IBIS Open Forum Minutes

Meeting Date: **January 10, 2020**
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2020 PARTICIPANTS

ANSYS	Curtis Clark*
Applied Simulation Technology	(Fred Balistreri)
Broadcom	(Yunong Gan)
Cadence Design Systems	Zhen Mu*
Cisco Systems	(Stephen Scearce)
Dassault Systemes (CST)	(Stefan Paret)
Ericsson	(Anders Ekholm)
Google	(Zhiping Yang)
Huawei Technologies	(Hang (Paul) Yan)
IBM	Michael Cohen
Infineon Technologies AG	(Christian Sporrer)
Instituto de Telecomunicações	(Abdelgader Abdalla)
Intel Corporation	Hsinho Wu*, Michael Mirmak*
Keysight Technologies	Radek Biernacki*
Marvell	Steve Parker*
Maxim Integrated	(Mahbubul Bari)
Mentor, A Siemens Business	Arpad Muranyi*
Micron Technology	Randy Wolff*
NXP	(John Burnett)
SiSoft (MathWorks)	Mike LaBonte*, Walter Katz*
SPISim	Wei-hsing Huang*
Synopsys	(Ted Mido)
Teraspeed Labs	(Bob Ross)*
Xilinx	(Raymond Anderson)
ZTE Corporation	(Shunlin Zhu)
Zuken	(Michael Schäder)
Zuken USA	Lance Wang*

OTHER PARTICIPANTS IN 2020

SAE ITC	Jose Godoy*

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
January 31, 2020	IBIS Summit at DesignCon – no teleconference	
February 21, 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 December 13, 2019 IBIS Open Forum teleconference. Randy noted that the minutes had been posted to the website for a few days, but Curtis Clark had sent the email notification out that morning. Bob Ross asked that we defer review and approval until the next meeting given the late notice.

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 AR could be closed. His report is in the Related Standards section of these minutes.

2. Randy Wolff to discuss formation of the China Regional Forum with the IBIS Board and Task Group Chairs [AR].
   Randy noted that this AR could closed. His report is in the New Administrative Issues section of these minutes.

3. Randy Wolff to send a vote solicitation email for BIRD197.6 [AR].
   Randy noted that this had been done. However, there will be no vote on BIRD197.6 because a BIRD197.7 was subsequently submitted.

ANNOUNCEMENTS, **CALL FOR ADDITIONAL AGENDA ITEMS**

Mike LaBonte noted the new tinyurl link and meeting information in the meeting agenda email. Randy Wolff confirmed SAE ITC had created a new webex meeting for us. This new meeting information is reflected in the Upcoming Meetings section of these minutes.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we had 26 members in 2019. Existing members will carry over through May of 2020, and their membership will end then unless they renew for 2020. We have $32,481 cash flow for 2019 and a $33,981 adjusted balance for 2019. These numbers reflect two parser payments that were received on December 31st and one DesignCon 2020 sponsorship payment that was received in 2019.

We have nine fully signed agreements, and these organizations will receive the parser code:
ANSYS
Cadence Design Systems
Dassault Systemes
Keysight Technologies
Intel
Julin (Shanghai) Microelectronics
Mentor, A Siemens Business
Synopsys
Zuken

We have now collected 8 of the 9 parser license payments. Randy Wolff asked about 2020 membership renewal emails. Bob noted that Phyllis Gross had not yet sent them out, but they should be going out soon. He asked members to follow up internally as soon as the invoice is received. He noted that he sees more companies using an accounting dictated 45 to 60 day payment process.

WEBSITE ADMINISTRATION

Steve Parker noted that the website was up to date with respect to BIRDs, minutes, summit information, etc. He noted that he had updated the accepted date for BIRD200, added BIRD201, updated BIRD197.6 to BIRD197.7, updated the copyright date on the pages to 2020, and introduced the Marvell logo and removed the GLOBALFOUNDARIES logo from the home page. He noted that he had updated the ibischk 7 info on the ibischk parser information page, and that there are pre-existing cosmetic issues on that page that we are addressing.

Bob Ross asked Steve what official name should be used for Marvell in meeting minutes, etc. Steve said he was checking with corporate for clarification, and that the name of the US operation (Marvell Semiconductor, Incorporated) is different than the name of the company headquarters in Bermuda (Marvell Technology Group).

MAILING LIST ADMINISTRATION
Mike LaBonte noted that mailing lists were operating smoothly. The sender-score reputation for both ibis.org and freelists.org is fine. Normal activity over the recent period saw 6 subscribers drop and 2 add across all ibis lists.

LIBRARY UPDATE
No update.

INTERNATIONAL/EXTERNAL ACTIVITIES
- Conferences
24th IEEE Workshop on Signal and Power Integrity (SPI 2020)
Bob Ross asked if the link below was still the current and active link. Randy Wolff confirmed real time that it was.

https://spi2020.uni-siegen.de/

- Press Update
None.

- Related standards
IEC 63055/IEEE 2401, JEITA "LPB"
Randy Wolff noted that we would probably get an update on IEEE 2401 from a JEITA representative at the DesignCon IBIS Summit.

JEDEC JESD204C.1
Randy noted that he had been contacted by the chairperson of this task group. They are asking for permission to reproduce portions of IBIS 7.0 section 10.3. This section contains the AMI parameter definition file structure, and they would like to use it verbatim or with minor changes. Randy noted that he had forwarded the request to SAE ITC, since they hold the copyright, and they will get back to us. Randy noted that he thought this would be good advertising for IBIS if AMI were explicitly mentioned in the JEDEC JESD204C.1 standard. Hsinho Wu noted he had participated in that task group, and that they likely wanted to adopt the parameter file structure and some of the infrastructure developed by IBIS but not necessarily actual AMI models. Randy agreed and noted that the advertising for IBIS would come in the form of an acknowledgement in JESD204C.1 that certain text came from IBIS 7.0.

JEDEC JEP30
Randy noted that he had discussed this with a colleague who works in JEDEC and is familiar with JEP30. JEP30 is an XML format which has lots of mechanical information on packages and components, and it has expanded into electrical and thermal characteristics of devices. This is where IBIS comes in, as the JEP30 XML file can document the location of the IBIS file.

JEP30 development was started about 5-6 years ago. Michael Durkan of Mentor led the spec development. It was developed under JC11 as the main JEDEC committee. It was started to define any package in industry today for use in automating pick and place machines (assembly). Pick and place machines will know how to pick the device up in bulk, tape & reel,

and other packaged formats and be able to handle it. The part numbering system is useful for all pick and place machines to automate programming of machines.

JEP30 has been expanded for use in other design automation roles. Once an XML file is created for a device, the information could be useful for creating mechanical outlines (manufacturing drawings). The information could be used to export logical and physical symbols for package and board design tools. Although developed by Mentor, this will be ported over to Cadence and other tools.

A manufacturing verification tool is coming next. It can be used to check whether a part number from a vendor is compliant with JEDEC outline drawings. This will tell us what is within spec or out-of-spec to easily identify JEDEC-compliant parts for BOM creation. The first use is still for pick and place machines.

Randy noted that he could see companies like Micron eventually releasing JEP30 XML files for every component. Thermal and electrical models such as IBIS could be referenced in the XML file. Another use could be in reading information from XML files for use in creating IBIS model Component pin lists and signal names. The same XML file might be referenced as the single source of truth for creating other collateral such as datasheets. Randy noted that the JEP30 XML files are currently stored in a JEDEC controlled data base that is locked down for security and only accessible by certain member organizations.

SUMMIT PLANNING AND STATUS

- DesignCon 2020 Summit (January 31, 2020)

Randy Wolff noted that the summit is held on Friday, the day after DesignCon ends. Randy confirmed that a new room has been arranged. We will now be in Ballroom G, which is a bigger room than the 209-210 combination we have used in the past. Randy noted that he was working with Informa Markets (formerly UBM) on the catering and other set up.

Bob Ross noted that Cadence, Keysight, and Synopsys are sponsors. The IBIS Open Forum and Informa Markets are also sponsors since they are providing the room. Bob noted that he currently has two presentations from JEITA. Bob noted that the deadline for submission of presentations is Friday, January 17th. However, he asked people to submit the information earlier so presentations can be reviewed. Lance Wang noted that 35 people have currently signed up for the summit, but he expects many more in the coming weeks.

- IEEE SPI Summit 2020

Bob moved to schedule a vote at the February 21, 2020 IBIS Open Forum teleconference to hold an IBIS Summit at SPI on May 20, 2020 at a cost not to exceed $2,500. Radek Biernacki seconded. There were no objections. Randy Wolff to send an email to the Open Forum announcing the vote [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. Recently discussions have been focused on BUG207 and the release of ibischk7.0.1, which resolves BUG208 and BUG209.

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 a variety of topics including changes to the DC_Offset BIRD, which had recently been submitted to the Open Forum as BIRD197.7 (see below), the review of a new response from the authors of BIRD198, and Walter Katz's proposal for enhancing the AMI back channel interface (BCI) to work in statistical mode, which had recently been submitted to the Open Forum as BIRD201 (see below).

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Randy Wolff reported that the group meets at 8:00 a.m. PT on Wednesdays. Randy noted that they continue to work on the EMD proposal, which is now on draft 30. He noted that their goal is to submit the proposal to the Open Forum and get an official BIRD number prior to DesignCon. He noted that there would be further changes expected afterward, and Bob Ross noted that there are still some technical ambiguities to clean up.

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

IBIS China Regional Forum

Randy Wolff noted that the China Regional Forum had been started in 2016. There were many leadership changes early on and no real activities beyond the first meeting or two. Randy noted that there was some interest in restarting this forum, and Kevin Li of Synopsys was interested in leading it. Randy noted that he had solicited feedback from Task Group Chairs and the IBIS Board on this subject. The plan is to reopen the China Regional Forum for China and Taiwan only, so the meetings can be held in Mandarin. The forum can discuss topics of interest including reviewing topics from other boards. Kevin could take the lead in communicating with

IBIS leadership and getting meeting minutes published in English. There is no firm plan for a restart date at this time. Randy and Lance Wang first need to contact the previous leadership and make sure they are onboard with the plan to restart the forum under different leadership [AR].

BIRD201: Back-channel Statistical Optimization

Walter Katz summarized the newly introduced BIRD. The BIRD primarily consists of two parts. The first part is the introduction of a new Reserved Parameter BCI_Training_Mode. The parameter is of Usage In, and allowable values are “Impulse”, “GetWave” or “Dual”. Both the Tx and Rx models (or every model in a redriver simulation) must support the particular BCI_Training_Mode and BCI_Protocol being used.

The second part is a new function signature, AMI_Impulse(), in the AMI .dll. This has arguments similar to what are already seen in AMI_Init() and AMI_GetWave(). The impulse_matrix argument is defined the same way as the impulse_matrix argument to AMI_Init(). The same is true for the AMI_parameters_out argument. The AMI_memory argument is a pointer to the memory allocated by AMI_Init(), as it is in the call to AMI_GetWave(). AMI_Impulse() contains BCI_parameters_in and BCI_parameters_out arguments. These are strings used for communication between the Tx and Rx models. Time domain back-channel optimization (BIRD147) relies on file I/O for communication between the models, and the BCI_parameters_in and BCI_parameters_out remove this reliance on file I/O for back-channel statistical optimization. Walter noted that the contents of BCI_parameters_in and BCI_parameters_out are not documented in the BIRD because the BCI protocol defines the contents. Walter noted that this proposal covers the case when the Tx is optimizing the Rx and the case when the Rx is optimizing the Tx.

Bob Ross noted that sections of this BIRD, for example the definition of impulse_matrix, simply refer to existing pages in the spec. Walter agreed and noted that he thought this was a matter of editorial preference. He said he preferred to use a “pointer” to an existing definition rather than copying the same definition over in two locations. Bob said he thought the pointers should be replaced with copies of the actual text.

BIRD197.7: NEW AMI RESERVED PARAMETER DC_OFFSET

Randy Wolff noted that the scheduled vote on BIRD197.6 was cancelled because BIRD197.7 had been submitted. Randy noted that the changes in BIRD197.7 were prompted by review and questions from Fangyi Rao. The changes were meant to clarify what the Other Notes section is discussing, in particular to clarify that the value of DC_Offset from the .ami file is always just a placeholder. The EDA tool must generate the value of DC_Offset passed to the model. Bob Ross moved to schedule a vote on BIRD197.7 at the February 21, 2020 IBIS Open Forum teleconference. Walter Katz seconded. There were no objections. Randy 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.

BIRD198: KEYWORD ADDITIONS FOR ON DIE PDN (POWER DISTRIBUTION NETWORK) MODELING
Discussion was tabled. Randy Wolff noted that a subset of ATM members is still preparing another response to the authors, and we might expect a BIRD198.1 shortly thereafter. Bob Ross noted that JEITA does not appear to be planning another BIRD198 update presentation for the DesignCon IBIS Summit.

IBISCHK PARSER AND BUG STATUS
Bob Ross noted Mike LaBonte had updated the released executables, and an ibischk 7.0.1 had been released. This release had been issued quickly to correct BUG208, which involved the parser hanging with certain Interconnect Models. During the process of creating 7.0.1, the parser developer had also discovered and fixed BUG209. BUG209 involved two messages that incorrectly reported issues with a “pad name” when they should have reported issues with a “bus label”. Bob noted that he had classified it as Moderate, Medium Priority, and Closed since it had already been fixed in 7.0.1. Bob moved to formally classify it this way. Curtis seconded. There were no objections. Bob noted that he would update BUG209 to show its officially approved status [AR].

BUG207 is still in debate in the Quality task group, and Bob noted that they still haven’t come to agreement on whether it’s a BUG and should be addressed. He noted that it relates to a change in the checking of Submodels. He noted that current behavior of the parser is that only the main Model without the Submodel is considered when the parser checks for endpoint agreement of the [Ramp] specification and the static I/V tables. He said that BUG207 proposed a special case for a Submodel for an on-die terminator clamp in driver mode. Bob said he was not yet ready to classify it. Randy Wolff agreed that more discussion is needed in the Quality task group.

Radek Biernacki noted that BUG207 is an issue with missing information about how the v(t) data in the model was gathered, but the specification is currently silent on this issue. He suggested that if that additional piece of information was added to the standard, then the parser could act on it. There would be no reason to worry about breaking older models. Radek noted that this information would be useful for the EDA tool during the simulation, not just for the parser. Randy agreed that it might make sense to consider a BIRD to clarify Submodel handling.

NEW TECHNICAL ISSUES
None.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held on February 21, 2020, and votes are scheduled for BIRD197.7 and whether to hold an IEEE SPI Summit 2020. The following teleconference meeting is tentatively scheduled for March 13, 2020. Note that the DesignCon 2020 IBIS Summit will be held on January 31, 2020.

Mike LaBonte moved to adjourn. Curtis Clark seconded the motion. The meeting 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. 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

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SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	November 8, 2019	November 22, 2019	December 23, 2019	January 10, 2020
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	-	-	-	-
Dassault Systemes	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	X	-	-	-
Google	User	Inactive	-	-	-	-
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	X	-	-
Instituto de Telecomunicações	User	Inactive	-	-	-	-
IBM	Producer	Inactive	-	X	-	-
Intel Corp.	Producer	Active	-	X	X	X
Keysight Technologies	User	Active	X	X	X	X
Marvell (GLOBALFOUNDRIES)	Producer	Active	-	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	-	-	-	-
SiSoft	User	Active	-	X	X	X
SPISim	User	Active	-	X	X	X
Synopsys	User	Active	X	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.