



IBIS Open Forum Minutes

Meeting Date: **June 20, 2014**

Meeting Location: **Teleconference**

Agilent Technologies	Radek Biernacki*, Nilesh Kamdar, Colin Warwick, Graham Riley, Pegah Alavi, Fangyi Rao, Heidi Barnes, Dimitrios Drogoudis
Altera	David Banas, Kundan Chand, Hsinho Wu
ANSYS	(Steve Pytel)
Applied Simulation Technology	Fred Balistreri, Norio Matsui
Cadence Design Systems	Ambrish Varma, Brad Brim*, Joy Li, Kumar Keshavan, Ken Willis, Yingxin Sun, Joshua Luo, John Phillips
Ericsson	Anders Ekholm, Zilwan Mahmod
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Michael Mirmak*, Jon Powell, Riaz Naseer Udy Shrivastava, Mustafa Yousuf, Jimmy Jackson Pietro Brenner, Todd Bermensolo*
IO Methodology	Lance Wang*, Michelle Coombs
LSI (Avago)	Xingdong Dai*, Min Huang, Anaam Ansari, Brian Burdick Venkatesh Avula
Maxim Integrated Products	Hassan Rafat
Mentor Graphics	Arpad Muranyi*, John Angulo, Fadi Deek, Chuck Ferry Thomas Groebli
Micron Technology	Randy Wolff*
Qualcomm	Jaimeen Shah, Srinivasa Rao*, Senthil Nagarathinam*
Signal Integrity Software	Mike LaBonte*, Walter Katz*, Todd Westerhoff, Michael Steinberger
Synopsys	Ted Mido, Scott Wedge, Kevin Cameron, Rita Horner
Teraspeed Consulting Group	Bob Ross*, Tom Dagostino, Scott McMorrow
Xilinx	Ravindra Gali
ZTE Corporation	(Shunlin Zhu)
Zuken	Michael Schaefer, Amir Wallrabenstein, Griff Derryberry Reinhard Remmert

OTHER PARTICIPANTS IN 2014

ADVLSI	Pierre Dermay, Juanna Gao
Carleton University	Ramachandra Achar
Continental Automotive	Catalin Negrea
CST	Stefan Paret
ECL Advantage	Thomas Iddings
Freescale	Asher Berkovitz
Fujitsu	Shogo Fujimori
Hewlett Packard	Ting Zhu

Hong Kong University	Lijun Jiang
Huawei Technologies	Jinjun Li, Xiaoqing Dong, Zanglin Yuan, Han Li
IBM	Adge Hawes*
Instituto de Telecomunicações	Wael Dghais
KEI Systems	Shinichi Maeda
Lattice Semiconductor	Xu Jiang
Mediatek	Alice Lin
Mellanok Technologies	Piers Dawe
Microsemi	Nizar Abdallah, Ann Lau
Nanium	Abel Janeiro
Oracle	Stephan Mueller
Pangya	Edgar Aguirre
Proficient Design	Kishor Patel
Renesas	Genichi Tanaka
SAE International	Chris Denham
Tabula	Ben Zhou
Technische Universität Hamburg	Torsten Reuschel
Toshiba	Hiroyuki Ikegami, Toshihiro Tsujimura
University of Illinois	José Schutt-Ainé
Vitesse	Siris 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
July 11, 2014	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

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

Todd Bermensolo from Intel introduced himself. He works with IBIS-AMI 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, 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 14, 2014 European IBIS Summit, the May 23, 2014 IBIS Open Forum teleconference and the June 5, 2014 DAC IBIS Summit. The minutes were approved without changes.

Michael Mirmak asked what the process is for revising the minutes if errors are found. Randy clarified that he makes notes of the errors in the current set of minutes but does not go back to edit old minutes.

ANNOUNCEMENTS

None.

CALL FOR ADDITIONAL AGENDA ITEMS

Arpad Muranyi requested time to discuss an issue on IBIS-AMI descriptions in the specification.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that at the DAC IBIS Summit we had 19 members, but we also got a renewal from Maxim, so now there are 20 paid members. The treasury sits at \$38,683. Payments will come in for additional memberships and parser purchases, but we also have a payment to make to the parser developer.

WEB PAGE AND MAILING LIST ADMINISTRATION

Mike LaBonte reported that the mailing list is operating fine. The events page has been updated.

Mike mentioned a proposal to pay for our own web server. Michael Mirmak noted that we do own the domain name ibis-information.org. Mike reported that the web engine on eda.org serves our page, but it does not run PHP, so it is very difficult to manage the web page through logins to the server. Eda.org administrators are all volunteers, so there are limits to how much

they can do. With a new web server, we could build a new website that could be administered much more easily. We would need to create a SQL database. Mike is willing to prototype a new website such as one using WordPress. Michael asked if we'd get better service if we paid money to the eda.org people. Mike wasn't sure who to ask, but it would be someone at Accellera. Mike will also contact SAE about services they may offer. Bob Ross noted that he owned the ibiseda.org domain and would donate it to IBIS if needed.

MODEL LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

The 23rd Conference on Electrical Performance of Electronic Packaging (EPEPS) will be held October 26-29, 2014 in Portland, Oregon. There is usually some IBIS and/or signal integrity related material. More information is available at:

<http://epeps.org>

- Press Update

None.

SUMMIT PLANNING AND STATUS

- DAC IBIS Summit Review

The DAC IBIS Summit meeting was held June 5, 2014. Michael Mirmak reported that there were 23 attendees from 19 companies. There was discussion on IBIS history as well as interconnect modeling and AMI modeling. Bob Ross reported that we learned a lot about DAC logistics for signups. A DAC badge was not needed for access. DAC will be in San Francisco again next year. We also learned from JEITA that their EDA working group is renamed the IBIS Promotion working group to fully support IBIS work. Mike LaBonte wondered if there would be enough JEITA work on IBIS to warrant regular updates under International Activities discussions. Michael noted that we get irregular updates such as around the DAC and the Yokohama Summit events. It would be good to get more regular updates as well as from IEEE P2401. Michael took an AR to extend an invitation. Brad Brim mentioned that he is a P2401 member, so he can give regular updates.

Michael noted we had a lot more people sign up for the IBIS meeting through the DAC website than actually attended. We did require an RSVP email before the event that gave a better estimate of attendee numbers. We may need to make it harder for someone to register in the future. Bob noted that DAC did not require prepayment for food and we are still waiting for the bill.

- Asian IBIS Summit planning

Michael reported that we are planning Summit events in Taipei, Yokohama and Shanghai in November. We are working offline to arrange travel dates. The Yokohama event is set for Thursday, November 20 as requested by JEITA. It will be a half day event. Bob reported that we are looking at November 7 and November 17 for the other two dates, possibly Shanghai on

November 7 and Taipei on November 17. We need to look at room arrangements to see if these dates are available. Lance Wang will contact the Parkyard hotel in Shanghai and Michael will contact the Sherwood hotel in Taipei.

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 working on ibischk5 documentation. Some new messages will need to be documented for ibischk6. Mike has a plan for how to use a script to find new messages in the ibischk6 source code.

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 main discussion topic in the last few months has been BIRD147 on backchannel modeling and another proposal from SiSoft. That discussion is on hold for a few weeks. Last week the group discussed IBIS directionality (I/O versus Output or Input) for IBIS AML models. Michael Mirmak asked if there is still a vote planned for BIRD147 versus the SiSoft proposal. Arpad noted that there was a vote a few weeks ago that ended in a tie, so more discussion is needed before a decision can be made.

Brad Brim asked about voting requirements in the task groups. Michael confirmed that only paid IBIS members may vote.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Michael Mirmak reported that the group is talking about handling of unconnected terminals in the next meeting. There has been some discussion of corners for interconnect modeling as well. The group is meeting Wednesdays at 8:00 a.m. PT.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES

Michael Mirmak noted that there was discussion at DAC about the need to update the IBIS cookbook. There may be a cookbook task group starting up soon, so let a board member know if you are interested in working on a cookbook update.

BIRD168: HANDLING OF OVERCLOCKING CAUSED BY DELAY IN WAVEFORM TABLES

Radek Biernacki mentioned receiving one email about the BIRD last night from Brad Brim. Radek summarized the BIRD. It attempts to standardize the handling of waveform delay trimming associated with I-T and V-T data tables. The BIRD introduces the keyword [Initial_Delay] with subparameters to specify initial delay values that can be trimmed from I-T and V-T data tables within a [Model]. The trimmed values becoming triggering events for the I-T and V-T data when the EDA software processes the model in simulation. Brad commented that Randy Wolff had addressed his question over email.

Arpad Muranyi commented that it should be spelled out that negative numbers are not allowed. He suggested that τ_v and τ_{cc} should be defined better in the BIRD. Randy clarified for Arpad that the τ_v and τ_{cc} values do not remove the delay relationships between I-T and V-T data but simply become triggering events.

Senthil Nagarathinam asked which tables are affected by the delays being removed. Randy and Radek clarified that the delay trim works on all data tables at once.

Brad expressed concern with the last sentence of the BIRD specifying what an EDA tool 'shall' do. Bob Ross agreed that EDA tool behavior should not be mentioned. It was determined that the sentence should change to say "For IBIS files with [IBIS Ver] 6.2 or higher, if the delay information is missing (the [Initial_Delay] keyword is not specified or when it is specified the subparameter(s) corresponding to the table(s) that is/are present is not specified) the assumption is that the corresponding delay value(s) (τ_v and/or τ_{cc}) is/are zero." Arpad noted that some other language will need to be changed such as 'can' to 'may'. Radek commented that the [IBIS Ver] mentioned in the last sentence will need to be edited as well based on the numbering of the next version.

Radek moved to vote on the BIRD for acceptance in the next version of IBIS with the noted changes above. An updated BIRD will be uploaded to the website. Bob seconded the motion.

The vote passed with the following vote tally:

Agilent – yes
Cadence – yes
Intel – yes
IO Methodology – yes
LSI – yes
Mentor – yes
Micron – yes
Qualcomm – yes
SiSoft – yes

Teraspeed – yes

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.

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.

IBISCHK5 PARSER AND BUG STATUS

No update. Bob Ross noted this can be removed as a discussion topic.

IBISCHK6 PARSER STATUS

Bob Ross reported that the ibischk6 parser has been released. Source code packages are being distributed to parser licensees. Parser bugs including BUG147, BUG148, BUG149, BUG152, BUG153, BUG154 and BUG156 should all be considered closed in the new parser release.

Bob moved to consider these bugs closed as of June 20, 2014. Radek Biernacki seconded the motion. There were no objections.

Michael Mirmak noted that the parser license information is on our website. Contact a board member if interested in purchasing a parser license.

Bob moved to approve payment to the parser developer of \$10,000 as contracted upon receipt of the parser error spreadsheet. Randy Wolff seconded the motion. There were no objections.

Bob noted that 7 bugs were fixed in this parser release while only 3 bugs were contracted. We can ask the parser developer to fix additional bugs in a future release that may also cover bugs specific to ibischk6 yet to be discovered. Bob and Mike LaBonte might work with the parser developer to clean up the source code by adding a readme file and removing unnecessary directories and files.

Michael requested the ibischk bugs webpage get an added column to indicate in which version of the parser a bug was fixed. A separate text document does exist with this information. Mike LaBonte took the AR to update the webpage.

NEW TECHNICAL ISSUES

Arpad Muranyi noted that in section 10.2.1 of the IBIS specification covering IBIS AMI files, it would be nice to add a description of how a model developer should best test their models to ensure they work in multiple platforms. Arpad talked with Mike LaBonte, and they felt the model needs to be tested on a clean system. There is test code on the IBIS website from Cadence and SiSoft for testing AMI models, but the code could use some updates to make it more user friendly. A second option could be to add some basic test functionality in the ibischk parser.

Walter Katz noted that we can add informative information in the specification. The model maker would need to supply a .csv file containing setup parameters for the .ami file to pass to the .dll file to allow ease of model testing. Arpad restated that we need to figure out the easiest way to have an executable that can test the models. Mike LaBonte noted that we could have code that just tests for dependencies in the DLL.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held July 11, 2014. The following IBIS Open Forum teleconference meeting will be held August 1, 2014.

Arpad Muranyi moved to adjourn. Brad Brim seconded the motion. There were no objections.

NOTES

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This meeting was conducted in accordance with ANSI guidance.

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>

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IBIS – SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	May 14, 2014	May 23, 2014	June 5, 2014	June 20, 2014
Agilent Technologies	User	Active	X	X	X	X
Altera	Producer	Active	-	X	X	-
ANSYS	User	Inactive	-	-	-	-
Applied Simulation Technology	User	Inactive	-	-	-	-
Cadence Design Systems	User	Active	-	-	X	X
Ericsson	Producer	Inactive	X	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	X	X
IO Methodology	User	Inactive	-	X	-	X
LSI (Avago)	Producer	Active	-	-	X	X
Maxim Integrated Products	Producer	Inactive	-	-	-	-
Mentor Graphics	User	Active	X	X	-	X
Micron Technology	Producer	Active	X	X	-	X
Qualcomm	Producer	Inactive	-	X	-	X
Signal Integrity Software	User	Active	-	X	X	X
Synopsys	User	Inactive	-	-	X	-
Teraspeed Consulting	General Interest	Active	-	X	X	X
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	-	-	-	-
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.