



IBIS Open Forum Minutes

Meeting Date: **September 27, 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	Steve 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
October 18, 2019	624 227 121	IBISfriday11

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

<http://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

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 September 6, 2019 IBIS Open Forum teleconference. Mike LaBonte moved to approve the minutes. Bob Ross seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

1. Randy Wolff to find out what organizations were involved in creating JEP30 and who would make use of it [AR].
Randy noted that this was in progress and should remain an active [AR].
2. Michael Mirmak to check on the cost of making IEEE 2401 available via the IEEE Get Program [AR].
Michael was unable to join the first part of the meeting. Randy noted that Michael had informed us via email that this is in progress and should remain an active [AR].
3. Steve Parker to add the known issues document for IBIS 7.0 to the website [AR].
Steve was unable to join the meeting. Randy reported that this had been done.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

None.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we have 26 members.

We have \$22,368 cash flow for 2019 and a \$25,118 adjusted balance for 2019. The \$6,000 increase relative to the previous report is the result of two new parser license purchases. We have six fully signed agreements, and these organizations will receive the parser code:

ANSYS

Cadence Design Systems

Keysight Technologies

Julin (Shanghai) Microelectronics

Mentor, A Siemens Business

Zuken

WEBSITE ADMINISTRATION

Steve Parker was unable to join the meeting. Randy Wolff reported that Steve had posted the known issues document for IBIS 7.0 to the website (previous [AR]). Randy noted that Steve had also updated the Summits page to reflect the latest list of sponsors for the Asia IBIS Summits. Bob Ross noted that Steve had also moved the DesignCon 2020 IBIS Summit to the scheduled events section per our vote at the last meeting. Bob noted that he had also asked Steve to post the Mandarin version of the Shanghai announcement and the Japanese version of the Tokyo announcement to the webpage.

Randy noted that our parent organization SAE-ITC has put together a draft top-level IBIS website that currently exists under the SAE website (<https://ibis.sae-itc.com/>). We have upcoming discussions about our existing website, their website, and whether we will continue to host our own website or move onto SAE-ITC's

MAILING LIST ADMINISTRATION

Mike LaBonte noted that he had unsubscribed a few addresses that were bouncing, which was normal. He noted that a number of @st.com addresses had started bouncing simultaneously. He had not yet been unable to reach any of these subscribers by other means and asked anyone subscribed from @st.com to contact him if they weren't receiving IBIS email.

Mike noted that he had preliminary discussions with the webmaster Steve Parker to explore the idea of migrating our mailing lists from freelists.org to ibis.org. Mike noted that this was partly prompted by the two-day outage freelists had experienced in early September, though he also noted that service had resumed, and no emails were lost. Mike said we had the option to add software to our ibis.org website and could add email lists to it. Mike noted that there is no hurry to do it, but that he and Steve may create a list for testing purposes.

LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

EDI CON is a web-based conference that was held September 10-12, 2019. Mike LaBonte noted that he had attended several sessions. He said that the trend was toward EDI focusing on areas that aren't very relevant to IBIS. Randy Wolff noted that we could reconsider whether to include it in our plans next year.

- Press Update
Nothing new was reported.

- Related standards
IEC 63055/IEEE 2401, JEITA "LPB"
Randy Wolff reported that Michael Mirmak had informed us that he had no new updates for this meeting.

SUMMIT PLANNING AND STATUS

- Asia Summits

Shanghai (November 1, 2019):

Bob Ross noted that we now had five sponsors. Huawei is the primary sponsor, and ANSYS, Keysight Technologies, Synopsys, and ZTE are also sponsors. Two of the sponsors have said that they will provide a vendor-specific presentation, and there is a possibility that a third will as well. Bob noted that he was busy with getting sponsorship deals approved. Bob noted that he hadn't yet started receiving presentations, but we would have to start reviewing presentations in time for Lance Wang to get the summit booklets printed. Randy Wolff noted that the third announcement would go out that day.

Taipei (November 4, 2019):

Bob noted that Synopsys is a sponsor. We are waiting for other sponsorship commitments.

Tokyo (November 8, 2019):

Bob noted that this will be a half-day summit in the afternoon. There will be no vendor-specific presentations. JEITA will host an IBIS update session in the morning, and presumably this will include IBIS 7.0. The IBIS summit will be in the afternoon. Bob noted that we currently expect three presentations from Japan and three or four from the US and Europe.

Bob and Randy noted that programs for all three summits are developing. Bob noted that Lance Wang would present at all three, and he expected Ericsson would also present at all three. We expect presentations from EDA vendors. Randy noted that Micron Japan would have a presentation for the Tokyo summit.

- DesignCon 2020 Summit (January 31, 2020)

Randy noted that a call with Suzanne Deffree of UBM was scheduled for the following Monday. They planned to review the previous year's partnership agreement and decide on the agreement for 2020. Randy noted that he would report on this at the next meeting [AR].

QUALITY TASK GROUP

Mike LaBonte reported that the group is meeting on Tuesdays at 8:00 a.m. PT. The group continues to focus on ibischk 7.0. Mike noted that a new parser BUG had been submitted by Micron.

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 had not yet joined the meeting. Randy Wolff reported that the group meets on Tuesdays at 12:00 p.m. PT. The group had recently been discussing Walter Katz's proposal for enhancing the AMI back channel interface (BCI) to work in statistical mode. Curtis Clark noted that because Walter had suggested this might have some interaction with the DC_Offset BIRD (BIRD197.4), it was given priority and the DC_Offset BIRD was set aside temporarily.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Michael Mirmak had not yet joined the meeting. Randy Wolff reported that the group meets at 8:00 a.m. PT on Wednesdays. The group had been focusing on the EMD proposal, and the proposal is on draft 21. Technical changes have wound down, and it is now going through full editorial review.

Randy noted that Touchstone updates had also been discussed. Michael had drafted a response to the si-list, but they have not set a date for when it will be sent out. The group plans to take up discussion of Touchstone updates after EMD is complete, prepare some presentations on the issues to be resolved, and then advertise the meeting.

Task group material can be found at:

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

EDITORIAL TASK GROUP

Randy Wolff reported the task group remains suspended.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES

None.

BIRD200: C_COMP MODEL USING IBIS-ISS OR TOUCHSTONE

Mike LaBonte moved to approve BIRD200 to be included in an upcoming version of IBIS. Bob Ross seconded. There were no objections.

The roll call vote tally was:

ANSYS – yes
Google – yes (by email)
IBM – abstain
Infineon – yes (by email)
Intel – yes
Keysight – yes
Micron – yes
SiSoft – yes
SPISim – yes
Synopsys – yes (by email)
Teraspeed Labs – yes
Zuken – yes

The roll call vote concluded with a vote tally of Yes – 11, No – 0, Abstain – 1. The vote passed.

Randy Wolff gave Steve Parker an AR to update the status of BIRD200 on the website [AR].

BIRD166.4: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW

Discussion was tabled.

BIRD181.1: I-V TABLE CLARIFICATIONS

Mike LaBonte moved to untable BIRD181.1. Bob Ross seconded. There were no objections.

Mike noted that BIRD181.1 had been dormant for almost two years and predated IBIS 7.0. He said the editorial corrections made in IBIS 7.0 had affected much of the text covered by this BIRD. He noted that he had created a draft 1 of BIRD181.2 by starting with the IBIS 7.0 text and applying the BIRD181.1 changes. He noted that the original BIRD covered the [Pullup], [Pullupdown], [GND Clamp], and [POWER Clamp] keywords, but that Bob Ross had correctly pointed out that the BIRD's changes would also apply in other areas. Therefore, draft 1 of BIRD181.2 also contains smaller equivalent changes in [ISSS PU], [ISSO PD], and the Notes on Data Derivation section. Mike noted that he had not yet formally submitted BIRD181.2 and wanted to bring it up for discussion in the ATM task group first.

Bob noted that BIRD181.1 contains some important clarifications and explains the syntax

differences between ECL and CMOS models. He noted, however, that the proposed change to a SPICE-like V(NodeA, NodeB) voltage syntax would require far-reaching editorial changes to the entire document including figures and references. Mike said he recommended leaving this BIRD in the untabled state, as he might be ready for more discussion by the next meeting. No one objected.

BIRD190: CLARIFICATION FOR REDRIVER FLOW

Discussion was tabled.

BIRD197.4: NEW AMI RESERVED PARAMETERS DC_OFFSET AND NRZ_Threshold

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 one new BUG to classify. Bob noted we now have six fully signed ibischk 7.0 parser license agreements. Bob said that we had received a very good release of the parser code, but it contained one critical mistake. A fundamental change in IBIS 7.0 is that IBIS files can now contain file references that are relative paths to files in subdirectories. An existing check in the parser code was generating erroneous errors because it compared the relative paths to the value of the [File Name] keyword, which contains only the file name. Bob said there was also some confusion in the test cases with regard to '/' or '\' as path separators.

Arpad Muranyi, Curtis Clark, and Radek Biernacki noted that the spec explicitly states that '/' (forward slash) is the path separator and '\' (back slash) should not be used in the IBIS file. Mike LaBonte also noted that the spec had been careful to limit the allowable character set so that it was never necessary to use back slash as an escape character. However, Mike noted that the statement that forward slash is the required path separator only appears in the Definition sections of the AMI parameters DLL_Path and Supporting_Files.

Bob noted that Section 3.1 is the section that is generally applicable to all file references. It does not contain the explicit prohibition against back slash. Radek noted that the example in that section contains forward slashes. Arpad, Curtis, Radek and Randy Wolff agreed that the intent had been to use forward slash as the path separator in 3.1. Arpad noted that it was not explicitly stated and would best be handled with a clarification BIRD. For now, the issue should be noted in the IBIS 7.0 known issues document.

Mike noted that some of the parser developer's test cases may include backslash characters in the IBIS files, and the developer's stated intention had been to handle these. However, it was clear from the discussion that this should not be allowed. Bob and Mike agreed to work out the details of a response to the parser developer. Mike agreed to update the IBIS 7.0 known issues document with the content of today's discussion [AR].

Bob, Mike and Randy reviewed the new BUG207 – “Submodel clamps should be included in V-T extraction” submitted by Randy. The parser provides basic checking to ensure that the steady-state endpoint values of the V-T waveforms agree with the values expected if the static I-V tables are applied to the same load. In the example provided with this BUG, a Submodel is used with mode “All”. The parser’s check does not include the effects of the Submodel in the load applied to the I-V tables when checking for I-V vs. V-T agreement. Therefore, the parser generates an error.

There was some disagreement on how to handle this issue. Mike, Randy, and Arpad thought this was a defect and should be fixed, though they noted that handling all the possible combinations was non-trivial. Arpad said that the parser should combine the Model and Submodel elements in the way that they will be used at simulation time, otherwise the check is not helpful. He noted that a similar issue would apply to the parser’s check to ensure that the Vmeas value could be attained by the driver. Bob, however, did not think it was a defect. He feared that changing the parser’s behavior would complicate things and possibly break existing models and tools. He said workarounds for the model maker exist. For example, the model maker could include the Submodel’s effects directly in the Model and use a Model Selector for choosing amongst Models.

Randy noted that discussion would have to continue at the next meeting.

NEW TECHNICAL ISSUES

None.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held on October 18, 2019. The following teleconference meeting has not yet been scheduled due to potential conflicts with the IBIS Summits in Asia.

Mike LaBonte moved to adjourn. Arpad Muranyi seconded the motion. The meeting adjourned.

=====

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:

<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>

Other trademarks, brands and names are the property of their respective owners.

SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	July 19, 2019	August 9, 2019	September 6, 2019	September 27, 2019
ANSYS	User	Active	-	X	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	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
GLOBALFOUNDRIES	Producer	Active	X	-	X	-
Google	User	Active	-	-	X	X
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Active	-	-	X	X
Instituto de Telecomunicações	User	Inactive	-	-	-	-
IBM	Producer	Active	X	X	X	X
Intel Corp.	Producer	Active	X	X	X	X
Keysight Technologies	User	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
NXP	Producer	Inactive	-	-	-	-
SiSoft	User	Active	X	X	X	X
SPISim	User	Active	-	-	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.