IBIS Open Forum Minutes

Meeting Date: **October 9, 2020**
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2020 PARTICIPANTS

ANSYS	Curtis Clark*, Wei-hsing Huang, Marko Marin Shai Sayfan-Altman, Zilwan Mahmod, Baolong Li Usman Saeed
Applied Simulation Technology	(Fred Balistreri)
Broadcom	James Church, Jim Antonellis
Cadence Design Systems	Zhen Mu, Ambrish Varma, Jared James Kumar Keshavan, Ken Willis, Suomin Cui
Cisco Systems	Stephen Scearce, Hong Wu, Han Gao
Dassault Systemes (CST)	Stefan Paret
Ericsson	Anders Ekholm, Sungjoo Yu, Thomas Ahlstrom
Google	Zhiping Yang*, Shuai Jin, Zhenxue Xu, Hanfeng Wang Songping Wu, Yimajian Yan
Huawei Technologies	(Hang (Paul) Yan)
IBM	[Michael Cohen], Greg Edlund
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, Kinger Cai
Keysight Technologies	Radek Biernacki*, Hee-Soo Lee, Todd Bermensolo Graham Riley, Pegah Alavi, Fangyi Rao Stephen Slater
Marvell	Steve Parker, Johann Nittmann, Shaowu Huang
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, Larry Smith Vijay Kanagachalam
MST EMC Lab	Chulsoon Hwang, Anfeng Huang, Bo Pu, Jiayi He Yin Sun
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*
Amazon Lab126	John Yan
Apollo Giken Co.	Satoshi Endo
Apple	Jin Shi, Jun Xu
Aurora Innovation	Jianming Li
ARRL (IEEE EMC)	Ed Hare
Christie Digital Systems	Mingchang Wang
Ciena	Kaisheng Hu
De Montfort University (IEEE EMC)	Alistair Duffy
Exponential Failure Analysis Associates (IEEE EMC)	Vignesh Rajamani
ETS-Lindgren	Janet O'Neil
Facebook	Xin Chang
Kandou Bus	Sherman Chen
KEI Systems	Shinichi Maeda
Kioxia Corporation	Yasuo Otsuka
Lemonade Social Media	Rachel Norrod
OmniVision	Sirius Tsang
Qualcomm	Kevin Roselle, Sunil Gupta, Yi Cao
Renesas	Genichi Tanaka
RITA Electronics	Takahide Nozaki
Rockwell Automation	Meilin Wu
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
University of Florida	Shuo Wang
Unaffiliated	Colin Brench

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 connection information for future IBIS teleconferences is as follows:

https://tinyurl.com/IBISOFfridayTeams

Join Microsoft Teams Meeting
Conference ID: 803 509 041#
Local numbers | Learn more about Teams | Meeting options
Join with a video conferencing device
106010980@teams.bjn.vc VTC Conference ID: 1143484747
Alternate VTC dialing instructions

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.

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 September 18, 2020 IBIS Open Forum teleconference. Mike LaBonte moved to approve the minutes. Lance Wang seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

1. Randy Wolff to send thank you notes to IBIS Summit at IEEE EMC + SIPI presenters [AR].
   Randy reported that this had been done.

2. Randy Wolff to update BIRD206 accepted date and send to Steve Parker for posting [AR].
   Randy reported that this had been done.

3. Steve Parker to update status of BIRD206 on the IBIS BIRDs page [AR].
   Randy reported that this was in progress.

4. Randy Wolff to send an email to the Open Forum announcing the BIRD207 vote [AR].
   Randy reported that this had been done.

ANNOUNCEMENTS, **CALL FOR ADDITIONAL AGENDA ITEMS**

Randy Wolff noted we have had a change to the IBIS board. There is a new librarian, Zhiping Yang. This is discussed further in the New Administrative Issues section.

Randy Wolff noted that a new BIRD, BIRD208, had been submitted and would be discussed.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we have 27 members. The quorum for meetings is 7. We have $28,785 cash flow for 2020 and a $29,135 adjusted balance for 2020. These figures are unchanged from the previous meeting. Bob noted that the only expected upcoming payment is for $350 to reimburse Mike LaBonte for the bluehost webhosting payment.

WEBSITE ADMINISTRATION

Randy Wolff gave the update and noted that the ibis.org bluehost domain account had been transferred from Mike LaBonte to Steve Parker . The website was up to date with respect to ATM and Quality task group minutes and documents. Steve is still troubleshooting an issue with the Interconnect task group minutes page. BIRD208 had been posted.

Randy and Bob Ross noted a list of pending website updates including updating BIRD206, updating the IBIS 7.0 known issues document, removing the EMC + SIPI Summit from the upcoming events page, and correcting minutes links for several past summits.

MAILING LIST ADMINISTRATION

Mike LaBonte reported that mailing lists were generally operating smoothly. One glitch had occurred when the previous Open Forum minutes were sent out, and it appeared Intel addresses had not received them. However, this appears to have a been a transient issue on Intel's end. Mike asked any Intel subscribers to notify him if they had not received the minutes from the previous meeting.

LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

IEEE EMC + SIPI Symposium 2021 (May 13-15, Raleigh, NC)

Randy Wolff noted that IEEE EMC had sent out emails and calls for papers. The normal

deadline for submission is October 19, 2020. Bob Ross said we have penciled in a virtual IBIS Summit in conjunction with it. Zhiping Yang reported that IEEE had converted all Q1 2021 conferences to virtual, but the status of this one is still to be decided.

- Press Update
None.

- Related standards
None.

SUMMIT PLANNING AND STATUS

- Asia Summits

Japan (November 13, 2020):

Randy Wolff noted that the third call for presentations would be sent out that day. The summit is held in conjunction with JEITA and will occur on Friday morning from 9 a.m. until noon local time to allow for overlap with evening hours in the US. Bob Ross reported that we expected 5 or 6 presentations and could be open for more.

Bob noted the presentation slides should be in English, and the oral presentation can be in English or Japanese. For pre-recorded presentations, JEITA will provide a service to add Japanese or English subtitles. The deadline for presentation submissions is October 30th, but Randy noted that pre-recorded presentations should be submitted a week or two earlier if you want to utilize JEITA's subtitle service.

China (November 20, 2020):

Randy noted that the first call for presentations had been sent out on October 2nd. We are not planning any pre-recorded presentations for this summit. Presentations will be live via Webex. Lance Wang said he had been in communication with members of the China Region Forum and others, and they had all agreed that we need a virtual summit this year. Randy noted that we had not recorded our previous virtual summit at EMC + SIPI. However, unless there are objections he would like to plan to record this one so it can be posted for others to watch. Bob suggested this would have to be mentioned in the agenda. Randy agreed, and Bob and Randy said they would take up the issue with SAE ITC.

- DesignCon 2021:

Randy noted that DesignCon 2021 had been moved to April 13-15, 2021, with the hope that it can be a non-virtual event. For 2021, it will be held in the San Jose Convention Center instead of the Santa Clara Convention Center. For 2022, it is expected to move back to its traditional time.

Randy reported that Suzanne Deffree of Informa Markets had informed us about meeting space availability. They have space available the Monday before DesignCon but not the Friday afterward. If we want to have a summit meeting, it would need to be on Monday, April 12th. Bob said the upcoming events page should be updated to reflect these dates.

QUALITY TASK GROUP

Mike LaBonte reported that the group is meeting on Tuesdays at 8:00 a.m. PT. They are currently discussing how to check .iss files included by IBIS files. (further discussion in the ibischk section below)

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 completed review of a proposal from Michael Mirmak to introduce a [Clock Pins] keyword to add clock pin to data pin relationship information to the IBIS [Component], and Michael had submitted this as BIRD208. Randy Wolff had given a presentation on a new single-ended PAM4 signaling technology and possible IBIS modeling enhancements to support it.

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. He noted that the focus is still on the EMD proposal (BIRD202), and they are now working on draft 27 of BIRD202.1. They are approximately two thirds of the way through a final technical review, and then he envisions a final editorial review before submitting BIRD202.1.

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/

CHINA REGIONAL FORUM

Lance Wang reported that there had been no activity since the last Open Forum meeting. He said an announcement about the virtual summit in China had been sent to the CRF. They had not yet received any registrations, but ZTE and Celstica had inquired about presenting.

China Regional Forum material can be found at:

http://www.ibis.org/china_forum/

NEW ADMINISTRATIVE ISSUES

- IBIS 7.0 Known Issues Document

Randy Wolff noted two new updates that were not yet posted to the website. One was a misspelling ("Rx_Receiver_Sensitvity") Randy discovered on page 253 in the Modulation parameter section. The second was from the Interconnect task group and suggested keyword descriptions be reviewed for language describing column headers (as sub-parameters) and the number of columns following the keyword. It recommended using BIRD208 as an example of best practice. Bob Ross noted that this list is the first thing considered before starting the next version of the specification. Randy agreed and said the items on the known issues list are resolved to make a clean copy of IBIS 7.0 from which to start the next revision.

- IBIS Librarian

Randy Wolff reported that long-time Librarian Anders Ekholm is leaving Ericsson and will no longer be involved with IBIS for the time being. Anders is working on finding a replacement representative from Ericsson. Per our Policies and Procedures, Randy had temporarily appointed Zhiping Yang to replace Anders, and Zhiping had accepted. Our Policies and Procedures do not spell out the exact procedure for a special election. Therefore, Randy proposed the following variation of the normal election process.

A nomination period will extend from October 9th through October 22nd. The voting period will extend from October 23rd through October 29th. The results will be announced on October 30th. Randy noted that he had asked Curtis Clark to serve as the returning officer. Curtis had agreed. Bob Ross moved to formally nominate Zhiping Yang for the Librarian position. Lance Wang seconded. There were no objections. Randy Wolff to send an email announcing the vote and explaining the election process and timeline [AR].

Randy thanked Anders for his service to IBIS and said he had enjoyed working with him. Bob also thanked Anders for proactively sending his information in order to aid in a smooth transition.

BIRD208: CLOCK-DATA PIN RELATIONSHIP KEYWORD

Michael Mirmak summarized his new BIRD. He said it is a relatively simple BIRD, and the idea is to add a keyword to IBIS to explicitly define the existence of clocking relationships between pins. The new keyword is really only declaring the pins for which a relationship exists. The motivation for the BIRD is more complex buffer types, such as those modeled with AMI for DDR5, where the buffer has both data and clock interface points. It becomes necessary to have a way to notify the tool that a particular buffer needs to interact with other pins (for clock). AMI parameters and the [Model] keyword are not at the level of an individual buffer instance. The only way to define these clocking relationships, where 1, 4, 8, etc., pins might get clock from the same pin, would be at the pin level.

Each entry (row) for the keyword consists of 3 columns: clock pin, clocked pin, and "Unspecified". "Unspecified" is a place holder, and the third column is for future expansion. This was discussed in the ATM task group, and the "Unspecified" place holder is there because

fully defining the timing relationships could delay the BIRD for years. For now, the clocking relationship is indicated, and the tool or user can fill in the details.

Bob Ross noted that he expects to vote to approve the BIRD, but we have to be careful. If a relationship between two pins is defined in IBIS 7.1 as “Unspecified”, and a new keyword or value is specified in some future version, the older file will not automatically pick up the new keyword or value. Michael agreed this was a good point. In fact, he said the expectation is that “Unspecified” will remain an available value in future releases even if new relationship information is defined. The model maker would have to go back and update their older model to replace “Unspecified” with the newly defined relationship if necessary.

Bob noted that the RAIL (Rules Augmented Interconnect Layout) specification first developed in 1996 might be a good reference for future discussions on defining the actual timing relationships. Michael asked if it had ever been formally approved. Bob said a RAIL 1.2 was formally approved, and he thought it was informational and based on IBIS 2.x. Bob noted that the specification exists on the IBIS website, but the page is currently hidden and contains broken links to eda.org that would have to be fixed. Randy Wolff agreed that updating the links and making RAIL available would make it a good discussion reference for a task group. Mike LaBonte said only about 8 links needed to be fixed. (Note: During the meeting, Mike repaired the links. The RAIL specification page can now be found at https://ibis.org/rail/)

Zhiping Yang noted that some interfaces are programmable and allow different pins to be used as the clock for ease of layout. So, every pin in the bus can be configured as a clock. He asked how this BIRD would support this case. Michael said this was a good point and could be taken up in the ATM task group. He said one question would be whether this programmability is dynamic at configuration time, during normal operation, or only across different SKUs. Zhiping said it would probably be fixed and specific to the layout of a particular board. Randy said this keyword is scoped at the [Component] level, so you would need different [Component]s to handle different cases. Michael noted that the BIRD had anticipated the question of dynamically changing timing relationships, and it states, “…[Clock Pins] assumes that the clocking relationships cannot be redefined dynamically for a given [Component]…”

BIRD207: NEW AMI RESERVED PARAMETERS COMPONENT_NAME AND SIGNAL_NAME

Randy Wolff briefly reviewed the BIRD. He noted that it adds new Reserved parameters for the component name and signal name. These provide a way for the executable model to identify a unique buffer on a chip, which could be useful if the model wants to have a lookup table for buffer specific information. Randy said that there are no cross-coupling issues with the new BIRD208. Michael Mirmak noted that BIRD208 refers to BIRD207 in its justification section, but there are no coupling issues.

Curtis Clark moved to vote on the BIRD. Radek Biernacki seconded the motion. There were no objections.

The roll call vote tally was:

ANSYS – yes
Cadence – yes (email vote)
Google – yes

Intel – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed Labs – yes
Zuken - abstain

The roll call vote concluded with a vote tally of Yes – 10, No – 0, Abstain – 1. The vote passed.

Randy took an AR to update the Date Revised field of the BIRD [AR]. Randy gave Steve Parker an AR to update the status of BIRD207 on the website [AR].

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 said there were no new parser BUGs to report. The Interconnect task group is working on a proposal and BUG report (enhancement) to add IBIS-ISS checking to the ibischk parser. Bob and Mike LaBonte said the current proposal is to check subcircuit topologies to make sure they at least match the terminal list in the interconnect model. Bob noted that the current release of the parser, ibischk7.0.2, merely checks for the existence of any IBIS-ISS file referred to by an IBIS model.

NEW TECHNICAL ISSUES
- None.

NEXT MEETING
The next IBIS Open Forum teleconference meeting will be held on October 30, 2020. The

following teleconference meeting is tentatively scheduled for November 20, 2020.

Mike LaBonte moved to adjourn. Curtis Clark seconded the motion. The meeting adjourned.

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NOTES

IBIS CHAIR: Randy Wolff (208) 363-1764
rrwolff@micron.com
Principal Engineer, Silicon SI Group, Micron Technology, Inc.
8000 S. Federal Way
P.O. Box 6, Mail Stop: 01-720
Boise, ID 83707-0006

VICE CHAIR: Lance Wang (978) 633-3388
lance.wang@ibis.org
Solutions Architect, Zuken USA
238 Littleton Road, Suite 100
Westford, MA 01886

SECRETARY: Curtis Clark
curtis.clark@ansys.com
ANSYS, Inc.
150 Baker Ave Ext
Concord, MA 01742

TREASURER: Bob Ross (503) 246-8048
bob@teraspeedlabs.com
Engineer, Teraspeed Labs
10238 SW Lancaster Road
Portland, OR 97219

LIBRARIAN: Zhiping Yang (650) 214-0868
zhipingyang@google.com
Sr. Hardware Manager, Google LLC
1600 Amphitheatre Parkway
Mountain View, CA 94043

WEBMASTER: Steven Parker (845) 372-3294
sparker@marvell.com
Senior Staff Engineer, DSP, Marvell
2070 Route 52
Hopewell Junction, NY 12533-3507

POSTMASTER: Mike LaBonte
mlabonte@sisoft.com

IBIS-AMI Modeling Specialist, SiSoft
1 Lakeside Campus Drive
Natick, MA 01760

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	August 07, 2020	August 28, 2020	September 18, 2020	October 09, 2020
ANSYS	User	Active	X	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	-	X	-	-
Dassault Systemes	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
Google	User	Active	X	X	X	X
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Instituto de Telecomunicações	User	Inactive	-	-	-	-
IBM	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	X	X
Keysight Technologies	User	Active	X	-	X	X
Marvell	Producer	Active	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
MST EMC Lab	User	Inactive	-	X	-	-
NXP	Producer	Inactive	-	X	-	-
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	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.