



## IRDIBIS Open Forum Minutes

Meeting Date: **September 15, 2023**

Meeting Location: **Teleconference**

### VOTING MEMBERS AND 2023 PARTICIPANTS

Altair	(JuneSang Lee)
AMD (Xilinx)	(Bassam Mansour)
Ansys	Curtis Clark*, Wei-hsing Huang
Applied Simulation Technology	(Fred Balistreri)
Aurora System	Dian Yang, Raj Raghuram
Broadcom	(Yunong Gan)
Cadence Design Systems	Kyle Lake*, Jared James, John Philips, Kristoffer Skytte
Celestica	(Sophia Feng)
Cisco Systems	(Stephen Scearce), Hong Wu
Dassault Systemes	Stefan Paret, BAI Longfei
GE Healthcare Technologies	(Balaji Sankarshanan)
Google	(Hanfeng Wang)
Honeywell	Bavish Vazhayil
Huawei Technologies	Danilo Di Febo, Marco De Stefano, (Hang (Paul) Yan)
Infineon Technologies AG	(Christian Sporrer)
Instituto de Telecomunicações	(Abdelgader Abdalla), Joana Catarina Mendes
Intel Corporation	Chi-te Chen, Kingler Cai*, Michael Mirmak*, Hsinho Wu*
Keysight Technologies	Ming Yan, Douglas Burns, Fangyi Rao, Pegah Alavi, Hee-Soo Lee, Heidi Barnes
Marvell	Steven Parker*
MathWorks	Graham Kus*, Walter Katz*, Kerry Schotz
Micron Technology	[Randy Wolff], Justin Butterfield*, Akshay Shivaji Chaudhari, Dragos Dimitriu
MST EMC Lab	Chulsoon Hwang*, Zhiping Yang*
SerDesDesign.com	John Baprawski
Siemens EDA	Arpad Muranyi*, Weston Beal*, Matthew Leslie, Mikael Stahlberg, Todd Westerhoff, Scott Wedge, Randy Wolff*
STMicroelectronics	Olivier Bayet, Rahul Kumar, Raushan Kumar, Manish-FTM Bansal, Sameer Vashishtha
Synopsys	Ted Mido*, (Tushar Pandey), Wael Dghais
Teraspeed Labs	Bob Ross*
Waymo	[Zhiping Yang], (Ji Zhang)
ZTE Corporation	(Shunlin Zhu)
Zuken	[Michael Schäder], Markus Bücken, Ralf Brüning
Zuken USA	Lance Wang*

## OTHER PARTICIPANTS IN 2023

Alphawave Semi	Adrien Auge, Todd Bermensolo
Ciena	Hugues Tournier
Hitachi Ltd.	Yutaka Uematsu
Honeywell	Bavish Vazhayil
India Institute of Technology	Jai Narayan Tripathi, Vinod Verma
Nokia	Ramiro Guzman
OMNIVISION	Sirius Tsang
SAE-ITC	Tammy Patton*
Signal Edge Solutions	Ben Dannan
SI Guys	Donald Telian
Socionext, Inc.	Raymond Yakura
University of Illinois Urbana-Champaign	Jose Schutt-Aine
University of Tunisia, Electronic Laboratory	Malek Souilem
Unaffiliated	Will Hobbs, Mike LaBonte, Jon Powell, Stephen Peters

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:

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[+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.

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## INTRODUCTIONS AND MEETING QUORUM

Lance Wang opened the meeting. Roll Call: Graham Kus reported 11 attendees and that quorum was reached. Lance continued the meeting.

## **CALL FOR PATENTS**

Lance Wang called for declaration of any patents or pending patents related to the IBIS, IBIS-ISS, ICM, or Touchstone 2.0 specifications. Patents were not declared and there was no comment raised regarding specifications.

## **REVIEW OF MINUTES AND ARS**

- Review of Previous Meeting's Minutes and ARs
- August 4, 2023 Hybrid IBIS Summit at IEEE EMC+SIPI 2023
- August 25, 2023 IBIS Open Forum teleconference
- These have not been updated to the web site, so adoption is tabled.

ARs:

- Update Website for University Relations and DASC Liaison
- Lance to send a vote solicitation email for IBIS Quality

Specification 3.0

- Lance to send a vote solicitation email for BIRD225
- Lance to send a vote solicitation email for TSIRD5.1
- Lance to send a vote solicitation email for TSIRD6

- Lance reports ARs are Completed

## **ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS**

Lance Wang called for any new announcements; no new agenda items were adopted.

## **MEMBERSHIP STATUS AND TREASURER'S REPORT**

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Bob Ross reported that Tammy Patton is being phased in as our new SAE ITC contact. Meanwhile there are no changes in the numbers from the last report. We expect a \$347.88 payment to Steve Parker for the ibis.org URL charge after payment documentation is submitted.

We expect payments for the Asian IBIS Summit (Shanghai) based on the number of participants.

We also expect another sponsorship payment.

Based on a quote, we expect to pay the parser developer for IBISCHK721 in 2023.

**\$17,245** Balance for 2023

**\$22,295** Adjusted Balance for 2023 (Note, 2020 ZTE sponsorship moved forward to 2023)

## **WEBSITE ADMINISTRATION**

Steven Parker was available to report later in the meeting. Lance Wang reported on his behalf that there is a new web page for BIRD listings, based on a new Python script. It is not yet linked to the BIRD link on the main page but is semi-live under the hood.

Steven reported that the current web site is a very HTML based system. The goal here is to make it so that making people responsible for documents to be able to upload those artifacts, rather than relying on a webmaster to adjust or modify HTML. In the case of the TSIRDs, right now Lance has access but all the key information is there. For example, this month Steven has worked on automatic parsing of the text files for BIRD section, which sort of creates a database-backed system. It can read the .doc file or the .txt file, depending on what it is. The most recent are backed by the BIRD data base system and if something needs to be updated right after a meeting, it can be done without a webmaster modifying HTML.

Steven has created a GitHub (private) that is IBIS Open Forum to enable the website contents to be hosted. If anyone is interested it fosters group participation. Email Steven if you wish to participate in modification or distribution.

The same would be true for BIRDs, TSIRDs, or Minutes, the person can now upload directly.

## **MAILING LIST**

Curtis Clark reported no updates.

## **LIBRARY UPDATE**

Zhiping Yang reported no updates.

## **UNIVERSITY RELATIONS**

Professor Chulsoon Hwang reported no updates.

## **INTERNATIONAL/EXTERNAL ACTIVITIES**

### Conferences:

Lance Wang reported no updates. IBIS Summits would be discussed in their section below.

### Press Updates

Lance Wang reported no updates.

### Related Standards

Michael Mirmak reported no updates.

### IBIS Summits:

Asian Summits (November 2023)

- China IBIS Summit, Shanghai, November 10, 2023 at Park Yard Hotel.
- Sponsors: ZTE, ANSYS China, Cadence

Lance Wang stated this will be a whole-day event, starting at 8:30 depending on presentation listing. After 3:30 local time, there is a sponsorship promotion introduction and promotion section. Thus far, Cadence and Ansys are sponsors. It is possible that Imperium would be a sponsor also. Bob Ross asked if he should be in the loop to make sure SAE-ITC is able to

perform financial accounting. There was group discussion on how best to collect recording or minutes of the proceedings.

- Japan IBIS Summit (organized by JEITA) Tokyo, November 14, 2023.
- Sponsors: Lance reported that JEITA will handle all sponsorship for this conference. There will be a half day summit meeting. This will support remote/hybrid participation. There would be a room to accommodate local attendees, such as JEITA officers. The balance of participants would be online, including some pre-recorded presentations. Randy Wolff reported that due to pre-recording, the presentations may be sooner than normal by some weeks, to accommodate sub-titling of the slides/presentations. Lance will take an AR to contact JEITA about this [AR].

US Summit (February 2024):

- DesignCon IBIS Summit (Santa Clara, CA – Friday February 2, 2024) Sponsors: TBD
- Sponsors: TBD.

Lance Wang asked Graham Kus to speak about MathWorks sponsorship of a facility. Graham stated that on behalf of Barry Katz, Director of SPC and Comms at the MathWorks, the organization would offer a sponsorship of a facility at Mission Towers complex approximately 1 mile from the Santa Clara Convention Center. This would be the same facility provided last year for the 2023 IBIS Summit.

## **QUALITY TASK GROUP**

Bob Ross reported that there is a quality revision to schedule to vote upon this session. Weston Beal was not currently present when Lance Wang asked for comments. Bob Ross briefly spoke that updates are mainly editorial; and the main edition update is to speak to power integrity as a topic. There are some additional rules added to earlier sections to support this. Randy Wolff stated that this mostly defines level 4 as power-aware IBIS models. There would be a new spreadsheet to help people define models.

Lance asked for comments before vote for Quality Specification 3.0 to adopt into IBIS Specification:

Randy Wolff motioned to vote for approval Quality Specification level 3.0. Bob Ross seconded the motion. There were no objections. The motion passed.

- Ansys – Yes
- Cadence – Yes
- Intel Corporation - Yes
- Marvell – not present
- MathWorks – Yes
- Micron Technology – Yes (via email ballot)
- MST EMC Lab – Yes
- Siemens EDA – Yes
- Synopsys – Yes
- Teraspeed Labs – Yes (via email ballot)
- Zuken – Yes

- 10 Yes counts
- 0 No votes
- 0 Abstains

Lance Wang reported that the vote passed.

**Note:** The Quality task group checklist and other documentation can be found at:

[https://www.ibis.org/quality\\_ver3.0/](https://www.ibis.org/quality_ver3.0/)

### **ADVANCED TECHNOLOGY MODELING TASK GROUP**

Arpad Muranyi reported Tuesdays at noon pacific time, past two weeks are major topics such as Kinger's BIRD223 on SPIM, some editorial issues. Kinger Cai reported that he had no further updated until reviewing the most recent editorial feedback. Lance Wang asked if there were further questions. There were none asked.

**Note:** Task group material can be found at:

[http://www.IBIS.org/macromodel\\_wip/](http://www.IBIS.org/macromodel_wip/)

### **INTERCONNECT TASK GROUP**

Michael Mirmak reported that at the moment focused on Touchstone 3 efforts. Should have a closer TSIRD to port-mapping and pole-residue format soon. He advised to expect to see one or both of those coming to the open forum in a few weeks.

Lance Wang asked for any questions. There were none asked.

**Note:** Task group material can be found at:

[http://www.IBIS.org/interconnect\\_wip/](http://www.IBIS.org/interconnect_wip/)

### **EDITORIAL TASK GROUP**

Michael Mirmak reported no updates as this group is idled at present.

**Note:** Task group material can be found at:

[http://www.IBIS.org/editorial\\_wip/](http://www.IBIS.org/editorial_wip/)

### **NEW ADMINISTRATIVE ISSUES**

Tammy Patton introduced herself as the representative of SAE-ITC for the IBIS Open Forum. Brief introductions to the IBIS Open Forum board members was conducted.

### **ROLL CALL**

Mid-meeting roll call: Graham Kus took the roll call and reported 15 attendees. He declared Quorum is still in place.

## **TECHNICAL DISCUSSION**

Arpad Muranyi encouraged attendees to review BIRD220 and BIRD226 as to whether they can co-exist, or whether they should be one or the other. Randy Wolff stated that BIRD220 presents Jitter on an individual buffer basis. BIRD226 is a very different approach.

Link to BIRD220:

<https://IBIS.org/birds/bird220.docx>

## **NEW AND REVISED \*IRDS**

BIRD223.1:

Kinger Cai reported this was approved on July 14, 2023. Some feedback was provided after this point on an editorial basis and would be BIRD223.1. Kinger discussed some of the editorial feedback. Bob Ross stated that this BIRD needed to be provided on the website and reflector. Arpad Muranyi stated this would have to be done for this BIRD to be officially submitted to the specification.

Link to BIRD223.1:

<https://IBIS.org/birds/bird223.1.docx>

## **IRDS SCHEDULED FOR VOTE**

BIRD225

Arpad Muranyi stated this was motivated by the parser interaction with EMD files in regard to IBIS Ver statement. If the IBIS file is instantiating an EMD file the IBIS\_Ver must be correct. This clarifies that statement.

Arpad motioned to vote on this item. Kyle Lake seconded the motion. There were no objections. The motion passed.

- Ansys – Yes
  - Cadence – Yes
  - Intel Corporation – Yes
  - MathWorks – Yes
  - Micron Technology – Yes (via email ballot)
  - MST EMC Lab – Yes (via email ballot)
  - Siemens EDA – Yes
  - Synopsys – Yes
  - Teraspeed Labs – Yes (via email ballot)
  - Zuken USA – Yes
- 
- 10 Yes votes
  - 0 No votes

- 0 Abstain

Lance Wang announced that the vote passed.

#### TSIRD5.1

Arpad Muranyi reports this is a Touchstone specification related proposal, after so many years seeing models with officially illegal syntax on the Option line, to decide to leverage some entries for reference resistance. Officially this was one value at the time. If a person wanted to do more than one, Touchstone 2.0 allowed for that. But if a person wanted to avoid Touchstone 2.0, they would include this Option line in Touchstone 1.0 with the multiple impedance values. We are trying to make this legal so that EDA vendors can officially support this syntax. And to unify the implementation. It appears to be a useful change. Bob Ross clarified this would extend the Touchstone 1.1 syntax rules. What is designated in Touchstone 2.1 would be still different port reference impedances and remains the way to do so. Arpad clarified this only affects the Option line in the Touchstone 1.1 files. Ted Mido asked if there was any rule about new-line or carriage return in the line. Arpad stated that on the Option line there is no line length limit, but it does have to be one line. We wanted to keep this TSIRD as simple as possible and avoid other fixes that could expand or gallop in scope creep.

Lance stated this is schedule for vote. Arpad motioned to vote. Bob seconded the motion. There were no objections. The motion passed.

- Ansys – Yes
- Cadence – Yes
- Intel Corporation – Yes
- MathWorks – Yes
- Micron Technology – Yes (via email ballot)
- MST EMC Lab – Yes (via email ballot)
- Siemens EDA – Yes
- Synopsys – Yes
- Teraspeed Labs – Yes (via email ballot)
- Zuken USA – Yes

10 yes votes

0 no votes

0 abstains

Lance Wang announced that the vote passed.

#### TSIRD6

Arpad Muranyi reports, this was originally a proposal by Bob Ross, but ended up with editorial corrections under his name. During discussions on previous Option line for corrections, some additional modifications snuck into the discussions and the Touchstone specification is a bit ambiguous in regard to file extensions and Bob suggested correcting that. Again this is more like an editorial change, very small. Bob added, the Touchstone 2.0



and 2.1 supported any extension for files. Typically, .sNp is used for one of the extension options. This is semi-technical but clarifies contradictory information. Additionally, this applies for any version of Touchstone file. Arpad stated this has no technical changes to the Touchstone specs themselves.

Lance Wang asked for motion to vote. Arpad motioned to vote. Bob seconded. There were no objections. The motion passed.

- Ansys – Yes
- Cadence – Yes
- Intel Corporation – yes
- MathWorks – Yes
- Micron Technology – Yes (via email ballot)
- MST EMC Lab – Yes (via email ballot)
- Siemens EDA – Yes
- Synopsys – Yes
- Teraspeed Labs – Yes (via email ballot)
- Zuken USA – Yes

10 Yes votes

0 No votes

0 abstains

Lance Wang announced that the vote passed.

## **IRDS ELIGIBLE FOR VOTE**

BIRD226: Support System Level SI-PI

This BIRD considers design and involving all power supplies instead of one power supply. This adds keywords related to these topics. BIRD226 also proposes to add PSIJ sensitivity keywords to join the rails together as well as a voltage list for all supply rails, involved in the same one interface. This is the proposal summary.

Arpad Muranyi suggested that BIRD226 and BIRD220 be compared side by side. And decide whether both can co-exist in the spec, and that this be considered over the next 3 weeks.

Lance agreed that both BIRD226 and BIRD220 would remain eligible for vote.

Arpad reported that we wanted to get this out to get some editorial changes finalized in order to have them available to build upon for Touchstone 3.x and future Touchstone specifications.

After some discussion, consensus is that BIRD226 would be eligible for vote at a future Open Forum meeting.

Link to BIRD226:

<https://www.ibis.org/birds/bird226.docx>

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

Lance reported no tabled IRDs.

## **IBISCHK AND TSCHK PARSER AND BUG STATUS**

IBISCHK Parser: Bob Ross reported no new bugs.

TSCHK Parser: Bob reported no new bugs.

Bob related that there would be feedback/contract on IBISCHK 7.2.1 to the parser developer for a quote. Then it would be subject to approval by this IBIS Open Forum committee. No further to report.

Lance Wang asked for questions. None were asked.

## **NEW TECHNICAL ISSUES**

Lance Wang reported no new items.

## **NEXT MEETING AGENDA AND SCHEDULING**

Lance Wang announced that the next meeting would be October 6, 2023. He suggested that due to personal travel, he may require coverage for October 27, 2023 perhaps by Randy Wolff. Randy agreed he may be able to support this.

Graham Kus motions to adjourn. Arpad Muranyi seconded. There were no objections. The motion passed. The meeting was 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](mailto: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](mailto:IBIS@freelists.org) and/or [IBIS-users@freelists.org](mailto:IBIS-users@freelists.org) email lists (formerly [IBIS@eda.org](mailto:IBIS@eda.org) and [IBIS-users@eda.org](mailto:IBIS-users@eda.org)):
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  - <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: IBISchk7, 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](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	July 14, 2023	Aug 4, 2023	Aug 25, 2023	Sept 15, 2023
Altair	User	Inactive	-	-	-	-
AMD (Xilinx)	Producer	Inactive	-	-	-	-
Ansys	User	Active	X	-	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Aurora System	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	-	X	X
Celestica	User	Inactive	-	-	-	-
Cisco Systems	User	Inactive	-	X	-	-
Dassault Systemes	User	Inactive	-	X	-	-
GE Healthcare Technologies	User	Inactive	-	-	-	-
Google	User	Inactive	-	-	-	-
Honeywell	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	Inactive	-	-	-	-
Marvell	Producer	Inactive	X	-	-	X
MathWorks	User	Active	X	X	-	X
Micron Technology	Producer	Active	-	-	-	X
MST EMC Lab	User	Active	X	X	X	X
SerDesDesign.com	User	Inactive	-	-	-	-
Siemens EDA	User	Active	X	X	X	X
STMicroelectronics	Producer	Inactive	-	X	-	-
Synopsys	User	Active	X	-	X	X
Teraspeed Labs	General Interest	Active	X	X	X	X
Waymo	User	Inactive	-	-	-	-
ZTE Corp.	User	Inactive	-	-	-	-
Zuken	User	Active	X	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.