



IBIS Open Forum Minutes

Meeting Date: **July 31, 2015**

Meeting Location: **Teleconference**

VOTING MEMBERS AND 2015 PARTICIPANTS

Altera	[David Banas], Masashi Shimanouchi, Hsinho Wu
ANSYS	(Steve Pytel), Curtis Clark
Applied Simulation Technology	Fred Balistreri, Norio Matsui
Avago Technologies	Minh Quach, Leif Zweidinger
Cadence Design Systems	Brad Brim, Joshua Luo, Ken Willis, Joy Li, Ambrish Varma*
Cisco Systems	David Siadat, Rockwell Hsu, Bidyut Sen
CST	Stefan Paret, Matthias Troescher
Ericsson	Anders Ekholm
IBM	Adge Hawes*, Luis Armenta
Infineon Technologies AG	Christian Sporrer
Intel Corporation	Michael Mirmak*, Todd Bermensolo, Nhan Phan Gianni Signorini
IO Methodology	Lance Wang*
Keysight Technologies	Radek Biernacki*, Pegah Alavi, Colin Warwick Jian Yang, Nicholas Tzou, Heidi Barnes, Dave Larson Kyla Thomas
Maxim Integrated Products	Mahbubul Bari, Don Greer, Joe Engert, Joe Rayhawk Yan Liang
Mentor Graphics	Arpad Muranyi*, Ed Bartlett, Vladimir Dmitriev-Zdorov
Micron Technology	Randy Wolff*
Signal Integrity Software	Mike LaBonte*, Walter Katz*, Todd Westerhoff Mike Steinberger
Synopsys	Ted Mido*, Rita Horner, William Lau, Scott Wedge Michael Zieglmeier, Joerg Schweden
Teraspeed Labs	Bob Ross*, Tom Dagostino
Toshiba	(Yasumasa Kondo)
Xilinx	(Raymond Anderson)
ZTE Corporation	(Min Huang), Tao Guo
Zuken	Michael Schaefer, Markus Buecker, Griff Derryberry Ralf Bruening

OTHER PARTICIPANTS IN 2015

Bayside Design	Elliot Nahas
Continental Automotive	Felix Goelden, Markus Bebendorf, Sebastian Groener Stefanie Schatt
eASIC	David Banas*
Freescale	Jon Burnett
Galbi Research	Dave Galbi

Huawei Technologies	Xiaoqing Dong
Independent	Tim Wang Lee
Instituto de Telecomunicações	Wael Dghais
KEI Systems	Shinichi Maeda
Lattice Semiconductor	Xu Jiang
Leading Edge	Pietro Vergine
Politecnico di Torino	Stefano Grivet-Talocia
Qualcomm	Senthil Nagarathinam*, Kevin Roselle
Raytheon	Joseph Aday
SAE International	Chris Denham
Siemens AG	Boris Kogan, Michael Flint
Simberian	Yuriy Shlepnev
Technische Universität Hamburg-Harburg	Jan Preibisch
Vitesse	Siris Tsang
ZI Consulting	Iliya Zamek

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
August 21, 2015	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 a.m. to 9:55 a.m. 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

NOTE: "AR" = Action Required.

INTRODUCTIONS AND MEETING QUORUM

David Banas noted that he is attending the meeting with a new company association, eASIC.

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

CALL FOR PATENTS

Mike LaBonte called for any patents or pending patents related to the IBIS 3.2, IBIS 4.2, IBIS 5.1, IBIS 6.0, Touchstone 2.0, IBIS-ISS 1.0 or ICM 1.1 specifications. No patents were declared.

REVIEW OF MINUTES AND ARS

Randy Wolff called for comments regarding the minutes of the July 10, 2015 IBIS Open Forum teleconference. There were no comments.

Mike LaBonte moved to approve the minutes. Lance Wang seconded the motion. There were no objections, so the minutes were approved without changes.

Randy reviewed ARs from the previous meeting.

1. Mike LaBonte took an AR to look into adding the requirement to the Policies and Procedures document of a report from the returning officer before the election of officers' vote opens if there are no nominations for any position.
Mike reported he did add this language to a new draft of the Policies and Procedures document that will be shared for the next teleconference meeting.
2. Brad Brim took an AR to find out whom to contact about the Si2Con conference.
Mike reported that Brad Brim did find the correct contact. Mike made contact and found that the conference does not have a vendor table area.
3. Mike LaBonte took an AR to contact Michael Mirmak to discuss the DesignCon IBIS Summit planning.
Mike reported that Michael agreed to be the point of contact for planning. There is no formal change of status on the planning yet.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

Bob Ross requested the introduction of the IBIS 6.1 specification draft document for review.

Bob Ross noted that there was a recommendation for BIRD157 of a no vote from the ATM task group, and he plans to un-table the BIRD for discussion.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that CST is a new member, joining for a half year. The treasury balance stands at \$63,489. He is expecting one more additional member company renewal and some summit payments to come in. Several companies have been invoiced. SAE did supply their accounting of the IBIS committee and their request of a forecast of spending through the end of the year. Bob's accounting is close to SAE's, but SAE has some deductions he was not aware of including for FedEx of documents to Asia and an allocation for bank account charges of about

\$40 per month. Mike LaBonte commented that the spreadsheet Bob is keeping has good detail. He sees no issue with adding charges from SAE to track them. Bob noted that the monthly allocation is variable per month, so he doesn't have the numbers real time.

WEBSITE ADMINISTRATION

Mike LaBonte reported that the events pages have had small updates for the Summits. The roster and poster pages were updated for CST.

MAILING LIST ADMINISTRATION

Mike LaBonte reported that there have been usual adds and drops. There was an email issue with four people using yahoo.com addresses not receiving an email from a particular sender. Curtis Clark has contacted freelists to see what can be done about that.

LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

The 24th Conference on Electrical Performance of Electronic Packaging (EPEPS) will be held October 25-28, 2015 in San Jose, California. There is usually some IBIS and/or signal integrity related material. More information is available at:

<http://www.epeps.org>

The Si2Con conference will be held Tuesday, October 6, 2015 in Santa Clara, California. Mike LaBonte noted he has contacted the organizers about the possibility of IBIS having a vendor table at the conference. Due to the response that there are not vendor tables available, this may not work out. More information is available at:

<https://www.si2.org/?page=2129>

- Press Update

None.

SUMMIT PLANNING AND STATUS

- EPEPS Summit Planning

EPEPS is taking place October 25-28, 2015 in San Jose, CA. Wednesday, October 28 will be a Summit in the afternoon at the DoubleTree by Hilton hotel. Bob Ross has a rough cost estimate for the meeting. Bob moved to vote on capping the Summit expenses at \$1,500. This includes a rate of \$250 for the room, about \$300 for the A/V and an additional \$600 for a projector if we can't supply our own, and food up to \$500. Lance Wang seconded the motion. The vote passed with the following vote tally:

Cadence – yes
IBM – yes
IO Methodology – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed – yes

The website for Electrical Performance of Electronic Packages and Systems is:

<http://www.epeps.org/>

- Asian IBIS Summit (Shanghai)

The Shanghai meeting will be held Monday, November 9, 2015 at the Parkyard hotel. Cadence, Huawei, IO Methodology, Synopsys, Teledyne LeCroy and ZTE are sponsors so far.

- Asian IBIS Summit (Taipei)

The Taipei meeting will be held Friday, November 13, 2015 at the Sherwood hotel. IO Methodology and Synopsys are sponsors so far.

- Asian IBIS Summit (Tokyo)

The Tokyo meeting will be held Monday, November 16, 2015. JEITA is taking care of all sponsorships. The room is already arranged.

Bob Ross noted that booklets will be printed for all three Summits, so paper deadlines will be earlier in the schedule than for other Summits.

- DesignCon IBIS Summit

Mike LaBonte reported that we are working with UBM to arrange conference space for a full day.

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 the group is meeting on Tuesdays at 8:00 a.m. PT. They are largely working on the ibischk parser planning for IBIS 6.1. They also started a discussion of checks that might be possible for BIRDs going into IBIS 6.1 such as the AMI directionality BIRD.

The ibischk6 user guide work in progress can be reviewed at:

http://www.eda.org/ibis/ibischk6/ibischk_6.0.0_UserGuide_wip1.pdf

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

http://www.eda.org/ibis/quality_wip/

ADVANCED TECHNOLOGY MODELING TASK GROUP

Arpad Muranyi reported that the group is meeting regularly on Tuesdays at 12:00 p.m. PT. The discussion topics have slowed down. They are waiting for feedback from Cadence on the backchannel proposal. They recently spent time doing cleanup of the to-do list. They also discussed Usage Out and Usage InOut of AMI models.

Task group material can be found at:

http://www.eda.org/ibis/macromodel_wip/

INTERCONNECT TASK GROUP

Walter Katz reported that the group is meeting on Wednesdays at 8:00 a.m. PT. They are in the editorial phase on the interconnect BIRD encompassing package and on-die interconnect models from package pins to buffers. They are trying to improve syntax of the Terminal records.

Task group material can be found at:

http://www.eda.org/ibis/interconnect_wip/

EDITORIAL TASK GROUP

Bob Ross reported that the group is meeting on Fridays at 8:00 a.m. PT, with the exception of the weeks when Open Forum meetings are held in the same time slot. He noted that draft 7 of the IBIS 6.1 specification document assumes that BIRD178.2 will be approved as BIRD178.3. The plan is that the draft will be issued as the Revision 1 draft for review.

Task group material can be found at:

http://www.eda.org/ibis/editorial_wip/

NEW ADMINISTRATIVE ISSUES

- Contract and expenditure for IBISCHK6 development

Bob Ross reported that we have already voted to approve the contract quote of \$3,500. Since that time, he sent information to the contractor about adding BIRD178.3, requesting a re-quote. He hasn't heard back. Bob moved to approve the expenditure up to \$5,000 for the new quote. Mike LaBonte noted that he thought the initial quote was somewhat low, and we've added more content. Arpad Muranyi seconded the motion. Radek Biernacki noted he thought an additional \$1,500 for BIRD178.2 content is too high. Bob agreed that the additional checks for BIRD178.3 look simple, but there are two checks to do. There is a check on the .ami file and a check on the .ibs file. Bob suggested that \$4,500 could be considered as a cap on the expenditure.

Ambrish Varma moved to table the motion on approving the expenditure until we have the actual quote. Bob withdrew his motion.

- IBIS 6.1 Schedule

Bob reported that we have a Draft 1 to review. We could introduce it at the end of this meeting, allowing two more meetings for review and a possible vote at the September 11, 2015 IBIS Open Forum teleconference meeting.

BIRD178.2: SPECIFYING BUFFER DIRECTIONALITY FOR AMI

Michael Mirmak noted that the BIRD adds a direction indicator to AMI models to support I/O [Model]s. The BIRD adds some tables for the Reserved Parameters to indicate their supported directions.

Bob Ross introduced changes for BIRD178.3. The first proposal was to simplify the text “Rx-only” to “RX”, “Tx-only” to “Tx” and “Any” to “Rx, Tx”. The second proposal is that for each Reserved Parameter, add one of the direction choices under the description. Michael noted that he agreed with both these of changes.

Michael moved to approve BIRD178.2 as posted with the changes suggested by Bob and posted as BIRD178.3. Radek Biernacki seconded the motion. The vote passed with the following vote tally:

Cadence – yes
Intel – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed – yes

Michael Mirmak will make changes to the BIRD and post as BIRD178.3 [AR].

Michael moved to incorporate BIRD178.3 in the list of BIRDs to be included in IBIS Version 6.1. Bob Ross seconded the motion. The vote passed with the following vote tally:

Cadence – yes
Intel – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed – yes

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

Discussion was tabled.

BIRD128.2: ALLOW AMI_PARAMETERS_OUT TO PASS AMI_PARAMETERS_IN DATA ON CALLS TO AMI_GETWAVE

Discussion was tabled.

BIRD145.3: CASCADING IBIS I/O BUFFERS WITH [EXTERNAL CIRCUIT]S USING THE [MODEL CALL] KEYWORD

Discussion was tabled.

BIRD147: BACK-CHANNEL SUPPORT

Discussion was tabled.

BIRD157: PARAMETERIZE [DRIVER SCHEDULE]

Bob Ross moved to un-table BIRD157 for discussion. Michael Mirmak seconded the motion. There were no objections. Bob noted that the ATM task group voted to recommend that BIRD157 be put to a vote with a recommendation to vote it down.

Bob moved to schedule a vote on the BIRD at the next meeting. Michael seconded the motion. There were no objections.

BIRD158.3: AMI TOUCHSTONE ANALOG BUFFER MODELS

Discussion was tabled.

BIRD161.1: SUPPORTING INCOMPLETE AND BUFFER-ONLY [COMPONENT] DESCRIPTIONS

Discussion was tabled.

BIRD163: INSTANTIATING AND CONNECTING [EXTERNAL CIRCUIT] PACKAGE MODELS WITH [CIRCUIT CALL]

Discussion was tabled.

BIRD164: ALLOWING PACKAGE MODELS TO BE DEFINED IN [EXTERNAL CIRCUIT]

Discussion was tabled.

BIRD165: PARAMETER PASSING IMPROVEMENTS FOR [EXTERNAL CIRCUIT]S

Discussion was tabled.

BIRD166: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW

Discussion was tabled.

IBISCHK6 PARSER AND BUG STATUS

Bob Ross reported no new bugs. He noted that we already dealt with the parser re-quote issue. The contract has been reviewed by SAE and some minor changes were made based on their lawyer's suggestions. BIRD178.3 has been added in the new contract. We are waiting for a new quote from the parser developer.

NEW TECHNICAL ISSUES

Bob Ross shared the IBIS Version 6.1 draft 7 document. He walked through some editorial changes such as to copyright notices, the list of BIRDS included in the new version and new directionality tables in Section 10.8. Bob Ross will arrange to post a .docx revision 1 file and a clean .pdf revision 1 file for review [AR]. Comments can be sent by email to Mike LaBonte or Michael Mirmak. Mike LaBonte will ask Michael Mirmak if he wants to announce the IBIS Version 6.1 revision 1 document availability, and he will post the document to the IBIS website [AR].

David Banas gave an overview of his PyIBIS-AMI software. It wraps .ami DLLs in a Python wrapper so that Python can be used to analyze the IBIS-AMI models. Python offers many useful libraries for analyzing models. The presentation exists in an IPython Notebook. He showed code for plotting the impulse response of a model. He also showed how to reverse engineer the tap weights of a Tx from the tap indices. One can also look at relationships between the tap weights, such as independence or interdependency. Mike asked if it parses the AMI file. David responded that it does not care about the .ami file and does not parse it. David mentioned he has some C code that does contain a universal .ami file parser. Mike noted that he had to manually setup correct parameter values, and it would be useful to include lists that could be obtained from the .ami file. Mike added that this code has the potential to be used as an IBIS-AMI DLL checker. David noted it would be useful to have a list of desired checking capabilities. David's presentation is available at:

http://www.eda.org/ibis/minutes/min2015/m073115_docs/PyIBIS-AMI_Demo1.html

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held August 21, 2015. A vote on BIRD157 is scheduled. The following IBIS Open Forum teleconference meeting will be held September 11, 2015.

David Banas moved to adjourn. Arpad Muranyi seconded the motion.

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NOTES

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This meeting was conducted in accordance with ANSI guidance.

All inquiries may be sent to ibis-info@freelists.org. Examples of inquiries are:

- To obtain general information about IBIS.
- To ask specific questions for individual response.
- To subscribe to the official ibis@freelists.org and/or ibis-users@freelists.org email lists (formerly ibis@eda.org and ibis-users@eda.org).
- To subscribe to one of the task group email lists: ibis-macro@freelists.org, ibis-interconn@freelists.org, or ibis-quality@freelists.org.
- To inquire about joining the IBIS Open Forum as a voting Member.
- To purchase a license for the IBIS parser source code.
- To report bugs or request enhancements to the free software tools: ibischk6, tschk2, icmchk1, s2ibis, s2ibis2 and s2iplt.

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/bugform.txt

The BUG Report Form resides along with reported BUGs at:

http://www.eda.org/ibis/icm_bugs/
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/bugsplt.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>

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IBIS – SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	May 22, 2015	June 12, 2015	July 10, 2015	July 31, 2015
Altera	Producer	Active	X	-	X	-
ANSYS	User	Active	X	X	X	-
Applied Simulation Technology	User	Inactive	-	-	-	-
Avago Technologies	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	-	X	X
Cisco Systems	User	Inactive	-	-	-	-
CST	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
IBM	Producer	Inactive	X	-	-	X
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	-	X	X	X
IO Methodology	User	Active	X	X	-	X
Keysight Technologies	User	Active	X	X	X	X
Maxim Integrated Products	Producer	Active	X	X	-	-
Mentor Graphics	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
Signal Integrity Software	User	Active	X	X	X	X
Synopsys	User	Active	X	X	-	X
Teraspeed Labs	General Interest	Active	X	X	X	X
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	-	-	-	-
Zuken	User	Inactive	-	-	-	-

I/O Buffer Information Specification Committee (IBIS)

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 SAE 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.