IBIS Open Forum Minutes

Meeting Date: **January 5, 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)
Cisco Systems	(Bidyut Sen)
CST	(Leonardo Sassi)
Ericsson	(Anders Ekholm)
GLOBALFOUNDRIES	(Steve Parker)
Huawei Technologies	(Jinjun Li)
IBM	(Luis Armenta)
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Hsinho Wu*
IO Methodology	Lance Wang*
Keysight Technologies	Radek Biernacki*
Maxim Integrated	(Mahbubul Bari)
Mentor, A Siemens Business	Arpad Muranyi*
Micron Technology	Randy Wolff*
NXP	(John Burnett)
Qualcomm	(Senthil Nagarathinam)
Raytheon	(Joseph Aday)
SiSoft	Mike LaBonte*, Walter Katz*
Synopsys	Ted Mido*
Teraspeed Labs	Bob Ross*
Xilinx	(Raymond Anderson)
ZTE Corporation	(Shunlin Zhu)
Zuken	(Michael Schaeder)

OTHER PARTICIPANTS IN 2018

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 26, 2018	624 227 121	IBISfriday11
February 2, 2018	IBIS Summit at DesignCon – no teleconference	

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 December 15, 2017 IBIS Open Forum teleconference. Walter Katz moved to approve the minutes. Lance Wang seconded the motion. There were no objections.

Mike reviewed ARs from the previous meeting.

1. Mike to add approval date to the website for BIRD165.1 [AR].
   Mike reported this as done.

ANNOUNCEMENTS, **CALL FOR ADDITIONAL AGENDA ITEMS**
None.

MEMBERSHIP STATUS AND TREASURER'S REPORT
Bob Ross reported that we are at 26 members, extending through May. Our account balance is at $19,489 for 2017. Actual cash flow of $17,739 has been collected in 2017. There are no adjustments for 2018 paid in 2017, such as for DesignCon. SAE is assigning new codes for

IBIS expenditures, and no invoicing has occurred yet for membership renewal for 2018. We expect a deduction for SAE expenses for 2017 to occur in January or February.

WEBSITE ADMINISTRATION

Mike LaBonte reported that some pages are generated by Perl scripts. One for the Interconnect task group was fixed after noting an issue with two documents that were posted on the same date. They were listed out of sequence, so the code was adjusted to list documents in sequence when they are posted on the same date.

MAILING LIST ADMINISTRATION

Mike LaBonte reported that he has not seen anything unusual to report.

LIBRARY UPDATE

Mike LaBonte noted that there are 80 or so vendors providing IBIS models that are listed on the library page. Any updates to the list should be sent to Anders Ekholm.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences
None.

- Press Update
None.

- Related standards
Mike LaBonte noted that IEEE 2401 (JEITA LPB) is a standard that we are tracking.

SUMMIT PLANNING AND STATUS

- DesignCon 2018
DesignCon will be held in Santa Clara, CA on January 30 through February 1, 2018. An IBIS Summit will be held on Friday, February 2, 2018 from 8:00 a.m. to 5:00 p.m. in room 209 of the convention center. Mike LaBonte noted that more presentations are needed. Send registration information to Lance Wang. Bob Ross noted he penciled in about 7 presentations. So far, none are confirmed yet. Keysight Technologies is a sponsor.

- European IBIS Summit at SPI 2018
SPI 2018 will be held in Brest, France on May 22 through May 25, 2018. An IBIS Summit will be held the afternoon of Friday, May 25, 2018. Mike LaBonte noted that he will be attending. Lance Wang will be receiving registrations.

- Other Summits
Bob noted that EDI CON and EPEPS both occur in the October timeframe in the San Jose/Santa Clara area. We will need to decide at a later time if we will hold an IBIS Summit at

one of these events.

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 emphasis is mostly regarding the development of IBISCHK. An inquiry came in by email by a model maker from a chip company. They were asking what other checks can be performed on models besides IBISCHK. This was a chance to plug the IBIS Quality checklist.

The IBISCHK6 user guide work in progress can be reviewed at:

> http://www.ibis.org/ibischk6/ibischk_6.1.4_UserGuide_wip1.pdf

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. Next Tuesday will be the first meeting of the year. The group will be helping to resolve the interconnect modeling BIRD. Arpad started a new BIRD related to a figure in the specification related to package modeling that will need to be addressed.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Mike LaBonte reported that the group is meeting at 8:00 a.m. PT on Wednesdays. The meetings continue to be about BIRD189. Some meetings may occur on Fridays during the IBIS Open Forum time slot on weeks without Open Forum meetings. A draft 15 is in progress for BIRD189.5. BIRD189.5 will ultimately be submitted and voted on. Radek Biernacki asked if the last Wednesday meeting was announced. Mike noted that the meeting was announced shortly after the last meeting in 2017.

Task group material can be found at:

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

EDITORIAL TASK GROUP

Mike LaBonte reported that this group remains suspended. Should there be any official document to review such as IBIS 7.0, the task group will resume meetings on Fridays when there is no Open Forum teleconference.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES
Mike LaBonte noted that there is a scheduled phone call with people from SAE to discuss a number of topics. There will be a new assessment on IBIS proposed. There may be a fixed fee announced that will change the way accounting works for IBIS.

BIRD125.1: MAKE IBIS-ISS AVAILABLE FOR IBIS PACKAGE MODELING
Discussion was tabled.

BIRD145.3: CASCADING IBIS I/O BUFFERS WITH [EXTERNAL CIRCUIT]S USING THE [MODEL CALL] KEYWORD
Discussion was tabled.

BIRD163: INSTANTIATING AND CONNECTING [EXTERNAL CIRCUIT] PACKAGE MODELS WITH [CIRCUIT CALL]
Discussion was tabled.

BIRD164: ALLOWING PACKAGE MODELS TO BE DEFINED IN [EXTERNAL CIRCUIT]
Discussion was tabled.

BIRD166.4: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW
Discussion was tabled.

BIRD181.1: I-V TABLE CLARIFICATIONS
Discussion was tabled.

BIRD189.4: INTERCONNECT MODELING USING IBIS-ISS AND TOUCHSTONE
Discussion was tabled.

BIRD190: CLARIFICATION FOR REDRIVER FLOW

Discussion was tabled.

IBISCHK6 PARSER AND BUG STATUS
Bob Ross reported there are two new bugs to classify. He is also working on the parser contract related to bugs and BIRDs already approved.

Bob introduced BUG195 from Arpad Muranyi. There is a syntactical violation of [Node Declarations] with no [End Node Declarations], but no error is flagged. Bob suggested classifying the bug as Moderate severity and Medium priority. This should be an easy fix and may end up with a new error number. Bob moved to classify BUG195 as Moderate severity and Medium priority. Radek Biernacki seconded the motion. There were no objections.

Bob introduced BUG196 from Arpad Muranyi. Polarity of inverting or non-inverting for D_to_A converters was added in IBIS version 6.0. The polarity column, if included, should generate an error in IBIS versions older than 6.0. This does not occur. Bob suggested classifying the bug as Moderate severity and Medium priority. Bob moved to classify BUG196 as Moderate severity and Medium priority. Radek seconded the motion. There were no objections.

Arpad noted he had a few more items submitted for review. Bob responded he has not had time to review them yet.

NEW TECHNICAL ISSUES
Arpad Muranyi noted that Figure 29 in the specification will need to be changed with the approval of BIRD189. The figure shows explicit pads that are not supported in the current specification. Bob Ross noted that "pad_2a" and "pad_2b" are I/O signals that split, and they still won't be supported in BIRD189. Radek Biernacki noted that the nodes could be declared in [Node Declarations]. Arpad clarified that while this is true, there is no syntax in IBIS to connect package model terminals to such on-die nodes. In addition, IBIS does not support splits and joins in package models. Bob commented that BIRD189 is not designed to work with [External Circuit]. Arpad commented that this is true, but the figure should not show the forward looking syntax anymore. Mike LaBonte asked if everything in the "Component Die" box is correct. Arpad said this is not necessarily the case. Arpad noted that "pad_2b" might need to be removed completely, or another pin would need to be defined.

Arpad started a BIRD to address changes needed to Figure 29. Arpad noted that the "pad_4" situation came from the Rambus days of dual clock pins. Walter Katz noted the reason to do it was if you have only one pin, you can end up with a large stub, so the connection was made close to the die with two pins. Arpad noted that the idea of the split from pin 2 was to look at self-adjusting buffers that could sense their output and adjust. Mike asked if the discussion of Arpad's new BIRD is on the agenda for the ATM task group. Arpad noted he briefly introduced the BIRD idea, but he does not have a BIRD draft ready for review. Arpad asked who has the actual drawing of Figure 29. Mike will find out where the original Figure 29 drawing is at [AR]. Bob added that the drawing is in Visio format.

Radek commented that Note 2 is a disclaimer that the package model is a non-native IBIS package model. He asked if this is sufficient to not need to change the figure. Arpad responded he thought this was not sufficient, since explicit pad connections are not defined in IBIS.

Mike asked if this BIRD is needed for IBIS 7.0. Arpad thought we did not have a choice, that this figure needs to be fixed when BIRD189 is implemented to eliminate confusion. The change will remove non-supported things in the figure. The examples will be modified to remove explicit pad connections. Mike noted he has Visio and can help Arpad with modifications to the figure.

NEXT MEETING

The next IBIS Open Forum teleconference meeting will be held January 26, 2018. The following IBIS Open Forum teleconference meeting is tentatively scheduled on February 16, 2018. The DesignCon IBIS Summit is scheduled on February 2, 2018. No teleconference will be available.

Arpad Muranyi moved to adjourn. Bob Ross 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/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	November 17, 2017	December 1, 2017	December 15, 2017	January 5, 2018
ANSYS	User	Active	X	X	X	-
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	-	X	-
Cisco Systems	User	Inactive	-	-	-	-
CST	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
GLOBALFOUNDRIES	Producer	Inactive	-	X	-	-
Huawei Technologies	Producer	Inactive	-	-	-	-
IBM	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	X	-
Intel Corp.	Producer	Active	-	X	X	X
IO Methodology	User	Active	-	X	-	X
Keysight Technologies	User	Inactive	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	-	-	-	-
Qualcomm	Producer	Inactive	-	-	-	-
Raytheon	User	Inactive	-	-	-	-
SiSoft	User	Active	X	X	X	X
Synopsys	User	Active	-	X	X	X
Teraspeed Labs	General Interest	Active	-	X	X	X
Xilinx	Producer	Inactive	X	-	-	-
ZTE Corp.	User	Inactive	-	-	X	-
Zuken	User	Inactive	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.