**IBIS Open Forum Minutes**

Meeting Date: **October 3, 2014**

Meeting Location: **Teleconference**

**VOTING MEMBERS AND 2014 PARTICIPANTS**

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

Huawei Technologies Jinjun Li, Xiaoqing Dong, Zanglin Yuan, Han Li

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

Keysight Technologies (Agilent) Radek Biernacki\*, Nilesh Kamdar, Colin Warwick,

 Graham Riley, Pegah Alavi, Fangyi Rao,

 Heidi Barnes, Dimitrios Drogoudis

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 Labs Bob Ross\*, Tom Dagostino, Scott McMorrow

 (Teraspeed Consulting Group)

Toshiba Hiroyuki Ikegami, Toshihiro Tsujimura, Hideo Oie\*

Xilinx Ravindra Gali

ZTE Corporation (Shunlin Zhu)

Zuken Michael Schaeder, Amir Wallrabenstein, Griff Derryberry

 Reinhard Remmert

**OTHER PARTICIPANTS IN 2014**

ADVLSI Pierre Dermy, 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

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

Pangeya Edgar Aguirre

Proficient Design Kishor Patel

Renesas Genichi Tanaka

SAE International Chris Denham

Tabula Ben Zhou

Technische Universität Hamburg Torsten Reuschel

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

October 24, 2014 205 475 958 IBIS

November 14, 2014 Asian IBIS Summit – Shanghai – no teleconference

November 17, 2014 Asian IBIS Summit – Taipei – no teleconference

November 20, 2014 Asian IBIS Summit – Yokohama – no teleconference

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.

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**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, 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 September 12, 2014 IBIS Open Forum teleconference. The minutes were approved without changes.

**ANNOUNCEMENTS**

None.

**CALL FOR ADDITIONAL AGENDA ITEMS**

None.

**MEMBERSHIP STATUS AND TREASURER'S REPORT**

Bob Ross reported that Huawei is officially a voting member again after receiving their payment. We now have 22 paid members. We have recently received a parser payment and made the DAC payment and a Taiwan Summit payment for holding the room. The treasury sits at $35,184.

**WEB PAGE AND MAILING LIST ADMINISTRATION**

Mike LaBonte reported that the email situation is bad. A lot of spam goes through our system, although it is not reaching members, only administrators. The spam goes through eda.org and the Stanford SMTP server. That server’s reputation is very low, so certain end recipient servers are rejecting messages from the Stanford server (smtp-grey@stanford.edu). For the first time, a few emails from the eda.org server are going to the Stanford server, and the Stanford server is rejecting them. Mike is trying to get help from the eda.org administrators.

Mike has started a document that addresses our needs for IT services. It is a starting point in case we need to shop around for other services. So far it describes what we have today. The next section to add will describe in more detail our websites. Then a section will describe all the things we’d like to have.

Michael Mirmak asked if a move to freelists would be a good solution. Mike thought this might be a good idea, since we don’t have a lot of traffic. He likes the way the freelists mailing lists work.

**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](http://epeps.org/)

- Press Update

None.

-P1735 IEEE IP encryption standard

Michael Mirmak reported that the entire package has been moved through the IEEE process, and by December 10 or 11, the revisions committee and standards boards will be considering it. If they approve, it will be published as a standard by mid March 2015. We could make use of this in IBIS for multi-lingual approaches in the future.

**SUMMIT PLANNING AND STATUS**

- Asian IBIS Summit Shanghai – November 14, 2014

This event will be held at the Parkyard Hotel. Bob Ross reported that seven presentations are tentatively planned. Two new sponsors are ANSYS and Teledyne LeCroy. Sponsors for Shanghai now include Huawei Technologies, ANSYS, IO Methodology, Synopsys, Teledyne LeCroy, ZTE Corporation and others to be determined.

- Asian IBIS Summit Taipei – November 17, 2014

This event will be held at the Sherwood Hotel. Bob Ross noted that ANSYS is a new sponsor. There are about 15 sign-ups so far. Sponsors for Taipei include ANSYS, Cadence Design Systems, IO Methodology, Synopsys and others to be determined.

- Asian IBIS Summit Yokohama – November 20, 2014

This event will be held at the Pacifico Hotel. Sponsors for Yokohama now include JEITA, IBIS Open Forum, ANSYS, Cadence Design Systems, Cybernet Systems, Mentor Graphics Corporation, MoDeCH, Zuken and others to be determined.

Michael Mirmak noted that the first announcement and call for papers has gone out for each event. He encouraged additional sponsorships for the Summits. He noted that tables will be available at the Summits for sponsors to advertise their companies.

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 continuing to work on the IBISCHK6 User Guide. They will be asking the parser developer to eliminate the –etc option in ibischk. Lance Wang joined recently in the meeting. The 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 group is talking about backchannel modeling with BIRD147. They are looking at what the industry needs and what expectations are to see if the BIRD satisfies them or not.

Task group material can be found at:

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

**INTERCONNECT TASK GROUP**

Michael Mirmak reported that group is meeting regularly on Wednesdays at 8:00 a.m. PT. They have a list of nine action items to complete before the Interconnect BIRD will be finished. Draft 12 of the BIRD will be posted soon. It has been going through some private editing.

Task group material can be found at:

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

**NEW ADMINISTRATIVE ISSUES**

None.

**BIRD128.2: ALLOW AMI\_PARAMETERS\_OUT TO PASS AMI\_PARAMETERS\_IN DATA ON CALLS TO AMI\_GETWAVE**

Bob Ross noted the need to remove “Draft 1” from the title of the BIRD. Radek Biernacki commented that the BIRD needed some clarifications of what the parameters are to be passed in each direction. This BIRD was originally intended to be put together with BIRD147 which does describe the parameters. As a standalone BIRD, it needs to have additional text to add what is in BIRD147. Arpad Muranyi commented that the BIRD is on the list for further discussion in the ATM task group, and the authors need time to make any necessary updates.

Walter Katz moved to table the BIRD. Bob Ross seconded the motion. There were no objections.

**BIRD169.1: DLL DEPENDENCY CHECKING**

Radek Biernacki moved to vote on the BIRD for inclusion in the next version of the IBIS specification. Bob Ross seconded the motion. There were no objections. The BIRD passed with the following vote tally:

Cadence – yes

Intel – yes

IO Methodology – yes

Keysight – yes

Mentor – yes

Micron – yes

SiSoft – yes

Synopsys – yes

Teraspeed Labs – yes

Toshiba – abstain

**BIRD173.3: PACKAGE RLC MATRIX DIAGONALS**

Randy Wolff introduced the BIRD changes. A minor change was made to add “including zero” so a statement would read “all eigenvalues are real and non-negative, including zero.”

Radek Biernacki moved to vote on the BIRD for inclusion in the next version of the IBIS specification. Bob Ross seconded the motion. There were no objections. The BIRD passed with the following vote tally:

Cadence – yes

Intel – yes

IO Methodology – yes

Keysight – yes

Mentor – yes

Micron – yes

SiSoft – yes

Synopsys – yes

Teraspeed Labs – yes

Toshiba – abstain

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

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 reported a new bug, BUG158: Disable Undocumented –etc Flag for Added Multi-Lingual Checks. A –etc option was inserted in ibischk during the ibischk4 development. The checks are not valid specification checks and are undocumented. The BUG solution is to disable the flag.

The BUG was classified as Annoying severity, Low priority and Open status.

Michael Mirmak asked if it would take a lot of work to remove the code. Bob commented that we would not remove the code but just hard code the boolean value to false. Mike LaBonte stated that he’d prefer the code section be commented out at least so it wouldn’t look like active code.

Bob reported that there will be a version 6.0.1 release of ibischk6 to fix BUG157 and BUG155 that the parser developer is starting. Bob will alert the developer of BIRD158, and it may be fixed as well. There will also be some re-organization of the source code files to clean up the directory structure.

Bob noted that the BUG151 report may need to be updated with the approval of BIRD173.3. A comment might be added to reference BIRD173.3 to note that more extensive tests of the RLC package matrices may be required in a future parser release.

Bob moved to add comments as noted above to the BUG151 report. Radek Biernacki seconded the motion. There were no objections.

Michael asked about BUG155. Bob clarified that we should be able to add in checking that Vinh is greater than Vinl. This check was not desired originally before hysteresis was added to IBIS.

**NEW TECHNICAL ISSUES**

Walter Katz shared a presentation from the Interconnect task group relating signal\_name and [Pin Mapping]. Signal\_name in the [Pin] section is only mentioned as being a databook name for the signal on a pin. Walter noted that there is a common understanding that two pins with the same name, such as on power or ground pins, are meant to have a common voltage. You can actually have a pin with signal\_name VDDQ connected to the model\_name POWER and another pin with signal\_name VDDQ connected to the model\_name GND. This does not get flagged as a problem by the parser. Bus labels in [Pin Mapping] can also short together power pins with different signal names. Walter thinks that signal\_name should have some meaning when it comes to power and ground pins, and this would allow us to enhance [Pin Mapping].

Bob Ross confirmed that there is no checking on signal\_name by the parser except for length of the name. Best practice is to match the signal\_name to the data book name. Walter noted that this issue is related to power delivery models. Complex PDN models could connect many terminals at the pins to many terminals at each buffer. However, using a simplified model with single terminals at the pin and buffer require more information about which buffers connect to the PDN. Michael Mirmak asked if anyone had examples of the signal\_name being used to describe connections of pins. Walter asked if anyone could come up with an example of an instance where two pins with the same signal\_name (such as VDD) would be connected on the PCB to different voltages. Bob expressed concern with using the terminology of connected versus nodes that have the same voltage. Walter stated that he was talking about nets with a low impedance connection.

Arpad Muranyi gave an example of having a complicated PDN model with isolated supply connections to multiple buffers. Walter responded that this could be handled but you still needed to inform the tool of the supply connections.

Arpad asked if Walter’s intention was not to talk about node names as in Spice but more the concept of extended nets. Walter confirmed this. He noted that signal\_name should be treated like a CAD net name. Radek Biernacki noted that we only have meaning in the signal\_name if we start using it for interconnect modeling. Radek and Bob discussed using precedence rules, such as starting with [Pin Mapping], then looking at signal\_name if [Pin Mapping] isn’t used.

Walter stated that he was concluding that a new keyword would be needed so as not to change how [Pin Mapping] was interpreted. Bob stated that he was not so sure a new keyword was needed – that more discussion was required.

Walter’s presentation can be found at:

<http://www.eda.org/ibis/minutes/min2014/m100314_docs/m100314_walterkatz.pdf>

**NEXT MEETING**

The next IBIS Open Forum teleconference meeting will be held October 24, 2014. The Asian IBIS Summit in Shanghai will be held November 14, 2014. The Asian IBIS Summit in Taipei will be held November 17, 2014. The Asian IBIS Summit in Yokohama will be held November 20, 2014. No teleconferences will be available for the Summit meetings. The following IBIS Open Forum teleconference meeting will tentatively be held December 5, 2014.

Mike LaBonte 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 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](http://www.eda-stds.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-stds.org/ibis/icm_bugs/)

[http://www.eda.org/ibis/icm\_bugs/icm\_bugform.txt](http://www.eda-stds.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-stds.org/ibis/bugs/s2ibis/bugs2i.txt)

[http://www.eda.org/ibis/bugs/s2ibis2/bugs2i2.txt](http://www.eda-stds.org/ibis/bugs/s2ibis2/bugs2i2.txt)

[http://www.eda.org/ibis/bugs/s2iplt/bugsplt.txt](http://www.eda-stds.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](http://www.eda-stds.org/ibis/directory.html)

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**IBIS – SAE STANDARDS BALLOT VOTING STATUS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Organization** | **Interest Category** | **Standards Ballot Voting Status** | **August 1, 2014** | **August 22, 2014** | **September 12, 2014** | **October 3, 2014** |
| Altera | Producer | Inactive | - | X | - | - |
| ANSYS | User | Inactive | - | - | - | - |
| Applied Simulation Technology | User | Inactive | - | - | - | - |
| Cadence Design Systems | User | Active | X | X | X | X |
| Ericsson | Producer | Inactive | - | - | - | - |
| Huawei Technologies | Producer | Inactive | - | - | - | - |
| Infineon Technologies AG | Producer | Inactive | - | - | - | - |
| Intel Corp. | Producer | Active | - | X | X | X |
| IO Methodology | User | Active | - | - | X | X |
| Keysight Technologies (Agilent) | User | Active | X | X | X | X |
| LSI (Avago) | Producer | Inactive | - | - | - | - |
| Maxim Integrated Products | Producer | Inactive | - | - | - | - |
| Mentor Graphics | User | Active | X | X | X | X |
| Micron Technology | Producer | Active | X | - | X | X |
| Qualcomm | Producer | Active | - | X | X | - |
| Signal Integrity Software  | User | Active | X | X | X | X |
| Synopsys | User | Inactive | - | - | - | X |
| Teraspeed Labs | General Interest | Active | X | X | X | X |
| Toshiba | Producer | Active | - | - | X | X |
| 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.