technical Committee can then vote to start the work.	
Vesna	Vesna to run editorial change process on IVI 3.1 clarify the issues regarding repeated capability names in the config store and disambiguating physical identifiers	
Vesna	Vesna to run editorial change process on the “Class Driver Changes – Physical Names.docx” to better describe the changes that class spec owners must make.	
Vesna & Scott	Vesna and Scott to manage class specification changes for repeated capability names.	
Jim Piotrowski	Jim Piotrowski to take 64-bit VISA issue to the VISA Working group to create a response and report back to the IVI Technical committee	
Vesna	Vesna (NI) to run editorial change process to pull installation content from IVI 3.1 and place in a separate specification	
Kirk	Kirk to draft a proposal to allow scalar viByte, arrays of viByte, and scalar viReal32 in IVI Instrument Drivers. There needs to be some style guidance for when to use them. Dan Mondrik, Zulfiqar Haider, Jon Bellin, John Harvey, and Joe Mueller volunteered to review the proposal.	
All WG Chairs	All WG Chairpersons are to post completed action items and detailed agendas for the upcoming meeting by May 4 th .	
All WG Chairs	All WG Chairpersons to submit minutes for the October meeting to Bob H in two weeks – February 25th.	

Adjourn

Meeting Adjourned.

Chapter 3 AC Power Source Working Group

General Meeting Info:

Date of Meeting: February 9, 2009
Chairperson: Kevin Lam (Ametek Programmable Power)
Minutes Prepared By: Eric Lord (Pacific Power Source)
Location: Ametek Programmable Power/IVI Conference

Meeting Attendees:

Name	Company	Email	Phone
Eric Lord	Pacific Power Source	eric.lord@pacificpower.com	(949)251-1800, ext. 151
Ray Martin	Pacific Power Source	ray.martin@pacificpower.com	(949)251-1800
Richard Fitzgerald	Ametek Programmable Power	Richard.Fitzgerald@Ametek.com	(858)678-4431
Kevin Lam	Ametek Programmable Power	Kevin.Lam@ametek.com	(858)450-0085, Ext. 2313

Agenda:

- Review Action Items
 - Arbitrary Waveform DC Offset
 - Waveform Clipping – Ametek/Elgar
 - Review Scott's Comments
 - New Scott Rust & Kirk Fertitta Questions:
 - DC Offset possibility in an Arbitrary Waveform. Discuss proposed solution.
 - IVI Scope, Channel Name Repeated capability is a 'one based' index. What does this mean? MAX channel names start with '0'.
 - Is the special channel name IVIACPWR_ALL_PHASES supposed to in the channel list or is this a virtual name that the driver interprets?
 - Why return status as return type when IVI Scope passes parameter (ref: IVI Scope section 4.3.2)?
 - Use ENUM parameter for protection status rather than Boolean attribute.
 - Do we need a Read Measurement function? (Kirk comment) DMM Read assumes instrument is configured for a particular measurement.
- Discussion:
 - Arbitrary Waveform with DC Offset
 - Some waveforms by nature can have a DC offset component depending on how they are drawn. This will potentially cause a conflict as the DC Offset is set by a different Extension Group.
 - Scott Rust and Kirk Fertitta comments/discussion:

- DC Offset possibility in an Arbitrary Waveform. Discuss proposed solution.
 - Use Threshold of 10^{-14} as the default IVI Constant for detecting waveforms with DC Content.
 - Create new error code for “Waveform_DC_Offset_Error”
- IVI Scope, Channel Name Repeated capability is a ‘one based’ index. What does this mean? MAX channel names start with ‘0’.
 - Arbitrary names chosen by vendor.
- Is the special channel name IVIACPWR_ALL_PHASES supposed to be in the channel list or is this a virtual name that the driver interprets?
 - Provide recommended names for channels (“Phase A”, “Phase B”, etc.) and all channels (“All Phases”). Vendor is free to pick their own names.
 - All phases channel name must be in the channel list. It is the responsibility of the driver to interpret this to apply to all channels.
- Why return status as return type when IVI Scope passes parameter (ref: IVI Scope section 4.3.2)?
 - Leave as is, but make name more descriptive than ‘Status’.
- Use ENUM parameter for protection status rather than Boolean attribute.
 - Make a Boolean property for the COM, Boolean attribute for C, and a IVI-C only function with Boolean parameter. (see DC spec)
 - Review other potentially Boolean property/attributes
- Do we need a Read Measurement function? (Kirk comment) DMM Read assumes instrument is configured for a particular measurement.
 - Doesn’t fit and won’t be used for IVIACPwr.
- Change output disable warning to error. Add example program to show sequence from changing range to enable output.
- Extension Groups should be disabled regardless of the reset parameter in the “Initialize with options” function.
- Scott’s Comments for the record:
 - The email mentions being able to set a DC offset in the Arbitrary Wfm mode. I believe that you do this by supplying a waveform that has a DC offset in it and NOT by configuring an attribute with a DC Offset that adds/subtracts the offset to the user defined waveform. Please confirm my understanding.
 - I am confused by the phrase "support DC Offset". When I hear it, I interpret it to mean that there is an attribute for configuring the DC Offset. It sounds like some instruments have an attribute that does this and some that don't. It sounds like some instruments allow you to have a DC Offset in the user-defined waveform and some

don't. Do some instruments allow both ways of configuring a DC offset. I need to get a much better understanding on how the devices work before having a strong opinion.

- Thoughts on Approach #1:
 - Without thinking about it too long, it sounds like instruments that don't allow a DC offset should return an error when a user-defined waveform has a DC offset within it. If the device cannot reproduce the waveform that the user supplies, it should return an error.
 - I don't understand the interaction between the DC offset in a user-defined waveform and the mode attribute and the voltage level attribute. I need a much better understanding of how they relate to each other.
- Thoughts on Approach #2:
 - If I am interpreting this one correctly, It sounds like you want the device to operate in multiple modes at the same time - Arbitrary Waveform and DC Generation. I am probably not understanding. Typically, modes are mutually exclusive. That is, attributes of a mode only affect the state of the device when the corresponding mode is selected.
- Next Meeting on March 5, 2009 at 2pm.
- Hold off prototyping until Specification is more stable.

Action Items:

#	Action Item	Discussion	Assigned To:	Due Date
1	Incorporate suggested changes.	Update Specification based on the comments in the minutes	Ray	3/5/09
2	Incorporate changes made to Spec in Project file	Update Nimbus Project File with changes made to Specification	Ray	3/5/09
3	Get Grady's consensus on Arb function	Get Grady up to speed arbitrary waveform issue with DC Offset	Grady	3/5/09
4	Generate GUID's	Generate GUID's for all extension groups section 19.1.1, Table 20-2. Email to Ray when complete.	Richard	2/27/09
5	Numeric values	Get Numeric Values for Base and Extension Group attributes and Help Context ID's. Email to Ray when complete.	Richard	2/27/09
6				
7				
8				

Operating Procedures - Deliverables:

#	Deliverable	Status	Assigned To:	Due Date
1	Investigate Tools: <ul style="list-style-type: none"> NI LabWindows CVI Pacific Mindworks – Nimbus 	Completed		
2	Working with CVI Toward IVI-C:	Completed	PPS & Ametek	
2a	Create Function Hierarchy	Completed	PPS/Ametek	
2b	Create Attribute Hierarchy	Completed	PPS/Ametek	
2c	Create Function Panels (Includes Function Tree and Attribute Tree)	Completed	PPS/Ametek	
2d	Create C Header File (proof of concept, optional example for NI/Committee)	Generated by NIMBUS	Ametek	
3	Working with NIMBUS:	Completed	Ametek	
3a	Create COM Hierarchy (Properties, Methods, Interfaces)	Completed	PPS/Ametek	
3b	Create COM IDL File (Duplicate Effort?)	Prototyping Stage	Ametek	
4	Establish 'COM GUIDS'	Prototyping Stage	Ametek	
5	Establish 'Help Context IDs'	Prototyping Stage	Ametek	
6	Establish 'Error Numbers'	Prototyping Stage	Ametek	
7	Deliverables:			
7a	<ul style="list-style-type: none"> Written Specification 			2/09
7b	<ul style="list-style-type: none"> IDL Files(Nimbus Generated) 			2/09
7c	<ul style="list-style-type: none"> .h file (attribute ID's etc.) {Prototyping Verification} 			2/09
7d	<ul style="list-style-type: none"> .fp file (function panel etc.) {Prototyping Verification} 			2/09
7e	<ul style="list-style-type: none"> Help Files (.chi, .chm Nimbus Generated) 	Completed 10/27/08	PPS	2/09
7f	<ul style="list-style-type: none"> Interop Assembly (IviACPwrInterop.dll) 			2/09
7g	<ul style="list-style-type: none"> XML IntelliSense file (IviACPwrInterop.xml) 			2/09
7h	<ul style="list-style-type: none"> Web Site Summary 			2/09

Chapter 4 .NET Working Group

General Meeting Info:

Date of Meeting: Feb. 9, 2009
Location: Dallas, TX
Chairperson: John Harvey
Minutes Prepared By: John Harvey

Meeting Attendees:

Name	Company	Phone	Email
Hugues Valois	Pacific Mindworks	858-587-8876 x227	hugues@pacificmindworks.com
John Ryland	Keithley Instruments		jryland@keithley.com
Joe Mueller	Agilent Technologies	970-679-3248	joe_mueller@agilent.com
Teresa Lopes	Teradyne	978-370-1377	teresa.lopes@teradyne.com
John Harvey	Agilent Technologies	970-679-3535	john_harvey@agilent.com
Chris Gorringer	EADS Test & Services		chris.gorringer@eads.ts.com
Rob Purser	The Mathworks		rob.purser@mathworks.com
Kirk Fertitta	Pacific Mindworks	858-587-8876 x237	kirk@pacificmindworks.com
Don Essner	DRS-SSI	314-553-4238	dessner@drs-ssi.com
Yves Maumary	Agilent Technologies		yves_maumary@agilent.com
Scott Rust	National Instruments		scott.rust@ni.com
David Rohacek	National Instruments		david.rohacek@ni.com

Agenda:

Morning:

- 8:30-9:00 - Review action items, issues list & schedule (John).
- 9:00-10:00 - Discuss architectural issues related to class compliant and instrument specific interfaces (David).
- 10:00-10:45 - Review waveform additions to the recipe document (Rob/Joe).
- 10:45-11:30 - Review the recipe document to educate people on what needs to be done (Joe/John).
- 11:30-12:30 – Apply the recipe document to two specs, PwrMeter and SpecAn. We will split into two groups for this exercise and regroup at the end of the day
 - Joe will record for the SpecAn group.
 - John will record for the PwrMeter group.

Afternoon:

- 1:15-5:30 – Continue spec modification exercise.
- 5:30-5:45 – Regroup and compare notes.

Review Action Items

Action Items in green are complete and will be removed from the ongoing list.

2008-05-13	Joe - Finish edits to the DMM spec.	<p>5-13: Joe has delivered a new version that needs to be reviewed. It has been posted to the web site.</p> <p>6-10: Finished review. Joe has several minor changes to make, documented in the minutes for 6-10-2008.</p> <p>7-22: Joe has kept this current. Can send out if needed.</p> <p>10-13: Still Current – no outstanding issues. Minimal editorial changes.</p> <p>02-09 Nothing outstanding.</p>
2008-05-13	Joe – Revise DMM assembly if needed	<p>2-19: Potential for minor changes to make assembly match DMM spec changes. Won't be done until after spec changes are complete.</p> <p>10-13: Still waiting for DMM spec changes to be completed & approved.</p> <p>02-09 Pick up documentation. John will do this</p>
2009-02-09	John will add documentation to DMM assembly.	
2008-05-13	Kirk – Add a discussion of the “Trigger Source as a String” section to the recipe document.	<p>8-19: Kirk will do the write-up and send to Joe. Joe will incorporate it into the current version. Tom has the current version of the recipe document(?). John will review minutes to see when the last time we reviewed this document was, and email Kirk, Joe & Tom with the resulting conclusion about who should have the latest copy. The 6-10 version on the web site has basic waveform changes, but not changes based on Tom's waveform work. If the web site doesn't have the latest copy, John will post.</p> <p>10-13: Latest has been posted. Trigger string section has not been added.</p> <p>02-09: Rob & Joe addressed this and Rob says it's done.</p>

2008-05-13	John – Hold a conference call to discuss sec. 6 of IVI 3.1 with Zulfiqar, Noel, and others from NI, and Hugues.	8-19: Not until September. 10-13: Delayed – will try to get this done before the next face-to-face meeting. 02-09: Not done – will do before next face-to-face.
2008-06-10	Tom (Rob) – Write a section in the recipe document dealing with the class API for using the waveform object. (adapted from: Unassigned – Add a discussion of the waveform pattern & class to the recipe document.)	6-24: Tom modified the IviScope spec to show use of the waveform object and emailed to all. 7-22: We finished a pass thru the sections that Tom has modified. Tom will continue with changes based on the pattern of what we did with the sections we reviewed. 8-19: Still needs to finish this. 10-13: Still outstanding pending further waveform discussion. Rob Purser may inherit. 02-09: Still pending.
2008-06-10	Joe – Make minor changes to the recipe document based on today's review.	7-22: Still needs minor changes, and some scope related changes. Tom is hopeful that future scope changes won't require changes to the recipe document. 8-19: Joe is waiting until all changes are ready. 10-13: Recipe document is current with changes in the DMM spec. Tom/Rob Purser will add waveform info (see previous item). 02-09: Joe logged two changes after fgen review. Will combine changes with Rob's.
2008-08-19	Hugues/Group – Would like some waveform object code to play with by the Oct. IVI meeting. Not necessarily something that talks to an instrument, but something that can be used to see how the waveform definition might be implemented.	8-19: The form this takes will be discussed over the next couple of weeks. 10-13: Still actively working on waveform design as a group. 02-09: NI did some prototyping in January. It still needs some work. There may be some work to rationalize with Digitizer requirements, which are still being discussed. The Digitizer group hopes to resolve this quickly, and

		we will respond to that group.
2008-10-14	Joe/John – Pick up changes from the Waveform solution and add them to the recipe document.	
2008-10-14	John – Post various files mentioned in the minutes to the web site. <ul style="list-style-type: none"> • New VS Solution from Hugues • TlbImp PowerPoint slides • New Issues List • New DMM Spec & Recipe doc • WG Minutes 	02-09: Links to last two phone conferences don't work.
2009-02-09	John/Joe/Rob – Integrate feedback from face-to-face into recipe document.	
	Joe send SpecAn spec to PMW, John send PwrMeter spec to Teresa. John will post both.	

Issues List

John reviewed the issues list. A couple of issues were moved from the outstanding list to the ready-to-document list.

Schedule

.NET Specification Schedule

According to Noel's memo of Jan. 20, 2009, the review of the specs is complete. There were a few minor changes, but they will be voted on at the technical committee meeting.

This means that the specs will be available for IVI.NET changes after the vote. We will verify this at the Technical Committee Meeting.

Assembly Progress.

See schedule document. There was general agreement on a schedule that results in approval by Feb, 2010.

Specification Progress.

We started on the specification schedule, but did not have the time to make significant progress. We will follow up in our regular phone conferences.

Architectural Issue

Dave described the following issue: If we have a reference from the specific driver to the foundation provided class assemblies, then the specific part of the driver can't be dissociated from the class compliant part. We are also coupling a version of the specific driver to the class compliant assembly.

The goal is to have one assembly that knows nothing about IVI, and a second assembly that is IVI compliant, and relies on the first for implementation, and to get a reference to the IVI assembly based on an instance of the non-IVI assembly.

Dave Rohacek presented some slides to illustrate the issue.

We discussed two solutions.

The first was to put the functionality in the Session Factory. The problem is that the user would have to give the Session Factory a reference to the specific driver. The fundamental benefit of the Session Factory for redirection & binding isn't valid.

The second was to create a vendor specific function that knows how to get references to additional class compliant assemblies that might be needed from the configuration store.

The consensus was the second solution.

Recipe Document Waveform Review

Joe reviewed a couple of quick changes to the recipe document.

- Added location for the revision compatibility table.
- Added a description of how to handle in/out parameters. We added a line to the output parameters table to indicate .NET return values. We agreed not to add a section for .NET exceptions after each method description.

We were not able to review waveform additions. We will review during regular telephone conferences.

Recipe Document Educational Review

Joe reviewed the recipe document to give those present an overview of what needs to be done to modify a class spec.

PwrMeter Spec Modifications

The PwrMeter group consisted of John Harvey, Kirk Fertitta, Teresa Lopes, Don Essner, and Chris Gorringer. It worked through the PwrMeter specification and the recipe document. The group completed a first pass through the spec.

SpecAn Spec Modifications

The SpecAn group consisted of Hugues Valois, Joe Mueller, John Ryland, Rob Purser, Yves Maumary, Jochen Wolle, and David Rohacek. It worked through the SpecAn specification and the recipe document. The group completed a first pass through about 2/3 of the spec.

Action Items:

The following list of action items replaces the list above. Incomplete items were carried over.

2008-05-13	John – Hold a conference call to discuss sec. 6 of IVI 3.1 with Zulfiqar, Noel, and others from NI, and Hugues.	8-19: Not until September. 10-13: Delayed – will try to get this done before the next face-to-face meeting. 02-09: Not done – will do before next face-to-face.
2008-06-10	Rob – Write a section in the recipe document dealing with the class API for using the waveform object.	02-09: Still pending.
2008-08-19	Hugues/Group – Would like some waveform object code to play with by the Oct. IVI meeting. Not necessarily something that talks to an instrument, but something that can be used to see how the waveform definition might be implemented.	02-09: NI did some prototyping in January. It still needs some work. There may be some work to rationalize with Digitizer requirements, which are still being discussed. The Digitizer group hopes to resolve this quickly, and we will respond to that group.
2008-10-14	John – Post various files mentioned in the minutes to the web site. <ul style="list-style-type: none"> • New VS Solution from Hugues • TlbImp PowerPoint slides • New Issues List • New DMM Spec & Recipe doc • WG Minutes 	02-09: Links to last two phone conferences don't work.
2009-02-09	John will add documentation to DMM assembly.	
2009-02-09	John/Joe/Rob – Integrate feedback from face-to-face into recipe document.	
	Joe send SpecAn spec to PMW, John send PwrMeter spec to Teresa. John will post both.	

Chapter 5 IVI Marketing Committee Meeting Minutes

General Meeting Info:

Date of Meeting: February 10, 2009
Location: Dallas – Fort Worth, TX
Chairperson: Alex McCarthy
Minutes Prepared By: Alex McCarthy

Meeting Attendees:

Name	Company	Attended
Alex McCarthy	NI	Y
Bob Helsel	IVI Foundation	Y
Jochen Wolle	Rohde & Schwarz	Y
Kirk Fertitta	Pacific MindWorks	Y
Nicole Dierksheide	Agilent	Y
Rob Purser	The Mathworks	Y
John Harvey	Agilent	Y
Joe Mueller	Agilent	N
Evan Cone	NI	Y
Teresa Lopes	Teradyne	Y
Chris Goringe	EADS	Y
Don Essner	DRS	N
John Ryland	Keithley	N
Yves Maumary	Agilent	Y

Discussion Topics:

- Roll call
- Review action items from previous meeting (Alex)
- Getting Started Guide shortened versions for each ADE (Bob)
- Ask for volunteers to own specific 2009 marketing tactics (Alex)
- New Business

Record of Discussions:

Review action items from previous meeting

Owner	Action Item	Deadline	Status
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Owner	Action Item	Deadline	Status
Bob	Redirect SCPI site to IVI foundation SCPI page	Feb mtg	Done
Bob	Investigate SCPI.org website new organization	Feb mtg	Done
Bob	Check that SCPI spec is posted on IVI web site as pdf	Feb mtg	Done
Bob	Make edits in shortened version and one edit in master GSG then final review by content expert	Feb mtg	Pending review by Joe
Bob	Ask for quote on completing additional chapters on a not to exceed basis	Feb mtg	Done
Alex	Include discussion of engaging more companies to add new IVI classes	Feb mtg	Done
All	Bring ideas of what outbound marketing efforts you are willing to commit to completing in 2009	Feb mtg	Done

Notes from Reviewing Past Action Items

- Redirect SCPI consortium web site to IVI or keep separate and redirect for specs.
 - o **Bob – reduce SCPI site and point to IVI site. Work with Jochen to modify IVI site to make finding the SCPI spec easier.**

GSG Shortened Versions (Bob)

- GSG shortened version will be run by Joe this week to verify edits and then get to Bob. Mary Jane Paulson's quote included changes required per chapter and master copy for not to exceed \$8100 for all nine guides. Joe suggested not including chapter 3 in each guide, but to include a reference to it in the Master GSG.
- Include information from the complete Table of Contents in the reference used in each of the shortened versions.
 - o **Action: Bob will pass on new instructions to not include Advanced Topics but replace with a reference including the table of contents in the master guide.**
- Need to have technical reviewers named and ready to review based on proposed schedule (complete all guides end of March). We want to make sure guides are completed and posted by end of April at the latest.
 - o **Action: Bob will send proposed dates to technical reviewers to review the shortened guides.**
- We will wait for all guides to post and then issue a PR.
 - o **Alex – Discuss shortened GSG rollout in March IVI Marketing meeting**
 - o **Bob – Seek board's approval on spending up to \$8100 to develop the shortened GSGs**

Review current messaging and ask for volunteers to own specific tactics (Alex)

- Increasing the number of instrument classes
 - o This may reduce the perception that customers should not use IVI if there is not an instrument class specification. Currently have five new instrument specs and 64-bit in the works – maybe wait until later this year to engage additional vendors and consider new classes.
 - o Electro-optics came in, but decided not to pursue it. Initial motivation was gov't contracts, lost momentum. SIWG is a successful example of adding new instrument classes.
 - o Setting expectations on level of effort, process, and time line for new companies.
 - o Look additional instrument types that are widely used and then approach vendors of those instruments. We need user support to justify vendor investment in developing new class specifications. At some point, the effort required to develop a new instrument specification may reach a point of diminishing return.
 - **Action: Bob – add link for web site visitors to state what additional instruments they want supported.**
- Focus on doing a few marketing ideas with owners:
 - o Plaques for AutoTestCon 2009, if IVI funds it. Should cost less than \$1200. Rob Purser will distribute them at ATC. Owner: Nicole
 - o Press releases on 64-bit spec (1Q), shortened GSG (2Q), new instruments classes (timing TBD depending on release timing). Cost to wire is ~\$400 each. Bob H will write for \$500 each. Nicole mentioned that Agilent may be able to help cover some of costs to write if IVI budget is limited.
 - **Bob to ask TWG chairs for estimated release dates.**
 - o Webinar(s) to educate on IVI and advanced IVI topics. Relatively low-cost to product and broadcast. Focused areas by technical expert is key. Go-to Webinar is a potential low-cost hosting service. Do a series of 6-8. Can be promoted and hosted by vendors. Shorter is better (~5 minutes). Host on YouTube.
 - **Bob will research webinars/videos further and bring back more data**
 - **Rob will generate a list of potential short videos**
 - o Write an IVI paper from list of former abstracts. Kirk will own. Potentially hire a ghostwriter to develop the actual paper. We may be able to hire cheaply in this timeframe - ~\$1000 each.
 - **Kirk will develop an outline/draft by next IVI meeting**
 - o Bode hosts a standards seminar at AutoTestCon. Can turn it over to IVI to run it for IVI, LXI, PXI, ...
 - **Bob will give more specifics on current arrangement to gauge interest**

Summary of New Action Items:

Owner	Action Item	Deadline	Status
Bob	Reduce SCPI site and point to IVI site. Modify IVI site to find SCPI spec easier and work with Jochen.		
Bob	Pass on new instructions to not include Advanced Topics but replace with a reference to the table of contents in the master guide.		
Bob	Send proposed dates to technical reviewers to review the shortened guides.		
Alex	Discuss rollout of shortened GSG in March IVI Marketing meeting		
Bob	Seek board's approval on spending up to \$8100 to develop the shortened GSGs		
Bob	Add link for web site visitors to state what additional instruments they want supported.		
Bob	Ask TWG chairs for estimated release dates for potential press releases		
Bob	Research webinars/videos further and bring back more data		
Rob P.	Generate a list of potential short videos		
Kirk	Develop a paper outline/draft by next IVI meeting		
Bob	Give more specifics on current AutoTestCon seminar arrangement to gage interest		

Chapter 6 IVI Data Conversion working group minutes

10 February 2009

- Attendees:
 - Yves Maumary
 - Evan Cone
 - Kirk Fertitta
 - Don Essner
 - Jochen Wolle
- Patent review – nothing new.
- Last meeting minutes
 - Approved.
- Action items:
 - ~~Source parameter problem for triggers — fixed (Dan & Kirk).~~
 - New draft specification document 0.15 including the resolutions mentioned in these minutes and those of the previous meeting, Jan 21st (Dan). This should best wait until after the meeting in Dallas, so that we can also include the final resolutions about the Read/Fetch functions. Note: make sure that revision tracking is on for the Word document so that Kirk (and others) can see where the changes are.
 - New Nimbus package (Kirk). This will follow shortly after the new draft specification document (0.15).
- Dallas face-to-face meeting agenda:
 - **Fetch/read methods prototypes**: Yves will prepare function prototype proposals and gather all comments/remarks/suggestions. We should converge and have a satisfactory proposition for the spec rev 0.15.
 - **New method for buffer size query**: An IVI-C only query function will be necessary.
 - **COM hierarchy for ARB**: This was distributed by email (Kirk). Please review and send feedback via email before the meeting if you cannot attend.
 - **Note**: there will be a separate session for the IVI FGen trigger source name issue.
- Fetch/Read calls: Rename some parameters for better clarity.
 - Record → FirstRecord
 - NumPoints → NumPointsPerRecord
 - Remove WaveformArrayStartIndex: rare use case, confusing for most other cases.

- WaveformArray: we need to explicitly specify that this is an in&out parameters in COM, i.e. when a non-empty SAFEARRAY is passed in, it cannot be reallocated by the driver.
- ActualPoints → ActualPointsInRecord?
- ActualPoints, FirstValidPoint, InitialXOffset, InitialXTimeSeconds, InitialXTimeFraction need to be arrays of size NumRecord. Suggestion: only the fetch calls would allow multi-record and/or partial record readout. Read would always return single record data. If the 'number of records' attribute set for the acquisition is not equal to 1, then the Read calls would return an error.

```
HRESULT Channels.Item().Measurement.ReadWaveformInt16 ( [in] long MaxTimeMilliseconds,
    [in, out] SAFEARRAY(short)* WaveformArray,
    [in, out] __int64* ActualPoints,
    [in, out] __int64* FirstValidPoint,
    [in, out] double* ScaleFactor,
    [in, out] double* ScaleOffset,
    [in, out] double* InitialXOffset,
    [in, out] double* InitialXTimeSeconds,
    [in, out] double* InitialXTimeFraction,
    [in, out] double* XIncrement);
```

- Should we allow the user to pass NULL for some (or even all) of the return parameters (ActualPoints, etc.), at least for COM? Given the fact that some digitizers will e.g. always have a FirstValidPoint equal to zero, we should not force the user to declare a variable to be filled with 0. Consensus: we will allow (both for COM and C) all the return parameters except WaveformArray to be NULL pointers. To be confirmed (Kirk).
- Even though we would then not need a 'simple' fetch call, it is still desirable to keep it for asynchronous operation.

```
HRESULT Channels.Item().Measurement.FetchWaveformInt16 (
    [in, out] SAFEARRAY(short)* WaveformArray,
    [in, out] __int64* ActualPoints,
    [in, out] __int64* FirstValidPoint,
    [in, out] double* ScaleFactor,
    [in, out] double* ScaleOffset,
    [in, out] double* InitialXOffset,
    [in, out] double* InitialXTimeSeconds,
    [in, out] double* InitialXTimeFraction,
    [in, out] double* XIncrement);
```

- For the multi-record fetch calls we need new names:
FetchMultiRecordWaveformInt8/Int16/Int32/Real64.
 - Kirk asks the question about the int64: what are we going to do, since VISA does not (yet?) have viRead/viWrite calls for 64bit integers for message-based instruments?
- Query for the minimum buffer size: this is necessary because the user does not know a priori the maximum value that FirstValidPoint can assume. Also, for the multi-record

case, the value of FirstValidPoint is relative to the start of WaveformArray. So that:

Sample n of record m = x [FirstValidPoint[m] + n]

In COM, rather than having to query for the required size, allocating the SAFEARRAY, and then calling the Read/Fetch, the user can simply let the driver allocate the SAFEARRAY on the first call. In summary, we need QueryMinWaveformMemory only for C. The returned size is in samples.

- Jochen suggest we add some explicit example use cases in the spec. This would go in an appendix. Once prototyping will be complete, we should have a better feeling whether this would be necessary or not.

- ARB COM hierarchy:
 - Trigger attributes (Coupling, Delay, etc.) need to be added to top level Trigger.
 - Coupling: No devices allow this to be set programmatically. Can we remove it? This comment is valid for all trigger types.
 - Sync polarity: decide to make it vendor specific (This comment is valid for all trigger types).
 - Markers: we need more precise information about the ‘sequencing markers’ to understand what we need for the interface.
Do we need 3 collections of markers (for each type)? Amplitude, Delay, Destination, Polarity and PulseWidth are common, but there are significant differences between Data and Sparse markers to warrant using different collections. One suggestion is to use separate extension groups for the 3 marker types.
 - There is doubt about the exact signification of [about Sparse Markers] “an array that specifies data indexes where markers should happen; this is attached to a sequence, not to a waveform”. Ask Dan where that came from.
 - Tek is (afawk) the only vendor that has a settable amplitude for the markers. We should ask their opinion about making this vendor specific.
 - What is “Generate Software Marker”???
 - CreateWithChannel: final name was TBD [Evan]. Proposal: CreateChannelBoundWaveform, CreateChannelWaveform. The latter seems to satisfy all present.
 - Sequence of Sequences (also called Scenarios [Agilent]): arbitrary depth is likely not supported, need for Property to be able to query maximum depth. Or is the limitation only finite memory?
We need to get the experts (Zoltan, Dan, Tek) on a conf call to finalize what to do about Sequence of Sequences.

- Next meeting is on February 18th, 2009.

Chapter 7 Counter/Timer Working Group

General Meeting Info:

Date of Meeting: February 10, 2009
Location: Dallas, TX
Chairperson: Don Essner (DRS)
Minutes Prepared By: Don Essner

Meeting Attendees:

Name	Company	Email	Phone
Don Essner	DRS	dessner@seistl.com	314.553.4238
Vesna Jadric	NI	vesna.jadric@ni.com	512.683.5360
John Ryland	Keithley	jryland@keithley.com	440-498-3134
Joe Mueller	Agilent	Joe_mueller@agilent.com	970.679.3248

Agenda:

- 1) Review Action Items from last IVI Foundation meeting
- 2) Action Item comments
- 3) Review latest Counter Specification Document
- 4) Submit Specification for Approval
- 5) Create new Action Items

1) Review Action Items from the previous IVI Foundation Meeting

#	Action Item	Discus sion	Assigned To	Due Date
1	Post updated spec on the IVI Web	Complete 10/16/2008	DRS, Don	10/21/2008
2	Post minutes on the IVI Web	Complete 10/16/2008	DRS, Don	10/21/2008
3	Post Teleconference Minutes on the IVI Web	Complete 10/16/2008	DRS, Don	10/21/2008
4	Monitor IVI 3.3 Trigger Table approval progress and switch to alternate plan if it is dragging out.	Changes have been submitted and should be approved ahead of Counter spec	DRS, Don	1/1/2008
5	Where to put IDL and help information and how to manage/maintain it.	Pending	Shared Component Management Committee	12/1/2008
6	Check on official decision to leave or remove C include file in spec	Pending	DRS, Don and Technical Committee	1/1/2009
7	Update spec descriptions to be "more" descriptive.	Complete 10/23/2008	DRS, Don NI, Zulfiqar	12/1/2008
8	Review and Finalize spec. Depends on AI #7.	In work	WG	1/1/2009
9	Update IDL based on finalized spec. Depends on AI #5 and #8.	In work	Agilent, Joe NI, Zulfiqar	1/15/2009
10	Insert spec descriptions and summaries into Nimbus. Depends on AI #9.	In work	NI, Zulfiqar	1/15/2009
11	Filling out the help context IDs	In work	NI, Zulfiqar	1/15/2009
12	Change Courier/9 to Courier New/9 throughout spec	Complete 10/20/2008	DRS, Don	12/1/2008
13	Add IIVICounterChannels Count(IVI-C and COM), Item, and Name functions (COM Only) refer to Scope.	Added, complete 10/20/2008	DRS, Don	12/1/2008
14	Check Header file for GatedSlope	Not in header file, complete 10/20/2008	DRS, Don	12/1/2008
15	Change IviCounterArmEnum to IviCounterArmTypeEnum in Code	In work	Agilent, Joe	1/1/2009
16	Remove MaximumFrequencyRange.Configure	In work	Agilent, Joe	1/1/2009

#	Action Item	Discus sion	Assigned To	Due Date
	from code			
17	Check code for FrequencyRatio.NumeratorFrequencyEstimate FrequencyRatio.Estimate FrequencyRatio.Resolution	In work	Agilent, Joe	1/1/2009
18	Change FetchContinuousTotalizeCount from DOUBLE to LONG	In work	Agilent, Joe	1/1/2009
19	Use Operating Procedures 5.2 Required Deliverables from Class Committees for Spec Release	In work	DRS, Don	1/1/2009
20	Website summary, pattern after others already there	Pending	DRS, Don	1/1/2009
21	Schedule 2 hr teleconferences for November 19, December 17, and January 14 at 8am MT and 9am CT	Complete	DRS, Don	11/12/2008

- 2) Action Items
 - a) See new Action Items
- 3) Review latest Counter Specification Document
 - a) See Marked Up Spec for revisions
- 4) Submit Specification for Approval

5) Create new Action Items

#	Action Item	Discus sion	Assigned To	Due Date
1	Post updated spec on the IVI Web	Complete 2/17/2009	DRS, Don	2/17/2009
2	Post minutes on the IVI Web	Complete 2/17/2009	DRS, Don	2/17/2009
3	Move “Auto” to the end of attribute names		DRS, Don	2/23/2009
4	For Boolean attributes added Defined Value Table		DRS, Don	2/23/2009
5	Add Immediate/External decision block to Figure 4.2		DRS, Don	2/23/2009
6	Revisit Edge Time measurement and instrument capabilities. Determine if candidate instruments support % based measurements. May need 2 functions, one with High/Low % and one with High/Low voltages.		DRS, Don	2/23/2009
7	Where to put IDL and help information and how to manage/maintain it.		Shared Component Management Committee	4/1/2009
8	Check on official decision to leave or remove C include file in spec		DRS, Don and Technical Committee	4/1/2009
9	Review and Finalize spec. Depends on AI #7.		WG	4/1/2009
10	Update IDL based on finalized spec. Depends on AI #5 and #8.		Agilent, Joe NI, Vesna & Penar	4/1/2009
11	Insert spec descriptions and summaries into Nimbus. Depends on AI #9.		NI, Vesna & Penar	4/1/2009
12	Filling out the help context IDs		NI, Vesna & Penar	4/1/2009
13	Change IviCounterArmEnum to IviCounterArmTypeEnum in Code		Agilent, Joe	4/1/2009
14	Remove MaximumFrequencyRange.Configure from code		Agilent, Joe	4/1/2009
15	Check code for FrequencyRatio.NumeratorFrequencyEstimate FrequencyRatio.Estimate FrequencyRatio.Resolution		Agilent, Joe	4/1/2009

16	Change FetchContinuousTotalizeCount from DOUBLE to LONG		Agilent, Joe	4/1/2009
17	Use Operating Procedures 5.2 Required Deliverables from Class Committees for Spec Release		DRS, Don	4/1/2009
18	Website summary, pattern after others already there		DRS, Don	4/1/2009
19	Schedule a 2 hr WebEx for 2/25 at 2pm		DRS, Don	2/23/2009
20				
21				

Chapter 8 IVI BoD Meeting February 11,2009

Called to order at:

Directors in attendance

Present	Director	Company
X	Joe Mueller	Agilent
X	John Ryland	Keithley
X	Scott Rust	National Instruments
X	Jochen Wolle	Rohde & Schwarz
X	Kirk Fertitta	Pacific Mindworks
X	Don Essner	DRS-SSI
X	Teresa Lopes	Teradyne
X	Rob Purser	The MathWorks

Quorum is a majority of directors. 8/8 satisfies the requirement.

Agenda Review

IVI BOD MEETING FEBRUARY 11,2009

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. REVIEW MINUTES OF PREVIOUS MEETING
 - 5.1 ACTION ITEMS FROM PREVIOUS MEETING
6. ELECTION OF OFFICERS
7. BOD SUB COMMITTEES
8. REPORT FROM MARKETING GROUP
 - 8.1 PROMOTIONAL PLANS
 - 8.2 IVI GETTING STARTED GUIDE
9. REPORT FROM OPERATING PROCEDURES GROUP
10. MOTION FROM TECHNICAL COMMITTEE REGARDING 64-BIT SPEC CHANGES
11. IP DISCUSSION
12. FINANCIAL REPORT

13. NEW BUSINESS

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

The following motion was passed by the Board of Directors since the last face-face meeting:

The Technical Committee moves that the BoD approve changes for VISA C Plug-In Arch for Vista 64. The updated specifications include VPP-2 (Frameworks), VPP-4.3 (VISA Library), VPP-4.3.4 (VISA COM), VPP-6 (Installation). A new specification was created - VPP-4.3.5 (VISA Shared Components).

MOTION CARRIED UNANIMOUSLY November 17, 2008

Review Minutes of Previous Meeting

Been posted – no issues raised

Action Items from Previous Meeting

ITEM	OWNER	UPDATE
Ensure appropriate IP information is posted on the web site	Joe & Bob	Complete
Agilent propose updated license for the VISA components it has offered to IVI. Hold appropriate meetings to discuss.	Joe	Complete

Election of officers

Office	Serving in 2008	Nominees for 2009
President	Joe Mueller	Joe Mueller
Treasurer	Scott Rust	Scott Rust
Secretary	Jochen Wolle	Jochen Wolle
Chair Technical Committee	Scott Rust	Scott Rust
Chair Marketing Committee	Matt Friedman	Alex McCarthy

Don Essner moved to nominate the same slate of officers with the exception of having Alex as the Marketing chair. Rob Purser seconded.

7 in favor, 0 opposed, motion carries

BoD Sub Committees

Sub Committees of BoD	Serving in 2008	Nominated for 2009
Legal Committee		
Marketing Committee	Alex McCarthy (chair) Rob Purser Jochen Wolle Kirk Fertitta Nicole Dierksheide Bob Helsel	Alex McCarthy (chair) Rob Purser Jochen Wolle Kirk Fertitta Nicole Dierksheide Bob Helsel
Operating Procedures	Joe Mueller (chair) Bob Helsel Scott Rust	

Operating procedures and Legal committee will be formed if and when needed.

Alex should use this list as the nominal members of the marketing committee.

Report from Marketing group

Promotional Plans

Generally the “marketing plan” is that proposals for marketing tasks need to be based on things that people are willing to sign up for.

At the meeting this week:

Getting Started Guide Pamphlets – Bob got a quote from our writer to prepare a pamphlet for each language. Quote is for \$900 per pamphlet (not-to-exceed). Will eliminate the “Advanced Topics” chapter. There are 9 chapters (implying \$8100),

Articles – Kirk Fertitta volunteered to create an article to be placed by the consortium.

Nicole Dierksheide – Will revive the Autotestcon placques. Estimate about \$50 per placque times about 20. (\$1000). Rob willing to help distribute at Autotestcon.

Total for these activities close to the \$10K that is likely to be available.

Group also discussed:

- Press releases (low-cost). Distribution cost about \$375 per release (direct cost of “Market Wire”. Shows up in a global marketplace.
- Nicole (Agilent) volunteered time to write press releases if consortium can not afford to hire Bode Ent. To do it (estimate \$500 per release to Bode Enterprises). Ideas:
 - o 64-bit
 - o IVI-Counter
 - o Availability of getting started guide and pamphlets
- Will look for owners for technical articles, some other ideas are around
- Could do some video's or Webinars. 5 minute video webinar (e.g., youtube videos). Short consumable piece that could be viewed at any time. Rob is looking into content for these.
- Host a series of 6-7 webinars on educational topics. Thrust was classes or steps after the getting started guides. Primarily educational format. Time for live Q&A. Would require an inexpensive approach to Webinars. Bob will look into low-cost webinar delivery.

Report from Operating Procedures group

No actions. The Operating procedures group will not be created for '09 unless required.

Motion from Technical Committee Regarding 64-bit spec Changes

The IVI Technical committee moves that the IVI BoD confirm the changes to the specifications as detailed in the minutes of the Technical Committee meeting 2009-02-11. (TC Resolution: 2009-02-11:#01).

Motion passes 7:0 no abstentions.

IP Discussion



License Agreement
for IVI Software Licen:

Agilent has proposed the license agreement (incorporated in these minutes) for the software components it is contributing to IVI for the VISA shared components. Agilent will not pursue the patent applications it advised the consortium of fall 2007 regarding the DLL replacement. That is: US patent application 1/137,526 and its counterpart, pending EP patent application 06252727.0.

Joe will conduct an e-Vote of the BoD starting March 1 with the intent of directing Jochen to sign the contract on behalf of the IVI Foundation assuming no issues are found with the license.

Financial Report

Plan to evaluate dues structure October 2009.

IVI P&L 2008



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In summary, with projections of outstanding invoice we have about \$17K we can spend on marketing etc, and two years of operational budget (at about \$42K). See financial report for details.

The marketing committee should propose a budget based on about a \$16K 2009 spending.

New business

Motion to adjourn (Rob Purser) seconded Don Essner. Motion passed unanimously.

Chapter 9 Annual Membership Meeting

Feb 11, 2009

Called to order 12:08

Review voting members in attendance, introductions

Voting Members in Attendance (establish quorum and voting representatives in attendance):

Company	Representative	Present
Aeroflex Corporation	Mary Rozner	
Ametek Programmable Power	Kevin Lam	
Aseor (Gigatronics)	Terukumi Okiyama	
BAE Systems	Ron Drees	
California Instruments	Kevin Lam	
DRS Sustainment Systems, inc	Don Essner	X
Elgar	Omar Vitobaldi	
GCSD Division of Harris	Jan McNeilly	
Honeywell		
Lockheed Martin	Steven J O'Donnell	
Keithley Instruments	John Ryland	X
The MathWorks	Rob Purser	X
Pacific MindWorks, Inc.	Kirk Fertitta	X
Pacific Power Source, Inc	Eric Lord	
Phase Matrix	Michael Granieri	
Rockwell Collins	Jason Schares	
Santa Barbara Infrared	Steve McHugh	
Tektronix	Murali Sreedhara	
Teradyne	Teresa Lopes	X
EADS/TYX Corp	Chris Gorringer	X
Vektrex Electronic	Mark Skiba	
VTI Instruments	Paul Dhillon	
Xantrex (now Ametek Programmable Power)		

Company	Representative	Present
Agilent Technologies	Spon Joe Mueller	
Keithley Instruments (General)	Spon John Ryland	
National Instruments	Spon Scott Rust	
Rohde & Schwarz	Spon Jochen Wolle	
Tektronix (General)	Spon Murali Sreedhara	

Note: Quorum is 25% of voting membership or 2, whichever is *greater* (By-Laws section 3.6). Based on 18 voting members, a quorum is 5.

 9 Present 2008-02-08 satisfies quorum.

Review Agenda

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Review minutes of previous meeting

No modifications noted.

Circulate membership roster to be corrected by members

General updates done

Create slate of general directors representing general membership

There are 15 General-level members in the IVI Foundation, Inc., of whom, 6 are in attendance. Being more than 25% of the total membership that class, this constitutes a quorum.

NOTE FROM BY-LAWS 4.3c: "... Notwithstanding anything in these By-laws to the contrary, at the discretion of the Board, no Member shall be eligible to nominate or elect a Director if such Member's representative to the Board of Directors failed to attend a majority of the meetings of the Board in the previous year...."

Company	Representative	Present	Able to Serve as Director
Aeroflex Corporation	Marv Rozner		
Ametek Programmable Power	Kevin Lam		
BAE Systems	Ron Drees		

DRS Sustainment Systems, inc	Don Essner	X	X
Keithley Instruments	John Ryland	X	X
The MathWorks	Rob Purser	X	X
Pacific MindWorks, Inc.	Kirk Fertitta	X	X
Pacific Power Source, Inc	Eric Lord		
Phase Matrix	Michael Granieri		
Rockwell Collins	Jason Schares		
Tektronix	Murali Sreedhara		
Teradyne	Teresa Lopes	X	X
EADS/TYX Corp	Chris Gorringer	X	
Vektrex Electronic	Mark Skiba		
VTI Instruments	Paul Dhillon		

15 total general members. As a class, General Members are permitted to nominate 5 directors.

Nominations: All those listed as available in the table above.

Teresa moves that this slate of directors be nominated on block. Rob Purser seconded.
6:0:0 Motino carries unanimously.

Identify Sponsor Directors as elected by Sponsor Members

The following directors were elected by their representative companies.

Company	Representative
Agilent Technologies	Joe Mueller
National Instruments	Scott Rust
Rohde & Schwarz	Jochen Wolle

New Business

None Expressed

Meeting adjourned 12:20