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 (formerly Mentor Graphics)	Arpad Muranyi*, Nitin Bhagwath, Praveen Anmula 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.

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.
2. 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.
3. Mike LaBonte to update the Upcoming Events page with the new JEITA contact information [AR].
    Mike reported that as done.
4. 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

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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

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.