



IBIS Open Forum Minutes

Meeting Date: **July 19, 2019**

Meeting Location: **Teleconference**

VOTING MEMBERS AND 2019 PARTICIPANTS

ANSYS	Curtis Clark, Marko Marin, Miyo Kawata Toru Watanabe, Akira Ohta
Applied Simulation Technology	(Fred Balistreri)
Broadcom	(Yunong Gan)
Cadence Design Systems	[Brad Brim], Ambrish Varma, Ken Willis Yingxin Sun, Zhen Mu*
Cisco Systems	(Stephen Searce)
Dassault Systemes (CST)	Stefan Paret, Longfei Bai
Ericsson	Anders Ekholm, Anders Vennergrund, Felix Mbairi Hui Zhou, Inmyung Song, Mattias Lundqvist Wenyan Xie, Zilwan Mahmood
GLOBALFOUNDRIES	Steven Parker*
Google	Zhiping Yang, Songping Wu
Huawei Technologies	Antonio Ciccomancini
Futurewei Technologies	Albert Baek
IBM	Michael Cohen*, Greg Edlund
Infineon Technologies AG	Anke Sauerbrey, Pietro Brenner, Francesco Settino
Instituto de Telecomunicações	(Abdelgader Abdalla)
Intel Corporation	Hsinho Wu*, Michael Mirmak*, Nhan Phan Kinger Cai, Eddie Frie, Wendem Beyene Yuanhong Zhao
Keysight Technologies	Radek Biernacki*, Hee-Soo Lee, Stephen Slater Jian Yang, Ming Yan, Pegah Alavi
Maxim Integrated	Joe Engert, Yan Liang, Charles Ganai
Mentor, A Siemens Business	Arpad Muranyi*, Raj Raghuram, Weston Beal Vladimir Dmitriev-Zdorov, Mikael Stahlberg Todd Westerhoff, Ed Bartlett, Nitin Bhagwath
Micron Technology	Randy Wolff*, Justin Butterfield
NXP	(John Burnett)
SiSoft (MathWorks)	Mike LaBonte*, Graham Kus, Walter Katz*
SPISim	Wei-hsing Huang
Synopsys	Ted Mido*, Adrien Auge, John Ellis, Sam Sim Scott Wedge
Teraspeed Labs	Bob Ross*
Xilinx	Ravindra Gali
ZTE Corporation	(Shunlin Zhu)

Zuken
Zuken USA

Michael Schäder
Lance Wang*

OTHER PARTICIPANTS IN 2019

Apollo Giken Co.	Satoshi Endo
AVL	Wolfgang Röhrner
Carleton University	Ram Achar
Continental	Stefanie Schatt
Hitachi	Norio Chujo
IO Methodology	[Lance Wang]
John Baprawski, Inc.	John Baprawski
Hamburg University of Technology	Til Hillebrecht
KEI Systems	Shinichi Maeda
Marvell	Johann Nittmann
OmniVision	Sirius Tsang
Politecnico di Torino	Stefano Grivet-Talocia, Paolo Manfredi Alessandro Zanco
Qualcomm	Kevin Roselle
Raytheon	Joseph Aday
Renesas	Genichi Tanaka
Ricoh Co.	Kazuki Murata
SAE ITC	(Jose Godoy)
Seagate	Alex Tain
Signal Metrics	Ron Olisar
Silvaco Japan Co.	Yoshiharu Furui
Socionext	Megumi Ono, Motoaki Matsumura, Yuji Nakagawa
STMicroelectronics	Olivier Bayet, Aurora Sanna
Toshiba	Imi Hitoshi
Toshiba Electronic Devices & Storage Corp.	Atsushi Tomishima
Université de Bretagne Occidentale	Mihai Telescu
University of Cassino	Antonio Maffucci
University of Toronto	Fadime Bekmambetova
University of Zagreb	Adrijan Baric

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
August 9, 2019	624 227 121	IBISfriday11

For teleconference dial-in information, use the password at the following website:

<https://tinyurl.com/IBISfriday>

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

Randy Wolff said that Curtis Clark was unable to attend due to flight problems. Mike LaBonte 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 June 21, 2019 IBIS Summit at IEEE SPI 2019. Bob Ross moved to approve the minutes. Mike LaBonte seconded. Without objection the minutes were approved.

Randy Wolff called for comments on the minutes of the June 28, 2019 IBIS Open Forum teleconference. Radek Biernacki moved to approve the minutes. Bob Ross seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

1. Steven Parker to add the 2020 SPI IBIS Summit to the bottom of the Unscheduled section of the Events page [AR].
Randy Wolff reported this as done.
2. Steven Parker to move the Asian IBIS Summits into the Scheduled section on the Events page [AR].
Randy Wolff reported this as done.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

None.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we had 26 members. We had \$13,368 cash flow for 2019 and a

\$16,118 adjusted balance for 2019, unchanged from the previous report. We may gain one or two more members. We also should have parser source code license income soon.

WEBSITE ADMINISTRATION

Steven Parker reported that only the usual regular website updates had been made.

MAILING LIST ADMINISTRATION

Mike LaBonte reported that emails activity was normal and the freelists.org server was not encountering any blacklist problems.

LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

EDI CON is a web-based conference held September 10-12, 2019. The third day has some SI/PI content with some prominent experts giving presentations. More information is available at:

<https://www.edicononline.com/>

- Press Update

Mike LaBonte reported that Eric Bogatin's article about Touchstone was listed in a second email newsletter from the Signal Integrity Journal, and that two more feedback emails were then received at our touchstone@ibis.org address. Randy Wolff said he would contact people to thank them for their input. The article is at:

<https://www.signalintegrityjournal.com/blogs/4-eric-bogatin-signal-integrity-journal-technical-editor/post/1285-the-new-touchstone-specification-30-awaits-for-your-input>

- Related standards

IEC 63055/IEEE 2401, JEITA "LPB"

Michael Mirmak had received notice from Fukuba-san that P2401 now has 6 eligible ballot entities. Five will be needed for approval. Balloting should be complete by August 21. Randy Wolff asked if any follow-up actions were required on our part. Michael said members of balloting entity members can and should get the materials from their P2401 representative. He noted that P2401 is entity based, whereas DASC is individual based.

SUMMIT PLANNING AND STATUS

- Asia Summits

Asian IBIS Summits are scheduled in Shanghai on November 1, 2019, Taipei on November 4, 2019, and Tokyo on November 8, 2019.

Bob Ross said the meeting rooms had been reserved. Plans for handling sponsorship were being worked on.

- DesignCon 2020 Summit

Bob Ross suggested beginning the planning for a DesignCon 2020 IBIS summit soon. We should have a motion in the next meeting to schedule a vote.

QUALITY TASK GROUP

Mike LaBonte reported that the group is meeting on Tuesdays at 8:00 a.m. PT. Only one meeting was held in the last 3 weeks. The group continues to focus on ibischk7.0.0. The agreement document has been sent to likely source code license purchasers.

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

https://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. Michael Mirmak had submitted a draft BIRD for frequency-dependent Tx Rj, that will be reviewed in a future meeting. Discussions about DC_Offset proposals were continuing.

Task group material can be found at:

https://www.ibis.org/macromodel_wip/

INTERCONNECT TASK GROUP

Michael Mirmak reported that the group meets at 8:00 a.m. PT on Wednesdays. The group had reviewed Touchstone feedback emails received in response to Eric Bogatin's article about Touchstone. Bob Ross had raised a specification issue found on IBIS 7.0 page 311. That discussion was to be continued in the next meeting.

Task group material can be found at:

https://www.ibis.org/interconnect_wip/

EDITORIAL TASK GROUP

Michael Mirmak reported the task group remains suspended.

Task group material can be found at:

https://www.ibis.org/editorial_wip/

NEW ADMINISTRATIVE ISSUES

None.

BIRD200: C_COMP MODEL USING IBIS-ISS OR TOUCHSTONE

Randy Wolff introduced new BIRD200. This BIRD had been a long time in development. The ATM group had held a vote to submit the draft. It would allow a C_comp model to be more complicated than a single capacitor, using IBIS-ISS or Touchstone. Discussion and submission had been delayed until after BIRD189.7 was passed and in IBIS 7.0. The new feature allows for timing measurements to be made at an internal subcircuit node. A mode parameter allows for separate C_comp models for driving and non-driving modes. Parameters could be specified by corner. Michael Mirmak asked if legacy C_comp would still be required. Randy said it would. The BIRD also had a new rule requiring [C Comp Corner] if the new [C Comp Model] is present.

Walter Katz asked if C_comp would be used in simulation if [C Comp Model] was present. Mike LaBonte asked if the values of C_comp could be zero when it was known that they would not be used. Arpad Muranyi said Walter had used the wrong keyword name, that [C Comp Corner], not [C Comp Model], had a bearing on whether C_comp was used. Walter said [C Comp Corner] only specified that C_comp values were to be in typ/slow/fast corner order, not min/typ/max, and that it contained no values. Arpad said Walter was calling for [C Comp Corner] to have realistic values. Walter said [C Comp Corner] did not have values. Bob Ross said [C Comp Corner] did have values. Randy showed [C Comp Corner] in IBIS 7.0. Radek Biernacki said the point was that C_comp would still be required. Walter said IBIS 7.0 page 68 showed that [C Comp Corner] had a subparameter with values, but there were no values on the keyword line. Randy said the C_comp values under [C Comp Corner] were in typ/slow/fast order, not typ/min/max.

Michael Mirmak asked what IBIS version this BIRD would target. Randy suggested it would be IBIS 7.1. Bob Ross agreed.

BIRD197.3: NEW AMI RESERVED PARAMETERS DC_OFFSET AND NRZ_THRESHOLD

Walter Katz said the major change done was to allow DC_Offset to be either Usage In or InOut. If InOut, the EDA tool would know the model had shifted the output waveform. In that case NRZ_Threshold would also be output to inform the EDA tool. Arpad Muranyi said the BIRD197.4 draft would be reviewed for submission next week.

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.

BIRD198: KEYWORD ADDITIONS FOR ON DIE PDN (POWER DISTRIBUTION NETWORK) MODELING

Discussion was tabled.

IBISCHK PARSER AND BUG STATUS

Bob Ross reported the first complete source code package had been received. Bob has reviewed 12 of the 32 test cases. Some required closer inspection. Some clarification BIRDS may result from questions posed by the developer. The source code fixes BUG205, issued by the developer. Errors were not reported for new AMI parameters that illegally contained both Usage Out and Format Corner. We are not fixing other bugs. The developer discovered as Version 7.0 specification violation in the [Interconnect Model]s for example 6. They had terminals for three interfaces because the reference terminals were connected to the wrong interface. For example, the buffer to die pad [Interconnect Model] used a Pin_Rail reference, and the die pad to pin [Interconnect Model] used a Buffer_Rail reference.

Bob sent the license agreement as a heads-up to 12 traditional licensees and got responses from 5. No payments had been received yet. Some will not pay until the code is received. Two have signed the agreement.

The review may take another week. Michael Mirmak asked if release would be 6 weeks after the end of the review. Bob said the executable would be available in a couple of weeks. Mike LaBonte said he had compiled for Red Hat Linux and tested against a library of models, finding no regression problems. He will try 3 different Red Hat Enterprise Linux releases to determine the best choice. Bob said he had downgraded some models to version 6 to test for regression. A new rule caused a number of existing models to fail. The code was then changed to apply that check only to version 7.0. Arpad said that error should not be flagged unless [IBIS Ver] is 7.0. Bob agreed, adding that the problem, which involved overlapping signals and buses, was a real problem even in prior versions. Mike felt that the issue was difficult to explain without seeing the problem case. Walter suggested that model makers should explain what EDA tools should do when buses are shorted together. Arpad Muranyi said data book signal_name was not used for netlisting and should not cause a problem. Randy Wolff suggested this could be discussed in the interconnect group. Radek Biernacki said It seemed to be an issue only where an existing [IBIS Ver] 6.x or lower model was modified to read [IBIS Ver] 7.0. Would it then be sufficient to include in the error message that this could be a possible reason for the error? Arpad agreed it would be a problem mostly in that case. Bob said it could impact [IBIS Ver] 7.0 models, but not existing models. Some vendors may have surprises if they upgrade existing models to 7.0.

Mike LaBonte suggested that "IBISCHK6 Bugs" on the home page navigation bar probably should be changed to "IBISCHK Bugs". Steven Parker agreed, noting that the bug list covered all IBISCHK versions. Arpad Muranyi suggested "TSCHK2 Bugs" likewise could be changed to "TSCHK Bugs". Bob Ross was not certain that would be necessary, but Mike felt it didn't hurt to prepare for a future TSCHK3.

Steven Parker to remove numbers from "IBISCHK6 Bugs" and "TSCHK2 Bugs" on home page

[AR]

NEW TECHNICAL ISSUES

None.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held on August 9, 2019. Randy Wolff may be traveling, but he expected to be able to attend anyway. The following teleconference meeting is tentatively scheduled for August 30, 2019. Arpad noted that it was close to the Labor Day U.S. holiday, on September 2, 2019. Bob Ross felt August 30 would be OK. Michael Mirmak felt September 6, 2019 would be better. Michael Cohen asked if subsequent meetings would be shifted. We have taken both approaches in the past, either shifting subsequent meetings, or making the shift one time only, depending on whether it was felt a 2-week interval after was warranted. Michael Mirmak moved to move the next meeting to September 6, 2019. Arpad seconded. Without objection the meeting was rescheduled.

Michael Cohen moved to adjourn. Michael Mirmak seconded the motion. Without objection the meeting adjourned.

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NOTES

IBIS CHAIR: Randy Wolff (208) 363-1764

rwolff@micron.com

Principal Engineer, Silicon SI Group, Micron Technology, Inc.

8000 S. Federal Way

P.O. Box 6, Mail Stop: 01-711

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

steven.parker@averasemi.com

Principal Member of Technical Staff, GLOBALFOUNDRIES M/S 5E1

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:

<https://www.ibis.org/bugs/ibischk/>

<https://www.ibis.org/bugs/ibischk/bugform.txt>

The BUG Report Form for `tschk2` resides along with reported BUGs at:

<https://www.ibis.org/bugs/tschk/>

<https://www.ibis.org/bugs/tschk/bugform.txt>

The BUG Report Form for `icmchk` resides along with reported BUGs at:

<https://www.ibis.org/bugs/icmchk/>
https://www.ibis.org/bugs/icmchk/icm_bugform.txt

To report s2ibis, s2ibis2 and s2iplt bugs, use the Bug Report Forms which reside at:

<https://www.ibis.org/bugs/s2ibis/bugs2i.txt>
<https://www.ibis.org/bugs/s2ibis2/bugs2i2.txt>
<https://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:

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

Check the IBIS file directory on [ibis.org](https://www.ibis.org/) for more information on previous discussions and results:

<https://www.ibis.org/directory.html>

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SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	Standards Ballot Voting Status			
			June 7, 2019	June 21, 2019	June 28, 2019	July 19, 2019
ANSYS	User	Active	X	-	X	-
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Inactive	X	-	-	X
Cisco Systems	User	Inactive	-	-	-	-
Dassault Systemes	User	Inactive	-	X	-	-
Ericsson	Producer	Inactive	-	-	-	-
GLOBALFOUNDRIES	Producer	Active	X	-	X	X
Google	User	Inactive	-	-	-	-
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	X	X	-	-
Instituto de Telecomunicações	User	Inactive	-	-	-	-
IBM	Producer	Active	X	-	X	X
Intel Corp.	Producer	Active	X	-	X	X
Keysight Technologies	User	Active	X	-	X	X
Maxim Integrated	Producer	Inactive	-	-	-	-
Mentor, A Siemens Business	User	Active	X	-	X	X
Micron Technology	Producer	Active	X	-	X	X
NXP	Producer	Inactive	-	-	-	-
SiSoft	User	Active	X	-	X	X
SPISim	User	Inactive	X	-	-	-
Synopsys	User	Inactive	X	-	-	X
Teraspeed Labs	General Interest	Active	X	-	X	X
Xilinx	Producer	Inactive	-	-	-	-
ZTE Corp.	User	Inactive	-	-	-	-
Zuken	User	Active	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.