



IBIS Open Forum Minutes

Meeting Date: **August 10, 2018**

Meeting Location: **Teleconference**

VOTING MEMBERS AND 2018 PARTICIPANTS

ANSYS	Curtis Clark*
Applied Simulation Technology	(Fred Balistreri)
Broadcom	(Yunong Gan)
Cadence Design Systems	Brad Brim*, Ken Willis, Ambrish Varma
Cisco Systems	Stephen Searce, Cassie Yan, Baosh Xu
CST	Stefan Paret
Ericsson	Anders Ekholm, Zilwan Mahmood, Guohua Wang
GLOBALFOUNDRIES	Steve Parker
Huawei Technologies	(Hang (Paul) Yan)
IBM	Greg Edlund, Luis Armenta, Hubert Harrer
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Hsinho Wu*, Michael Mirmak*, Nilesh Dattani Fernando Mendoza Hernandez, Varun Gupta Subas Bastola, Hansel Dsilva, Gianni Signorini
IO Methodology	Lance Wang*
Keysight Technologies	Radek Biernacki*, Ming Yan, Heidi Barnes Pegah Alavi
Maxim Integrated	Joe Engert, Yan Liang
Mentor, A Siemens Business	Arpad Muranyi*, Weston Beal, Raj Raghuram Carlo Bleu, Mikael Stahlberg, Yasushi Kondou Vladimir Dmitriev-Zdorov, Nitin Bhagwath
Micron Technology	Randy Wolff*, Justin Butterfield
NXP	(John Burnett)
Raytheon	Joseph Aday
SiSoft	Mike LaBonte*, Walter Katz*, Todd Westerhoff
Synopsys	Ted Mido, Adrien Auge, Scott Wedge
Teraspeed Labs	Bob Ross*
Xilinx	Ravindra Gali
ZTE Corporation	(Shunlin Zhu)
Zuken	Michael Schaefer, Takayuki Shiratori

OTHER PARTICIPANTS IN 2018

Google	Zhiping Yang
Haskware	David Banas
John Baprawski, Inc.	John Baprawski

KEI Systems	Shinichi Maeda
Lattice Semiconductor	Dinh Tran, Maryam Shahbazi
OmniVision	Sirius Tsang
Politecnico di Milano	Flavia Grassi, Xinglong Wu
Politecnico di Torino	Tommaso Bradde, Marco De Stefano, Paulo Manfredi Riccardo Trincherio, Stefano Grivet-Talocia
Qualcomm	Kevin Roselle, Tim Michalka
Ricoh	Kazuki Murata
RITA Electronics Ltd.	Kenichi Higashiura, Hiroyuki Motoki (Jose Godoy)
SAE ITC	Ron Olisar
Signal Metrics	Megumi Ono
Socionext	Wei-hsing Huang
SPISim	Tom Lee
Stanford University	Aurora Sanna, Olivier Bayet
STMicroelectronics	Yasuki Torigoshi, Yoshinori Fukuba
Toshiba	Mihai Telescu, Charles Canaff
Université de Bretagne Occidentale	José Schutt-Aine
University of Illinois	Elmar Griese
University of Siegen	Torben Wendt
University of Technology Hamburg	

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 31, 2018	624 227 121	IBISfriday11

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

<http://tinyurl.com/y7yt7buz>

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 declared that a quorum was reached and the meeting could begin.

CALL FOR PATENTS

Mike LaBonte called for declaration of any patents or pending patents related to the IBIS 3.2, IBIS 4.2, IBIS 5.1, IBIS 6.1, Touchstone 2.0, IBIS-ISS 1.0 or ICM 1.1 specifications. No patents were declared.

REVIEW OF MINUTES AND ARS

Mike LaBonte called for comments on the minutes of the July 20, 2018 IBIS Open Forum teleconference. Randy Wolff noted that the title of BIRD195.1 should not have the word "Algorithmic" in it. Michael Mirmak previously sent an email about correcting this. Michael Mirmak moved to approve the minutes with the noted change. Curtis Clark seconded the motion. There were no objections.

Mike reviewed ARs from the previous meeting.

1. Mike to reorder the events webpage [AR].
Mike reported this as done.
2. Mike to update the status of all the BIRD votes on the webpage [AR].
Mike reported this as done.
3. Mike to ask Michael Mirmak to convene the Editorial task group and begin work on IBIS 7.0 [AR].
Mike reported this as done. The Editorial task group has started meeting.
4. Bob Ross to prepare and submit an IBISCHK6 update proposal to the parser developer [AR].
Bob reported this as done.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

Mike LaBonte reported that he missed sending out a vote solicitation email for a vote on BIRD195.1, and he missed adding the BIRD vote to the agenda for today's meeting. Michael Mirmak noted he did not have an objection to postponing the vote. Radek Biernacki added he made the original motion, and he also did not object to postponing the vote.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we have 25 members. There is \$23,209 in the treasury after a Summit sponsorship payment. There is a small chance of another membership renewal.

WEBSITE ADMINISTRATION

Mike LaBonte reported that there has been a small correction in the software used to create the BIRDS page. This handles the superseded BIRD text in combination with everything else. The information is stored in plain text files, and the actual HTML code is generated by a Perl script.

MAILING LIST ADMINISTRATION

Curtis Clark reported the folks at Freelists cleaned up the issues with the subscription request

cookies. There is one email bounce to investigate with Arpad Muranyi.

LIBRARY UPDATE

Mike LaBonte reported that Anders Ekholm updated the library page on August 8, 2018.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

EPEPS – The 27th IEEE Conference on Electrical Performance of Electronic Packaging and Systems will be held in San Jose, CA on October 14-17, 2018. More information is available at:

<http://www.epeps.org/>

EDI CON – Electronic Design Innovation Conference & Exhibition will be held in Santa Clara, CA on October 17-18, 2018. More information is available at:

<http://www.ediconusa.com>

- Press Update

None.

- Related standards

IEC 63055/IEEE 2401, JEITA “LPB”

Michael Mirmak reported he attended the last two IEEE 2401 LPB meetings. There is a first draft of LPB called “D1” that was released at the end of July. They are trying to align with IBIS 7.0, and they are glad to hear that IBIS 7.0 is moving to the editorial phase. The group is starting to study the text. The target revision date for LPB is 2020. They will review some comments by the end of September and move to a draft 2 stage in October. Michael was not sure if the document is available for review to non-IEEE Standards association members. Mike LaBonte asked if he should request an update from the group. Michael responded it would be better to wait until after the first set of comments come in. They won’t have a formal vote until October 29 on releasing the first revision. Michael suggested waiting until after the October 29 vote. Mike asked if LPB will have any effect on IBIS. Michael responded there are no requests for changes to IBIS thus far. As far as he can tell, LPB is a wrapper around IBIS and Touchstone. For anyone with access to IEEE Standards Association documents, the LPB draft is found at:

<https://iee-SA.imeetcentral.com/p2401/>

SUMMIT PLANNING AND STATUS

- Asian IBIS Summit (Tokyo)

An IBIS Summit will be held at the Akihabara UDX Bldg. from 12:30 p.m. to 5:00 p.m. on November 12, 2018. Bob Ross noted there will likely be a JEITA event in the morning before the Summit.

- Asian IBIS Summit (Shanghai)

An IBIS Summit will be held at the Parkyard Hotel Shanghai from 8:30 a.m. to 5:00 p.m. on November 14, 2018. Huawei Technologies is the primary sponsor, and ZTE is an additional sponsor.

- Asian IBIS Summit (Taipei)

An IBIS Summit will be held at the Sherwood Hotel from 9:00 a.m. to 4:30 p.m. on November 16, 2018. Bob noted he is looking for sponsors for the Taipei event.

Bob added that we will be soliciting more sponsors for the Summits next month.

Michael Mirmak asked about the relationship with ZTE. Bob noted our feedback as far as SAE ITC is concerned is that we do not have anything to worry about. Mike LaBonte noted the SAE ITC people are tracking any potential legal issues with ZTE.

Bob moved to schedule a vote to hold a DesignCon IBIS Summit with costs not to exceed \$9,000. He wanted the summit approved to make it easier to move forward with contracts when possible. Bob noted we spent \$7,750 last year including food, A/V, and hosting a breakfast with JEITA members from Japan. Michael Mirmak seconded the motion. There were no objections to scheduling the vote. Bob noted there was discussion in the ATM task group about having discussions and presentations at DesignCon on IBIS-AMI model support for single-ended signaling standards such as DDR5.

Sponsorship opportunities for all upcoming IBIS summits are available, with sponsors receiving free mentions in the minutes, agenda, and other announcements. Contact the IBIS Board for further details.

QUALITY TASK GROUP

Mike LaBonte reported that the group is meeting on Tuesdays at 8:00 a.m. PT. The focus has been on IBISCHK including some new bugs. They are trying to keep up-to-date the documentation that would be sent for an IBISCHK7 parser development contract.

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 is meeting regularly on Tuesdays at 12:00 p.m. PT. The group is discussing single-ended applications of IBIS-AMI, mostly targeted for DDR5.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Michael Mirmak reported that the group usually meets at 8:00 a.m. PT on Wednesdays. The group remains suspended. Many participants are in the Editorial task group, and their time is currently being spent on editorial work on IBIS 7.0.

Task group material can be found at:

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

EDITORIAL TASK GROUP

Michael Mirmak reported that the group is meeting on Fridays when there is no Open Forum teleconference. A first official editorial draft of IBIS 7.0 is released and in review. The next meeting will use the Interconnect task group time slot on Wednesday. They are reviewing the known issues list of IBIS 6.1. Bob Ross asked if the group is meeting next Friday, August 17, 2018. Michael responded that the date is available and can be decided during the Wednesday meeting.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES

None.

BIRD195.1: ENABLING [RGND] AND [RPOWER] KEYWORDS FOR INPUT MODELS

Mike LaBonte noted the need to defer the vote until the next meeting. Radek Biernacki moved to schedule a vote on BIRD195.1 for the next IBIS Open Forum meeting. Bob Ross seconded the motion. There were no objections.

Walter Katz noted he had a private conversation with Michael Mirmak, and he plans to discuss the potential issue at the next ATM task group meeting. An example might need to be added to the BIRD to make sure there is no confusion about [Rgnd] and [Rpower] when converted to I-V tables that are overlapping with existing [GND Clamp] and [POWER Clamp] tables. Bob noted the termination created by [Rgnd] and [Rpower] could still have clamp diode characteristics modeled in [GND Clamp] and [POWER Clamp] tables.

Michael Mirmak asked if BIRD166.4 and BIRD190 were on the ATM task group topics list. Arpad Muranyi confirmed that they are. Walter noted that there are discussions about changes to AMI Init flows that will affect these BIRDS.

Mike LaBonte suggested un-tabling the BIRDS for further discussion. Walter disagreed with un-tabling BIRD166.4 and BIRD190, noting the technical content of these BIRDS is better discussed in the ATM task group. Walter suggested that Mike prepare for a future discussion of BIRD181.1. Mike will prepare an overview of BIRD181.1 to facilitate discussion for a future meeting [AR].

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.

IBISCHK PARSER AND BUG STATUS

Bob Ross noted that at the last meeting there was agreement to move forward with a small parser contract to close all the existing bug reports. This will result in a clean baseline before starting on an IBISCHK7 parser. Bob asked the parser developer to provide an estimate on how long this project would take to complete. Bob recently reviewed some bugs that were submitted last year but not documented and considered. There are four more bugs to classify now. The parser development quote includes BUG190 through BUG201.

BUG198 found error messages were removed in IBISCHK6 related to checking for the IBIS-ISS language parameter under [External Circuit] and [External Model] when checking against the IBIS 5.1 or earlier specification versions. This error message needs to be restored. Bob moved to classify the bug as Severe severity and Medium priority. Radek Biernacki seconded the motion. There were no objections.

Arpad Muranyi noted that some bug reports he submitted to Bob originally turned out not to be bugs in the IBISCHK parser. They were bugs in the source code implemented and modified in his company's tool.

BUG199 notes an incorrectly reported error related to [External Circuit] is in the 6.1.3 parser but not the 6.1.2 parser. Bob suggested classifying the bug as Severe severity, Medium priority, and Open status. Arpad asked for High priority classification. Arpad moved to classify the bug as Severe severity and High priority. Bob seconded the motion. There were no objections. Mike asked if this would be added to the regression test. Bob noted that it would be added.

BUG200 reports that a bug report message should be reported as an error message. Subparameters of [Model] should report an error if they are found sequentially after other keywords below [Model]. Bob moved to classify the bug as Annoying severity and Low priority. Arpad seconded the motion. There were no objections.

BUG201 reports an enhancement to create a warning message for Input* or Terminator* Models with [Pullup] and/or [Pulldown] tables. Arpad asked if checking would be extended to Open Drain or Open Source models to check for inclusion of incorrect tables for these models. Bob did not plan to extend this bug report further. Mike noted this would be a good issue for the Quality task group to discuss and look into. Bob noted that technically there would not be a problem with tables that have zero current, but it is best to just check if the table exists and warn

about it. Arpad noted that ASIC modelers might make a Model for an I/O and reuse the data tables for Input models. Walter Katz commented that this is why you use [Model Selector] to choose between multiple model options that only include the correct data for a specific [Model] type. Arpad noted he just wanted to have consistency with checking for all [Model] types. Bob noted this could be a future bug report. Bob moved to classify the bug as Enhancement severity and Low priority. Arpad seconded the motion. There were no objections.

Bob added he is waiting for a quote from the parser developer.

NEW TECHNICAL ISSUES

None.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held on August 31, 2018. A vote is scheduled for BIRD195.1. A vote is also scheduled on the DesignCon IBIS Summit. The following IBIS Open Forum teleconference meeting is tentatively scheduled on September 21, 2018.

Michael Mirmak moved to adjourn. Arpad Muranyi seconded the motion. The meeting adjourned.

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NOTES

IBIS CHAIR: Mike LaBonte

mlabonte@sisoft.com

IBIS-AMI Modeling Specialist, SiSoft
6 Clock Tower Place, Suite 250
Maynard, MA 01754

VICE CHAIR: Lance Wang (978) 633-3388

lwang@iometh.com

President/CEO, IO Methodology, Inc.
PO Box 2099
Acton, MA 01720

SECRETARY: Randy Wolff (208) 363-1764

rrwolff@micron.com

Principal Engineer, Silicon SI Group Lead, Micron Technology, Inc.
8000 S. Federal Way
P.O. Box 6, Mail Stop: 01-711
Boise, ID 83707-0006

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: Mike LaBonte

mlabonte@sisoft.com

IBIS-AMI Modeling Specialist, SiSoft
6 Clock Tower Place, Suite 250
Maynard, MA 01754

POSTMASTER: Curtis Clark

curtis.clark@ansys.com

ANSYS, Inc.
150 Baker Ave Ext
Concord, MA 01742

This meeting was conducted in accordance with ANSI guidance.

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/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>

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

SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	June 8,	June 29,	July 20,	August 10,
			2018	2018	2018	2018
ANSYS	User	Active	X	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	-	X	X	X
Cisco Systems	User	Inactive	-	-	-	-
CST	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	X	-	-
GLOBALFOUNDRIES	Producer	Inactive	-	X	-	-
Huawei Technologies	Producer	Inactive	-	-	-	-
IBM	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Active	-	X	X	-
Intel Corp.	Producer	Active	X	X	X	X
IO Methodology	User	Inactive	-	-	-	X
Keysight Technologies	User	Active	X	X	X	X
Maxim Integrated	Producer	Inactive	-	-	-	-
Mentor, A Siemens Business	User	Active	-	X	X	X
Micron Technology	Producer	Active	X	X	X	X
NXP	Producer	Inactive	-	-	-	-
Raytheon	User	Inactive	-	-	-	-
SiSoft	User	Active	X	X	X	X
Synopsys	User	Active	-	X	X	-
Teraspeed Labs	General Interest	Active	X	X	X	X
Xilinx	Producer	Inactive	-	-	-	-
ZTE Corp.	User	Inactive	-	-	-	-
Zuken	User	Inactive	-	-	-	-

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.