



IBIS Open Forum Minutes

Meeting Date: **June 12, 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
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
CST	Stefan Paret, Matthias Troescher
Ericsson	Anders Ekholm
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
July 10, 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

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

Yan Liang introduced himself. He works at Maxim. His first use of IBIS was as a test engineer. He is now using IBIS models for SI work and working on providing IBIS models.

CALL FOR PATENTS

Michael Mirmak 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 May 13, 2015 IBIS Open Forum European Summit meeting at SPI. There were no comments. He then called for comments regarding the minutes of the May 22, 2015 IBIS Open Forum teleconference. He noted that Radek Biernacki sent a comment by email. The minutes did not state the date the officer call for nominations was sent out, which was May 8. Both sets of minutes were approved with noted changes.

Randy noted there were no ARs from the previous meeting to review.

ANNOUNCEMENTS

None.

CALL FOR ADDITIONAL AGENDA ITEMS

None.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we have 21 paid members so far this year. The treasury balance stands at \$62,139. He noted that we should move Ericsson and Huawei to non-membership status until payments are received. Qualcomm also moves to non-membership status and is not expected to renew. Mike LaBonte asked what the official date is for the status change. Bob responded that it is June 1 of each year.

WEB PAGE AND MAILING LIST ADMINISTRATION

Mike LaBonte reported that the mailing list is going smoothly with freelists. One major reason we moved to freelists was to get around the problem of people from a company sending to a list, and others from the company would not receive the email. That problem started happening with freelists as well, and these issues are being worked on by the freelists administrator.

Mike noted that we've been thinking about modernizing our webpages for several years. The process is complicated now. WordPress has turned into a very useful web page creation tool. Mike has prototyped an IBIS page using WordPress.

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>

- Press Update

None.

ORGANIZATIONAL ACTIVITIES

- Officer Elections Update

Radek Biernacki reported that we are in the voting period, and the voting ends June 15. Approximately half the membership has voted. He plans to send a reminder today. The ballot sent out contained all the nominations. Members can vote yes, abstain or write in a candidate.

Candidates are elected by simple majority. Mike LaBonte noted we could make adjustments to the process for next year in our charter if needed.

- Charter Revisions

Michael Mirmak noted that SAE requested several changes to the Policies and Procedures document. We will need to address these changes. Michael noted that if we receive any feedback on the officer elections voting process we can address that as well.

SUMMIT PLANNING AND STATUS

- EPEPS Summit Planning

EPEPS is taking place October 25-28, 2015 in San Jose, CA. October 28 would be the date for the Summit if it takes place. Bob Ross noted that we should decide the dates of the Asian IBIS Summits before deciding if an IBIS Summit will be held at EPEPS. Bob was leaning towards holding the meeting. Mike LaBonte noted that if the same groups of people that typically are at DesignCon are attending EPEPS, then the main reason for the meeting would be to have technical presentations. Michael Mirmak added that some presentations could be previews of papers for the Asian IBIS Summits. Mike noted he was leaning towards not holding the meeting.

Mike moved to hold a vote during the next Open Forum teleconference on having a Summit meeting at EPEPS. Bob seconded the motion. There were no objections. Mike added that a vote to hold the Summit is a vote to spend money on it.

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

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

- Asian Summit Planning

Bob Ross reported that he got proposed dates from JEITA for the Tokyo Summit. Lance Wang also provided some possible dates for the other Summit meetings. The dates are shifted about a week earlier than in the past. Dates provided by Lance were Friday, November 6 in Shanghai, November 9, 10 or 11 in Taipei and Monday, November 16 in Tokyo. Bob suggested we officially schedule the Shanghai and Tokyo dates now. Bob thought Tuesday, November 10 for Taipei would be best.

Bob moved to propose tentative dates for the Summit meetings as November 6 in Shanghai, November 10 in Taipei and November 16 in Tokyo. Radek Biernacki seconded the motion. There were no objections. Lance confirmed that the Parkyard Hotel in Shanghai is the preferred location there.

- DesignCon Summit Planning

Michael Mirmak noted that there will not be a half day of DesignCon content on Friday, January 22. UBM has offered at least a half day of meeting room availability in the morning of January 22. We have contacted UBM to inquire about getting a meeting room for a full day on Friday.

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 drafted a document covering checks that could be done related to DLLs. It is on the website in the work archive. They have no current plans to go further with it, such as implementing checks in the next parser for IBIS 6.1. The group has been discussing IBISCHK6.1 parser development. They have also been working on the user guide for IBISCHK6.1. Michael Mirmak asked if the AML related code from David Banas could be used for checking DLLs. Mike took an AR to check with David and see if the code could be leveraged to parse DLLs.

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. They recently talked about C_comp enhancements to IBIS. They are waiting for feedback from Cadence on backchannel proposals.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Michael Mirmak reported that the group is meeting on Wednesdays at 8:00 a.m. PT. They are going through live editing of the Interconnect proposal BIRD. They are at draft 20 currently.

Task group material can be found at:

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

EDITORIAL TASK GROUP

Michael Mirmak 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. They are finishing up the IBIS 6.1 draft specification. The draft is complete, but the group is in a holding pattern awaiting the potential approval of BIRDS in this meeting. The group will decide soon on passing the document back to the Open Forum for approval.

NEW ADMINISTRATIVE ISSUES

None.

BIRD175.2: EXTENDING IBIS-AMI FOR PAM4 ANALYSIS

Walter Katz noted there were a couple of editorial typos fixed and examples were updated. No other comments were received. Walter added that PAM4 model and tool development is well on its way, so the BIRD is ready for approval.

Bob Ross noted that he provided comments requesting some “_” characters removed from some parameter names. Bob also thought that if PAM4 thresholds were not provided in a model, then there should be defaults in the specification so that there would not be differences between EDA tools for default values. Mike LaBonte commented that the threshold parameters should have similar requirements as RX_Receiver_Sensitivity, which do not require values. Walter thought there could be cases where these thresholds are not easy for a model maker to determine, and the model maker may rely on the EDA software to determine the levels. Walter asked if Bob preferred that at least the upper and lower thresholds be required. Bob noted that he is requesting these levels for the parser. Walter said he could add a requirement that PAM4_LowerThreshold and PAM4_UpperThreshold be required. The PAM4_CenterThreshold, if missing, would default to 0. Mike showed another change made in a recently submitted BIRD175.3 that removed the “_” character from some parameter names for consistency in the BIRD.

Bob moved to vote on approval of the BIRD. Language will be added to state that PAM4_LowerThreshold and PAM4_UpperThreshold are required for PAM4 modulation. The

PAM4_CenterThreshold, if missing, would default to 0. Also, the “_” characters will be removed from some parameter names. Arpad Muranyi seconded the motion. The vote passed with the following vote tally:

ANSYS – yes
Intel – yes
IO Methodology – yes
Keysight – yes
Maxim – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed Labs – yes

BIRD176: POWER PIN PACKAGE MODELING

Randy Wolff noted there were no changes to the BIRD.

Don Greer asked if a requirement could be made that all pins of a [Component] be required in the [Package Model]’s [Pin Numbers] list. Randy noted that this was a major change, as this is not a current requirement in IBIS. Don asked if all the pins could be listed in [Pin Numbers]. Randy responded that if the pins are listed, then he thought there must be RLC values in the matrices. If all pins are listed and the matrices match, then [Merged Pins] would not be needed. [Merged Pins] only adds information for package models with missing pins due to merging of power or ground nets.

Radek Biernacki moved to vote on approval of the BIRD. Bob Ross seconded the motion. There were no objections. The vote passed with the following vote tally:

ANSYS – yes
Intel – yes
IO Methodology – yes
Keysight – yes
Maxim – yes
Mentor – abstain
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed Labs – yes

Arpad Muranyi noted that the [Row] keyword is described on page 144 of the IBIS 6.0 specification. It does state that [Row] entries must be complete and match the [Pin Numbers] list, but the [Pin Numbers] list can be a subset of the [Pin] list.

BIRD177: [INITIAL DELAY] KEYWORD FOR SUBMODELS AND DRIVER SCHEDULES

Radek Biernacki noted there were no changes to the BIRD.

Don Greer asked what version of IBIS will support BIRD177 and BIRD168.1. Arpad Muranyi responded that they will be available in IBIS 6.1. Michael Mirmak noted that if EDA software says it is IBIS 6.1 compliant, then it should at least not flag errors with the new keywords.

Radek Biernacki moved to vote on approval of the BIRD. Mike LaBonte seconded the motion. There were no objections. The vote passed with the following vote tally:

ANSYS – yes
Intel – yes
IO Methodology – yes
Keysight – yes
Maxim – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed Labs – yes

Radek Biernacki moved to include BIRD175.2, BIRD176 and BIRD177 in IBIS 6.1. Walter Katz seconded the motion. There were no objections.

BIRD178.1: SPECIFYING BUFFER DIRECTIONALITY FOR AMI

Michael Mirmak introduced the BIRD. This BIRD clarifies how to use IBIS-AMI models that are of type I/O. Current AMI models are only input or output. He noted there is interest in the industry to use AMI models for technologies such as DDR4 where I/O models are needed.

Bob Ross noted that the BIRD will need updating to add PAM4 parameters. Michael confirmed that the BIRD is not intended for IBIS 6.1. He will update the BIRD for PAM4 and release a BIRD178.2 revision.

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]

Discussion was tabled.

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 noted no new bugs. The parser contract has already been amended for BIRD176 and BIRD177. The parser contract will need to be revised to add BIRD175.3. Then, it will need to be reviewed by SAE and the Open Forum officers for approval. Walter Katz asked if there was an expected delivery date of the parser code. Bob did not have a specific date, as it will take several months, but it will be developed in parallel with IBIS 6.1 approval voting. Bob thought the parser should be available in the August/September timeframe.

NEW TECHNICAL ISSUES

Mike LaBonte showed the webpage proposal for the IBIS WordPress site. He noted that there are plugins available for issue tracking. Arpad Muranyi asked whether the calendar was intended to be kept current at all times, i.e. whether task group leaders were expected to update the calendar if a meeting was cancelled or changed. Mike noted that several people could be given access for editing for these purposes. Bob Ross asked if a calendar exists that could display a year at a time. Mike noted that there are calendars that could do this.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held July 10, 2015. The following IBIS Open Forum teleconference meeting will be held July 31, 2015.

Mike LaBonte moved to adjourn. Radek Biernacki seconded the motion.

NOTES

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This meeting was conducted in accordance with ANSI guidance.

The following e-mail addresses are used:

ibis-request@eda.org

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

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@freelists.org (changed from ibis@eda.org, which has been deactivated)

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@freelists.org (changed from ibis-users@eda.org, which has been deactivated)

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

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/bugform.txt

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/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/bugsplf.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 1, 2015	May 13, 2015	May 22, 2015	June 12, 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	-
Cisco Systems	User	Inactive	-	-	-	-
IBM	Producer	Active	X	-	X	-
Infineon Technologies AG	Producer	Inactive	-	X	-	-
Intel Corp.	Producer	Active	X	X	-	X
IO Methodology	User	Active	X	-	X	X
Keysight Technologies	User	Active	X	-	X	X
Maxim Integrated Products	Producer	Active	X	-	X	X
Mentor Graphics	User	Active	X	-	X	X
Micron Technology	Producer	Active	-	X	X	X
Signal Integrity Software	User	Active	X	-	X	X
Synopsys	User	Active	-	X	X	X
Teraspeed Labs	General Interest	Active	X	-	X	X
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	X	-	-	-
Zuken	User	Inactive	-	X	-	-

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.