

**IBIS Open Forum Minutes**

Meeting Date: **August 4, 2017**

Meeting Location: **Teleconference**

**VOTING MEMBERS AND 2017 PARTICIPANTS**

ANSYS Curtis Clark\*, Toru Watanabe

Applied Simulation Technology (Fred Balistreri)

Broadcom Bob Miller\*

Cadence Design Systems Brad Brim\*, Sivaram Chillarige, Debabrata Das

 Ambrish Varma

Cisco Systems (Bidyut Sen)

CST Stefan Paret, Matthias Troescher, Burkhard Doliwa

 Danilo Di Febo, Alexander Melkozerov

Ericsson Zilwan Mahmod

GLOBALFOUNDRIES Steve Parker\*

Huawei Technologies (Jinjun Li)

IBM Luis Armenta, Adge Hawes, Greg Edlund

Infineon Technologies AG (Christian Sporrer)

Intel Corporation Michael Mirmak\*, Hsinho Wu\*, Eddie Frie

 Gianni Signorini, Barry Grquinovic

IO Methodology Lance Wang\*

Keysight Technologies Radek Biernacki\*, Pegah Alavi, Fangyi Rao\*

 Stephen Slater, Jian Yang

Maxim Integrated Joe Engert, Don Greer, Yan Liang, Hock Seow

Mentor, A Siemens Business Arpad Muranyi\*, Nitin Bhagwath, Praveen Anmula

 (formerly Mentor Graphics) Fadi Deek, Raj Raghuram, Dmitry Smirnov

 Bruce Yuan, Carlo Bleu

Micron Technology Randy Wolff\*, Justin Butterfield

NXP (John Burnett)

Qualcomm Tim Michalka, Kevin Roselle

Raytheon Joseph Aday

Signal Integrity Software Mike LaBonte\*, Walter Katz\*, Todd Westerhoff

Synopsys Kevin Li\*, Ted Mido\*, John Ellis, Scott Wedge

Teraspeed Labs Bob Ross\*

Xilinx (Raymond Anderson)

Zuken Ralf Bruening, Michael Schaeder, Alfonso Gambuzza

**OTHER PARTICIPANTS IN 2017**

Accton Raul Lozano

ASUS Nick Huang, Bin-chyi Tseng

Continental AG Stefanie Schatt

eASIC David Banas

Extreme Networks Bob Haller

Ghent University Paolo Manfredi

Hamburg University of Technology Torsten Revschel, Torsen Wendt

IdemWorks Michelangelo Bandinu

Independent Dian Yang

John Baprawski, Inc. John Baprawski

KEI Systems Shinichi Maeda

Lattice Semiconductor Maryam Shahbazi, Dinh Tran

Leading Edge Pietro Vergine

Politecnico di Torino Claudio Siviero, Stefano Grivet-Talocia, Igor Stievano

SAE International (Thomas Munns)

Signal Metrics Ron Olisar

SPISim Wei-hsing Huang

STMicroelectronics Fabio Brina, Olivier Bayet

Toshiba Yasuki Torigoshi

Université Blaise Pascal Mohamed Toure

Université de Bretagne Occidentale Mihai Telescu

ZTE Corporation (Shunlin Zhu)

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

August 25, 2017 624 999 876 IBISfriday11

For teleconference dial-in information, use the password at the following website:

 <http://tinyurl.com/zeulerr>

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.

NOTE: "AR" = Action Required.

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**INTRODUCTIONS AND MEETING QUORUM**

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

**CALL FOR PATENTS**

Mike LaBonte called for declaration of any patents or pending patents related to the IBIS 3.2, IBIS 4.2, IBIS 5.1, IBIS 6.1, 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 on the minutes of the July 14, 2017 IBIS Open Forum teleconference. Lance Wang moved to approve the minutes. Brad Brim seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

1. Mike LaBonte to update the Upcoming Events page to add Summit dates [AR].

Mike reported that as done.

1. Mike LaBonte to check and send EDI CON announcement if not already sent [AR].

Mike reported that it had not been sent out, and it has been sent out since then.

1. Mike LaBonte to update the Upcoming Events page with the new JEITA contact information [AR].

Mike reported that as done.

1. Mike LaBonte to add new SPI 2018 link to the Upcoming Events page [AR].

Mike reported that as done.

**ANNOUNCEMENTS**, **CALL FOR ADDITIONAL AGENDA ITEMS**

Mike LaBonte noted one quick new agenda item to discuss potential IBIS 7.0 BIRDs and their status.

**MEMBERSHIP STATUS AND TREASURER'S REPORT**

Bob Ross reported that we had two membership renewals from Cisco Systems and Intel Corporation. This brings membership to 25 with a quorum of 7 members. We have had various sponsorships and memberships. Our account balance is at $24,044 for 2017. Actual cash flow of $22,294 has been collected in 2017. We made a payment to the parser developer as well. Several more sponsors are expected soon with one outstanding renewal. Net cash flow has passed the $100,000 mark since joining SAE in 2013.

**WEBSITE ADMINISTRATION**

Mike LaBonte reported that a few things have changed. On the Upcoming Events page, information is added about the conferences we are scheduled to attend. He would like to add images for the Asian IBIS Summits, but none are not available yet. Some photos are available from previous Summits that may get used. On the Past Summits page, the conference list has been reorganized.

**MAILING LIST ADMINISTRATION**

Curtis Clark reported nothing new to report. Everything is going smoothly.

**LIBRARY UPDATE**

No update.

**INTERNATIONAL/EXTERNAL ACTIVITIES**

- Conferences

EDI CON – Electronic Design Innovation Conference & Exhibition will be held in Boston, MA on September 11-13, 2017. An IBIS Summit at this event is planned. More information is available at:

 <http://www.ediconusa.com>

EPEPS – The 26th IEEE Conference on Electrical Performance of Electronic Packaging and Systems will be held in San Jose, CA on October 15-18, 2017. An IBIS Summit at this event is planned. More information is available at:

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

- Press Update

None.

- Related standards

None.

**SUMMIT PLANNING AND STATUS**

- EDI CON

EDI CON will be held in Boston, MA on September 11-13, 2017. The IBIS Summit will be held from 1:00 p.m. to 5:00 p.m. on Wednesday, September 13, 2017 in Room 104 at the Hynes Convention Center. Mike LaBonte reported that EDI CON will be hosting a free lunch. Bob Ross reported that tentatively 3-4 presenters are lined up already. Bob is waiting to hear back from potential sponsors. The meeting is concurrent with some afternoon events, but it doesn’t look like there are any conflicts with IBIS attendees. Signal Integrity Software and Teraspeed Labs are sponsors.

- EPEPS

EPEPS will be held in San Jose, CA on October 15-18, 2017. The IBIS Summit will be held on Wednesday afternoon, October 18, 2017. Bob noted he needs to sign the agreement, but he is reviewing the numbers still. Presentations are needed. Keysight and Synopsys are sponsors.

- Asian IBIS Summit (Shanghai)

An IBIS Summit will be held at the Parkyard Hotel Shanghai from 8:30 a.m. to 5:00 p.m. on Monday, November 13, 2017. Huawei is the primary sponsor and Cadence, IO Methodology, and Synopsys are additional sponsors.

- Asian IBIS Summit (Taipei)

An IBIS Summit will be held at the Sherwood Hotel from 9:00 a.m. to 4:30 p.m. on Wednesday, November 15, 2017. Mike noted that sponsors are welcome. Lance Wang mentioned a close conflict with an ANSYS user group meeting the day before. Synopsys is a sponsor. IO Methodology is a sponsor for the booklets.

- Asian IBIS Summit (Tokyo)

An IBIS Summit will be held at the Akihabara UDX Bldg. from 12:30 p.m. to 5:00 p.m. on Friday, November 17, 2017. Bob noted that there is a new contact for JEITA. JEITA and IBIS Open Forum are sponsors.

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. The focus continues to be on the ibischk parser. With the release of ibischk 6.1.4, the meetings have been relatively short.

The IBISCHK6 user guide work in progress can be reviewed at:

<http://www.ibis.org/ibischk6/ibischk_6.1.4_UserGuide_wip1.pdf>

The Quality task group checklist and other documentation can be found at:

<http://www.ibis.org/quality_wip/>

**ADVANCED TECHNOLOGY MODELING TASK GROUP**

Arpad Muranyi reported that the group is meeting regularly on Tuesdays at 12:00 p.m. PT. There are quite a few topics on the list. BIRD166 and BIRD190 have been under discussion, but they are now tabled. BIRD158 and other topics are being discussed as well.

Task group material can be found at:

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

**INTERCONNECT TASK GROUP**

Mike LaBonte reported that the group is meeting at 8:00 a.m. PT on Wednesdays. They have been taking up some refinements on BIRD189.4. A draft BIRD189.5 is under discussion. Two remaining questions are marked to be resolved in the meeting next Wednesday. Bob Ross noted that one of the comments was with respect to references. One of the examples was touched up, and another needs to be fixed. He has thought more about the references and has concerns about referencing. These relate to a long time issue with PDN references when all terminals are taken up with connection pads. Michael Mirmak asked for a rough ETA for completing the BIRD. Mike commented that it may take two meetings to resolve the issues. Walter Katz asked Bob to write up his thoughts and submit them to the Interconnect email list. Walter noted that the BIRD could be ready in a couple weeks. Arpad Muranyi noted that there was a suggestion to remove the Unused Port Terminations section completely, and this needs to be decided. Walter added that he discussed the terminations issue with several experts, and this resulted in four different recommendations.

Task group material can be found at:

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

**EDITORIAL TASK GROUP**

Michael Mirmak reported that meetings are suspended, and the group normally meets on Fridays. Recent discussions were on interconnect modeling and IBIS 7.0 preparation.

Task group material can be found at:

<http://www.ibis.org/editorial_wip/>

**NEW ADMINISTRATIVE ISSUES**

- Second revision of IBIS Policies and Procedures

Mike LaBonte reported there has been no activity on the document. It is possibly ready for a ratification vote. We need to find a good time for the vote. Ratification of the document requires greater than 2/3 of all members’ approval. So, we will actively seek votes from members who have not participated for a while. Michael Mirmak commented that DASC met this week, and they noted that for their Policies and Procedures, they started publishing state diagrams for their processes. This gives a picture of how a BIRD gets passed, for example. Mike asked if their processes were more complicated. Michael commented that their process is more complicated. For us, showing the loops of how a BIRD can go between multiple committees and the Open Forum and where it starts would be helpful. Mike noted this would be a significant addition.

Arpad Muranyi asked if soliciting votes conflicted with our participation in voting requirements. Mike noted that the participation rule, where we track meeting attendance at the bottom of the minutes, only applies to votes on a standard through our parent organization.

The Policy and Procedures document can be found at:

 <http://www.ibis.org/policies/>

**BIRD166.3: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW**

Mike LaBonte received a late submission last night of BIRD166.4. Walter Katz introduced the changes. BIRD166.4 adds an alternative redriver flow instead of replacing the existing flow. The reason for the change is that he thought there was agreement on applying BIRD166 flow to statistical flows only, but there is not consensus in discussions in the ATM task group. He added the alternative flow instead. Bob moved to have discussion moved to the ATM task group. He commented that this looks like a way to combine BIRD166 and BIRD190. He noted some editorial work was needed. Walter agreed with moving the discussion to the ATM task group. There were no objections. Radek asked if the note in red text came from BIRD190. Walter confirmed this, but the note applies only to the statistical flow in his BIRD.

**BIRD189.4: INTERCONNECT MODELING USING IBIS-ISS AND TOUCHSTONE**

Mike LaBonte noted that a vote was scheduled for today, but a BIRD189.5 is still in progress. Michael Mirmak moved that BIRD189.4 be tabled. Bob Ross seconded the motion. There were no objections.

**BIRD158.5: AMI TS4FILE ANALOG BUFFER MODELS**

Walter Katz commented that he is working on changes with Radek Biernacki and Arpad Muranyi. Walter moved to table BIRD158.5. Radek seconded the motion. There were no objections. Arpad noted that a draft BIRD was circulated on the ATM email reflector, so he encouraged review of it.

**BIRD191: ADDING BUFFER LOCATION TO SI\_LOCATION AND TIMING\_LOCATION**

Bob Ross noted that BIRD191.1 was submitted through an email to the ATM task group, but Mike LaBonte missed this. It will be available for review at the next Open Forum meeting. Arpad Muranyi commented that BIRD189 should be passed at the same time, since they have dependencies. Bob added that there are some thick lines in the Word document that he cannot delete. Mike will take a look at this.

**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.

**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.

**BIRD181.1: I-V TABLE CLARIFICATIONS**

Discussion was tabled.

**BIRD190: CLARIFICATION FOR REDRIVER FLOW**

Discussion was tabled.

**IBISCHK6 PARSER AND BUG STATUS**

Bob Ross introduced BUG190. This is an error message cleanup for multi-lingual [External Model]s where several extra and/or misleading error messages are issued. One message indicating one issue triggered two messages that were incorrect. Bob proposed the parser developer address the fixes as best as possible. Ambrish Varma suggested to Bob that the error related to an unused port should be changed to a warning.

Mike LaBonte proposed Moderate severity, Low priority and Open status. Radek suggested only the first error be issued instead of checking for multiple other errors. Bob responded that this would be a major change to how the parser operates. Mike noted that one of the messages is a false positive, so that was why the Quality task group recommended the Moderate severity classification. Bob expressed concerns about including a bug fix in the 7.0 parser if there is a possibility of the fix holding up a parser release. The parser version for this bug fix should be TBD. We may want to do a 6.1.5 release to fix this bug and other bugs that are in the works.

**NEW TECHNICAL ISSUES**

Walter Katz shared a story related to unconnected terminals in package modeling. He asked Scott McMorrow about measuring S-parameters on a package. Scott said that measuring between two points with a 2 port VNA, all other ports are left open. So, they are effectively terminated with a large resistance. This is not what you see in simulations. Walter asked Yuriy Shlepnev and Eric Bogatin the same question. They both said you must absolutely terminate every unused terminal to ground through a 50 ohm resistor for measurements. Scott commented that you don’t have an ability in measurements to terminate everything properly. Walter joked that “The only thing two SI experts can agree to is that the third expert is wrong”. The three experts used different terminology for the same thing.

Walter noted you can correlate an S-parameter to measurements by simulating with unconnected ports, but you should terminate unconnected ports in normal simulation to remove their effects as in a real system.

Arpad Muranyi asked if Mike LaBonte planned to discuss the IBIS 7.0 BIRD list topic. Mike responded that he had decided to defer the discussion.

**NEXT MEETING**

The next IBIS Open Forum teleconference meeting will be held August 25, 2017. A vote on BIRD189.5 is scheduled, provided that it is uploaded two weeks prior to the meeting. The following IBIS Open Forum teleconference meeting is tentatively scheduled on September 15, 2017.

Michael Mirmak moved to adjourn. Arpad Muranyi seconded the motion. The meeting adjourned.

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**NOTES**

IBIS CHAIR: Mike LaBonte

mlabonte@sisoft.com

 IBIS-AMI Modeling Specialist, Signal Integrity Software

 6 Clock Tower Place, Suite 250

 Maynard, MA 01754

VICE CHAIR: Lance Wang (978) 633-3388

lwang@iometh.com

President/CEO, IO Methodology, Inc.

PO Box 2099

Acton, MA 01720

SECRETARY: Randy Wolff (208) 363-1764

rrwolff@micron.com

Principal Engineer, Silicon SI Group Lead, Micron Technology, Inc.

8000 S. Federal Way

P.O. Box 6, Mail Stop: 01-711

Boise, ID 83707-0006

TREASURER: Bob Ross (503) 246-8048

bob@teraspeedlabs.com

Engineer, Teraspeed Labs

10238 SW Lancaster Road

Portland, OR 97219

LIBRARIAN: Anders Ekholm (46) 10 714 27 58, Fax: (46) 8 757 23 40

ibis-librarian@ibis.org

Digital Modules Design, PDU Base Stations, Ericsson AB

BU Network

Färögatan 6

164 80 Stockholm, Sweden

WEBMASTER: Mike LaBonte

mlabonte@sisoft.com

 IBIS-AMI Modeling Specialist, Signal Integrity Software

 6 Clock Tower Place, Suite 250

 Maynard, MA 01754

POSTMASTER: Curtis Clark

curtis.clark@ansys.com

 ANSYS, Inc.

 150 Baker Ave Ext

 Concord, MA 01742

This meeting was conducted in accordance with ANSI guidance.

All inquiries may be sent to info@ibis.org. Examples of inquiries are:

* To obtain general information about IBIS.
* To ask specific questions for individual response.
* To subscribe to the official ibis@freelists.org and/or ibis-users@freelists.org email lists (formerly ibis@eda.org and ibis-users@eda.org).
* To subscribe to one of the task group email lists: ibis-macro@freelists.org, ibis-interconn@freelists.org, or ibis-quality@freelists.org.
* To inquire about joining the IBIS Open Forum as a voting Member.
* To purchase a license for the IBIS parser source code.
* To report bugs or request enhancements to the free software tools: ibischk6, tschk2, icmchk1, s2ibis, s2ibis2 and s2iplt.

The BUG Report Form for ibischk resides along with reported BUGs at:

<http://www.ibis.org/bugs/ibischk/>
[http://www.ibis.org/ bugs/ibischk/bugform.txt](http://www.ibis.org/%20bugs/ibischk/bugform.txt)

The BUG Report Form for tschk2 resides along with reported BUGs at:

<http://www.ibis.org/bugs/tschk/>
<http://www.ibis.org/bugs/tschk/bugform.txt>

The BUG Report Form for icmchk resides along with reported BUGs at:

<http://www.ibis.org/bugs/icmchk/>
<http://www.ibis.org/bugs/icmchk/icm_bugform.txt>

To report s2ibis, s2ibis2 and s2iplt bugs, use the Bug Report Forms which reside at:

<http://www.ibis.org/bugs/s2ibis/bugs2i.txt>
<http://www.ibis.org/bugs/s2ibis2/bugs2i2.txt>
<http://www.ibis.org/bugs/s2iplt/bugsplt.txt>

Information on IBIS technical contents, IBIS participants and actual IBIS models are available on the IBIS Home page:

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

Check the IBIS file directory on ibis.org for more information on previous discussions and results:

<http://www.ibis.org/directory.html>

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**SAE STANDARDS BALLOT VOTING STATUS**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Organization** | **Interest Category** | **Standards Ballot Voting Status** | **June 2, 2017** | **June 23, 2017** | **July 14, 2017** | **August 4, 2017** |
| ANSYS | User | Active | X | X | X | X |
| Applied Simulation Technology | User | Inactive | - | - | - | - |
| Broadcom Ltd. | Producer | Inactive | - | X | - | X |
| Cadence Design Systems | User | Active | X | X | X | X |
| Cisco Systems | User | Inactive | - | - | - | - |
| CST | User | Inactive | - | - | - | - |
| Ericsson | Producer | Inactive | - | - | - | - |
| GLOBALFOUNDRIES | Producer | Active | X | X | X | X |
| Huawei Technologies | Producer | Inactive | - | - | - | - |
| IBM | Producer | Inactive | X | - | - | - |
| Infineon Technologies AG | Producer | Inactive | - | X | - | - |
| Intel Corp. | Producer | Active | X | X | X | X |
| IO Methodology | User | Active | X | X | - | X |
| Keysight Technologies | User | Active | X | X | X | X |
| Maxim Integrated | Producer | Inactive | - | - | - | - |
| Mentor, A Siemens Business | User | Active | X | X | X | X |
| Micron Technology | Producer | Active | X | X | X | X |
| NXP | Producer | Inactive | - | - | - | - |
| Qualcomm | Producer | Inactive | - | - | - | - |
| Raytheon | User | Inactive | - | - | - | - |
| Signal Integrity Software  | User | Active | X | X | X | X |
| Synopsys | User | Active | X | X | X | X |
| Teraspeed Labs | General Interest | Active | X | X | X | X |
| Xilinx | Producer | Inactive | - | - | - | - |
| Zuken | User | Inactive | - | - | - | - |

Criteria for SAE 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 standards 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.