IBIS Open Forum Minutes

Meeting Date: April 5, 2019
Meeting Location: Teleconference

VOTING MEMBERS AND 2019 PARTICIPANTS

ANSYS	Curtis Clark*, Marko Marin, Miyo Kawata Toru Watanabe, Akira Ohta
Applied Simulation Technology	(Fred Balistreri)
Broadcom	(Yunong Gan)
Cadence Design Systems	Brad Brim, Ambrish Varma, Ken Willis Yingxin Sun
Cisco Systems	(Stephen Scearce)
Dassault Systemes (CST)	Stefan Paret
Ericsson	Anders Ekholm, Anders Vennergrund, Felix Mbairi Hui Zhou, Inmyung Song, Mattias Lundqvist Wenyan Xie, Zilwan Mahmod
GLOBALFOUNDRIES	Steve Parker
Huawei Technologies	Antonio Ciccomancini
Futurewei Technologies	Albert Baek
IBM	Michael Cohen*, Greg Edlund
Infineon Technologies AG	Anke Sauerbrey
Intel Corporation	Hsinho Wu*, Michael Mirmak*, Nhan Phan Kinger Cai, Eddie Frie, Wendem Beyene Yuanhong Zhao
IO Methodology	[Lance Wang]
Keysight Technologies	Radek Biernacki*, Hee-Soo Lee, Stephen Slater Jian Yang, Ming Yan, Pegah Alavi
Maxim Integrated	Joe Engert, Yan Liang, Charles Ganal
Mentor, A Siemens Business	Arpad Muranyi*, Raj Raghuram, Weston Beal Vladimir Dmitriev-Zdorov, Mikael Stahlberg Todd Westerhoff, Ed Bartlett, Nitin Bhagwath
Micron Technology	Randy Wolff*, Justin Butterfield*
NXP	(John Burnett)
Raytheon	Joseph Aday
SiSoft (MathWorks)	Mike LaBonte*, Graham Kus, Walter Katz*
SPISim	Wei-hsing Huang
Synopsys	Ted Mido, Adrien Auge, John Ellis, Sam Sim Scott Wedge
Teraspeed Labs	Bob Ross*
Xilinx	Ravindra Gali
ZTE Corporation	(Shunlin Zhu)

| Zuken | (Michael Schaeder) |
| Zuken USA | Lance Wang* |

OTHER PARTICIPANTS IN 2019

Apollo Giken Co.	Satoshi Endo
Google	Zhiping Yang, Songping Wu
Hitachi	Norio Chujo
John Baprawski, Inc.	John Baprawski
KEI Systems	Shinichi Maeda
Marvell	Johann Nittmann
OmniVision	Sirius Tsang
Qualcomm	Kevin Roselle
Renesas	Genichi Tanaka
Ricoh Co.	Kazuki Murata
SAE ITC	(Jose Godoy)
Seagate	Alex Tain
Signal Metrics	Ron Olisar
Silvaco Japan Co.	Yoshiharu Furui
Socionext	Megumi Ono, Motoaki Matsumura, Yuji Nakagawa
Toshiba	Imi Hitoshi
Toshiba Electronic Devices & Storage Corp.	Atsushi Tomishima

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 |
| April 26, 2019 | 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
Randy Wolff declared that a quorum was reached.

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 March 15, 2019 IBIS Open Forum teleconference. Radek Biernacki moved to approve the minutes. Curtis Clark seconded the motion. There were no objections.

Mike reviewed ARs from the previous meeting.

1. Michael Mirmak to produce IBIS 7.0 document with agreed and voted updates [AR].
   Michael reported this as done.
2. Mike to send email solicitation for BIRD197.2 vote [AR].
   Mike reported this as done.
3. Mike to send email solicitation for IBISCHK7 parser development vote [AR].
   Mike reported this as done.
4. Mike to check IBISCHK7 parser development contract for IBIS-ISS file presence checking clause [AR].
   Mike reported this as done.
5. Mike to put full IBIS-ISS checking on IBIS Quality task group agenda [AR].
   Mike reported this as done.

ANNOUNCEMENTS, **CALL FOR ADDITIONAL AGENDA ITEMS**
None.

MEMBERSHIP STATUS AND TREASURER'S REPORT
Bob Ross reported that we have 26 members. 18 members have paid for 2019. Several payments are due in the next few weeks. We have $7,371 cash flow for 2019 and a $10,121 adjusted balance for 2019. This considers payments made in 2018 for 2019 memberships or Summits. We do expect a payment to be made soon for the European IBIS Summit of about $1,650 (1,500 Euros).

WEBSITE ADMINISTRATION
Mike LaBonte reported no major changes on the IBIS website. He mentioned previously setting up some FTP accounts for file transfers, and the first test failed. This was a test to deliver a large file, and Micron was not able to get it to work. This may be an SFTP issue with "@" being used in the username. A command line tool might work.

MAILING LIST ADMINISTRATION
Curtis Clark reported nothing new to report. Everything is working smoothly.

LIBRARY UPDATE
No update.

INTERNATIONAL/EXTERNAL ACTIVITIES
- Conferences
SPI2019 – the 23rd IEEE Workshop on Signal and Power Integrity will be held in Chambéry, France on June 18-21, 2019. An IBIS Summit will be held after the event. More information is available at:

>   https://spi2019.sciencesconf.org/

- Press Update
Mike LaBonte showed a press release from SAE ITC on the IBIS 7.0 release which has been picked up on other websites. The press release of April 4, 2019 can be found in the SAE press room at:

>   https://www.sae.org/news/press-room

- Related standards
IEC 63055/IEEE 2401, JEITA "LPB"
Michael Mirmak reported that IEEE DASC met yesterday morning. The group is tracking P2401 progress, but also P1735, the encryption standard, which is going through some testing. P2401 will have a vote later this month to approve a draft 3 document. This is the afternoon of Monday, April 15, 2019. A draft 4 is assumed to go through the wider IEEE review process with eventual standardization in 2020. Michael let the committee know that IBIS 7.0 was approved, and they were happy to hear that. There are mentions of IBIS 7.0 in the P2401 standard. This revision addresses new technical capabilities including the addition of IBIS 7.0 support.

SUMMIT PLANNING AND STATUS
- IEEE SPI Summit
SPI will be held in Chambéry, France on June 18-21, 2019. An IBIS Summit is planned in the afternoon on June 21, 2019. Mike LaBonte noted that 1:00 pm may be the starting time. Sponsors are welcome. Bob Ross noted the first announcement is planned to go out April 19, 2019. Mike added that Michael Schaeder has agreed to conduct the meeting if no other officers attend. Bob noted that there are delays in planning financial matters due to the university bureaucracy.

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 is on IBISCHK. Some discussions have started about a potential parser for IBIS-ISS. This conversation has extended to other task groups. Bob Ross mentioned the issue is how far a parser would go, such as full parsing or minimal syntax parsing. Mike added that discussion of the details would be appropriate in this task group.

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 meets on Tuesdays at 12:00 p.m. PT. Last week the discussion was about a response letter to the authors of BIRD198.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Michael Mirmak reported that the group meets at 8:00 a.m. PT on Wednesdays. The group is discussing Walter Katz's proposal for EMD, an update to EBD. The update expands the technical capabilities of the format and is being considered as a BIRD. The other issue is related to Touchstone and Touchstone 2.0. They are working on a set of survey questions to go out to the industry reflectors to gauge interest in Touchstone and new features.

Michael mentioned new interconnect examples provided by Justin Butterfield and shared with the Interconnect task group. Randy Wolff described that the examples contain several package modeling formats including coupled IBIS-ISS subcircuits with and without on-die PDN models for a partial package, a coupled IBIS-ISS subcircuit for a complete package, and a Touchstone 2.0 model for a partial package. Since no parser is available, there may be syntax errors. Walter added that he downloaded the examples and parsed them with his parser. He found no syntactical errors. He is not doing much contextual checking. Walter is not parsing the IBIS-ISS files. He will rely on the simulators to do this for him. Walter added that Justin asked him to look at one of the G elements in the IBIS-ISS file. Walter noted it is not clear if a particular field is optional or not in the IBIS-ISS specification. Justin clarified for Bob that all the Interconnect Model syntax is included in the .ibs file.

Michael asked if we have a BIRD like process for IBIS-ISS. Mike LaBonte responded that we do have a IIRD process. Michael clarified that this is for ICM. Randy commented that we will need a process for changing IBIS-ISS. Walter noted we may need an errata section of IBIS mentioning upcoming changes. Michael mentioned we may want a known issues document for IBIS-ISS.

Arpad Muranyi asked if we should inquire with Synopsys if they'd want to donate parser code

for IBIS-ISS. Mike thought that this would be a very large project to cut down the code from a large parser. A project to develop a simple parser for IBIS-ISS syntax would not take long.

Task group material can be found at:

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

EDITORIAL TASK GROUP
Michael Mirmak reported the task group remains suspended.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES
None.

BIRD199: FIX RX_RECEIVER_SENSITIVITY INCONSISTENCIES
Arpad Muranyi introduced the BIRD. In Editorial task group meetings preparing IBIS 7.0, some examples were found to be inconsistent for Rx_Receiver_Sensitivity. One example was fixed in IBIS 7.0, but the description of the parameter needed further clarification. The changes are not technical in the sense of changing how the parameter works, just describing it more precisely. The BIRD was discussed in the ATM task group, and it has the support of the task group.

Mike LaBonte asked if Arpad could call out the exact changes. Arpad stated that in one example, IBIS 7.0 changed a negative number so there was not an incorrect example. In this BIRD, the text portion for the Description, Usage Rules, and Example text sections changed. Arpad noted he thought showing change markup from the original text would not make it easy to read. He could consider creating a version showing some highlighted text changes.

Michael asked if we verified if the parser is not accepting negative values. Mike thought it would be a good AR for the Quality task group to see if including a negative number would pass or fail the parser. This could turn into a bug report for IBIS 7.1. Bob Ross thought the EDA tool may also be smart enough to change negative values to take the absolute value. Michael noted we are making the specification more restrictive by changing the example in IBIS 7.0, so the parser may need to raise a flag if a negative value is found in an IBIS 7.0 compliant file.

Mike will discuss this BIRD in the Quality task group as it relates to the parser [AR].

BIRD197.2: NEW AMI RESERVED PARAMETER DC_OFFSET
Mike LaBonte noted there has been some discussion offline about postponing the planned vote. Walter Katz moved to suspend the vote so the ATM task group can discuss the BIRD further. Bob Ross seconded the motion. There were no objections.

Bob Ross moved to table the BIRD. Radek Biernacki seconded the motion. There were no objections.

BIRD198: KEYWORD ADDITIONS FOR ON DIE PDN (POWER DISTRIBUTION NETWORK) MODELING

Mike LaBonte reported there have been some discussions in the ATM task group regarding a response to the BIRD authors.

Bob Ross moved to continue discussions on the BIRD in the ATM task group. Michael Mirmak seconded the motion. There were no objections.

BIRD166.4: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW

Discussion was tabled.

BIRD181.1: I-V TABLE CLARIFICATIONS

Discussion was tabled.

BIRD190: CLARIFICATION FOR REDRIVER FLOW

Discussion was tabled.

IBISCHK PARSER AND BUG STATUS

Bob Ross moved to vote on development of the IBISCHK7 parser with expenses up to $8,000. Bob noted the delivery date is planned for June 21, 2019. Michael Mirmak seconded the motion. There were no objections.

The roll call vote tally was:

ANSYS – yes
IBM – yes
Intel – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
SPISim – yes (by email)
Synopsys – yes (by email)
Teraspeed Labs – yes
Zuken – yes

The roll call vote concluded with a vote tally of Yes – 11, No – 0, Abstain – 0. The vote passed.

Mike showed BUG203 from Lance Wang. Bob reported that there is loose checking related to C_comp* parameters. For example, you can use C_comp_pullup and C_comp_pulldown for an Input model. The bug report says that for dealing with Input models, there could be a Caution, Warning, or Note for this scenario. Walter Katz asked what C_comp_pullup should be attached to if the Pullup Reference is not defined. Radek Biernacki thought that changes to the specification need to be discussed, and the parser could be changed later if restrictions are made in the specification.

Lance added that he found this case in a model, and he thought it did not make sense that it be allowed. In talks in the Quality task group, it seemed that the specification is not clear about this situation. Lance thought the bug could be held until there is further discussion on the topic, identifying any actions.

Walter moved to discuss the issue in the ATM task group. Lance seconded the motion. There were no objections.

Bob also noted that the same issue exists for [C Comp Corner].

Mike asked about classifying the bug. Bob thought we could defer classification for now.

Bob noted we need to decide what the parser source code license will cost. Mike added that the price for the parser has been $2,500 for some time. If you pay for the source code, you usually get subsequent updates of the parser, such as getting the 6.1 parser if you paid for the 6.0 parser. Mike asked what the lifecycle cost of IBISCHK7 might be. Bob thought it could be about $20,000, including eventual additions such as EMD and C_comp improvements for IBIS 7.1. Mike asked about potential for an IBIS-ISS parser. Bob responded that this would be a separate parser development. Mike noted the code could get integrated in IBISCHK, which could be accessed through a parser option flag. Mike asked how many source code licensees are projected. Bob responded that he expects 8.

Radek asked if historically what was the original parser contract for version 6 or 5, how does that compare to the $8,000 cost just voted on. Bob noted that the costs were variable based on needs for content parsing. Mike noted that we try to keep the parser self-funding by selling licenses for the source code. Michael Cohen asked how long it has been set at $2,500 for the parser source code. Bob thought it has been this cost since IBISCHK4. Michael Cohen thought it could be considered to raise the cost to make sure development is funded properly. Bob added that the parser contract bid came in lower than expected, so that helped with anticipating break even with a license cost of $2,500.

Arpad noted that he did some parser checking during the meeting, and the existence of negative numbers in the Rx_Receiver_Sensitivity parameter are not flagged.

NEW TECHNICAL ISSUES
Walter Katz noted that he looked at the G-element syntax in IBIS-ISS, and the parameter field he was looking at is optional. So, it does not need to be discussed in the Interconnect task group.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held on April 26, 2019. The following teleconference meeting is tentatively scheduled for May 17, 2019.

Michael Cohen moved to adjourn. Bob Ross seconded the motion. The meeting adjourned.

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NOTES

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This meeting was conducted in accordance with SAE ITC guidelines.

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	February 1, 2019	February 22, 2019	March 15, 2019	April 5, 2019
ANSYS	User	Active	X	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Inactive	X	-	-	-
Cisco Systems	User	Inactive	-	-	-	-
Dassault Systemes	User	Inactive	X	-	-	-
Ericsson	Producer	Inactive	X	-	-	-
GLOBALFOUNDRIES	Producer	Inactive	X	X	-	-
Huawei Technologies	Producer	Inactive	X	-	-	-
IBM	Producer	Active	X	X	X	X
Infineon Technologies AG	Producer	Inactive	X	-	-	-
Intel Corp.	Producer	Active	X	X	X	X
IO Methodology	User	Inactive	-	-	-	-
Keysight Technologies	User	Active	X	X	X	X
Maxim Integrated	Producer	Inactive	X	-	-	-
Mentor, A Siemens Business	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
NXP	Producer	Inactive	-	-	X	-
Raytheon	User	Inactive	-	-	-	-
SiSoft	User	Active	X	X	X	X
SPISim	User	Inactive	X	X	-	-
Synopsys	User	Active	X	-	X	-
Teraspeed Labs	General Interest	Active	X	X	X	X
Xilinx	Producer	Inactive	X	-	-	-
ZTE Corp.	User	Inactive	-	-	-	-
Zuken	User	Active	X	X	X	X

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.