

# IBIS Open Forum Minutes

Meeting Date: **March 15, 2013**

Meeting Location: **Teleconference**

## VOTING MEMBERS AND 2013 PARTICIPANTS

Agilent	Radek Biernacki*, Pegah Alavi, Heidi Barnes, Fangyi Rao, Colin Warwick
Altera	David Banas, Hsinho Wu
ANSYS	Luis Armenta
Applied Simulation Technology	Fred Balistreri, Norio Matsui
ARM	(Vipul Patel)
Cadence Design Systems	Terry Jernberg, Joy Li, Yingxin Sun, Ambrish Varma*, Kevin Yao
Ericsson	Anders Ekholm*, Martina Fiammengo
Foxconn Technology Group	(Sogo Hsu)
Freescale	Jon Burnett
Huawei Technologies	(Jinjun Li)
IBM	Greg Edlund*, Adge Hawes*
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Michael Mirmak*, Mohammad Bapi, Stewart Gilbert, Ravindra Rudraraju
IO Methodology	Lance Wang*
LSI	(Brian Burdick)
Maxim Integrated Products	Hassan Rafat, Mahbubul Bari, Ron Olisar
Mentor Graphics	Arpad Muranyi*, Ed Bartlett, Vladimir Dmitriev-Zdorov
Micron Technology	Randy Wolff*
Nokia Siemens Networks GmbH	(Eckhard Lenski)
QLogic	James Zhou
Signal Integrity Software	Walter Katz*, Mike LaBonte*, Mike Steinberger, Todd Westerhoff
Synopsys	John Ellis, Ted Mido, Scott Wedge, Rinsha Reghunath*
Teraspeed Consulting Group	Bob Ross*, Tom Dagostino
Texas Instruments	(Pavani Jella)
Toshiba	(Yasumasa Kondo)
Xilinx	(Raymond Anderson)
ZTE	(Huang Min)
Zuken	Masaud Raeisi, Reinhard Remmert

## OTHER PARTICIPANTS IN 2013

Bayside Design	Elliot Nahas
ECL Advantage	Thomas Iddings
Granite River Labs	Vamshi Kandalla, Miki Takahashi
Hewlett-Packard	Yongjin Choi, Ting Zhu

KEI Systems	Shinichi Maeda
National Instruments	Lee Mohrmann
Nvidia	Eric Hsu
Qualcomm	Scott Powers
TechAmerica	(Chris Denham)
University of Illinois	Tom Comberiate, José Schutt-Ainé
Vitesse Semiconductor	Sirius Tsang

In the list above, attendees at the meeting are indicated by \*. Principal members or other active members who have not attended are in parentheses. Participants who no longer are in the organization are in square brackets.

## UPCOMING MEETINGS

The bridge numbers for future IBIS teleconferences are as follows:

Date	Meeting Number	Meeting Password
April 5, 2013	205 475 958	IBIS

For teleconference dial-in information, use the password at the following website:

<https://ciscosales.webex.com/ciscosales/j.php?J=205475958>

All teleconference meetings are 8:00 AM to 9:55 AM US Pacific Time. Meeting agendas are typically distributed seven days before each Open Forum. Minutes are typically distributed within seven days of the corresponding meeting. When calling into the meeting, follow the prompts to enter the meeting ID. For new, local international dial-in numbers, please reference the bridge numbers provided by Cisco Systems at the following link:

[http://www.cisco.com/web/about/doing\\_business/conferencing/index.html](http://www.cisco.com/web/about/doing_business/conferencing/index.html)

NOTE: "AR" = Action Required.

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## INTRODUCTIONS AND MEETING QUORUM

Randy Wolff declared that a quorum was reached and the meeting could begin.

Rinsha Reghunath of Synopsys joined the meeting about halfway through and introduced herself. She is an R&D engineer working on IBIS modeling.

## CALL FOR PATENTS

Michael Mirmak called for any patents or pending patents related to the IBIS 3.2, IBIS 4.2, IBIS 5.1, Touchstone 2.0 or ICM 1.1 specifications. No patents were declared.

## **REVIEW OF MINUTES AND ARS**

Randy Wolff called for comments regarding the minutes of the February 22, 2013 IBIS Open Forum teleconference. The minutes were approved without changes.

Randy mentioned that the minutes have not been getting legal review from TechAmerica [since the 11/30/2012 set of minutes]. Michael Mirmak took the AR to contact TechAmerica regarding legal review.

## **MEMBERSHIP STATUS AND TREASURER'S REPORT**

Bob Ross reported that he has not received a report from TechAmerica on 2012 finances or 2013 membership dues payments.

## **WEB PAGE UPDATES**

Mike LaBonte reported that he moved the parser link higher up on the web page and added links to the IBIS-AMI tools to the free tools page. He also fixed the script that is used to create the BIRDs page.

## **MAILING LIST ADMINISTRATION**

Mike LaBonte reported that everything is running normally. Anders Ekholm noted that he didn't receive the agenda for the meeting. Mike will send a list to Anders of all the emails sent recently to the [ibis-users@eda.org](mailto:ibis-users@eda.org) email to see if he has received any of these messages.

## **MODEL LIBRARY UPDATE**

No update.

## **MISCELLANY/ANNOUNCEMENTS**

None.

## **CALL FOR NEW ISSUES**

Michael Mirmak noted that many new and updated BIRDs have been added to the agenda, specifically BIRD159 and updates to BIRDs 116, 117, 118, 129 and 153.

Walter Katz asked for time to discuss an upcoming vote in the Interconnect task group.

Greg Edlund asked if the Model Review task group has been disbanded. Michael noted that there is not an official task group currently, but there are a few people willing to review models. Greg was specifically looking for reviewers for IBIS-AMI models. Michael asked if there were a list of these volunteers, would that be sufficient. Greg responded that a published list would be a good starting point. Arpad Muranyi and Lance Wang are willing to review models.

Ambrish Varma noted that IBIS-AMI models need very strict criteria for reviewing and judging their quality. Radek Biernacki suggested that the Quality task group could provide a list of checks for AMI models. Mike LaBonte noted that Greg has discussed an AMI quality checklist in the Quality task group before, and it might be time to start discussing this again. Greg commented that he would like to have an additional set of eyes available for reviewing vendor models. Michael asked if it would be reasonable to post on a model review page a list of volunteers along with current checks provided by the volunteers. The list can be expanded as needed. Mike will look into a better location for this information on the web page. Ambrish commented that he'd like to see reviewers from more EDA software companies. Mike proposed that we use our member roster page and list at the top a comment noting that certain companies with a special marker provide model review. Radek noted that he'd like to see a more concise list of contacts for model review that would be easier to use. Mike will look at proposals before making any changes to the web change.

## **IBIS AFFILIATIONS**

Michael Mirmak noted that he is deferring this topic until the next meeting.

## **INTERNATIONAL/EXTERNAL ACTIVITIES**

### **- Conferences**

The 17th IEEE Workshop on Signal and Power Integrity (SPI 2013) will be held May 12-15, 2013 in Paris, France. There will be a European IBIS Summit in conjunction with this conference. Bob Ross noted that Anders Ekholm is the keynote speaker. More information is available at:

<http://spi2013.org>

The 22<sup>nd</sup> IEEE Workshop on Electrical Performance of Electronic Packaging and Systems (EPEPS 2013) will be held October 27-30, 2013 in San Jose, California. There may be content related to IBIS modeling.

### **- Press Update** None.

## **IEC APPROVAL ACTIVITIES**

Randy Wolff reported that he is unsure what follow-up to do with Dennis Brophy and Victor Berman after the teleconference meeting with the IEC National Committee TC91 WG13 on February 8. Michael Mirmak commented that we should defer any additional work on this topic until our parent organization affiliation is settled out.

## **SUMMIT PLANNING**

- SPI 2013 will be held in Paris on May 12-15. The IBIS Summit meeting is planned for Wednesday afternoon, May 15, at the conference hotel. Michael Mirmak asked for a sponsor for the meeting. Bob Ross noted he would contact at least one company directly. He also said that the first announcement will need to go out soon.

Sponsorship opportunities for all upcoming IBIS summits are available, with sponsors receiving free mentions in the minutes, agenda, and other announcements. Contact the IBIS Board for further details.

### **QUALITY TASK GROUP**

Mike LaBonte reported that last meeting where they had a quorum was in January. He and Bob Ross have been calling in and working on the specification document for the parser. He asked for more participation in the meeting. Michael Mirmak suggested that Mike send a notice to the larger IBIS mailing list about the Quality task group asking for participation.

The Quality Task Group checklist and other documentation can be found at:

[http://www.eda.org/ibis/quality\\_wip/](http://www.eda.org/ibis/quality_wip/)

### **ADVANCED TECHNOLOGY MODELING TASK GROUP**

Arpad Muranyi reported that the group is meeting regularly on Tuesdays at 12:00pm Pacific time. They are discussing several topics including dependency tables, analog modeling, and repeaters and backchannel communications.

Task group material can be found at:

[http://www.eda.org/ibis/macromodel\\_wip/](http://www.eda.org/ibis/macromodel_wip/)

### **INTERCONNECT TASK GROUP**

Michael Mirmak reported that the group is waiting for an update on the Si2 specification. Release of this has been delayed. There may be some overlap with the Interconnect work. The group is discussing the EMD specification written by Walter Katz.

The task group documents can be found at:

[http://www.eda.org/ibis/interconnect\\_wip/](http://www.eda.org/ibis/interconnect_wip/)

### **NEW ADMINISTRATIVE ISSUES**

None.

### **BIRD116.2: ADD IBIS-ISS TO [EXTERNAL MODEL] AND [EXTERNAL CIRCUIT] AS A SUPPORTED LANGUAGE**

Arpad Muranyi commented that he reformatted the BIRD to the IBIS 5.1 format without making any technical changes. He encouraged people to review the BIRD to make sure he had not made any mistakes in editing.

#### **BIRD117.5: PARAMETERIZE A\_TO\_D AND D\_TO\_A CONVERTERS**

Arpad Muranyi commented that he reformatted the BIRD to the IBIS 5.1 format without making any technical changes.

#### **BIRD118.4: ANALOG PARAMETER ASSIGNMENTS**

Arpad Muranyi commented that he reformatted the BIRD to the IBIS 5.1 format without making any technical changes.

#### **BIRD129.1: ADD “POLARITY” ARGUMENT TO D\_TO\_A CONVERTERS**

Arpad Muranyi commented that he reformatted the BIRD to the IBIS 5.1 format without making any technical changes.

#### **BIRD153.1: PARAMETER TREE KEYWORD**

Arpad Muranyi commented that he reformatted the BIRD to the IBIS 5.1 format without making any technical changes.

#### **BIRD159: RX\_RECEIVER\_SENSITIVITY CLARIFICATION**

Arpad Muranyi summarized the BIRD. It adds a parameter Rx\_Receiver\_Threshold that is used to specify a reference level around which the Rx\_Receiver\_Sensitivity value is defined. Bob Ross asked if it needed to include Out Usage. Arpad noted that he had used the same Usage definitions as Rx\_Receiver\_Sensitivity. Walter Katz commented that he'd like to see the examples changed including adding more descriptions. Walter will make some comments off line to Arpad. Arpad commented that he added a sentence about an assumed value for the parameter if it isn't present in the AMI file. Some other parameters may need to have similar text added.

Walter commented that the input to a Tx GetWave model is +/- 0.5 volts, centered on 0V, but the output doesn't have to be centered on 0V. So, the input to the Rx GetWave doesn't have to be centered on 0V, and its output could have any center. A model writer could easily subtract a common mode voltage, but this isn't always done. Arpad noted that the BIRD could be simplified by stating that Rx\_Receiver\_Sensitivity must be centered on 0V, although this does take away flexibility allowed by the new parameter Rx\_Receiver\_Threshold.

Walter moved to table discussion and move discussion to the ATM task group. Radek Biernacki seconded the motion. There were no objections.

#### **BIRD122: IBIS-AMI NEW RESERVED PARAMETERS FOR ANALOG MODELING**

Discussion was tabled.

#### **BIRD125.1: MAKE IBIS-ISS AVAILABLE FOR IBIS PACKAGE MODELING**

Discussion was tabled.

**BIRD128: ALLOW AMI\_PARAMETERS\_OUT TO PASS AMI\_PARAMETERS\_IN DATA ON CALLS TO AMI\_GETWAVE**

Discussion was tabled.

**BIRD 131: IBIS-AMI REPEATERS**

Discussion was tabled.

**BIRD144.3: ADD TOUCHSTONE TO [EXTERNAL MODEL] AND [EXTERNAL CIRCUIT] AS A SUPPORTED LANGUAGE**

Discussion was tabled.

**BIRD145.2: CASCADING IBIS I/O BUFFERS WITH [EXTERNAL CIRCUIT]S USING THE [MODEL CALL] KEYWORD**

Discussion was tabled.

**BIRD147: BACK-CHANNEL SUPPORT**

Discussion was tabled.

**BIRD150: IBIS-AMI NEW RESERVED PARAMETERS FOR DEPENDENCY TABLES**

Discussion was tabled.

**BIRD154: USING IBIS-AMI LEAF LABELS IN LIST PARAMETERS**

Discussion was tabled.

**BIRD155: NEW AMI API TO RESOLVE DEPENDENT MODEL PARAMETER**

Discussion was tabled.

**BIRD156.1: IBIS-AMI EXTENSION FOR MID-CHANNEL REDRIVER**

Discussion was tabled.

**BIRD157: PARAMETERIZE [DRIVER SCHEDULE]**

Discussion was tabled.

**BIRD158: AMI TOUCHSTONE ANALOG BUFFER MODELS**

Discussion was tabled.

### **IBIS SPECIFICATION CHANGE STATUS**

Michael Mirmak noted that the list of BIRDS targeted for the next version is very long. Most BIRDS have now been updated to the new IBIS 5.1 format. Michael asked which BIRDS that are new features are likely to be ready in the next two months to be eligible for the next release. Arpad Muranyi would like to see BIRDS 116, 117, 118 and 129 in the specification. He also wrote a new BIRD that combined 116, 117 and 118 together to make all the changes of these three BIRDS easier to read. Walter Katz commented that he'd like to see the analog BIRDS in the next specification, defer backchannel, interconnect and repeater BIRDS, but discuss adding the dependency tables. Michael proposed that we be prepared to close on this issue at the next Open Forum teleconference meeting.

Walter moved to table discussion for this meeting. Bob Ross seconded the motion. There were no objections.

The document is available at the following link:

<http://www.eda.org/ibis/docs/ibis-version-change-strategy-v2p6.pdf>

### **IBISCHK5 BUG STATUS**

Bob Ross reported that he is waiting for a parser update.

### **NEW TECHNICAL ISSUES**

Walter Katz presented an overview of the EMD specification. He noted that the Interconnect group is having a vote next Wednesday on going forward with development of the Electronic Module Description (EMD) specification. EMD is used to describe interconnect, not active devices. EMD, unlike EBD, will allow descriptions of multi-chip modules, internal connections and connectors. EMD replaces the [Path Description] of EBD with IBIS-ISS subcircuits and Touchstone files. Modeling will be done with a Parameter Tree format. EBD files could be converted into EMD files.

Bob Ross asked what typical, slow or fast corners might mean for interconnect. Walter commented that dielectric constant would create corner cases. He specifically was thinking about velocity of propagation related to fast and slow etch. Michael Mirmak asked what typ, min or max might mean. Walter said he did not want to use these labels. Lance Wang asked how EDA vendors would support this specification. Walter said that most EDA vendors should have ways of supporting the functionality of broadband Spice models.

Michael mentioned that this is a standalone specification. Bob commented that it does interact with IBIS models. Walter clarified that an EMD can connect to the pins of a [Component] in an IBIS file or to the pins of another EMD file.

### **NEXT MEETING**



The next IBIS Open Forum teleconference will be held April 5, 2013 from 8:00am to 10:00am US Pacific Time.

Radek Biernacki moved to adjourn. Ambrish Varma seconded. There were no objections.

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## NOTES

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This meeting was conducted in accordance with the TechAmerica Legal Guides and TechAmerica Manual of Organization and Procedure.

The following e-mail addresses are used:

[majordomo@eda.org](mailto:majordomo@eda.org)

In the body, for the IBIS Open Forum Reflector:  
subscribe ibis <your e-mail address>

In the body, for the IBIS Users' Group Reflector:  
subscribe ibis-users <your e-mail address>

Help and other commands:  
help

[ibis-request@eda.org](mailto:ibis-request@eda.org)

To join, change, or drop from either or both:  
IBIS Open Forum Reflector ([ibis@eda.org](mailto:ibis@eda.org))  
IBIS Users' Group Reflector ([ibis-users@eda.org](mailto:ibis-users@eda.org))  
State your request.

[ibis-info@eda.org](mailto:ibis-info@eda.org)

To obtain general information about IBIS, to ask specific questions for individual response, and to inquire about joining the IBIS Open Forum as a full Member.

[ibis@eda.org](mailto:ibis@eda.org)

To send a message to the general IBIS Open Forum Reflector. This is used mostly for IBIS Standardization business and future IBIS technical enhancements. Job posting information is not permitted.

[ibis-users@eda.org](mailto:ibis-users@eda.org)

To send a message to the IBIS Users' Group Reflector. This is used mostly for IBIS clarification, current modeling issues, and general user concerns. Job posting information is not permitted.

[ibis-bug@eda.org](mailto:ibis-bug@eda.org)

To report ibischk parser BUGs as well as tschk2 parser BUGs. The BUG Report Form for ibischk resides along with reported BUGs at:

<http://www.eda.org/ibis/bugs/ibischk/>  
<http://www.eda.org/ibis/bugs/ibischk/bugform.txt>

The BUG Report Form for tschk2 resides along with reported BUGs at:

[http://www.eda.org/ibis/tschk\\_bugs/](http://www.eda.org/ibis/tschk_bugs/)  
[http://www.eda.org/ibis/tschk\\_bugs/bugform.txt](http://www.eda.org/ibis/tschk_bugs/bugform.txt)

[icm-bug@eda.org](mailto:icm-bug@eda.org)

To report icmchk1 parser BUGs. The BUG Report Form resides along with reported BUGs at:

[http://www.eda.org/ibis/icm\\_bugs/](http://www.eda.org/ibis/icm_bugs/)  
[http://www.eda.org/ibis/icm\\_bugs/icm\\_bugform.txt](http://www.eda.org/ibis/icm_bugs/icm_bugform.txt)

To report s2ibis, s2ibis2 and s2iplt bugs, use the Bug Report Forms which reside at:

<http://www.eda.org/ibis/bugs/s2ibis/bugs2i.txt>  
<http://www.eda.org/ibis/bugs/s2ibis2/bugs2i2.txt>  
<http://www.eda.org/ibis/bugs/s2iplt/bugspl.txt>

Information on IBIS technical contents, IBIS participants and actual IBIS models are available on the IBIS Home page:

<http://www.eda.org/ibis>

Check the IBIS file directory on eda.org for more information on previous discussions and results:

<http://www.eda.org/ibis/directory.html>

To create an account on the TechAmerica KAVI workspace, check out:

<http://workspace.techamerica.org/kwspub/join/>

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## IBIS – TECHAMERICA STANDARDS BALLOT VOTING STATUS

### I/O Buffer Information Specification Committee (IBIS)

Organization	Interest Category	Standards Ballot Voting Status	January 11, 2013	January 31, 2013	February 22, 2013	March 15, 2013
Agilent Technologies	User	Active	-	X	X	X
Altera	Producer	Active	-	X	X	-
ANSYS	User	Inactive	X	X	-	-
Applied Simulation Technology	User	Inactive	-	X	-	-
ARM	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	X	-	X
Ericsson	Producer	Active	X	X	-	X
Foxconn Technology Group	Producer	Inactive	-	-	-	-
Freescale	Producer	Inactive	-	X	-	-
Huawei Technologies	Producer	Inactive	-	-	-	-
IBM	Producer	Active	X	X	X	X
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	-	X
IO Methodology	User	Active	X	X	-	X
LSI	Producer	Inactive	-	-	-	-
Maxim Integrated Products	Producer	Inactive	-	X	-	-
Mentor Graphics	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
Nokia Siemens Networks	Producer	Inactive	-	-	-	-
QLogic	Producer	Inactive	-	X	-	-
Signal Integrity Software	User	Active	X	X	X	X
Synopsys	User	Inactive	-	X	-	X
Teraspeed Consulting	General Interest	Active	X	X	X	X
Texas Instruments	Producer	Inactive	-	-	-	-
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	-	-	-	-
Zuken	User	Inactive	-	X	-	-

#### CRITERIA FOR MEMBER IN GOOD STANDING:

- MUST ATTEND TWO CONSECUTIVE MEETINGS TO ESTABLISH VOTING MEMBERSHIP
- MEMBERSHIP DUES CURRENT
- MUST NOT MISS TWO CONSECUTIVE MEETINGS

#### INTEREST CATEGORIES ASSOCIATED WITH TECHAMERICA BALLOT VOTING ARE:

- USERS - MEMBERS THAT UTILIZE ELECTRONIC EQUIPMENT TO PROVIDE SERVICES TO AN END USER.
- PRODUCERS - MEMBERS THAT SUPPLY ELECTRONIC EQUIPMENT.
- GENERAL INTEREST - MEMBERS ARE NEITHER PRODUCERS NOR USERS. THIS CATEGORY INCLUDES, BUT IS NOT LIMITED TO, GOVERNMENT, REGULATORY AGENCIES (STATE AND FEDERAL), RESEARCHERS, OTHER ORGANIZATIONS AND ASSOCIATIONS, AND/OR CONSUMERS.