IBIS Open Forum Minutes

Meeting Date: May 18, 2018
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2018 PARTICIPANTS

ANSYS	Curtis Clark*
Applied Simulation Technology	(Fred Balistreri)
Broadcom	(Yunong Gan)
Cadence Design Systems	Brad Brim*, Ken Willis, Ambrish Varma
Cisco Systems	Stephen Scearce, Cassie Yan, Baosh Xu
CST	Stefan Paret
Ericsson	Anders Ekholm, Zilwan Mahmod, Guohua Wang
GLOBALFOUNDRIES	Steve Parker*
Huawei Technologies	(Hang (Paul) Yan)
IBM	Greg Edlund, Luis Armenta*
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Hsinho Wu*, Michael Mirmak*, Nilesh Dattani Fernando Mendoza Hernandez, Varun Gupta Subas Bastola, Hansel Dsilva
IO Methodology	Lance Wang*
Keysight Technologies	Radek Biernacki*, Ming Yan, Heidi Barnes Pegah Alavi
Maxim Integrated	Joe Engert, Yan Liang
Mentor, A Siemens Business	Arpad Muranyi*, Weston Beal, Raj Raghuram Carlo Bleu, Mikael Stahlberg, Yasushi Kondou Vladimir Dmitriev-Zdorov
Micron Technology	Randy Wolff*, Justin Butterfield
NXP	(John Burnett)
Qualcomm	Kevin Roselle, Tim Michalka
Raytheon	Joseph Aday
SiSoft	Mike LaBonte*, Walter Katz*, Todd Westerhoff
Synopsys	Ted Mido*, Adrien Auge, Scott Wedge
Teraspeed Labs	Bob Ross*
Xilinx	Ravindra Gali
ZTE Corporation	(Shunlin Zhu)
Zuken	Michael Schaeder, Takayuki Shiratori

OTHER PARTICIPANTS IN 2018

Google	Zhiping Yang
Haskware	David Banas

John Baprawski, Inc.	John Baprawski
KEI Systems	Shinichi Maeda
Lattice Semiconductor	Dinh Tran, Maryam Shahbazi
OmniVision	Sirius Tsang
Ricoh	Kazuki Murata
RITA Electronics Ltd.	Kenichi Higashiura, Hiroyuki Motoki
SAE-ITC	(Jose Godoy)
Signal Metrics	Ron Olisar
Socionext	Megumi Ono
SPISim	Wei-hsing Huang
Stanford University	Tom Lee
Toshiba	Yasuki Torigoshi, Yoshinori Fukuba

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
May 25, 2018	IBIS Summit at SPI – no teleconference	
June 8, 2018	624 227 121	IBISfriday11

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

http://tinyurl.com/y7yt7buz

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 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

Mike LaBonte called for comments on the minutes of the May 4, 2018 IBIS Open Forum teleconference. Michael Mirmak moved to approve the minutes. Radek Biernacki seconded the motion. There were no objections.

There were no ARs from the previous meeting to review.

ANNOUNCEMENTS, **CALL FOR ADDITIONAL AGENDA ITEMS**

Mike LaBonte noted he sent the meeting agenda late for this meeting.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we have 26 members. There have been 23 renewals for 2018 to date. There is $16,787 in the treasury. If renewal payment is not received by May 31, an organization loses their vote.

Mike LaBonte asked if any member declared they were not renewing for 2018. Bob noted that this happened with one organization, but a secondary contact in the company decided to renew membership.

WEBSITE ADMINISTRATION

Mike LaBonte reported that a known editorial issue in IBIS 6.1 was contributed by Arpad Muranyi, so the known issues document has been updated.

MAILING LIST ADMINISTRATION

Curtis Clark reported that there were a few new subscriptions this week.

LIBRARY UPDATE

None.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

SPI2018 – the 22nd IEEE Workshop on Signal and Power Integrity will be held in Brest, France on May 22-25, 2018. An IBIS Summit will be held after the event. The IBIS program is listed on the SPI schedule. More information is available at:

https://spi2018.sciencesconf.org/

- Press Update
None.

- Related standards

IEC 63055/IEEE 2401, JEITA "LPB"
Michael Mirmak reported that 2401 had the first meeting this last Wednesday. There was some guidance from IEEE on officer elections. The next meeting will be at DAC. In the last meeting, Michael reported to the group the rough plans on IBIS 7.0 development.

SUMMIT PLANNING AND STATUS
- European IBIS Summit at SPI 2018
SPI 2018 will be held in Brest, France on May 22 through May 25, 2018. An IBIS Summit will be held the afternoon of Friday, May 25, 2018. Bob Ross noted that the program is finalized. A final agenda will be sent out today. Mihai Telescu will provide a short walking tour after the meeting. Mike LaBonte thanked Bob for his work organizing the event. Mentor, a Siemens Business, SiSoft, Teraspeed Labs, and Zuken are sponsors.

- EPEPS/EDI CON Discussion
Bob wants to gauge if there is interest in holding a Summit at one of these events during the week of October 14-18. EPEPS has asked IBIS if we want to hold an event there. We also have made good arrangements at EDI CON in the past. Mike solicited comments from members to Bob if they are interested in attending a Summit at one of these events. Walter Katz noted that the cost of IBIS management expense should be considered.

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 has been on discussing some IBISCHK bugs. Some advanced preparation work on an IBIS 7.0 parser contract has been in progress. Details of BIRD189 will need to be added.

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. The group reviewed their list of topics to address and prioritized them. We are starting to work on new topics, including comments on BIRD194 from Michael Mirmak.

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. The group voted out BIRD189.6 for introduction at this meeting. The group may not meet next week.

Task group material can be found at:

EDITORIAL TASK GROUP

Mike LaBonte reported that this group remains suspended. Should there be any official document to review such as IBIS 7.0, the task group will resume meetings on Fridays when there is no Open Forum teleconference.

Task group material can be found at:

NEW ADMINISTRATIVE ISSUES

- IBIS Officer Elections

Mike LaBonte noted that Radek Biernacki agreed to be the Returning officer for the election.

Radek stated we are officially in the nomination period that started yesterday and is open until Thursday, May 31. After May 31, the voting period starts and runs for two weeks until June 15. All eligible members can vote, and he will send out an email describing the voting rules at the end of the nomination period. The voting results will be announced on June 18. The 3 member companies that have not renewed membership for 2018 will have until June 15 to finish their renewal if they want to vote in the election.

Bob Ross officially nominated all the existing officers for re-election, but he is still waiting for confirmation from Anders Ekholm about the Librarian position. Bob will send the nominations to Radek. Bob noted one must be an IBIS member to hold the Chair and Vice Chair positions. Mike noted that anyone can nominate themselves for a position.

BIRD189.6: INTERCONNECT MODELING USING IBIS-ISS AND TOUCHSTONE

Mike LaBonte reported that BIRD189.6 adds rail relaxation rules from Bob Ross. Bob noted this allows rail terminals at any one interface instead of requiring two interfaces in one Interconnect Model. One motivation was to support on-die decoupling capacitors that exist at only one interface. There is trust that the model provider will put in what makes sense for a model.

Mike noted there are no plans for further Interconnect task group meetings unless issues arise with the BIRD that need further discussion. So, there is no BIRD189.7 planned. Arpad Muranyi

commented we consider this BIRD completed in the Interconnect task group. Unless issues arise in this meeting, we consider the BIRD ready for a vote in the IBIS Open Forum.

Walter Katz moved to vote on the BIRD in the next meeting. Arpad seconded the motion. Radek Biernacki rejected this, stating that the BIRD is very complicated and should have more time for review by those who have not been involved in development of the BIRD. Radek suggested scheduling the vote for two meetings from this one. Walter modified his motion to schedule a vote for the meeting after the next one (June 29, 2018). Michael Mirmak seconded the motion. There were no objections. Arpad encouraged everyone to review the BIRD.

BIRD194: REVISED AMI TS4FILE ANALOG BUFFER MODELS
Arpad Muranyi moved to schedule the vote on this BIRD at the same time as BIRD189. There is a relationship between the two BIRDs relative to A_gnd. In case there is an issue found with BIRD189, he would like to wait until there is time to update this BIRD before voting on it. Radek Biernacki seconded the motion. There were no objections. A vote will be scheduled for BIRD194 on June 29, 2018.

Arpad Muranyi asked if some of the BIRDs that are tabled should be scheduled for votes (for rejection) during the same meeting as the vote on BIRD189, since some of them are related. Michael Mirmak noted it would make sense to approve BIRD189 first before voting on other related BIRDs.

Michael moved to un-table all BIRDs for discussion in the meeting. Walter Katz seconded the motion. There were no objections.

BIRD125.1: MAKE IBIS-ISS AVAILABLE FOR IBIS PACKAGE MODELING
Arpad Muranyi reported that this BIRD has existed for a long time, and development was directed towards BIRD189. If BIRD189 is approved, then it is recommended to reject this BIRD.

BIRD145.3: CASCADING IBIS I/O BUFFERS WITH [EXTERNAL CIRCUIT]S USING THE [MODEL CALL] KEYWORD
Mike LaBonte noted this BIRD originated with some authors at Cadence. Arpad Muranyi stated the current IBIS specification does not allow [External Circuit]s to be in series with the [Model] keyword. This would allow on-die interconnects or package models without changing away from support of I-V curve based IBIS models. In light of BIRD189 allowing the same mechanisms, this BIRD would not be needed.

BIRD163: INSTANTIATING AND CONNECTING [EXTERNAL CIRCUIT] PACKAGE MODELS WITH [CIRCUIT CALL]
Arpad Muranyi noted that this BIRD, as well as BIRD125 and BIRD164, was an attempt to use [External Circuit] to support more detailed package modeling. Arpad suggested scheduling a vote for BIRD125.1, BIRD145.3, BIRD163, and BIRD164 for the meeting after the vote on BIRD189. He suggested these BIRDs should all be rejected.

BIRD164: ALLOWING PACKAGE MODELS TO BE DEFINED IN [EXTERNAL CIRCUIT]
See discussion on BIRD163.

BIRD166.4: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW
Walter Katz noted this BIRD, along with BIRD190 as an alternate approach, will come up for further discussion in the IBIS ATM task group.

BIRD181.1: I-V TABLE CLARIFICATIONS
Mike LaBonte commented this BIRD relates to the I-V tables. The BIRD began as a more complete filling out of the I-V table sections as well as some grammar cleanups. It became entangled with ground reference discussions before the BIRD was tabled. An example for ECL was added as well. Bob Ross noted a new syntax was added for describing tables, using a SPICE syntax. If we do this editorial change, then it ripples throughout the specification, so it will require a significant amount of work to address the whole specification. This is not just editorial work. Michael Mirmak added this will be a huge undertaking for editorial work. Radek Biernacki commented this would be good work to address after IBIS 7.0. Bob added that other keywords such as [Voltage Range], [ISSO *] and others would be affected.

BIRD190: CLARIFICATION FOR REDRIVER FLOW
See discussion on BIRD166.4. Bob Ross noted a third idea for redriver flow has also been proposed.

Arpad Muranyi moved to table all seven BIRDs that were un-tabled. Michael Mirmak seconded the motion. There were no objections.

IBISCHK PARSER AND BUG STATUS
Bob Ross reported that he was planning to introduce a bug, but a fix was not agreed upon between the authors Bob, Mike LaBonte, and Lance Wang during the last Quality task group meeting. Mike LaBonte noted the bug relates to the Increment type allowing zero delta. The debate is whether IBISCHK should proclaim zero increment or delta an error. Radek Biernacki stated that the specification requires a positive increment, which does not include zero. Bob noted that Steps does not mention the positive requirement. There is disagreement if zero step size should be an error or a warning due to this. Mike added that if we can agree that positive does not include zero, this helps with some parser decisions. Radek stated that this is the mathematical definition of positive. Bob noted an editorial BIRD may be needed for some cleanup of pathological cases.

NEW TECHNICAL ISSUES
None.

NEXT MEETING

The IBIS Summit at SPI will be held on May 25, 2018. No teleconference will be available. The next IBIS Open Forum teleconference meeting will be held on June 8, 2018. The following IBIS Open Forum teleconference meeting is tentatively scheduled on June 29, 2018. Votes on BIRD189.6 and BIRD194 are scheduled for this meeting.

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	March 23, 2018	April 13, 2018	May 4, 2018	May 18, 2018
ANSYS	User	Active	X	X	-	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
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
Huawei Technologies	Producer	Inactive	-	-	-	-
IBM	Producer	Inactive	-	-	-	X
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	X	X
IO Methodology	User	Active	X	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	-	-	-	-
SiSoft	User	Active	X	X	X	X
Synopsys	User	Active	X	-	X	X
Teraspeed Labs	General Interest	Active	X	X	X	X
Xilinx	Producer	Inactive	-	-	-	-
ZTE Corp.	User	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.