IBIS Open Forum Minutes

Meeting Date: May 15, 2020
Meeting Location: Teleconference

VOTING MEMBERS AND 2020 PARTICIPANTS

ANSYS	Curtis Clark*, Wei-hsing Huang, Marko Marin
	Shai Sayfan-Altman, Zilwan Mahmod
Applied Simulation Technology	(Fred Balistreri)
Broadcom	James Church, Jim Antonellis*
Cadence Design Systems	Zhen Mu*, Ambrish Varma, Jared James
	Kumar Keshavan, Ken Willis
Cisco Systems	Stephen Scearce, Hong Wu
Dassault Systemes (CST)	Stefan Paret
Ericsson	Anders Ekholm, Sungjoo Yu, Thomas Ahlstrom
Google	Zhiping Yang*, Shuai Jin, Zhenxue Xu
Huawei Technologies	(Hang (Paul) Yan)
IBM	Michael Cohen*
Infineon Technologies AG	(Christian Sporrer)
Instituto de Telecomunicações	(Abdelgader Abdalla)
Intel Corporation	Hsinho Wu*, Michael Mirmak, Adrien Auge
	Fernando Mendoza*, Taeyoung Kim, Wendem Beyene
	Oleg Mikulchenko, Nhan Phan, Ifiok Umoh
	Subas Bastola
Keysight Technologies	Radek Biernacki*, Hee-Soo Lee, Todd Bermensolo
	Graham Riley, Pegah Alavi, Fangyi Rao
	Stephen Slater
Marvell	Steve Parker*, Johann Nittmann
Maxim Integrated	Joe Engert, Charles Ganal, Dzung Tran, Yan Liang
Mentor, A Siemens Business	Arpad Muranyi*, Raj Raghuram, Todd Westerhoff
	Weston Beal
Micron Technology	Randy Wolff*, Justin Butterfield
NXP	John Burnett
SerDesDesign.com	John Baprawski
SiSoft (MathWorks)	Mike LaBonte*, Walter Katz*, Graham Kus
Synopsys	Ted Mido*, Andy Tai
Teraspeed Labs	Bob Ross*
Xilinx	Ravindra Gali
ZTE Corporation	(Shunlin Zhu)
Zuken	Michael Schäder, Kazunari Koga
Zuken USA	Lance Wang

OTHER PARTICIPANTS IN 2020

Accton	Tariq Abou-Jeyab
Achronix Semiconductor	Hansel Dsilva
Apollo Giken Co.	Satoshi Endo
Kandou Bus	Sherman Chen
KEI Systems	Shinichi Maeda
Kioxia Corporation	Yasuo Otsuka
OmniVision	Sirius Tsang
Qualcomm	Kevin Roselle, Sunil Gupta
Renesas	Genichi Tanaka
RITA Electronics	Takahide Nozaki
SAE ITC	Jose Godoy
Samsung	Wonsuk Choi
San Jose State University	Vincent Tam
Seagate	Preetesh Rathod, Alex Tain, Karthik Chandrasekar Emmanuel Atta
Signal Metrics	Ron Olisar
Silvaco Japan Co.	Yoshiharu Furui
SK Hynix Memory Solutions	Jongchul Shin, Alex Lee, James Yu
Socionext	Matsumura Motoaki, Shinichiro Ikeda Takafumi Shimada
SPISim	[Wei-hsing Huang]
Teradyne	Dongmei Han, Edward Pulscher, Sheri Zhuang Tomoo Tashiro, Paul Carlin, Tao Wang

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
June 05, 2020	627 261 744	Friday1

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

https://tinyurl.com/IBISfriday-new

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
Curtis Clark declared that a quorum was reached.

Jim Antonellis of Broadcom introduced himself. He has worked on LPDDR4 products in the past and is currently interested in LPDDR5. Recent BIRDs related to equalization and clock forwarding had piqued his interest in IBIS.

CALL FOR PATENTS
Randy Wolff called for declaration of any patents or pending patents related to the IBIS, IBIS-ISS, ICM, or Touchstone 2.0 specifications. No patents were declared.

REVIEW OF MINUTES AND ARS
Randy Wolff called for comments on the minutes of the April 24, 2020 IBIS Open Forum teleconference. Radek Biernacki moved to approve the minutes. Zhiping Yang seconded the motion. There were no objections

Randy reviewed ARs from the previous meeting.

1. Randy Wolff to discuss university membership options with the board [AR].
    Randy noted that he had informally started this discussion. He said we have to discuss whether we want to do it with a different cost structure, and he said to leave this AR open [AR].

2. Zhiping Yang to email Bob Ross and Randy with the details of both IEEE EMC conferences, so IBIS can begin to consider whether to hold summits [AR].
    Zhiping noted that he had internal discussions within IEEE EMC, and they supported the idea of IBIS involvement in Raleigh, NC and Glasgow, Scotland next year. They would plan to provide a free room and coffee break similar to what we have at DesignCon.
    Randy said this AR was closed.

3. Randy to send out his edited version of BIRD204 to the ATM task group email [AR].
    Randy reported that this had been done.

4. Steve Parker to update the status of BIRD203 on the website [AR].
    Steve reported that this had been done.

5. Randy to send his draft version of BIRD198.2 to a small working group for review and later introduction to the ATM task group [AR].
    Randy reported that this had been done.

6. Bob Ross to update the status of BUG210 on the webpage [AR].
    Bob reported that this had been done.

7. Steve Parker to add a link to the IBIS 7.0 specification page in the unofficial files related to IBIS 7.0 section for the updated interconnect modeling examples [AR].

Steve reported that this had been done.

ANNOUNCEMENTS, **CALL FOR ADDITIONAL AGENDA ITEMS**

Randy Wolff noted that BIRD205 had been submitted earlier in the week. BIRD205 is introduced and discussed in the Technical Discussion section of these minutes.

MEMBERSHIP STATUS AND TREASURER'S REPORT

We now have 26 members, and Bob Ross noted that he was still working with a potential new member for a half-year membership. Thus far, 22 organizations have paid for 2020 membership (21 renewals, and one new member), and Bob expected the remaining four to come in soon. Existing members will carry over through May of 2020, and their membership will end then unless they renew for 2020. Bob said he thought the 4 companies that hadn't yet completed their renewals were aware of the deadline. We have $18,778 cash flow for 2020 and an $19,128 adjusted balance for 2020. Bob said one company has moved forward with purchase orders for ibischk7 and tschk2.

WEBSITE ADMINISTRATION

Steve Parker reported that the website was up to date with respect to ATM, Interconnect, and Quality task group minutes and documents. BIRD203 had been updated, BIRD205 had been posted, and the link to the IBIS 7.0 interconnect model syntax examples had been added. Steve said the new Jenkins based automation scripts were working well. He said he had not yet completed a script for Interconnect task group work files.

MAILING LIST ADMINISTRATION

Mike LaBonte reported that mailing lists were generally operating smoothly. He noted that there had been multiple attempts by a spammer to inject emails into the ibis-macro list. One had gotten through, and he and the freelists administrator were attempting to figure out how that had happened. Only subscribers can post directly to lists, and normally a moderator would have to approve any posts from non-members. None of the IBIS moderators claimed to have approved the spam post, but the freelists administrator said it appeared one had. However, the administrator could not recover the IP information of the alleged approval, and he was still looking into it. Mike noted that he had changed the IBIS list configurations so that this moderator approval was now impossible since the approval cookie would time out very quickly. Mike mentioned that freelists is currently blacklisted on SORBS, but he hasn't seen any email rejections related to this.

LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

2020 IEEE International Symposium on EMC + SIPI (July 27-31, Reno, NV)

- Press Update
None.

- Related standards
IEC 63055/IEEE 2401, JEITA "LPB"
No update.

JEDEC JESD204C.1
Randy Wolff noted that SAE ITC legal had responded to JEDEC's inquiry about the SAE ITC copyright agreement.   However, Randy had recently learned that the person driving JESD204C.1 had left their company. So, we now expect delays in them getting back to the process of including some IBIS text in their specification.

IEEE EMC Society
Randy said that IBIS and the IEEE EMC Society have been looking into agreements on how we can better collaborate on standards work, including the possibility of adding new PI modeling support to IBIS. He said that he, Bob Ross and Zhiping Yang will have a discussion in the coming weeks about some of Zhiping's PI modeling ideas. They may have a presentation on that topic at the next Open Forum meeting.

Zhiping added that there had been a call for proposals from IEEE. The EMC society chair and Zhiping had drafted a proposal for a two day event, likely a virtual conference, to get people together to discuss PI related topics and how the industry could develop new PI standards. Zhiping said he would ensure IBIS is invited if the proposed conference is approved.

SUMMIT PLANNING AND STATUS
- IEEE EMC + SIPI Symposium (July 27-31, Reno, NV)
Bob Ross noted that a slot has been reserved for us on Friday, July 31st in the afternoon. It will be provided at no cost to us and includes the room, AV equipment, and light refreshments. However, at this point it appears likely that it will become a virtual conference. IBIS would likely host its meeting as a teleconference. Zhiping Yang said the organizers will probably decide at the end of May, but he expected it would become a virtual conference. Zhiping will inform us once he hears the official announcement. Randy Wolff said we can continue to plan for virtual presentations for this event.

Bob said a first announcement would typically go out around May 29th. We can plan on a more high-level introduction to IBIS informational format. We could consider a presentation on PI information in IBIS. Bob suggested Zhiping could give a PI presentation.   Bob noted that Zhiping had given an excellent PI talk during the EMC Society webinar on May 13th. Zhiping thanked Randy and IBIS for the email announcement in support of the EMC seminar. He noted that approximately 400 people attended.

- Asian IBIS Summits

Randy noted that the Board is looking ahead to the November summits in Asia. He said we are in communication with JEITA and discussing the possibility of web-based meetings, but it's still too early to know what final plans will be.

QUALITY TASK GROUP

Mike LaBonte reported that the group is meeting on Tuesdays at 8:00 a.m. PT. The group continues to focus on ibischk. Mike reported that the group had been working on two new BUGs. BUG212 and BUG213 are introduced and discussed in the Technical Discussion section of these minutes. The group is looking into a 7.0.2 release of the parser to address the current BUGs, with the exception of BUG202. Mike noted that one new topic of discussion was the idea of a license agreement for the freely distributed tools, which Michael Mirmak had first brought up last year. Mike said they will be discussing a simple proposal at the next meeting.

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. The group had recently been discussing Hansel Dsilva's proposal to add sampling point information to statistical mode AMI models, and the resulting proposal was being introduced today as BIRD205. The group now intends to discuss the recently submitted BIRD198.1. The group is also reviewing Radek Biernacki's comments on BIRD204 from the previous Open Forum meeting.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Randy Wolff reported that the group meets at 8:00 a.m. PT on Wednesdays. He noted that the focus is still on the EMD proposal (BIRD202). He said that they are about to review draft 10 of BIRD202.1. They are currently focusing on the [Voltage List] keyword.

Task group material can be found at:

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

EDITORIAL TASK GROUP

Randy Wolff reported the task group remains suspended.

Task group material can be found at:

CHINA REGIONAL FORUM

Randy Wolff said that he and Lance Wang had a discussion with Kevin Li, who leads the CRF. They are trying to bring in presentations to stimulate attendance at upcoming meetings.

China Regional Forum material can be found at:

NEW ADMINISTRATIVE ISSUES

- Annual Election of Officers

Radek Biernacki will send out the announcement today [AR]. Radek noted that the nomination period extends for two weeks, until May 29th. The voting period runs from June 1st through June 15th, and the results will be announced on June 16th.

Radek said the process begins when he sends out the announcement and call for nominations. Radek then collects any nomination emails and confirms receipt of the emails. Once the nominations are in, a separate email goes out between May 29th and June 1st with details on the nominees. Radek noted that self-nominations are allowed, but anyone nominating someone else should get confirmation that the nominee will accept. Radek also noted that the Chair and Vice Chair positions need to be filled by someone belonging to a member organization.

Randy Wolff thanked Radek for agreeing to serve as the returning officer.

BIRD205: NEW AMI RESERVED PARAMETER FOR SAMPLING POSITION IN AMI_INIT FLOW

Walter Katz and Arpad Muranyi reviewed the new BIRD. Arpad said that it was based on a presentation by Hansel Dsilva at the DesignCon IBIS Summit. Hansel had discovered that in the statistical flow there was nothing in AMI that allowed the model to return the sampling point and position the unit interval with respect to the impulse response returned by the AMI_Init function. Hansel had noted discrepancies between different tool makers. With this new proposal, a new AMI parameter allows the AMI_Init function to return the time of the UI sampling point with respect to the t=0 time of the impulse response it returns. Arpad said this proposal had been discussed in the ATM task group at length. Walter agreed and noted that the EDA tool vendors had agreed on the details of BIRD205, how the models should generate the value, and how the tools should use it. He asked others to review it now.

BIRD198.1: KEYWORD ADDITIONS FOR ON DIE PDN (POWER DISTRIBUTION NETWORK) MODELING

Randy Wolff reported that this is being discussed in ATM. Additional proposed changes will be sent to the authors, and the end result is expected to be BIRD198.2.

BIRD201: BACK-CHANNEL STATISTICAL OPTIMIZATION

Radek Biernacki reported that clarifications were still being discussed in ATM. Walter Katz said that Radek had pointed out that some things weren't explicitly stated, but that there was nothing contentious in terms of the intent of the BIRD. Walter noted that it is scheduled for another round of review in the next ATM meeting, and a BIRD201.1 should appear soon.

BIRD204: DQ DQS GETWAVE FLOW FOR CLOCK FORWARDING MODELING

Walter Katz said this was also largely agreed upon in content. Randy Wolff asked if a BIRD204.1 will be necessary. Bob Ross noted that at least one editorial issue remained, with the usage of "DLL" instead of "executable model" in the Usage Notes section. Randy agreed.

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.

BIRD202: ELECTRICAL DESCRIPTIONS OF MODULES

Discussion was tabled.

IBISCHK PARSER AND BUG STATUS

Bob Ross reported that the Quality task group had finished its work on two new BUGs and was ready to classify them.

BUG212 involves a coding error with bit-wise & used instead of the logical && in one location. Mike LaBonte noted that the line of code happens to work properly despite the mistake, so they were not able to attach a test file demonstrating a problem. This BUG is therefore just a code cleanup issue. Randy Wolff moved to classify the defect as annoying, low priority, to be fixed in next release. Curtis Clark seconded. There were no objections. Bob to update the status of BUG212 [AR].

BUG213 involves two issues with rules regarding Unused_port_termination in an [Interconnect Model] based on a Touchstone file. In an N port model, Unused_port_termination is illegal if the number of terminal lines is N+1. This error is not flagged in the first test case attached to the BUG. More critically, the parser throws an error in the second test case because only 3 terminal lines are defined for a 4 port Touchstone file based [Interconnect Model]. The error should not

be thrown because Unused_port_termination is specified in the [Interconnect Model] and should cover the unused ports.

Bob noted that the first issue is a subtle specification violation. If all the terminals are defined, then Unused_port_termination is illegal. Radek Biernacki said that having Unused_port_termination in this case is harmless. Randy Wolff agreed, but said we would need a BIRD if we want to remove this restriction from the specification. He said this would be a topic for the Interconnect task group.

Mike moved to classify BUG213 as severe, high priority, to be fixed in next release. Arpad Muranyi seconded. There were no objections. Bob to update the status of BUG213 [AR].

NEW TECHNICAL ISSUES
None.

NEXT MEETING
The next IBIS Open Forum teleconference meeting will be held on June 5, 2020. The following teleconference meeting is tentatively scheduled for June 26, 2020.

Mike LaBonte moved to adjourn. Curtis Clark 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](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 13, 2020	April 03, 2020	April 24, 2020	May 15, 2020
ANSYS	User	Active	X	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	X
Cadence Design Systems	User	Active	-	X	-	X
Cisco Systems	User	Inactive	-	-	-	-
Dassault Systemes	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
Google	User	Active	-	-	X	X
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Instituto de Telecomunicações	User	Inactive	-	-	-	-
IBM	Producer	Active	X	X	X	X
Intel Corp.	Producer	Active	X	X	X	X
Keysight Technologies	User	Active	X	X	X	X
Marvell (GLOBALFOUNDRIES)	Producer	Active	X	X	X	X
Maxim Integrated	Producer	Inactive	X	X	-	-
Mentor, A Siemens Business	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
NXP	Producer	Inactive	-	-	-	-
SerDesDesign.com	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	Active	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.