



IBIS Open Forum Minutes

Meeting Date: **May 13, 2022**

Meeting Location: **Teleconference**

VOTING MEMBERS AND 2022 PARTICIPANTS

AMD (Xilinx)	(Bassam Mansour)
Analog Devices (Maxim Integrated)	Tushar Pandey, Jermaine Lim
ANSYS	Curtis Clark*
Applied Simulation Technology	(Fred Balistreri)
Broadcom	(Yunong Gan)
Cadence Design Systems	Zhen Mu^, Jared James, Ken Willis
Celestica	(Sophia Feng)
Cisco Systems	(Stephen Searce)
Dassault Systemes	(Stefan Paret)
Ericsson	(Guohua Wang)
Google	(Hanfeng Wang)
Huawei Technologies	(Hang (Paul) Yan)
Infineon Technologies AG	(Christian Sporrer)
Instituto de Telecomunicações	(Abdelgader Abdalla)
Intel Corporation	Hsinho Wu*, Michael Mirmak, Jingbo Li, Liwei Zhao
Keysight Technologies	Radek Biernacki*, Ming Yan, Fangyi Rao, Majid Ahadi Dolotsara, Pegah Alavi, Saish Sawant
Luminous Computing	(David Banas)
Marvell	Steven Parker*
MathWorks	Mike LaBonte*, Walter Katz*
Micron Technology	Randy Wolff*, Aniello Viscardi, Justin Butterfield
MST EMC Lab	(Chulsoon Hwang)
SerDesDesign.com	John Baprawski
Siemens EDA	Arpad Muranyi*, Weston Beal, Amin Maher, Scott Wedge, Steve Kaufer, Todd Westerhoff, Vladimir Dmitriev-Zdorov
STMicroelectronics	(Olivier Bayet)
Synopsys	Ted Mido*
Teraspeed Labs	Bob Ross*
Waymo	Zhiping Yang*
ZTE Corporation	(Shunlin Zhu)
Zuken	(Michael Schäder)
Zuken USA	Lance Wang*

OTHER PARTICIPANTS IN 2022

Amazon Lab126	Ashkar Hashemi
Ciena	Hugues Tournier
IBM	Greg Edlund
Mercury Systems	Vincent Tam
National Central University, Taiwan	Chiu-Chih Chou
OVT	Sirius Tsang
SAE ITC	José Godoy
SerialLink Systems	Aleksey Tyshchenko, David Halupka

University of Colorado, Boulder, ECEE
University of Illinois

Eric Bogatin
José Schutt-Aine

In the list above, attendees at the meeting are indicated by *. Those submitting an email ballot for their member organization for a scheduled vote 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:

Microsoft Teams meeting

Join on your computer or mobile app

[Click here to join the meeting](#)

Join with a video conferencing device

106010980@teams.bjn.vc

Video Conference ID: 114 666 897 5

[Alternate VTC dialing instructions](#)

Or call in (audio only)

[+1 267-768-8015,554664847#](tel:+12677688015554664847) United States, Philadelphia

Phone Conference ID: 554 664 847#

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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 had been 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 April 8 DesignCon summit. Radek Biernacki moved to approve the minutes. Bob Ross seconded the motion. There were no objections.

Randy called for comments on the minutes of the April 22, 2022, IBIS Open Forum teleconference. Radek moved to approve the minutes. Bob seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

- Randy Wolff and Steven Parker to make web changes for new ISSIRD template document [AR]
Changes had been sent to Steve the day before. They would be posted. Randy showed where on the website changes would be made.
- Randy Wolff to announce vote for new TSIRD template document [AR]
Randy said this was done.
- Randy Wolff to provide updated BIRD218 reflecting approval [AR]
Randy said this was done.
- Randy Wolff to provide updated BIRDS 166.4, 190, and 210 reflecting rejections [AR]
Randy said this was done.
- Randy Wolff to solicit email votes for BIRD181.1 [AR]
Randy said this was done.
- Michael Mirmak to add note to TSIRD 4 that no parser change is required [AR]
Randy said that would wait until Michael's return from sabbatical.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

None

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we had 24 renewed and new members. One of 29 prior year members planned to drop membership. Unpaid returning companies would be dropped from membership at the end of May. We had a new balance of \$16,974 (rounded) for 2022 payments, and a balance adjusted for 2022 attribution of \$20,324 (rounded). A balance of \$450 was attributed to 2023. The charge of \$5,119 for the DesignCon summit had been recorded. Bob had estimated \$0 for remaining summit expenses, but he said there could be some on-site expenses for the Spokane summit. Bob was working with SAE to find recognition of a membership payment that had been made, where a bank account number might have changed.

Randy Wolff asked if the acquisition of Xilinx by AMD required any actions. Bob said that had happened in February of 2022. He said AMD was now considered the IBIS member company. Bob said he would find out who should be our contact. The entity might be listed as "AMD (Xilinx)" in our minutes.

WEBSITE ADMINISTRATION

Steven Parker reported that work on web pages for the newly approved ISSIRD template would be done next week. Other regular updates had been made. A DesignCon summit page link had been updated.

MAILING LIST ADMINISTRATION

Curtis Clark reported that list administration activity was mostly quiet. He was waiting for a confirmation reply from a gmail.com address.

LIBRARY UPDATE

Zhiping Yang reported he had not been contacted about the model library.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

The IEEE SPI 2022 conference would be held in Siegen, Germany, May 22 to 25, 2022.

26th IEEE Workshop on Signal and Power Integrity, May 22 to 25, 2022

<https://spi2022.uni-siegen.de/>

The IEEE EMC+SIPI would be held in Spokane, Washington, August 1 to 5, 2022.

IEEE International Symposium on Electromagnetic Compatibility, Signal & Power Integrity (EMC+SIPI), August 1-5, 2022

<https://emc2022.emcss.org>

- Press Updates

Bob Ross said a book by Donald Telian, "Signal Integrity, in Practice", contained a brief history of IBIS.

<https://www.amazon.com/Signal-Integrity-Practice-Practical-Engineers/dp/B09NWL171T>

There was also a webcast interview of Donald by Eric Bogatin. Bob said there was much content in the interview about IBIS.

<https://podcasts.signalintegrityjournal.com/e/eric-bogatin-talks-with-donald-telian-the-father-of-ibis-models/>

Bob said the IEEE EMC+SIPI conference would have an "Ask the IBIS Experts" panel. He was not sure if that would take place on-site only or if it would be hybrid. Zhiping Yang said the hall would be noisy, he was not sure if it would be hybrid. He would check with the conference organizers.

Randy said he was not aware if the IEEE quarterly with his article about IBIS 7.1 had been published yet.

- Related standards

IEC 63055/IEEE 2401, JEITA "LPB"

No update.

- IEEE IBIS Standardization

Randy Wolff said he had no new information from SAE ITC regarding their position concerning possible IEEE standardization of IBIS. Zhiping Yang had no update from IEEE on the subject.

Randy Wolff to contact SAE ITC about IEEE standardization [AR]

SUMMIT PLANNING AND REVIEW

Randy Wolff said the IEEE SPI summit would be held Thursday, May 26, 2022. The agenda was full, with good presentations. Bob Ross said the agenda would be sent next week. 18 people had registered. Bob said it would be virtual. Randy said it would be a Zoom meeting,

with meeting information sent to those registered. Bob said presentations were under review. Bob said there would be one repeat of an SPI presentation.

Randy said the IEEE EMC+SIPi summit would be August 5, 2022. Zhiping Yang was helping to plan a hybrid summit. Bob said the entry on our Upcoming Events page should be updated. Randy said it would be a morning meeting. No lunch was planned, but there would be morning refreshments. Zhiping asked when the first announcement would be sent. Randy said that would be about 2 months before the meeting. Zhiping said a room had been reserved, asking if anything else was needed. Bob said the room number should be on the web page and announcement.

QUALITY TASK GROUP

Mike LaBonte said the group meets on Tuesdays at 9:00 a.m. PT. They had been discussing open IBISCHK bugs, which Bob Ross would discuss later in the meeting. They also were looking for people to chair the group and take minutes after Mike's departure from IBIS around the middle of the year.

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 a.m. PT. They had submitted the IBIS-AMI root name BIRD to the IBIS Open Forum and were working to finalize the PAMn BIRD.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Randy Wolff said he had been temporarily chairing in Michael Mirmak's absence. He reported the group was meeting on Wednesdays at 8:00 a.m. PT. They had discussed Touchstone port naming and pole-residue format. He said Arpad Muranyi had drafted a Touchstone specification update.

Task group material can be found at:

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

EDITORIAL TASK GROUP

Randy Wolff reported that the group remained suspended.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES

- TSIRD Template Vote

Randy Wolff showed the proposed TSIRD template. It had been shown in previous meetings. Mike LaBonte moved to vote. Radek Biernacki seconded, asking to vote by acclamation. Mike agreed. There were no objections. Randy said the new document would be added to the website.

Steven Parker to add TSIRD template to website [AR]

- New BIRD template

Randy showed the proposed BIRD template, He moved to vote in the next meeting. Curtis Clark seconded. There were no objections.

Randy Wolff to send vote email [AR]

- Officer elections

Randy Wolff said Mike LaBonte had agreed to serve as Returning Officer. Mike said nominations would open May 17, 2022, and continue through May 31, 2022. He would send a notice May 16, 2022. Anyone could send him their nominations, which should include office, name, company affiliation, and whether the person has agreed to be nominated. Voting would take place from June 1, 2022, to June 15, 2022. Votes could be received by email from members in good standing. The results would be announced on June 16, 2022.

Bob Ross added that he would be informing Mike of the voting status of each member. Votes received during the voting period would be counted if membership payment was received by June 15, 2022.

Randy said he was seeking candidates for the Secretary position, asking for volunteers.

NEW AND REVISED *IRDS:

None

***IRDS SCHEDULED FOR VOTE:**

BIRD219.1: AMI PARAMETER ROOT NAME CLARIFICATION

Randy Wolff showed the BIRD. He said it had a vote of recommendation from the ATM task group. Arpad Muranyi described the changes made. The IBIS-AMI model executable was not required to report root name errors in the AMI_parameters_in string. The group had made that decision to avoid the need to standardize the error message. However, reporting such errors was a strong recommendation. The EDA tool on the other hand “must” detect AMI_parameters_out mismatches.

Randy said this would require new IBISCHK capabilities. Bob Ross said the specifics of that checking remained to be finalized.

Radek Biernacki agreed that models should not be required to return a message, especially since the model may not care about the root name. He said one question was if we were losing anything. Walter Katz said we had to assume the model would return in the output what it expected as input. Arpad said models that do care about the root name should print a message. Arpad and Bob discussed what a message might contain. Mike LaBonte suggested

we could require models to output the root name they expected as input. If they didn't care about the input, they could pass through whatever the input root name was.

Arpad asked people to review and provide their comments.

BIRD181.1: I-V TABLE CLARIFICATIONS

Randy Wolff showed the BIRD. Walter Katz moved to vote on the BIRD. Arpad Muranyi seconded. Bob Ross suggested a roll call vote. Randy agreed, saying that a roll call would allow emailed votes to be recorded. Radek Biernacki noted that per previous discussion, a vote of "no" to reject the BIRD was expected.

Radek Biernacki moved to vote. Arpad seconded. Randy conducted a roll call vote.

The roll call vote tally was:

1. ANSYS – no
2. Cadence – no (by email)
3. Intel – no
4. Keysight – no
5. MathWorks – no
6. Micron Technology – no
7. Siemens EDA – no
8. Synopsys – no
9. Teraspeed Labs – no
10. Zuken – no

The BIRD was rejected.

Randy Wolff to update BIRD181.1 to reflect rejection [AR]

***IRDS ELIGIBLE FOR VOTE:**

BIRD213: EXTENDING IBIS-AMI FOR PAMn ANALYSIS

Arpad Muranyi said the finalization of the BIRD was taking a long time in the ATM Task Group. A new issue had been found in the previous meeting. Hopefully it would be returned to the Open Forum soon.

TSIRD4: [END] KEYWORD CORRECTIONS AND OTHER EDITORIAL CHANGES

Arpad Muranyi moved to table the TSIRD. Curtis Clark seconded. There were no objections.

TABLED BIRDS (NO DISCUSSION WITHOUT MOTION TO "UNTABLE"):

None

IBISCHK AND TSCHK PARSER AND BUG STATUS

Randy Wolff showed IBISCHK BUG232. Bob Ross said Yingxin Sun of Cadence had found the bug in a tool that embedded the code. The fix was to set a pointer correctly after each run. Bob moved to classify the bug as Moderate severity and Medium priority. He said the bug caused IBISCHK to hang. Arpad Muranyi seconded the motion. There were no objections.

Bob Ross to update BUG232 classification [AR]

Randy showed BUG233. Bob said a certain combination of subparameters caused IBISCHK to hang. The IBISCHK program itself reproduced this. Arpad said no failure message was produced where one should have been produced. Bob moved to classify as Moderate severity and Low priority. Arpad preferred Medium priority. Radek agreed. He said the problem mislead users into believing a file had no problems when it in fact did. Bob moved to classify the bug as Moderate severity and Medium priority. Arpad seconded the motion. There were no objections. Randy noted that the classification date in the document also needed to be updated.

Bob Ross to update BUG233 classification [AR]

Bob said Arpad had sent another potential IBISCHK bug, for which Bob was working on a testcase. He said it required some research. Arpad said it was a path parsing inconsistency related to two different checks. He felt the checks did not follow the IBIS specification, noting that the checks had been implemented at different times.

NEW TECHNICAL ISSUES

Arpad Muranyi asked if an IBIS 7.2 BIRD list should be started. Randy Wolff suggested discussing that in the next meeting.

Walter Katz asked if GDDR7 would be PAM3, not PAM4 as expected. Randy had not heard that.

Arpad said he would like to consider new keywords to expand legacy IBIS models to support multi-level buffers such as MIPI C-PHY and PAM4. He noted we supported PAM4 in IBIS-AMI, but not the legacy IBIS I-V buffer models. That could become important where the simulation of non-linear effects was needed. Walter asked if MIPI C-PHY had 3 levels or 3 wires. Arpad said it was both. He said he had a Verilog-A implementation, which he described. Arpad preferred to model it using IBIS I-V curves. Randy said there were papers on the subject that could be helpful. Mike LaBonte asked there was enough public information about MIPI for IBIS to write about it in the open. Arpad and Randy felt that would need research. There were some presentations from IBIS summits that gave some details, with one being about state machine implementations.

Arpad said the 3 buffers for MIPI had to be stimulated in synchronization. He said this could be an ATM topic, inviting those interested to join on Tuesdays.

NEXT MEETING

The next IBIS Open Forum teleconference meeting would be held on June 3, 2022. The following IBIS Open Forum teleconference meeting was tentatively scheduled for June 24, 2022. Randy Wolff said he would be on vacation on that day, but arrangements could be discussed in the next meeting.

Arpad Muranyi moved to adjourn. Walter Katz 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 or unsubscribe from the official ibis@freelists.org and/or ibis-users@freelists.org email lists (formerly ibis@eda.org and ibis-users@eda.org):
 - <https://www.freelists.org/list/ibis>
 - <https://www.freelists.org/list/ibis-users>
- To subscribe to or unsubscribe from one of the task group email lists: ibis-macro@freelists.org, ibis-interconn@freelists.org, ibis-editorial@freelists.org, or ibis-quality@freelists.org:
 - <https://www.freelists.org/list/ibis-macro>
 - <https://www.freelists.org/list/ibis-interconn>

- <https://www.freelists.org/list/ibis-editorial>
- <https://www.freelists.org/list/ibis-quality>
- 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 s2iptl.

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 s2iptl 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/s2iptl/bugspl.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	April 1, 2022	April 8, 2022	April 22, 2022	May 13, 2022
AMD (Xilinx)	Producer	Inactive	-	-	-	-
Analog Devices (Maxim Integrated)	Producer	Inactive	-	-	-	-
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
Celestica	User	Inactive	-	-	-	-
Cisco Systems	User	Inactive	-	-	-	-
Dassault Systemes	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
Google	User	Inactive	-	-	-	-
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Instituto de Telecomunicações	User	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	X	X
Keysight Technologies	User	Active	X	X	X	X
Luminous Computing	General Interest	Inactive	-	-	-	-
Marvell	Producer	Active	X	-	X	X
MathWorks (SiSoft)	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
MST EMC Lab	User	Inactive	-	-	-	-
SerDesDesign.com	User	Inactive	-	X	-	-
Siemens EDA (Mentor)	User	Active	X	X	X	X
STMicroelectronics	Producer	Inactive	-	-	-	-
Synopsys	User	Active	X	X	X	X
Teraspeed Labs	General Interest	Active	X	X	X	X
Waymo	User	Active	X	-	X	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 (voting by email counts as attendance)

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.