IBIS Open Forum Minutes

Meeting Date: **September 15, 2017**
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2017 PARTICIPANTS

ANSYS	Curtis Clark, Toru Watanabe
Applied Simulation Technology	(Fred Balistreri)
Broadcom	[Bob Miller], (Cathy Liu)
Cadence Design Systems	Brad Brim, Sivaram Chillarige, Debabrata Das Ambrish Varma, Kumar Keshavan, Ken Willis Brad Griffin
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, Jeff Shiba, Harry Shin
NXP	(John Burnett)
Qualcomm	Tim Michalka, Kevin Roselle
Raytheon	Joseph Aday
SiSoft	Mike LaBonte*, Walter Katz*, Todd Westerhoff Steve Silva
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, Lawrence Der
John Baprawski, Inc.	John Baprawski
KEI Systems	Shinichi Maeda
Lattice Semiconductor	Maryam Shahbazi, Dinh Tran
Leading Edge	Pietro Vergine
Lexington Consulting	Mike Barg
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
October 6, 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

Mike LaBonte declared that a quorum was not yet reached with only six members, but the meeting could begin. A quorum was later reached before any votes took place.

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 August 25, 2017 IBIS Open Forum teleconference. Walter Katz moved to approve the minutes. Radek Biernacki seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

1. Mike LaBonte to update Broadcom roster entry [AR].
    Mike reported that as done.
2. Michael Mirmak to check if IEEE DASC policies and procedures can be distributed [AR].
    Michael reported he had not completed the AR.
3. Mike LaBonte to remove BIRD192 from webpage [AR].
    Mike reported this as done. BIRD192 is in the archive section and BIRD192.1 is displayed.

ANNOUNCEMENTS, **CALL FOR ADDITIONAL AGENDA ITEMS**

None.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we are still at 25 members. Our account balance is at $25,144 for 2017. Actual cash flow of $23,394 has been collected in 2017. We still expect additional money from sponsors, and we will start draining down the account with expenses for some bills.

WEBSITE ADMINISTRATION

Mike LaBonte reported BIRD192 was moved into the archive section. There is now a webpage for EDI CON as a past Summit including all the presentations. There is now a bullet item explaining EDI CON as well. The Broadcom entry was also changed on the roster.

MAILING LIST ADMINISTRATION

Mike LaBonte reported that he has not seen anything unusual, just normal subscriptions and drops.

LIBRARY UPDATE
No update.

INTERNATIONAL/EXTERNAL ACTIVITIES
- Conferences
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:

- Press Update
None.

- Related standards
None.

SUMMIT PLANNING AND STATUS
- EDI CON Review
EDI CON was held in Boston, MA on September 11-13, 2017. The IBIS Summit was 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 there were three IBIS officers and a total of 13 attendees. Two presentations were adapted from presentations given earlier in the morning at the conference, but there were many more questions during the IBIS Summit. There were at least four attendees who do not regularly attend IBIS meetings. EDI CON is a small conference as compared to DesignCon, with all sessions taking place in four rooms in one hallway. The IBIS meeting was in a separate hallway.

Walter Katz noted that we should seriously consider the value of hosting Summits at any future events. Bob Ross asked if there was any requirement for an IBIS Summit attendee to be registered with EDI CON. Mike noted this was the case for the lunch count, although there was nothing blocking someone from attending the Summit without registering and having an EDI CON badge. Bob also asked if Janine had expressed any concerns with the number of attendees. Mike had not had a conversation with Janine about this. Bob also noted we'd have a larger number of attendees if the conference was in San Jose. Mike noted that EDI CON was attempting this year to add Signal Integrity content, but there were few attendees there for SI.

Mike noted that EDI CON did provide a lot of sponsorship including the lunch and room costs. The lunch was longer than it needed to be. Mike also thanked Signal Integrity Software and Teraspeed Labs for their sponsorship. Mike took an AR to move EDI CON to the bottom of the Summit page [AR].

- 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 that the third announcement has gone out, and more 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. Bob Ross noted that the first announcement just went out. Mike noted that presentations are needed. A Chinese language invitation is linked on the webpage. Huawei is the primary sponsor, and Cadence, IO Methodology, Mentor, MostecEDA (SPISim), Synopsys, and Teledyne-LeCroy 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. IO Methodology, Peace Giant Technology (SPISim), and Synopsys are sponsors.

- 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 an announcement will go out in the next day or two. In the morning, there is a JEITA class with the focus of power delivery networks. Mike asked if the morning JEITA class was IBIS-centric. Bob noted that the class does discuss power aware IBIS. 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. It was pointed out recently that the user guide for ibischk does not say what the return status of the program represents. The group is working on adding descriptions of this to the document.

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. Currently they were discussing a BIRD158 draft, hopefully with a final version to be submitted soon to the Open Forum.

Task group material can be found at:

INTERCONNECT TASK GROUP

Michael Mirmak reported that the group is meeting at 8:00 a.m. PT on Wednesdays. Some of the major focus has been on termination treatments for unused ports and referencing. Mike LaBonte added that the group is working on a draft of BIRD189.5. A draft 7 of that BIRD is posted on the Interconnect webpage. Bob Ross noted that an addition was the [Interconnect Model Set Group] keyword. Touchstone references were discussed as being defined or reverting to use of a Node 0. Both options can be brought in now. With respect to required connections for IBIS-ISS files, all nodes of the SPICE subcircuit must be documented as terminal lines in the interconnect specification, whereas with Touchstone files, some connections can be undefined. Verbiage is being discussed for handling of unused port connections. Mike noted that the group is trying to meet on both Wednesdays and Fridays to accelerate progress.

Task group material can be found at:

EDITORIAL TASK GROUP

Michael Mirmak reported that meetings are suspended, and the group normally meets on Fridays. When a full IBIS document is available for review, the group will resume meetings.

Task group material can be found at:

NEW ADMINISTRATIVE ISSUES

- Second revision of IBIS Policies and Procedures

Mike LaBonte reported that the document is static and ready for a ratification vote whenever we want to schedule it. Michael Mirmak asked if there was anything delaying the vote. Mike noted that there will be additional work required by the board to seek enough approval votes by email. Bob Ross noted it was discussed last meeting that we could move forward with a vote, requiring 2/3 approval by members. We could have a 3 week voting period. Failure to get approval means rejection of the new document.

Bob moved to schedule a vote to be completed at the next IBIS Open Forum meeting. Walter Katz seconded the motion. Michael noted that the first week of October is usually a holiday in PRC, so we'd need to move quickly to get responses in the next two weeks. Mike noted we could extend the vote to two meetings. Bob was not in favor of this. Bob noted that we need 17 yes votes. Radek Biernacki commented that the vote invitation should be fairly specific to point out important changes in the new document. Mike will work with the board to draft the vote invitation and include Radek.

The Policy and Procedures document can be found at:

BIRD191.2: ADDING BUFFER LOCATION TO SI_LOCATION AND TIMING_LOCATION

Bob Ross noted the BIRD clarifies, in anticipation of BIRD189, that existing buffer locations for Si_location and Timing_location will treat the "Die" entry as meaning the same location as the buffer.

Walter Katz moved to vote to accept BIRD191.2. Radek Biernacki asked if we need to decide to vote conditionally, since the BIRD references a keyword which is part of a BIRD that is not yet accepted. Walter noted that this vote is to add the BIRD to the next release of IBIS, but there will be another vote on the next version of IBIS and the BIRDs it contains. So, if the Interconnect BIRD is not accepted, there will be another opportunity to ask for a revision to this BIRD. Michael Mirmak seconded the motion. There were no objections.

The roll call vote tally was:
Intel – yes
IO Methodology – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes (by email)
Teraspeed Labs – yes

The roll call vote concluded with a vote tally of Yes – 8, No – 0, Abstain – 0. The motion passed.

BIRD192.1: CLARIFICATION OF LIST DEFAULT RULES

Michael Mirmak noted he has not received any private feedback on the BIRD. Public feedback has been positive. This BIRD clarifies what the default of List is in AMI files, and that duplicates are allowed in the list.

Walter moved to vote to approve BIRD192.1. Radek Biernacki seconded the motion. There were no objections.

The roll call vote tally was:
Intel – yes
IO Methodology – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes (by email)
Teraspeed Labs – yes

The roll call vote concluded with a vote tally of Yes – 8, No – 0, Abstain – 0. The motion passed.

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.

BIRD158.5: AMI TS4FILE ANALOG BUFFER MODELS
Discussion was tabled.

BIRD161.1: SUPPORTING INCOMPLETE AND BUFFER-ONLY [COMPONENT] DESCRIPTIONS
Michael Mirmak moved to un-table the BIRD. Walter Katz seconded the motion. There were no objections.

Michael noted that the BIRD was intended to treat many of the concepts found in BIRD191. So, large portions of the BIRD are obsolete or covered with other BIRDs. He thought the BIRD needs to be rewritten completely. Walter asked if he could move to vote on the BIRD during the meeting. Mike LaBonte noted he prefers to schedule the BIRD vote to allow email votes. Bob Ross noted there is no problem with leaving BIRDs on the table. The replacement BIRD could be in place before we reject this BIRD. If Michael submits a new BIRD, that forces the issue.

Walter moved to schedule a vote on the BIRD. Michael seconded the motion. Bob requested the vote be scheduled for the following meeting so not to deflect attention from the Policies and Procedures vote. Walter requested a roll call vote, but withdrew his motion completely with the intention of making a motion to schedule a vote during the next meeting.

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.

BIRD166.4: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW
Discussion was tabled.

BIRD181.1: I-V TABLE CLARIFICATIONS
Discussion was tabled.

BIRD189.4: INTERCONNECT MODELING USING IBIS-ISS AND TOUCHSTONE
Discussion was tabled.

BIRD190: CLARIFICATION FOR REDRIVER FLOW
Discussion was tabled.

IBISCHK6 PARSER AND BUG STATUS
Bob Ross noted BUG192 and BUG193, both submitted by Michael Mirmak, need to be classified.

Michael described BUG192. If you have a [Model] appearing under [Diff Pin] but also associated with non-differential pins, then the parser issues a Caution noting there are pins that are non-differential but associated with a [Model] determined to be differential. Walter Katz noted that for instance in DDR, DQS is differential but made out of two single ended signals. Maybe the correct message would state that "Model Input1 is used on both single-ended and differential signals". Radek noted that the situation is legal. There might only be a problem if a [Model] is truly differential. Radek thought the only Caution message that makes sense is the suggestion from Walter that a [Model] is used on both single-ended and differential signals. Walter suggested that the message be changed to say a Model is "referenced" by a [Diff Pin] instead of "set" by a [Diff Pin]. Mike added that the "Diff Pin" should be changed to "[Diff Pin]" as well. Radek suggested an additional change, and Walter suggested the wording be: "Pin 1 is not referenced in a [Diff Pin] record through the associated Model Input 1 is referenced in a [Diff Pin] record."

Bob moved to classify the bug with Annoying severity and Low priority. Walter seconded the motion. There were no objections.

Michael described BUG193. Using the Caution flag of ibischk, if a Model has [Ramp] but no I-V tables, a Caution message is issued noting a mismatch between the Ramp dV and the I-V dV of 0.000 V. The Caution message should be clarified with differing messages depending on whether or not [External Model] is present. Walter noted that if you had an Output or I/O type model, then you'd have a requirement to have some I-V tables. If you do not have [External Model], the parser generates an error if you do not have either Pullup or Pulldown I-V curves for Output type Models. Michael noted that there should be a message if [Ramp] contains rising and falling values but there is not a corresponding I-V table to check against. Bob added that certain model types will only contain one table, and this is all checked. Michael noted he did not cross check the parser messages for cases where [External Model] was not present. Bob noted there are other checks done first by ibischk. Bob said the message needs to be fixed or have

no message for the case where [External Model] is not present.

Walter moved to classify the bug with Annoying severity and Low priority. Michael seconded the motion. There were no objections.

Mike suggested there be a note added to the ibischk user guide about the intention of the BUG192 message meaning.

NEW TECHNICAL ISSUES
None.

NEXT MEETING
The next IBIS Open Forum teleconference meeting will be held October 6, 2017. The following IBIS Open Forum teleconference meeting is tentatively scheduled on October 27, 2017.

Michael Mirmak moved to adjourn. Walter Katz 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

Other trademarks, brands and names are the property of their respective owners.

SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	August 4, 2017	August 25, 2017	September 13, 2017	September 15, 2017
ANSYS	User	Active	X	X	X	-
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	X	-	-	-
Cadence Design Systems	User	Active	X	X	X	-
Cisco Systems	User	Inactive	-	-	-	-
CST	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
GLOBALFOUNDRIES	Producer	Inactive	X	-	-	-
Huawei Technologies	Producer	Inactive	-	-	-	-
IBM	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	-	X
IO Methodology	User	Active	X	X	X	X
Keysight Technologies	User	Active	X	X	-	X
Maxim Integrated	Producer	Inactive	-	-	-	-
Mentor, A Siemens Business	User	Active	X	X	-	X
Micron Technology	Producer	Active	X	X	X	X
NXP	Producer	Inactive	-	-	-	-
Qualcomm	Producer	Inactive	-	-	-	-
Raytheon	User	Inactive	-	-	-	-
SiSoft	User	Active	X	X	X	X
Synopsys	User	Active	X	X	-	X
Teraspeed Labs	General Interest	Active	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.