



IBIS Open Forum Minutes

Meeting Date: **October 21, 2022**
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2022 PARTICIPANTS

AMD (Xilinx)	(Bassam Mansour)
Analog Devices (Maxim Integrated)	Tushar Pandey, Jermaine Lim, Rolynd Aquino, Aprille Hernandez-Loyola, Janchris Espinoza, Francis Ian Calubag, Toni Rose Racelis, Thi Nhu Quynh Nguyen
ANSYS	Curtis Clark*
Applied Simulation Technology	(Fred Balistreri)
Aurora System	Dian Yang
Broadcom	(Yunong Gan), Jim Antonellis
Cadence Design Systems	Zhen Mu, Jared James, Ken Willis, Kyle Lake
Celestica	(Sophia Feng)
Cisco Systems	Stephen Scarce
Dassault Systemes	(Stefan Paret), Longfei Bai
Google	Hanfeng Wang , Jianmin Zhang
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, Chi-te Chen, Kinger Cai
Keysight Technologies	Ming Yan, Fangyi Rao, Majid Ahadi Dolotsara, Pegah Alavi, Saish Sawant, [Radek Biernacki]
Luminous Computing	(David Banas)
Marvell	Steven Parker*
MathWorks	Graham Kus*, Walter Katz*, [Mike LaBonte]
Micron Technology	Randy Wolff*, Aniello Viscardi, Justin Butterfield, Dragos Dimitriu
MST EMC Lab	Chulsoon Hwang, Hanyu Zhang, Haran Manoharan, Jiahuan Huang, Junho Joo, Reza Yazdani, Seunghun Ryu, Seungtaek Jeong, Xiangrui Su, Xu Wang, Yuanzhuo Liu, Zhekun Peng, Yifan Ding*
SerDesDesign.com	John Baprawski
Siemens EDA	Arpad Muranyi*, Weston Beal*, Amin Maher, Scott Wedge, Steve Kaufer, Todd Westerhoff, Vladimir Dmitriev-Zdorov, Ken Cantrell
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

Altair
Amazon Lab126
Ciena
Cornelis Networks
De Montfort University
GE HealthCare
Honeywell
IBM
Imperial College, UK
Mercury Systems
National Central University, Taiwan

OVT
Politecnico di Torino

Rivos
SAE ITC
SeriaLink Systems
University of Colorado, Boulder, ECEE
University of Illinois
University of L'Aquila
Unaffiliated

Junesang Lee
Askar Hashemi
Hugues Tournier, Kaisheng Hu
Champion Kao
Alistair Duffy
Balaji Sankarshanan, Sarah Salvador
Bavish Vazhayil*
Greg Edlund
Cong Ling
Vincent Tam
Chiu-Chih Chou, Liu Huang Fu, Bohong Chai,
Remxiang Xu, Kuan Fa, Yanting Li
Sirius Tsang
Stefano Grivet Talocia, Tommaso Bradde, Marco
De Stefano, Riccardo Trincherro, Alessandro
Zanco, Antonio Carlucci
Yansheng Wang
José Godoy
Aleksy Tyshchenko, David Halupka
Eric Bogatin
José Schutt-Aine
Fancesco De Paulis
Mike LaBonte

In the list above, attendees present 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#

[Find a local number](#) | [Reset PIN](#)

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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

Graham Kus notes that a quorum of 8 is now required due to membership count of 29 active members. He declared quorum been reached with 11 attendees.

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 new items were announced.

REVIEW OF MINUTES AND ARS

Randy Wolff called for comments on the minutes of the September 30, 2022 IBIS Open Forum teleconference

<https://ibis.org/minutes/>

Arpad motioned to approve, and Curtis seconded. Motion approved. There were no objections.

ARs:

Steve Parker to add China IBIS Summit to the website [AR]

- Steve reported this is completed.

Steve to add TSIRD4.1 with updated approval date to the website [AR]

- Steve reported this is completed.

Bob Ross to update classifications of BUG237 and TSCHK BUG6 on the website [AR]

- Bob reported this is completed.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

Randy announced BIRD220 has been submitted and that there was a new BUG238 to review.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported we currently have 29 members for 2022. The quorum increases to 8 from 7. Aurora System has recently joined for one-half year as a new member. One company is expected to pay shortly for 2023 because their financial year ends on October 31, 2022. We have already credited an academic institution for one-half year payment in 2023. Therefore, we want to officially formalize the dues for 2023.

The following payments are expected for 2022:

- \$1,500 for ibischk7.02 parser development
- Approximately \$6,000 for end of year SAE ITC assessment.

No additional Summit payments are planned for 2022.

Treasury Summary:

\$21,461 Balance for 2022

\$24,811 Adjusted Balance for 2022

\$450 Adjusted Balance for 2023

WEBSITE ADMINISTRATION

Stephen Parker reported the links have been updated for announcements. Randy reported that the summit pages have been enhanced to contain new details about specific time and dates.

MAILING LIST ADMINISTRATION

Curtis Clark reported one new IBIS subscriber and one new IBIS-ATM subscriber.

LIBRARY UPDATE

Zhiping Yang reported no update or email inquiry on the library side.

INTERNATIONAL/EXTERNAL ACTIVITIES

Conferences:

Graham Kus reported no new conferences.

Press Updates

Randy Wolff reported no new items.

Related standards

Michael Mirmak reported on IEC 63055/IEEE 2401, JEITA "LPB" – There was an IEEE DASC meeting on October 7, 2022, and Okabu-san gave an update on IEEE 2401 status and plans. Then in November 2022, there would be a more detailed presentation in Japan with JEITA. In

summary, they currently have 2401-2019 where the first release was 2015, and second in 2019 which introduced IBIS 7 AMI support along with S-parameters. That has been adopted by the IEC. It has not been formally published but has been adopted. The plan is to incorporate into 2025, to support power circuits, EMC, and some schematic support. They have also already added some thermal and system-C support in 2019, but even more in 2025. When the report is available through DASC, it will be forwarded.

IEEE IBIS Standardization

Randy Wolff reported no new contact from SAE-ITC, will ping them about this work [AR].

IBIS Summits:

Asia IBIS Summit (China) November 4, 2022:

Randy Wolff reported this summit is two weeks out on November 4, 2022, which is a Thursday evening November 3 in the US, and will be a hybrid summit.

Asia IBIS Summit (Japan) November 11, 2022:

Randy Wolff reported this will be held November 11, 2022, which is a Thursday evening November 10 in the US, and will be a hybrid summit. Some presentations will be recorded in the upcoming weeks.

Bob Ross reported that several presentations are pre-recorded and ready. Some presentations have recently come in and require review. Others have some confidential notices on their slide decks which must be removed for use in an IBIS Summit presentation format. While we do not yet have a full program, there is sufficient material for three to four hours of presentation. Randy also mentioned that he has an additional presentation for the Japan summit but may not be available in time for China summit. However, China has nearly a full program so there is no issue.

Bob also reported there is a presentation from Fujitsu has been submitted but not yet been reviewed. He clarified the reason for pre-recording is to allow Closed Captioning to be completed along with the presentation. In terms of registration JEITA will take care of on-site registration during the Japan Summit.

Americas IBIS Summit (California), DesignCon (2023):

Randy Wolff reported there is still no definitive solution for having the summit on Friday Feb 3, 2023, but there are some proposals in motion with member companies to see if spaces are available or co-sponsored. There was discussion on this topic about pending possibilities which are at request stage but not yet approved. Randy noted the meeting would be hybrid in nature to allow remote attendance.

QUALITY TASK GROUP

Bob Ross reported we have a new BUG238 to classify.

The parser developer said if we need to do a new build, but for the same release, it is not a problem. One of the bugs that has not been dealt with, the Windows AMI file DLL giving a false platform report- we do not have a test case that shows the problem, so this would be a future bug. We could do a release, we tentatively planned to do that.

Note: 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 the meetings continue Tuesday afternoons. There is a continued discussion on “Rx_Use_Clock_Input” keyword. The goal is to clarify this area of the specification for version 7.2 that the editorial group is working on.

Note: Task group material can be found at:

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

INTERCONNECT TASK GROUP

Michael Mirmak reported this remains suspended during the editorial task but is accumulating some topics for when it begins again.

Note: Task group material can be found at:

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

EDITORIAL TASK GROUP

Michael Mirmak reported there are one or two editorial BIRDS, one to clock times, and the other to clarifications on what parts on AMI end string would be handed to the model. Randy Wolff asked if there was an estimate for when a draft would be available to the Open Forum. Michael replied if we want to complete approval before the end of this year would not be enough time. However, the process could begin. Randy agreed the earliest we could look at it would be November 18th 2022. Michael said the BIRD on AMI Parameters would be relatively quick but would have to defer to Arpad Muranyi on the clock times BIRD.

Walter Katz stated that the issue is the contents of the data that the Clock .dll/.so has in the Clock Forwarding situation to the DQ .dll/.so, is not how the transfer, but rather what the contents are of that transfer. And understanding what the rules may be if there are rules on what gets transferred back and forth- this is what the effort is on what is being discussed.

Randy suggested as there are a couple of BIRDS it may be possible to approve a draft specification and is hopeful it would be a possible goal of ratification by the time of the DesignCon IBIS Summit in February 2023.

Note: Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES

Randy Wolff suggested that it is now appropriate to set the cost of membership dues for 2023. Bob Ross moved to set this rate to \$900 and Michael Mirmak seconded. Randy suggested a vote for approval be held by membership in email within a one week turn to count votes.

Roll call: Graham Kus reported a mid-meeting count of 14 in attendance. There were additional attendees during other portions of the meeting and the attendee status listing has been updated accordingly.

NEW AND REVISED *IRDS

Randy Wolff presented BIRD220 on PSIJ and summarized as a shared document during the meeting. Randy asked if Yifan Ding had any additional comments as having done a lot of the work to validate the equations and test during simulation. Yifan mentioned that apply PSIJ sensitivity to the coefficient, the AC noise caused propagation could also be characterized, and may have more results for the next update. There would be no modifications to the equations, this is just additional validation work to characterize the PSIJ sensitivity to AC noise.

Bob Ross added there may be an upcoming BIRD on PSIJ sensitivity from Intel for IBIS 7.2 or 8.0 and these may be combined or differentiated at a future date as they deal with similar topics.

Randy asked Zhiping Yang for any comments and there were none.

IRDS SCHEDULED FOR VOTE

None.

IRDS ELIGIBLE FOR VOTE

None.

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

None.

IBISCHK AND TCHK PARSER AND BUG STATUS

Bob Ross reported that we classified BUG237 and has been included so the parser developer has provided a release. Also, that several BUG authors checked the release that their bugs are addressed. The group is satisfied that a release can be issued at this time. Also, that BUG237 was Arpad Muranyi's issue- that "Rx_Clock_Use_Input" where the arguments were flawed in how they were listed, and incorrect arguments were permitted based on location in the list.

Bob reported on BUG238 from Michael Mirmak that it related to Interconnect Model syntax in group rules where an Error is issued if the same Interconnect Model is repeated within a set. We cannot locate where in the spec this is illegal. For example, a case where this would not be an Error is where a model maker wants to purposely place two Interconnect Models with the same power pins, it would be flagged as illegal. The proposal in this specification is to change from Error to Caution because it would still alert the model developer. Bob discussed various scenarios that justify this being a Caution rather than an Error.

Michael added that to clarify, the issue is that barring any changes to the specification, the assumption of these structures is common pins in an Interconnect Model means they are connected as parallel circuit (as opposed to series). The only way to get replacement or substitution is to use different interconnect model groups. Even interconnect model set assumes that common pins would be connected.

Arpad asked whether this is not discussed our defined in the specification. Michael replied he is looking for a way to use Interconnect Model as a selector or corner case support- so a user can select multiple package corners for example, a user could use those in the same file, relatively convenient. Arpad stated the reason for the question was that it was raised a few times how

many different places we could make model selections- maybe using the "Set" keyword, but not sure if that question was ever answered.

Randy Wolff responded having the recollection was "Group" keyword was the intentional selector for different models such as package variations.

Bob replied that this is going back many years so is in agreement with Randy that the problem with "Group" is it is very inefficient, and we have to make reference to another file and pinout- the only difference might be reference to an IBIS ISS subcircuit but we have to repeat the whole group and Interconnect Model. To make another point we had a pseudo selection mechanism- that doesn't apply here- that we can repeat pins but tag them with aggressor only, so that one Interconnect Model is used but not both. So, if there is aggressor-only pattern, that would be the de facto selection. The intent is that Interconnect Model deals with a specific crosstalk pattern. This particular bug is so that Caution is issued so that a model developer knows maybe they made a cut-and-paste mistake. However it is legal if they wanted to implement this on purpose.

Randy shared an example of an Interconnect Models having the same pins.

Walter Katz offered that they could be calling same model in two Groups but passing different parameters- same IBIS AMI model but in the group it is wrapped differently.

Bob agreed parameters would be a way to differentiate- you could set a parameter for the .subckt name in one Group vs. another then you can call two Groups. But you still have them connected in parallel circuit.

Arpad said another way would be to have file references in there also, maybe called corner, that can have the file references for the three, typical minimum, maximum, and not change anything else. Also something similar to allow IBIS-ISS multiple times to reference in the same pinout- that would be a specification change.

Randy stated the reason we did not do this, is this concept of package model corners is different than actual silicon model corners in the IBIS AMI model itself and that in summary this BUG is to change the Error to Caution.

Michael asked if we need to have an additional sentence to outline the consequence of the error message. There was some discussion on this as to specifics.

Bob moved to mark the bug as Moderate / Medium. Arpad seconded. There were no objections.

Bob continued that the parser developer probably could accommodate this as a new build.

Randy asked if it would not be in 7.1.1- Bob clarified that it would be included in 7.1.1 as a new build and the parser developer agreed.

Bob reported on BUG228 on EMD checking, that is one where an extra message is now provided. We resolved this, but the problem is we cannot bring in an earlier version of IBIS that has pin mapping inconsistent where a bus label can be associated with two different signal names. This was illegal in IBIS 7.0. We cannot do EMD checking with that IBIS file even though it would pass an earlier parser. So we added a message to state we cannot do that. The proposal would be if the parser developer can do it, it would be a toggle error number, and the message would be "BUG228 detected with IBIS file." The issue is the "IBIS ver," both have the same keyword. A line number could also be added for helping the model developer. The parser developer could bring in the file name being checked as a minimum. This is a short message but tells what is required. Bottom line is that the parser developer look at this and see if they

can do something on revising message. This leads to we move forward with another build of the parser with BUG228 and BUG238 in this release.

Randy summarized by asking if we may expect a release of 7.1.1 soon.

Bob agreed and took an AR to communicate to the parser developer on these and get an estimated delivery date [AR].

NEW TECHNICAL ISSUES

Randy invited Bavish Vazhayil from Honeywell to make a self-introduction. Bavish asked about model revision control and other concerns, to whom to address these questions. Randy offered a brief screen-share summary of how to get started with the IBIS resources available through the IBIS website and IBIS email reflector available at freelists.org. There was also some group discussion to point out resources for IBIS-AMI questions, such as the IBIS Cookbook. Arpad Muranyi shared that sometimes models are released on BIRDS and are sometimes the official specification is different than the BIRD and sometimes that effects model behavior because model makers have not updated with official specification.

Randy asked if there were any new technical issues.

Bob Ross asked that the most recent recordings of presentations to be turned in when possible.

NEXT MEETING

Randy Wolff stated that the next IBIS Open Forum meeting date would be November 18, 2022 to avoid conflict with Japan Summit occurring November 10, 2022. The following meeting would be December 9, 2022. There were no objections.

Arpad Muranyi motioned to adjourn. Randy Wolff seconded. The meeting was adjourned.

NOTES

IBIS CHAIR: Randy Wolff (208) 363-1764

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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 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 (attendee X; absent -)

Organization	Interest Category	Standards Ballot Voting Status	August 12, 2022	Sept. 9, 2022	Sept. 30, 2022	Oct. 21, 2022
AMD (Xilinx)	Producer	Inactive	-	-	-	-
Analog Devices (Maxim Integrated)	Producer	Inactive	-	-	-	-
ANSYS	User	Active	X	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Aurora System	User	Active	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	X	X	-
Celestica	User	Inactive	-	-	-	-
Cisco Systems	User	Inactive	-	-	-	-
Dassault Systemes	User	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	-	-
Luminous Computing	General Interest	Inactive	-	-	-	-
Marvell	Producer	Active	-	-	-	X
MathWorks	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
MST EMC Lab	User	Inactive	-	-	-	-
SerDesDesign.com	User	Inactive	-	-	-	-
Siemens EDA (Mentor)	User	Active	X	X	X	X
STMicroelectronics	Producer	Active	-	X	X	X
Synopsys	User	Active	-	X	X	X
Teraspeed Labs	General Interest	Active	X	X	X	X
Waymo	User	Active	X	X	X	X
ZTE Corp.	User	Inactive	-	-	-	-
Zuken	User	Active	-	X	X	X

= Temporarily not a voting member

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.