



IBIS Open Forum Minutes

Meeting Date: **June 5, 2020**

Meeting Location: **Teleconference**

VOTING MEMBERS AND 2020 PARTICIPANTS

ANSYS	Curtis Clark*, Wei-hsing Huang, Marko Marin Shai Sayfan-Altman, Zilwan Mahmod
Applied Simulation Technology	(Fred Balistreri)
Cadence Design Systems	Zhen Mu*, Ambrish Varma, Jared James Kumar Keshavan, Ken Willis
Cisco Systems	Stephen Searce, Hong Wu
Dassault Systemes (CST)	Stefan Paret
Ericsson	Anders Ekholm, Sungjoo Yu, Thomas Ahlstrom
Google	Zhiping Yang*, Shuai Jin, Zhenxue Xu
Huawei Technologies	(Hang (Paul) Yan)
IBM	Michael Cohen
Instituto de Telecomunicações	(Abdelgader Abdalla)
Keysight Technologies	Radek Biernacki*, Hee-Soo Lee, Todd Bermensolo* Graham Riley, Pegah Alavi, Fangyi Rao Stephen Slater
Maxim Integrated	Joe Engert, Charles Ganal, Dzung Tran, Yan Liang
Mentor, A Siemens Business	Arpad Muranyi*, Raj Raghuram, Todd Westerhoff Weston Beal
Micron Technology	Randy Wolff*, Justin Butterfield
NXP	John Burnett
SerDesDesign.com	John Baprawski
SiSoft (MathWorks)	Mike LaBonte*, Walter Katz*, Graham Kus
Synopsys	Ted Mido*, Andy Tai
Teraspeed Labs	Bob Ross*
Xilinx	Ravindra Gali
ZTE Corporation	(Shunlin Zhu)
Zuken	Michael Schäder, Kazunari Koga
Zuken USA	Lance Wang*

OTHER PARTICIPANTS IN 2020

Accton	Tariq Abou-Jeyab
Achronix Semiconductor	Hansel Dsilva
Apollo Giken Co.	Satoshi Endo
Broadcom	James Church, Jim Antonellis*
Infineon Technologies AG	(Christian Sporrer)

Intel Corporation	Hsinho Wu, Michael Mirmak*, Adrien Auge Fernando Mendoza, Taeyoung Kim, Wendem Beyene Oleg Mikulchenko, Nhan Phan, Ifiok Umoh Subas Bastola
Kandou Bus	Sherman Chen
KEI Systems	Shinichi Maeda
Kioxia Corporation	Yasuo Otsuka
Marvell	Steve Parker*, Johann Nittmann
OmniVision	Sirius Tsang
Qualcomm	Kevin Roselle, Sunil Gupta
Renesas	Genichi Tanaka
RITA Electronics	Takahide Nozaki
SAE ITC	Jose Godoy
Samsung	Wonsuk Choi
San Jose State University	Vincent Tam
Seagate	Preetesh Rathod, Alex Tain, Karthik Chandrasekar Emmanuel Atta
Signal Metrics	Ron Olisar
Silvaco Japan Co.	Yoshiharu Furui
SK Hynix Memory Solutions	Jongchul Shin, Alex Lee, James Yu
Socionext	Matsumura Motoaki, Shinichiro Ikeda Takafumi Shimada
SPISim	[Wei-hsing Huang]
Teradyne	Dongmei Han, Edward Pulscher, Sheri Zhuang Tomoo Tashiro, Paul Carlin, Tao Wang

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
June 26, 2020	627 261 744	Friday1

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

<https://tinyurl.com/IBISfriday-new>

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 May 15, 2020 IBIS Open Forum teleconference. Mike LaBonte moved to approve the minutes. Lance Wang seconded the motion. There were no objections

Randy reviewed ARs from the previous meeting.

1. Randy Wolff to discuss university membership options with the board [AR].
Randy reported that this had been done. A proposal for this new type of membership is introduced in the New Administrative Issues section of these minutes.
2. Radek Biernacki to send out IBIS officer elections email announcement [AR].
Radek reported that this had been done.
3. Bob Ross to update the status of BUG212 on the webpage [AR].
Bob reported that this had been done.
4. Bob Ross to update the status of BUG213 on the webpage [AR].
Bob reported that this had been done.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS

Randy Wolff noted that BIRD201.1 had been submitted earlier in the week. BIRD201.1 is discussed in the Technical Discussion section of these minutes.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that 22 organizations had paid for 2020 membership prior to the renewal deadline at the end of May (21 renewals, and one new member). Four member organizations: Broadcom, Infineon Technologies AG, Intel Corporation, and Marvell had not completed membership payment before the deadline and had been moved to the Other Participants classification, though Bob still expected their payments to come in soon. Therefore, we now have 22 members, and the quorum for meetings is 6. We have \$22,778 cash flow for 2020 and a \$23,128 adjusted balance for 2020. These numbers reflect the fact that one company has moved forward with purchase orders for ibischk7 and tschk2, for \$3,000 and \$1,000 respectively. Bob noted that we have sold 10 ibishck7 licenses and 7 tschk2 licenses over the past years, and one of the tschk2 licenses was a free one given to the company that originally developed it.

WEBSITE ADMINISTRATION

Steve Parker reported that the website was up to date with respect to ATM, Interconnect, and Quality task group minutes and documents. BIRD201.1 had been posted, and he had updated the Known Issues for IBIS 7.0 document. Steve noted that he had updated the IBIS home page with Marvell's new logo.

MAILING LIST ADMINISTRATION

Mike LaBonte reported that mailing lists were generally operating smoothly. Our mailing lists' host, freelists.org, is not on any blacklists at the moment. Mike noted that information on subscribing can be found on the website, or potential subscribers can contact him directly if they have trouble subscribing.

LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

2020 IEEE International Symposium on EMC + SIPI (July 27-31, Reno, NV)

<https://www.emc2020.emcss.org/>

Bob Ross noted that the link shown above was no longer working at that time. However, that link is now working properly and redirecting to the site for this year's virtual event.

<https://www.emc2020virtual.emcss.org/>

- Press Update

None.

- Related standards

IEC 63055/IEEE 2401, JEITA "LPB"

Michael Mirmak reported that DASC had met recently, and there was no new technical change to report. He said JEITA is working on a set of training classes and slides for introducing 2401 to IC designers, system designers, and users.

SUMMIT PLANNING AND STATUS

- IEEE EMC + SIPI Symposium (originally planned for July 27-31, Reno, NV)

Bob Ross noted that this has now been officially confirmed as a virtual conference, and the dates have been shifted. Zhiping Yang said IEEE EMC had not yet finalized the date and time for the IBIS meeting, but it is tentatively August 21st or August 28th. Zhiping noted that all conference times are based on Central time, and something like 1 to 5 p.m. CST would likely be

best for the broadest range of attendees. Randy Wolff said we can plan to send our first announcement in mid-July, and we can plan to use our own SAE-ITC Webex to host our meeting.

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`. Mike reported that the group had been working on creating a license agreement for the freely distributed tools, which Michael Mirmak had first brought up last year. Mike noted that purchasers of the source code sign a license agreement, but there was no license agreement for the freely distributed executables. He said this was unusual in the industry, and typically there was at least some sort of liability disclaimer. With the help of a lawyer, the group had drafted a license agreement based on a BSD 3-clause license and crafted for IBIS. The license will still allow for the free redistribution of the executables, but a copy of the license agreement will have to be distributed as well. Mike noted that one minor consequence of this is that all downloads would be now `.zip` files so they can contain the executable and the license agreement.

Radek Biernacki asked if the license agreement text could simply be built into the new versions of `ibischk` and other tools as they are produced. Mike said the task group would consider that suggestion. Mike noted that there are currently no plans to make the user or redistributor click to acknowledge the license agreement. It will be shown on the website with a notice stating that downloading the executables indicates that you accept the terms of the license agreement.

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 meets on Tuesdays at 12:00 p.m. PT. The group had recently been discussing the newly submitted BIRD201.1. Hansel Dsilva had recently proposed an editorial BIRD related to the use of the phrase “transition time” in the definition of `Rx_Clock_Recovery_Mean`. Randy Wolff had replied to the authors of BIRD198.1 with the group’s feedback, and the group was waiting for their reply.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Michael Mirmak reported that the group meets at 8:00 a.m. PT on Wednesdays. He noted that the focus is still on the EMD proposal (BIRD202), and recent discussions had centered on ensuring that rules of interaction for rails and pins are correct and consistent. There was a fair amount of text in the original BIRD that was not consistent, and those rules are being revisited. Once that is complete they will submit the draft to the Open Forum as BIRD202.1. Once BIRD202.1 is submitted, they plan to move on to Touchstone issues.

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/

CHINA REGIONAL FORUM

Lance Wang reported that there had been no activity since the last Open Forum meeting, and the next meeting had not been scheduled.

China Regional Forum material can be found at:

http://www.ibis.org/china_forum/

NEW ADMINISTRATIVE ISSUES

- Annual Election of Officers

Radek Biernacki noted that the nomination period had ended on May 29th, and we were in the voting period, which runs through June 15th. Radek had sent out the email containing the nominated candidates and voting information. He reported that he had already received 6 ballots. Randy Wolff asked that any organization that had not yet renewed their membership still submit their ballots so they could be counted if payment were received by June 15th.

Randy Wolff thanked Radek for agreeing to serve as the returning officer.

- University/Non-profit Membership

Randy Wolff introduced the topic and noted that IBIS had always had a single membership level, and each year the Open Forum voted on setting the cost of annual membership. Several meetings ago, Zhiping Yang had suggested the idea of a reduced rate University membership. This would allow Universities to get voting rights, and it might spur increased participation from Universities, which often don't have much funding to pay for joining organizations like IBIS.

Randy said the board had discussed the proposal and talked about establishing the rate at 50 percent of the corporate rate. This way it would automatically move along with the corporate rate. For example, since regular corporate membership for 2020 is now available at half of full price based on the time of year (for new members), the new university membership for the rest of 2020 would be at 25 percent of the full rate. There would be a primary member contact, e.g., a professor with overall oversight over voting, etc. Randy noted that Instituto de Telecomunicações is already a full paid member for 2020, and if the new university rate were

established, this would be handled by granting Instituto de Telecomunicações a free membership in 2021 to compensate. Bob Ross and Randy noted that other universities with past IBIS involvement such as the University of Illinois, Georgia Tech, Missouri Institute of Science and Technology, North Carolina State, Politecnico di Torino might be interested in the new membership. Bob also suggested that we term it “Academic” membership and avoid any discussion of for-profit and non-profit.

Randy said the goal was to encourage more student participation in IBIS and its task groups. Arpad Muranyi said he had mixed feelings about the proposal. He thought it was good to encourage a fresh supply of new ideas and new members to carry on the work and the legacy of IBIS. However, he said that over the years he had seen lots of excellent research that had never been adopted into the IBIS specification. He had concerns, from an IC vendor or EDA tool vendor perspective, about “good ideas” getting voted into the specification because of an influx of new academic members. These might cause unnecessary hardship for IC model makers or EDA vendors trying to implement them. Research is good, but we all have practical limitations on what new approaches we can adopt with limited staffing and resources. Radek Biernacki said he thought Arpad made an excellent point. He said IBIS has always been open to considering ideas from all sources, so this is not an issue of enabling participation. Zhiping said he understood the point of view, but he thought we had to rely on the expertise and experience of IBIS members to steer things toward practicality and adoptability. We need to make sure everyone is reviewing the BIRDS carefully, but IBIS already has to rely on existing experts to keep things in line. Randy said he hoped that we could move forward with new ideas, and that we would all collaborate and compromise to find a solution that worked for everyone. He said IBIS had always worked that way, and he hoped it would continue in the future regardless of the outcome of this proposal.

Randy moved to schedule a vote on establishing an Academic Membership for IBIS at the June 26, 2020 IBIS Open Forum teleconference. Bob Ross seconded. There were no objections. Randy to send an email to the Open Forum announcing the vote [AR].

BIRD201.1: BACK-CHANNEL STATISTICAL OPTIMIZATION

Randy Wolff took an AR to send an email to the Open Forum announcing that BIRD201.1 had been submitted. Walter Katz said the issue addressed in BIRD201.1 was how you transition from statistical mode BCI training to time domain mode BCI training. Radek Biernacki had previously suggested that the BIRD go into detail and describe how to handle any failures and various combinations of modes. BIRD201.1 elaborated on those details. Randy asked everyone to review the latest version of the BIRD, and Walter said that at the next meeting he planned to move to schedule a vote on this BIRD.

BIRD198.1: KEYWORD ADDITIONS FOR ON DIE PDN (POWER DISTRIBUTION NETWORK) MODELING

Randy Wolff reported that the ATM group had sent its feedback to the authors and was waiting for their reply.

BIRD204: DQ DQS GETWAVE FLOW FOR CLOCK FORWARDING MODELING

Walter Katz said this BIRD had been posted for quite some time, and there had been no

comments or further discussion. Walter moved to schedule a vote on BIRD204 at the June 26, 2020 IBIS Open Forum teleconference. Michael Mirmak seconded. There were no objections. Randy Wolff to send an email to the Open Forum announcing the vote [AR].

BIRD205: NEW AMI RESERVED PARAMETER FOR SAMPLING POSITION IN AMI_INIT FLOW

Walter Katz said the BIRD introduces a new AMI parameter that allows the AMI_Init function to return the time of the UI sampling point with respect to the t=0 time of the impulse response it returns. It allows a model operating in statistical mode to specify the sampling time, just as the clock_times array allows a model operating in time domain mode to specify the sampling times. He noted that the EDA tool vendors had agreed on the details of BIRD205, how the models should generate the value, and how the tools should use it. Walter moved to schedule a vote on BIRD205 at the June 26, 2020 IBIS Open Forum teleconference. Arpad Muranyi seconded. There were no objections. Randy Wolff to send an email to the Open Forum announcing the vote [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.

BIRD202: ELECTRICAL DESCRIPTIONS OF MODULES

Discussion was tabled.

IBISCHK PARSER AND BUG STATUS

Bob Ross moved to schedule a vote to authorize payment of \$800 to the parser developer for a new ibischk7.0.2, which will fix 7 BUGs including the critical BUG213. Walter Katz seconded. There were no objections. Bob to send Randy Wolff the full text of the motion [AR]. Randy to send an email to the Open Forum announcing the vote [AR].

Bob moved to classify BUG202 as will not fix because ibischk can't address the reported problem. Walter Katz seconded. There were no objections. Bob to update the status of BUG202 [AR].

NEW TECHNICAL ISSUES

- Expanding Power Integrity Modeling in IBIS

Randy Wolff and Zhiping Yang reviewed their presentation “Expanding System-Level Power Simulation Modeling in IBIS”. Randy presented a review of some of the current power modeling capability in IBIS for I/O power supply (BIRD95.6, BIRD98.3) and PDN modeling (BIRD189.7, BIRD198.x). Randy also discussed possible areas for collaboration with the IEEE EMC Society on addressing power modeling needs.

Zhiping discussed areas in which he found current power modeling insufficient from the system designer’s point of view. He noted that IBIS had done good work with respect to I/O modeling and SerDes and was widely used by system designers. For power modeling he noted a lack of uniform standards. For example, certain modeling formats have become popular for switch mode power supplies, but these models often aren’t supported by tools used for SPICE simulations. Zhiping reviewed simulation types and modeling information for which uniform standards would be very helpful. He noted that as a system designer one is often left to create their own models, since vendors can’t provide models at all or can’t provide models that fit into other simulation flows.

Arpad Muranyi said that ATM task group agendas had been relatively light recently, and it could entertain new work in this area. He suggested that BIRD189.7 might already address some of the package and board modeling issues Zhiping had mentioned, though he noted this was capability new to IBIS 7.0. Arpad expressed some concern about the different time scales involved in I/O simulation and power supply simulation. Walter said the things Zhiping was asking for were important, but he didn’t know if they belonged in IBIS. Zhiping said he wanted to start by making sure we had agreement that these were important issues to address. Arpad said he would add this topic to the ATM task group agenda, and he invited Zhiping to present more information there.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held on June 26, 2020. The following teleconference meeting is tentatively scheduled for July 17, 2020.

Michael Mirmak moved to adjourn. Curtis Clark 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
sparker@marvell.com
Senior Staff Engineer, DSP, Marvell
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	Standards Ballot Voting Status			
			April 03, 2020	April 24, 2020	May 15, 2020	June 05, 2020
ANSYS	User	Active	X	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	-	X	X
Cisco Systems	User	Inactive	-	-	-	-
Dassault Systemes	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
Google	User	Active	-	X	X	X
Huawei Technologies	Producer	Inactive	-	-	-	-
Instituto de Telecomunicações	User	Inactive	-	-	-	-
IBM	Producer	Active	X	X	X	-
Keysight Technologies	User	Active	X	X	X	X
Maxim Integrated	Producer	Inactive	X	-	-	-
Mentor, A Siemens Business	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
NXP	Producer	Inactive	-	-	-	-
SerDesDesign.com	User	Inactive	-	-	-	-
SiSoft	User	Active	X	X	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

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.