IBIS Open Forum Minutes

Meeting Date: August 07, 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, 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
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
MST EMC Lab	(Chulsoon Hwang)
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
September 18, 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.

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 July 17, 2020 IBIS Open Forum teleconference. Mike LaBonte moved to approve the minutes. Randy seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

1. Steve Parker to update status of BIRD201.1 on the IBIS BIRDs page [AR].
    Steve reported that this had been done.

2. Randy Wolff to send an email to the Open Forum announcing the BIRD198.2 vote [AR].
    Randy reported that this had been done.

ANNOUNCEMENTS, **CALL FOR ADDITIONAL AGENDA ITEMS**
Curtis Clark reported that the discovery of a minor editorial issue in an approved BIRD had led to a discussion on how to record known editorial issues in approved BIRDs. Randy Wolff said we could discuss the topic in the New Administrative Issues section.

MEMBERSHIP STATUS AND TREASURER'S REPORT
Bob Ross reported that we now have 27 members, as payment for 2020 membership had been received from Intel, and payment for a half-year membership had been received from new Academic member Missouri University of Science and Technology (MST) EMC lab. The quorum for meetings is 7. We have $28,460 cash flow for 2020 and a $28,810 adjusted balance for 2020. These figures do not reflect the membership payments from Intel and MST EMC Lab.

Bob said one other possible half-year membership is proceeding slowly, and Huanda Empyrean Software purchased an ibischk7 license bringing the total number of licenses purchased to 11.

WEBSITE ADMINISTRATION
Steve Parker reported that the website was up to date with respect to ATM, Interconnect, and Quality task group minutes and documents. The IBIS Info and FAQ pages had been updated to reflect the new Academic Membership. Steve noted that there is a frame-within-a-frame issue on the IBIS parser info page and said this is a known issue that he's working on addressing.

Steve reported that he had created a prototype page for hosting videos and other content from a virtual summit, such as the upcoming EMC+SIPI IBIS Summit, and sent it to Randy Wolff. He hoped it would make content accessible in China, as opposed to relying on YouTube.

Bob Ross noted that we should work on getting the MST logo for the main page. Mike LaBonte said that a plain text version can be used in the meantime, as is done for IBM and Ericsson.

MAILING LIST ADMINISTRATION
Mike LaBonte reported that mailing lists were generally operating smoothly. One company's mail delivery may have been affected by freelists.org being on the SORBS blacklist, but he was checking with two subscribers to see if messages were getting through to them anyway. He may have to work with freelists.org to resolve the issue, but things are going smoothly for everyone except those two subscribers.

LIBRARY UPDATE
No update.

INTERNATIONAL/EXTERNAL ACTIVITIES
- Conferences
2020 IEEE International Symposium on EMC + SIPI (August 3-28, online)

> https://www.emc2020virtual.emcss.org/

- Press Update
None.

- Related standards
None.

SUMMIT PLANNING AND STATUS
- IEEE EMC + SIPI Symposium (August 3-28, online)
Bob Ross reported that the virtual IBIS Summit will take place on August 28th, the last day of the virtual conference, from 1 to 5 p.m. CST. Bob said that presentations were now coming in for review by the IBIS Board. He noted that the program contains some basic intro-to-IBIS presentations for this audience. We have one technical presentation from Google, Randy Wolff's Chair's report, and an introduction to IEEE EMC from their Chair Alistair Duffy. Bob asked for presentations to be submitted by Friday August 14th.

Bob noted that we currently have about 15 registered attendees, and that login and password information will be sent out to people who register with Lance Wang. Randy asked that participants also register with the IEEE EMC+SIPI site. Randy included information on both registration processes in the third Summit announcement email. Randy said a final agenda will be sent out a week before the summit.

QUALITY TASK GROUP

Mike LaBonte reported that the group is meeting on Tuesdays at 8:00 a.m. PT. The group had recently deemed ibischk7.0.2 parser development complete, as they had received the code and it had passed regression testing. There is a new ibischk7.0.2 executables page including the new license agreement. Mike thanked Steve Parker for updating the tschk webpage and noted that it now looks similar to the ibischk page.

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. He said that with the recent submission of several BIRDs that were discussed in ATM, the agenda is currently lighter than normal. The group had recently been discussing the newly submitted BIRD207. The group was also discussing a proposal from Walter Katz for a DDR5 DQ Write Cycle BCI training protocol.

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 finding technical details that require clarification of rules. He thanked Randy Wolff for leading the thorough and detailed review. He said they are nearing the completion of that phase and will then go through a final editorial pass before voting to submit the new version to the Open Forum.

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.

Randy Wolff noted that Lance was reaching out to some people in China to see if they could test out Steve Parker's virtual summit page and see if they can view .mp4 content.

China Regional Forum material can be found at:

NEW ADMINISTRATIVE ISSUES
- Known Issues with Approved BIRDs
Randy Wolff reported that Curtis Clark had found a minor editorial issue (one sentence was repeated) in BIRD197.7. How do we capture this information for the Editorial task group to use? Randy and Bob Ross suggested that we could capture the editorial issues with approved BIRDs in the same known issues document we maintain for the current version of the specification. Curtis said he thought this was a reasonable solution. Bob asked that we create a separate section for BIRD issues and keep them isolated from existing specification issues. Randy took an AR to add a new section to the known issues document for IBIS 7.0 and record the BIRD197.7 issue [AR].

BIRD207: New AMI Reserved Parameters Component_Name and Signal_Name
Randy Wolff reviewed the new 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. For example, buffer specific on-die DQ-DQS delay values could be stored by the model. There are cases in which you'd need both the component name and signal name to uniquely identify the right value.

Randy said the new parameters follow the precedent of the Model_Name Reserved parameter. The value in the .ami file is just a placeholder, and the EDA tool passes in the [Component] name and signal_name according to the simulation setup. If that information is not available for a given simulation, the EDA tool should pass in the empty string (""). The model maker should provide some default functionality in that case. Randy noted that the proposal had been discussed and reviewed in the ATM task group prior to submission. He asked that people review the BIRD in anticipation of an upcoming vote.

BIRD198.2: KEYWORD ADDITIONS FOR ON DIE PDN (POWER DISTRIBUTION NETWORK) MODELING
Randy Wolff summarized the BIRD. This BIRD establishes a way of providing a simple on-die decoupling model. A vote had been scheduled at the previous meeting. Randy noted that Bob Ross had several editorial comments to discuss prior to entertaining a motion to vote.

Bob had two suggestions that required minor editorial changes to BIRD198.2. On page 5, the second paragraph of Usage Rules, it would be clearer and more consistent with other language in the specification to simply state, "All three sub-parameters are required." Randy agreed that this was the intent, and that this was a good clarification. Also, starting at the end of page 5, three consecutive paragraphs started with "Note that". Bob suggested that these paragraphs be

moved into an Other Notes: section instead. Randy agreed to make this change as well. Randy took an AR to create BIRD198.3 with the two changes [AR].

Bob had two other discussion points that did not require changes to the BIRD. The last paragraph in Signal_name rules discusses a bus_label or signal_name that need not have a path to the buffer rail terminals. Randy said this could be used to give decoupling information for a supply that wouldn't normally be part of our SI simulations but could be used for PI analysis. Bob noted that the signal_name would still have to be a valid signal_name, or the parser would flag it as an error.

Bob mentioned that the Example for PDN Model allows for 6 possible combinations of decoupling for VCC-VSS. PDN Domains for the same bus_label or signal_name exist in parallel, but within each PDN Domain only one PDN Model is used. The example provides three VCC-VSS PDN Domains. One contains three PDN Models, one contains two PDN Models, and one contains one PDN Model. Randy suggested that it might be good for the model maker to give the user some guidance on how to make the choices.

Bob moved to vote on the BIRD, which will become BIRD198.3 after Randy captures the proposed changes. Randy seconded the motion. There were no objections.

The roll call vote tally was:

ANSYS – yes
Cadence – yes (email vote)
Google – yes
Intel – abstain
Keysight – yes
Marvell – yes
Mentor – no
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed Labs – yes
Zuken - yes

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

Randy Wolff gave Steve Parker an AR to update the status of BIRD198.3 on the website [AR].

BIRD206: CLARIFICATION OF TEXT "TRANSITION TIME"
Arpad Muranyi summarized the BIRD on behalf of Hansel Dsilva. He said the BIRD was a straightforward clarification of terminology, and that in using "transition time" we had really meant "threshold crossing time".

Arpad moved to schedule a vote on the BIRD at the September 18, 2020 IBIS Open Forum teleconference. Radek Biernacki seconded. There were no objections. Randy Wolff to send an email to the Open Forum announcing the vote [AR].

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

BIRD181.1: I-V TABLE CLARIFICATIONS
Discussion was tabled. Arpad Muranyi suggested that the primary person be changed from Mike LaBonte to Bob Ross in the agenda emails. Mike and Bob said this was okay with them.

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 there were no new parser BUGs to discuss. As Mike LaBonte had noted earlier, ibischk7.0.2 had been officially released. Executables had been uploaded to the site, and source code customers had received the new code. Bob said that he was waiting for the final invoice from the developer. The Open Forum had already voted to approve the expenditure of up to $800, and the next vote will be to accept the code and release the payment. We have 11 total ibischk7 source code license sales. Bob noted that Randy Wolff would send out the official announcement of ibischk7.0.2 that day.

Bob noted that this release fixes 7 BUGs, the most critical of which was BUG213. The "orphan" keyword error message changes, BUG210, were the biggest changes in terms of scope. The Quality task group has prepared a new error messages spreadsheet, but they have not yet updated the user guide for ibischk7.0.2. Mike LaBonte said the user guide link continues to point to the existing ibischk7.0.1 user guide for now.

NEW TECHNICAL ISSUES
- Next IBIS Specification Release (7.1 or 8.0)
Randy shared his "Next IBIS Specification Release" presentation.

Slide 3:
There have been 8 BIRDs accepted since IBIS 7.0 (now 9 with today's acceptance of BIRD198.3)

Slide 4:
Of the remaining BIRDs in progress and expected to be approved, all have expected vote dates of October 30, 2020 or earlier. BIRD202 is likely the gating factor here. Randy noted that he may soon move to vote on several BIRDs that are expected to be rejected, so we can get their

final resolution.

Slide 5: IBIS 7.1 Versus 8.0 Considerations
We have not been consistent in adhering to a major/minor release definition in terms of the technical content included. For example, IBIS 5.1 included 25 BIRDs and significant technical, formatting and editorial changes. There is also an issue for parser license purchases. Source code purchasers get the major release and all subsequent minor releases. Do we need to fund a new parser release? Does the major versus minor release affect EDA implementation?

Arpad Muranyi and Curtis Clark replied that major versus minor release did not affect their organizations' implementation decisions and efforts.

Randy noted that Bob Ross had previously stated that we have enough funding to undertake another major effort parser release. Bob reported that we have collected $33,000 in parser sales and spent about $8,800 so far on ibischk7.x.x. So, we could undertake the new work as a parser for IBIS 7.1.

Slide 6: BIRDs Classified by EDA Tool and IBISCHK Parser Implementation Effort
Only BIRD202 (Electrical Descriptions of Modules (EMD)) is projected to involve a large effort for the parser development and for EDA tools.

Slide 7: Next Steps
We will need motions to vote on the remaining BIRDs, then a motion to vote on the next IBIS version number, then a restart of the Editorial task group. BIRD 202 will likely define the time frame.

Arpad said that parser funding had been one aspect in past versioning decisions, but another aspect was more psychological and expectation based:
- .0 release was a fresh new specification but could have undiscovered issues
- .1 was the stable version that fixed any issues in the .0 release
- .2 releases were infrequent, which is an indication that .1 was usually stable

Arpad said the new EMD was much more capable than EBD, but he wondered if such a large feature should really only appear in a major 8.0 release. Bob agreed that theoretically the upcoming release is a major release. From a practical perspective, however, this would force Bob to conduct the license purchase process all over again. This is a significant drain on Bob's time that we should avoid if possible.

Randy and Curtis suggested that we might give ibischk7 purchasers the 8.x releases in this instance to avoid the overhead of new license purchases. Bob noted that the parser license specifically lists 7.x releases. Radek Biernacki suggested that we could release a 7.1 version including all of the smaller BIRDs but excluding BIRD202. Randy said there is a need for BIRD202, so we wouldn't want to do an interim release that might just delay a release containing BIRD202. Radek and Curtis said they thought it was simplest to incorporate all of them into a 7.1 release. Randy agreed.

Randy noted that we could entertain a motion on the topic at a future meeting, and we might even consider waiting for the Editorial task group to make a recommendation. At this time, it seems reasonable to go with 7.1.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held on September 18, 2020. The following teleconference meeting is tentatively scheduled for October 9, 2020.

The virtual IBIS Summit at 2020 IEEE EMC+SIPI will be held August 28, 2020.

Mike LaBonte moved to adjourn. Arpad Muranyi 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: Anders Ekholm (46) 10 714 27 58, Fax: (46) 8 757 23 40
> ibis-librarian@ibis.org
> Digital Modules Design, PDU Base Stations, Ericsson AB
> BU Network
> Färögatan 6
> 164 80 Stockholm, Sweden

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	June 05, 2020	June 26, 2020	July 17, 2020	August 07, 2020
ANSYS	User	Active	X	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	X	X	-	-
Cadence Design Systems	User	Active	X	X	X	X
Cisco Systems	User	Inactive	-	-	-	-
Dassault Systemes	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
Google	User	Active	X	X	-	X
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Instituto de Telecomunicações	User	Inactive	-	-	-	-
IBM	Producer	Active	-	X	-	-
Intel Corp.	Producer	Active	X	X	X	X
Keysight Technologies	User	Active	X	X	X	X
Marvell	Producer	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
MST EMC Lab	User	Inactive	-	-	-	-
NXP	Producer	Inactive	-	-	-	-
SerDesDesign.com	User	Inactive	-	-	-	-
SiSoft	User	Active	X	X	X	X
Synopsys	User	Active	X	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.