IBIS Open Forum Minutes

Meeting Date: **June 28, 2013**
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2013 PARTICIPANTS

Agilent	Radek Biernacki*, Pegah Alavi, Heidi Barnes, Fangyi Rao, Colin Warwick, Tarun Kalwani
Altera	David Banas*, Hsinho Wu
ANSYS	Luis Armenta, Ben Franklin, Dan Dvorscak, Steve Pytel
Applied Simulation Technology	Fred Balistreri, Norio Matsui
Cadence Design Systems	Terry Jernberg, Joy Li, Yingxin Sun, Ambrish Varma, Kevin Yao, Brad Brim
Ericsson	Anders Ekholm, Martina Fiammengo
Foxconn Technology Group	(Sogo Hsu)
IBM	Greg Edlund, Adge Hawes*, Dale Becker
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Michael Mirmak*, Mohammad Bapi, Stewart Gilbert, Ravindra Rudraraju
IO Methodology	Lance Wang*
LSI	Brian Burdick, Sarika Jain, Xingdong Dai
Maxim Integrated Products	Hassan Rafat, Mahbubul Bari, Ron Olisar
Mentor Graphics	Arpad Muranyi*, Ed Bartlett, Vladimir Dmitriev-Zdorov
Micron Technology	Randy Wolff*
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
Toshiba	(Yasumasa Kondo)
Xilinx	(Raymond Anderson)
Zuken	Masaud Raeisi, Reinhard Remmert, Michael Schaeder, Alfonso Gambuzza

OTHER PARTICIPANTS IN 2013

ARM	(Vipul Patel)
Bayside Design	Elliot Nahas
Computer Simulation Technology	Heiko Grubrich
ECL Advantage	Thomas Iddings
Freescale	Jon Burnett
Granite River Labs	Vamshi Kandalla, Miki Takahashi
Hewlett-Packard	Yongjin Choi, Ting Zhu
Huawei Technologies	(Jinjun Li)
KEI Systems	Shinichi Maeda
Molex	Davi Correia

National Instruments	Lee Mohrmann
Nokia Siemens Networks GmbH	(Eckhard Lenski)
Nvidia	Eric Hsu
Qualcomm	Scott Powers
QLogic	James Zhou
TechAmerica	(Chris Denham)
Teradyne	Raymond Yakura
Texas Instruments	(Pavani Jella)
Université de Brest	Mihai Telescu
University of Illinois	Tom Comberiate, José Schutt-Ainé, Xu Chen
Vitesse Semiconductor	Sirius Tsang
ZTE	(Huang Min)

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 19, 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

NOTE: "AR" = Action Required.

INTRODUCTIONS AND MEETING QUORUM

Michael Mirmak declared that a quorum was reached and the meeting could begin.

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 June 7, 2013 IBIS Open Forum teleconference. The minutes were approved without changes.

MISCELLANY/ANNOUNCEMENTS

None.

CALL FOR NEW ISSUES

None.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we gained one member, so we have 21 members so far for the year.

WEB PAGE AND MAILING LIST ADMINISTRATION

Mike LaBonte reported that he updated the poster and membership roster pages. He also added a header link on the main page to the IBIS 6.0 documents.

The board reviewed the Terms of Use document that Mike mentioned last meeting. This won’t be used like on other websites that force acceptance of terms of use before entering the website. It will just be linked somewhere on the site. Mike wasn’t sure how to handle its use related to the email lists. Michael Mirmak suggested checking with TechAmerica to see what they do on their website. Bob Ross added the he wants to change one provision to note that the IBIS Open Forum owns the IBIS logo. Michael stated that we should be in a good state if our Terms of Use are similar to TechAmerica’s. He asked Mike to send it to Chris Denham for review. Mike wasn’t sure that we could change the logo language given that we don’t have any legal standing on our own, so TechAmerica probably does own the copyright. He also mentioned the export restrictions language, stating that he doesn’t think we have anything on the site subject to restrictions, but we should keep the language in the Terms of Use document. Michael said the onus should be on the person accessing the website to comply with export restrictions.

Mike mentioned the spreadsheet he started related to features of various bug tracking tools. He isn’t done filling out all the boxes, but he is working on it. Mike will send the spreadsheet to the list for feedback. Michael suggested asking for feedback on what features are useful to people.

MODEL LIBRARY UPDATE

No update.

IBIS AFFILIATIONS

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

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

The 22nd 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. More information is available at:

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

- Press Update

No update.

SUMMIT PLANNING AND STATUS

- Asia Events

Michael Mirmak reported that we are planning on a series of Summits in Asia in November. Lance Wang reported that November 15 for Shanghai in the Parkyard hotel is available at the same rate as last year. Michael is working on finding a hotel for the Taipei Summit. In Japan, we plan to have a half day summit in Yokohama on November 22nd. The Summit in Taipei will be held November 18th or 19th.

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 had one meeting since the last Open Forum meeting. He and Bob finalized their approach for completing the spreadsheet of messages related to the ibischk parser. Assuming no major feedback, they will start working on a trimmed down table that can go into the IBIS documentation. The task group typically meets Tuesdays at 8:00 a.m. PT.

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 group is currently discussing the backchannel and dependency table topics.

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 regularly on Wednesdays at 8:00 a.m. PT, but did not hold a meeting this week. They had a discussion on how much restructuring of EMD is needed and also how packages, die and PCBs interact. The Si2 specification related to 3D structural modeling of interconnects was released this last week, so it must be discussed. The Si2 document is available through a registered login at:

http://www.si2.org/openeda.si2.org/project/showfiles.php?group_id=86#p152

Walter Katz noted that this specification is an example of another model connection protocol that is putting comments into Spice files. He didn't think it would change what is being developed in the EMD proposal. Walter noted he presented recently on what functionality we want in the on-die interconnect, and there are some fundamental questions to be answered such as use of EMD versus BIRD145 for on-die interconnect modeling.

The task group documents can be found at:

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

EDITORIAL TASK GROUP

Michael Mirmak reported that the group is starting to meet again to work on the IBIS 6.0 draft document. The first meeting is immediately after this Open Forum teleconference. Michael encouraged participation. The draft IBIS 6.0 document is available for review at:

http://www.eda.org/ibis/ver6.0_wip/

NEW ADMINISTRATIVE ISSUES

Bob Ross noted that all task groups are meeting next week, despite the 4th of July holiday.

Michael Mirmak reported that on June 4, the Compact Modeling Council, which was a part of TechAmerica, formally joined the Si2 organization. They changed their name to the Compact Model Coalition.

BIRD158.3: AMI TOUCHSTONE ANALOG BUFFER MODELS

Michael Mirmak asked if the BIRD was being discussed further in the ATM task group meetings. Arpad Muranyi responded that it will probably be discussed further in the ATM meetings after some other topics have been discussed.

Walter Katz moved to table discussion of the BIRD. Arpad Muranyi seconded the motion. There were no objections.

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.

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.

BIRD150: IBIS-AMI NEW RESERVED PARAMETERS FOR DEPENDENCY TABLES

Discussion was tabled.

BIRD155: NEW AMI API TO RESOLVE DEPENDENT MODEL PARAMETER

Discussion was tabled.

BIRD157: PARAMETERIZE [DRIVER SCHEDULE]

Discussion was tabled.

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

Discussion was tabled.

IBIS SPECIFICATION CHANGE STATUS

Michael Mirmak shared the updated document. He received some comments that the status of BIRDs on the IBIS website is difficult to determine. He will look into linking this document at the top of the BIRDs webpage. The first page of the document listed the BIRDs being added to IBIS 6.0. All BIRDs except BIRD152 will require parser changes. The second page of the document showed the list of pending BIRDs. Most, if passed, will require parser changes.

The document is available at the following link:

> http://www.eda.org/ibis/docs/ibis-version-change-strategy-v3p0.pdf

NAMING CONVENTION FOR POST-6.0: IBIS VERSIONS

Michael Mirmak noted that we have a version 6.0 being developed. There is a question about whether future versions of IBIS should continue the same numbering scheme or move to a date code similar to many other software releases. Radek Biernacki noted that the naming convention can't be discussed without first discussing the parser fees and how they will be handled. Michael clarified that, currently, once you pay for a parser license, minor releases are free. Moving to a 6-month release schedule requires a new policy.

Radek felt we should start looking at the current financial status of the parser development to see how much money may be required each year to pay for parser updates. He felt a yearly payment might be feasible. Michael asked for Bob Ross to put together this information for review, looking at income versus development costs for the parser on a year by year basis. Bob noted that money trickles in over the years, and some years we pre-paid for development. Other years, money was lost due to financial rules of our previous parent organizations. Michael will add an agenda topic to discuss the parser financial information in the next Open Forum teleconference.

IBISCHK5 PARSER AND BUG STATUS

Two potential BUGs were discussed in the last three weeks. One was a compilation issue and one had an easy workaround. Bob held off discussing a release of the parser until these BUGs were fully looked at. BUG145 and 146 are open, so Bob will ask the parser developer to issue a new release. With this release, all open bugs will be fixed.

V-T TABLES AND OVERCLOCKING IN IBIS-AMI MODELS

David Banas discussed how the parser flags errors if there are large mismatches between the I-V and V-t table data related to DC switching levels. To avoid overclocking issues, the V-t tables must be kept shorter than a bit time. David showed a shelf in the V-t curve of his SerDes Tx that occurs near the center of the switching edge. Walter Katz thought this might be a problem only if the driver is reaching full saturation. David looked to see if the shelf occurred when the driver does not reach full saturation. With the shelf, you get a strange impulse response that can't be represented using a [Ramp]-only model. When driving at 12.5Gbps, the shelf still exists, but it is less pronounced. The "double humped" impulse response is still present but much less pronounced. Walter noted that the frequency content in the small ripple in the impulse response would have high frequency content at about 100GHz. David clarified for Bob Ross that the load is just a standard load on the Tx for V-t curve characterization, not including a package or channel.

David performed simulations using his original V-t curves that were about 2 bit times long. With these long V-t curves, the model passed the parser. Results for two simulators passed his test, meaning that they didn't exhibit gross problems due to overclocking. He noted that the follow-up question for EDA vendors is that for the simulation performed post V-t curve trimming, how good of a job did they do to make sure the best part of the edge is used. Radek Biernacki noted that it depends on the waveform and the level of overclocking required. Radek didn't feel that initial delay should necessarily be removed. Arpad noted that he uses a simulator that allows the user to specify how trimming of the initial delay and end of the V-t waveform are handled. Walter noted that EDA tools have to take their best shot at how to handle waveforms that haven't settled to their final values. Arpad questioned if there was some data that could be extracted from the Spice model and put into IBIS to help with overclocking.

David asked if the weird impulse response could be captured in Walter's on-die S-parameter modeling approach. Walter felt that once you include channel losses, the characteristic won't make a difference to the final simulation. Walter asked David to do further simulations using a channel with15-20dB loss at the Nyquist frequency. Radek also asked David to look at removing the initial delay in the V-t curves to see if it made a difference.

David's presentation is available at the following link:

http://www.eda.org/ibis/docs/meetings/051713/banas.pdf

NEW TECHNICAL ISSUES

None.

NEXT MEETING

The next IBIS Open Forum teleconference will be held July 19, 2013 from 8:00 a.m. to 10:00 a.m. US Pacific Time.

David Banas moved to adjourn. Radek Biernacki seconded the motion. 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
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/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

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	May 15, 2013	May 17, 2013	June 7, 2013	June 28, 2013
Agilent Technologies	User	Active	-	X	X	X
Altera	Producer	Active	-	-	X	X
ANSYS	User	Active	X	X	X	-
Applied Simulation Technology	User	Inactive	-	-	-	-
Cadence Design Systems	User	Active	-	X	X	-
Ericsson	Producer	Inactive	X	-	-	-
Foxconn Technology Group	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	Active	-	X	X	-
Maxim Integrated Products	Producer	Inactive	-	-	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	Inactive	-	-	-	-
Teraspeed Consulting	General Interest	Active	-	X	X	X
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	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

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