

IBIS Open Forum Minutes

Meeting Date: **June 1, 2012**

Meeting Location: **Teleconference**

VOTING MEMBERS AND 2012 PARTICIPANTS

Agilent	Radek Biernacki*, Yoji Sekine, Fangyi Rao
Altera	David Banas, Hsinho Wu, Masashi Shimanouchi
AMD	(Nam Nguyen)
ANSYS (Ansoft)	Flavio Calvano, Luis Armenta*
Apple Computer	(Matt Herndon)
Applied Simulation Technology	Norio Matsui
Cadence Design Systems	Terry Jernberg, Jilin Tan, Dennis Nagle Ambrish Varma
Cisco Systems	David Siadat, Mike Sapozhnikov
Ericsson	Anders Ekholm*, Zilwan Mahmood, Mattias Lundquist
Foxconn Technology Group	(Sogo Hsu)
Freescale	(Jon Burnett)
Green Streak Programs	(Lynne Green)
Huawei Technologies	Xiaoqing Dong
IBM	Adge Hawes*, Greg Edlund
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Michael Mirmak*, Udy Shrivastava, Stewart Gilbert Eddie Frie
IO Methodology	Lance Wang*
LSI	Brian Burdick*
Maxim Integrated Products	Hassan Rafat, Mahbubul Bari
Mentor Graphics	Arpad Muranyi*, Vladimir Dmitriev-Zdorov,
Micron Technology	Randy Wolff*, Aniello Viscardi, Francesco Madonna Antonio Prisco
Nokia Siemens Networks GmbH	Eckhard Lenski*, Evis Minga
QLogic	(James Zhou)
Signal Integrity Software	Walter Katz*, Mike LaBonte*, Todd Westerhoff Akalu Lentiro
Sigrity	Raymond Chen, Yingxin Sun*, Sam Chitwood Ben Franklin, Srdjen Djordjevic
Synopsys	Andy Tai, Scott Wedge, Hany Elhak, Ted Mido
Teraspeed Consulting Group	Bob Ross, Tom Dagostino
Texas Instruments	Casey Morrison, Pegah Alavi, Valerie Chang Modesto Garcia, Karl Muth
Toshiba	(Yasumasa Kondo)
Xilinx	Harry Fu
ZTE	(Huang Min)
Zuken	Michael Schaefer

OTHER PARTICIPANTS IN 2012

Aruba Networks	Amir Motamedi
Avago Technologies	Sanjeev Gupta, Amolak Badesha
Bayside Design	Elliot Nahas
Cavium	Johann Nittmann
Enterasys	Robert Haller
Exar Corporation	Helen Nguyen
Granite River Labs	Jiang Xu, Johnson Tan
Hewlett-Packard	Ting Zhu
High Speed Design Center	Ben Chia
Hitachi	Yutaka Uematsu
Instituto de Telecomunicações	Wael Dghais, Hugo Teixeira
KEI Systems	Shinichi Maeda
Luxshare-ICT	Alan Kinningham, Steven Wong
MK Resolutions	Olga Chervyakova
Nvidia	Eric Hsu
Politecnico di Torino	Stefano Grivet-Talocia
Research In Motion	Yi Cao
Sony	Kenji Yasoda
ST Microelectronics	Davide Pandini
TechAmerica	(Chris Denham)
Université de Brest	Mihai Telescu, Cherif Diouf
University of Illinois	Thomas 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
June 22, 2012	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

NOTE: "AR" = Action Required.

INTRODUCTIONS AND MEETING QUORUM

Luis Armenta introduced himself. He used to work in high speed SI for Intel. He is now working with ANSYS covering SI products with his main focus being IBIS-AMI.

CALL FOR PATENTS

Michael Mirmak called for any patents or pending patents related to the IBIS 3.2, IBIS 4.2, IBIS 5.0, 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 May 11, 2012 IBIS Open Forum teleconference. He also called for comments regarding the minutes of the May 16, 2012 IBIS Open Forum Summit in Sorrento, Italy. Both sets of minutes were approved without changes.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Michael Mirmak reminded participants that the membership list and list of attendees eligible to vote will be updated after the DAC summit. Contact the board with any renewal issues. He had no update on membership status at this time.

WEB PAGE UPDATES

Mike LaBonte reported that the European IBIS Summit presentations are now available. Also, the IBIS home page has changed. He noted that boxes in the background have rounded corners except on Internet Explorer versions before IE9. Randy Wolff suggested adding member names in plain font for those companies that can not supply a logo for the main page.

MAILING LIST ADMINISTRATION

Mike LaBonte reported that everything is running fine.

MODEL LIBRARY UPDATE

No update.

MISCELLANY/ANNOUNCEMENTS

None.

OPENS FOR NEW ISSUES

None.

INTERNATIONAL/EXTERNAL ACTIVITIES

- IEEE DASC

Michael Mirmak reported that there is a meeting next week, but no IBIS related topics are scheduled for discussion.

- VHDL-AMS Table-Driven Models

Arpad Muranyi reported that he did not attend the meeting on May 14. More information can be found at:

http://www.eda.org/twiki/bin/view.cgi/P10761/ProjectsArea#Table_driven_Modeling_Champion_J

- Conferences

- EPEPS (21st IEEE Conference on Electrical Performance of Electronic Packaging and Systems) will be held October 21-24, 2012 in Tempe, Arizona. This event occasionally includes IBIS-related content. More information can be found at:

<http://epeps.ece.illinois.edu/>

Official IBIS participation may/may not be planned for all of the events above, though individual papers and discussion on IBIS are encouraged. These are events with refereed submissions, with deadlines either pending or already passed.

- Press Update

None.

IEC APPROVAL ACTIVITIES

Randy Wolff reported that he contacted Victor Berman to check on progress of TC93 changes and to check on when they might be having their next meeting so we can prepare for any required travel. Victor responded that TC93 has submitted its plan for merging with TC91, and he is awaiting approval from TC91. The plan as submitted includes moving forward on IBIS. Once the merger is approved, we plan to attend any upcoming teleconferences and possibly any in-person meetings.

SUMMIT STATUS

- European Summit Review

The meeting took place May 16, 2012 after the SPI conference in Sorrento, Italy. Sponsors included Micron Technology, Nokia Siemens Networks and Zuken. Lance Wang noted that the meeting went well. The room was donated by the SPI conference. There were several presentations related to new methods of doing behavioral buffer modeling. Some of these methods may apply to enhancing IBIS modeling. Eckhard Lenski noted that a lot of attendees at SPI now attend the IBIS meeting, so this has been good for the Summit meeting. There were several presentation related to S-parameters and BIRD95/98 usage to improve IBIS models.

- DAC Summit Planning

The Summit meeting will be held Tuesday, June 5, 2012 in San Francisco, CA. Michael Mirmak reported that the agenda went out this morning. The room is Sierra A at the Marriott Marquis Hotel. There is a full day program. Lance reported that we officially have 11 people registered. Michael expected other walk-in attendees. Mentor Graphics has helped provide the room.

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

QUALITY TASK GROUP

Mike LaBonte reported that the group is reviewing past projects to decide if any should be picked back up while the AML work is being finished up. The next meeting is June 5 at 8:00AM Pacific Time.

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 there will not be a meeting next week. Current discussion topics are the analog modeling BIRDS and BIRD150 on dependency tables.

Task group material can be found at:

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

EDITORIAL TASK GROUP

Michael Mirmak reported that meetings continue every Wednesday, but there is no meeting next week. June 13 will be the next meeting. The group intends to have a version of IBIS 5.1 with reformatting completed to show at the next teleconference on June 22. A draft copy may be shown at the DAC IBIS Summit.

The IBIS reformatting documentation can be reviewed at:

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

NEW ADMINISTRATIVE ISSUES

None.

BIRD152: ANALOG MODEL BOUNDARY DEFINITION

Arpad Muranyi reported that there have been no further comments on the BIRD. The BIRD is a result of long discussions over one and a half years ago about the boundary conditions on the analog model for IBIS-AMI. For Touchstone models, it is important to know what the boundary conditions are, so it is important to spell out these conditions for Touchstone purposes. The change is simple to the description of the A_to_D and D_to_A converters. Michael Mirmak asked if there are any parser changes expected due to this BIRD. Arpad replied no. Michael asked if only impedances on the analog side are being considered and nothing on the digital side. Arpad responded that yes, this changes only the analog side of the A_to_D and D_to_A converters. Radek Biernacki commented that this does not effect at all the existing interpretation, and applies not just to Touchstone but any analog circuit. Is this correct? Arpad replied yes.

Arpad moved to vote on BIRD152 for inclusion in a future IBIS specification beyond IBIS 5.1. Radek Biernacki seconded the motion. The vote passed with the following vote tally:

Agilent – yes
Ansys – abstain
Ericsson – yes
Intel – yes
IO Methodology – yes
LSI – yes
Mentor – yes
Micron – yes
Nokia Siemens Networks – yes
Sigrity – yes
SiSoft – yes

BIRD123.3: IBIS-AMI NEW RESERVED PARAMETERS FOR JITTER/NOISE

Arpad Muranyi noted that comments were raised related to the equations in previous meetings. The ATM group discussed and updated the BIRD. The ATM group members now feel that it is ready for a vote. Michael Mirmak noted some sections in the text having equations. He wondered if these are examples, explanatory notes, or are they supposed to be removed in the final BIRD version. Mike LaBonte remembered discussions in the ATM call where Walter Katz typed in text to answer a question. It might need to be removed. Arpad also noted some square boxes where “-“ was not translated properly in the .txt file. Michael took the AR to change this. Arpad also wondered about holding off on voting if this BIRD will need to be updated for the new IBIS BIRD template. This BIRD has substantial changes that might be better to put into the new format now instead of later in an editorial task group.

Michael noted that we just voted on BIRD152 that will need to be in a new format. Arpad noted that BIRD152 had very minor changes, so it might not be critical for it to be in the new format. Michael hoped the new format would make it easier to make edits. Arpad thought it would be a good idea to reformat the BIRD before voting on it. Arpad suggested that Michael make a note in his BIRD list on BIRDS that are ok technically but just need reformatting.

Walter added that he will be a guinea pig to convert BIRD123.3 to the new format. Michael noted that all the BIRDS except BIRD152 that have been approved to this point are for 5.1, so

we can ask the authors of pending BIRDS to update them to the new format, and this won't require any re-votes. Walter added that changes to the BIRD were minor such as changing ".5" to "0.5". Walter clarified that the equations are meant to be part of the BIRD. He suggested waiting until the BIRD is converted before further discussion.

Michael took an AR to update the BIRD list per Arpad's suggestions and post it in a more prominent place.

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

Discussion was tabled.

BIRD117.3: PARAMETERIZE A_TO_D AND D_TO_A CONVERTERS

Discussion was tabled.

BIRD118.2: ANALOG PARAMETER ASSIGNMENTS

Discussion was tabled.

BIRD121.1: IBIS-AMI NEW RESERVED PARAMETERS FOR DATA MANAGEMENT

Discussion was tabled.

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.

BIRD129: ADD "POLARITY" ARGUMENT TO D_TO_A CONVERTERS

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.

IBIS SPECIFICATION STATUS

Michael Mirmak showed an editorial group document at this URL appearing in the agenda:

http://www.eda.org/ibis/editorial_wip/ibis-version-change-strategy-v2.pdf

This document tracks the status of recent BIRDS and the version of IBIS they are planned for.

Michael will update the document with a new status of BIRD152 and add columns to describe whether BIRDS need technical, editorial, etc. changes.

Walter Katz felt that the next version of IBIS (maybe 6.0) will need to be released such that parser purchasers will need to be charged for a new parser. He suggested going to a yearly maintenance fee charge system.

IBISCHK5 BUG STATUS

Michael Mirmak reported that no new BUGs have been filed. There are 8 open BUGs are being addressed in the new parser update for IBIS 5.1.

NEW TECHNICAL ISSUES

Arpad Muranyi had a question raised from a customer that was making models to include BIRD95/98 data. They wondered how these keywords would work in conjunction with the [Driver Schedule] keyword. Because [Driver Schedule] adds together individual instances of [Model]s, each individual [Model] should include unique BIRD95/98 data. Is it intended that the BIRD95/98 data be added in parallel? Michael Mirmak noted that the intent of [Driver Schedule] is that each individual [Model] would stand on its own, but they could be added together with specific time relationships. Arpad noted that the models used in [Driver Schedule] usually exist

only to model a multi-tap driver and aren't meant to stand on their own.

Walter Katz said that [Driver Schedule] was an attempt to model TX equalization that is handled well in IBIS-AMI. However, in AMI, LTI assumptions exist. [Driver Schedule] adds or subtracts different [Model]s. It is messy to handle these pre-emphasis/de-emphasis buffers in [Driver Schedule]. The real question is: should power integrity issues be able to be modeled with IBIS-AMI? The answer is yes, but a scheme needs to be worked out.

Arpad noted that some people may not want to use IBIS-AMI if they only have a two-tap driver. Michael noted some precedence related to C_comp. Arpad stated that the ISSO keywords should be used to modulate each of the sub-buffers, since they will share the same voltage rail. [Composite Current] seems trickier. Walter felt they should just add together. Michael noted that with [Driver Schedule] C_comp is treated as ignoring the C_comp of sub-models and only using C_comp of the top level [Model]. Should [Composite Current] be handled the same way? Walter felt that each [Model] should have its own [Composite Current] that should add together as [Model]s are switched in. Lance Wang noted that we should find out if modeling each buffer separately and then adding them together gives the same result as looking at the current of the overall model. The answer isn't clear.

NEXT MEETING

The next Open Forum Summit will be held June 5, 2012 at DAC. No phone bridge will be available. The next IBIS Open Forum teleconference will be held June 22, 2012 from 8:00 to 10:00 AM US Pacific Time.

Arpad Muranyi moved to adjourn. Randy Wolff seconded. There were no objections.

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

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

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@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

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/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 CURRENT MEMBER VOTING STATUS

I/O Buffer Information Specification Committee (IBIS)

Organization	Interest Category	Standards Ballot Voting Status	April 20, 2012	May 11, 2012	May 16, 2012	June 1, 2012
Advanced Micro Devices	Producer	Inactive	-	-	-	-
Agilent Technologies	User	Active	X	X	-	X
Altera	Producer	Inactive	-	X	-	-
ANSYS	User	Active	-	-	X	X
Apple Computer	User	Inactive	-	-	-	-
Applied Simulation Technology	User	Inactive	-	-	-	-
Cadence Design Systems	User	Inactive	-	-	-	-
Cisco Systems	User	Inactive	-	-	-	-
Ericsson	Producer	Active	X	X	-	X
Foxconn Technology Group	Producer	Inactive	-	-	-	-
Freescale	Producer	Inactive	-	-	-	-
Green Streak Programs	General Interest	Inactive	-	-	-	-
Huawei Technologies	Producer	Inactive	-	-	-	-
IBM	Producer	Active	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	-	-	-	X
Maxim Integrated Products	Producer	Inactive	-	-	-	-
Mentor Graphics	User	Active	X	X	-	X
Micron Technology	Producer	Active	-	X	X	X
Nokia Siemens Networks	Producer	Active	X	-	X	X
QLogic	Producer	Inactive	-	-	-	-
Signal Integrity Software	User	Active	X	X	-	X
Sigrity	User	Active	X	-	X	X
Synopsys	User	Inactive	-	-	-	-
Teraspeed Consulting	General Interest	Inactive	X	X	-	-
Texas Instruments	Producer	Inactive	-	-	-	-
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	-	-	-	-
Zuken	User	Inactive	-	-	-	-

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.