IBIS Open Forum Minutes

Meeting Date: **July 1, 2016**
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2016 PARTICIPANTS

ANSYS	Curtis Clark*, Toru Watanabe
Broadcom (Avago Technologies)	Bob Miller
Cadence Design Systems	Ken Willis, Brad Brim*
CST	Stefan Paret
Ericsson	Anders Ekholm, David Zhang, Zilwan Mahmod
GLOBALFOUNDRIES	Steve Parker*
Huawei Technologies	(Jinjun Li)
IBM	Adge Hawes, Luis Armenta
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Hsinho Wu*, Mohammad Bapi, Michael Mirmak*, Masahi Shimanouchi, Todd Bermensolo, Zao Liu, Gong Ouyang, Udy Shrivastava, Gianni Signorini, Richard Mellitz
IO Methodology	Lance Wang
Keysight Technologies	Radek Biernacki*, Heidi Barnes, Jian Yang, Fangyi Rao, Stephen Slater, Pegah Alavi, Edwin Young
Maxim Integrated Products	Yan Liang, Don Greer, Thinh Nguyen, Joe Engert, Hock Seon
Mentor Graphics	Arpad Muranyi*, Vladimir Dmitriev-Zdorov, John Angulo, Mikael Stahlberg
Micron Technology	Randy Wolff*
Signal Integrity Software	Mike LaBonte*, Walter Katz*, Todd Westerhoff, Richard Allred
Synopsys	Ted Mido, Kevin Li, Massimo Prando
Teraspeed Labs	Bob Ross*
Xilinx	(Raymond Anderson)
ZTE Corporation	(Shunlin Zhu)
Zuken	Michael Schaeder, Amir Wallrabenstein

OTHER PARTICIPANTS IN 2016

Cisco Systems	Giuseppi Selli, Brian Baek
eASIC	David Banas
Fujitsu Advanced Technologies	Shogo Fujimori
Ghent University	Paolo Manfredi
H3C	Bin Cheng, Mao Jun
Hamburg University of Technology	Jan Preibisch, David Dahl
Independent	Carl Gabrielson
Institut Supérieur des Sciences	Wael Dghais

Appliquées et de Technologie de
 Sousse
JEITA   Yosuke Kanamaru
John Baprawski, Inc.   John Baprawski
KEI Systems   Shinichi Maeda
Lattice Semiconductor   Dinh Tran, Maryam Shahbazi
Leading Edge   Pietro Vergine
MathWorks   Mike Mulligan, Corey Mathis
Monsoon Solutions   Nathan Hirsch
Northrup Grumman   Alex Golian
NXP   Jon Burnett
Politecnico di Torino   Claudio Siviero, Stefano Grivet-Talocia,
                                 Igor Simone Stievano
Rambus   John Yan
Raytheon   Joseph Aday
SAE International   (Logen Johnson)
SILABTECH   Biman Chattopadhyary
Signal Metrics   Ron Olisar
SiGuys   Donald Telian
Sony Corporation   Hiroaki Ammo
Sony LSI Design   Takashi Hasegawa
SPISim   Wei-hsing Huang
STMicroelectronics   Fabio Brina, Olivier Bayet
Technoprobe   Alberto Berizzi, Lorenzo Bernasconi, Simona Cucchi
Université de Bretagne Occidentale Mihai Telescu

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
July 22, 2016	205 475 958	IBIS

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

    https://ciscosales.webex.com/ciscosales/j.php?J=205475958

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. When calling into the meeting, follow the prompts to enter the meeting ID. For new, local international dial-in numbers, please reference the bridge numbers provided by Cisco Systems at the following link:

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
Randy Wolff called for comments on the minutes of the June 10, 2016 IBIS Open Forum teleconference. He noted a correction from Bob Ross that the treasurer's report should state $18,916 instead of $18,590. Bob Ross moved to approve the minutes with the noted change. Brad Brim seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

1. Mike LaBonte to update broken web links in TSIRD documents [AR].
    Mike reported the AR is completed. 3-4 files were updated, since they contained references to eda.org.

2. Bob Ross to update the status of IBISCHK bugs and fix the spelling of Arpad Muranyi's name on the website [AR].
    Bob reported that as done.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS
None.

MEMBERSHIP STATUS AND TREASURER'S REPORT
Bob Ross reported that we have 21 members. We have a total of $18,916 for 2016. Actual cash flow of $14,605 has been collected this year. We have one IBISCHK parser payment expected. There has been no response yet from one member that we are hoping will renew, but there are difficulties with accounting policies between the member organization and SAE.

WEBSITE ADMINISTRATION
Mike LaBonte reported the change to the TSIRD documents. Based on membership updates, the list of members in good standing has been updated.

MAILING LIST ADMINISTRATION

Curtis Clark reported that Lance Wang created a new mailing list for the China regional group to support their activities. Lance is a moderator for the list. The legacy mailing list is smooth sailing. Mike LaBonte noted that he needs to update the website to reflect the new list [AR].

LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

The Conference on Electrical Performance of Electronic Packages and Systems (EPEPS) is in San Diego, CA October 23-26, 2016. EPEPS sometimes includes specific IBIS content as well as general SI and PI content.

>   http://www.epeps.org

- Press Update

Mike LaBonte reported an article in EDN, "IBIS-AMI for rocket scientists" by Rajan Bedi on June 9, 2016. The article is linked at:

>   http://www.edn.com/electronics-blogs/out-of-this-world-design/4442193/IBIS-AMI-for-rocket-scientists

- Related standards

None.

SUMMIT PLANNING AND STATUS

- EPEPS 2016 Consideration

Bob Ross moved to vote on the following motion:

"IBIS shall conduct the 2nd EPEPS IBIS Summit Meeting in San Diego, California on the afternoon of October 26, 2016 and with an estimated maximum expense budget of $2,500 that is expected to be partially or totally offset by Sponsorship contributions."

Steve Parker seconded the motion. Bob noted concern about the logistics of holding the Summit. It may be difficult to organize, because he does not know who might attend. We'd need the core support of officers and attendees with papers. Arpad Muranyi asked if it would be a half-day Summit. Bob confirmed it would be a half-day. Walter Katz noted that he was at EPEPS last year. He will not be attending this year, and he recommended not holding the Summit. Mike LaBonte noted it is unlikely he'd be able to attend. Bob noted that last year, the San Jose location was convenient for locals to attend, with many member companies in the San Jose area. Radek Biernacki commented that we asked about attendance in the last meeting, but we have no information of possible attendance. Mike noted he went through the IBIS roster page, and there isn't a single company in that area. Bob noted he recommended a no vote due

to logistics issues. Brad Brim asked if the logistics concern is for the IBIS officers to participate or for IBIS attendees to participate. Bob responded that both are a concern. Sponsorship is also a concern. Radek noted that we stopped hosting Summits at DAC due to logistics concerns. He added that he knows people who will attend EPEPS and would stay for the Summit. Bob asked Michael Mirmak if he would be able to attend. Michael noted that he should be able to. Bob added that Michael could bring a projector, and this would save about $600.

The roll call vote tally was:
ANSYS – no
Cadence – abstain
CST – yes (by email)
GLOBALFOUNDRIES – no
Infineon – yes (by email)
Intel – yes
IO Methodology – abstain (by email)
Keysight – abstain
Mentor – abstain
Micron – no
SiSoft – no
Synopsys – yes (by email)
Teraspeed Labs – no
Zuken – yes (by email)

The roll call vote concluded with a vote tally of Yes – 5, No – 5, Abstain – 4. The motion failed due to the tie vote.

- Taiwan IBIS Summit Consideration
Bob moved to vote on the following motion:

"IBIS shall conduct the 7th Asian IBIS Summit Meeting in Taipei, Taiwan around November, 2016, at a date to be coordinated with other Asian Summits, and with an estimated maximum expense budget of $10,000. This is expected to be partially offset by Sponsorship contributions, but we may have a loss of up to $5,000 that can be covered by accumulated Summit funds."

Michael seconded the motion. Mike noted that dates for the Asian IBIS Summits have not been discussed yet. Bob added that the Summits would be after the US election date. He noted that there were about 75 attendees last year. We have good local logistics support but not good local sponsorship or presentation support. Some presentations ended up being fillers. We do lose money on the Summit, but it is a question of allocation of sponsorships, such as the Cadence sponsorship all going to Shanghai last year even though it all went to Taipei the year before. Michael noted that the move of the Intel office in Taipei means that the Sherwood hotel is far away from where many of the tech people are located, and the Intel offices are located near a hotel with conference rooms. He'd expect many Intel attendees if the Summit is held in the Intel office area of the city. Brad asked if Bob's concern is with local participation or locally generated papers. Bob noted his greater concern is with attendance. One of the objectives is to get local participation in IBIS issues and generate local presentations. Brad noted his experience is that many local people like to attend to learn. We may need to advertise better

that we want locally generated papers. Mike added that we might conduct a training session.

The roll call vote tally was:
ANSYS – abstain
Cadence – yes
CST – abstain (by email)
GLOBALFOUNDRIES – yes
Infineon – abstain (by email)
Intel – yes
IO Methodology – yes (by email)
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes (by email)
Teraspeed Labs – yes
Zuken – abstain (by email)

The roll call vote concluded with a vote tally of Yes – 10, No – 0, Abstain – 4. The motion passed.

Michael added that the hotel near the Intel office is the Courtyard Taipei at Nangang Station.

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 group is discussing the IBISHCK bugs and parser development.

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

   http://www.ibis.org/ibischk6/ibischk_6.1.1_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. There is no meeting on July 5. The group is discussing how they can easily clean up the specification regarding referencing issues. There is a proposal from Walter Katz, and Bob Ross will have a presentation in the next meeting.

Task group material can be found at:

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

INTERCONNECT TASK GROUP
Michael Mirmak reported that the group is meeting on Wednesdays at 8:00 a.m. PT. The group is working on a draft 37 now. Mike LaBonte added that the most recent document posted is draft 36. Bob Ross added that the new draft will include updated examples as well as new terminal table details and language about aggressors. His draft could be released as draft 37.

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 at 8:00 a.m. PT on weeks the Open Forum teleconference is not held. Mike LaBonte noted that the editorial work is more significant than on previous specification versions, so it is taking more time than normal. Walter Katz noted that there is significant progress on resolving the referencing issue.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES
- Second revision of IBIS Policies and Procedures
Mike LaBonte reported that the document is still under review with a few other changes possible. We did ratify a Polices and Procedures document last year. We have a number of new changes from SAE review, to refine dates, clarify funds disbursement requirements and for reporting requirements for officer elections.

The document can be found at:

http://www.ibis.org/policies/

- 2016 officer elections report
Radek Biernacki reported the election went as planned and according to the current P&P. All 2015 officers were re-elected. One officer position had two write-in votes. All other positions received the full 17 votes. There were no abstentions. He congratulated the elected officers.

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

BIRD128.2: ALLOW AMI_PARAMETERS_OUT TO PASS AMI_PARAMETERS_IN DATA ON CALLS TO AMI_GETWAVE

Discussion was tabled.

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

Discussion was tabled.

BIRD147: BACK-CHANNEL SUPPORT

Discussion was tabled.

BIRD158.3: AMI TOUCHSTONE ANALOG BUFFER MODELS

Discussion was tabled.

BIRD161.1: SUPPORTING INCOMPLETE AND BUFFER-ONLY [COMPONENT] DESCRIPTIONS

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.

BIRD165: PARAMETER PASSING IMPROVEMENTS FOR [EXTERNAL CIRCUIT]S

Discussion was tabled.

BIRD166: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW

Discussion was tabled.

BIRD180: REQUIRE UNIQUE PIN NAMES IN [PIN]

Bob Ross moved to un-table the BIRD for discussion. Michael Mirmak seconded the motion.

Mike LaBonte noted the BIRD is related to how IBIS has no statement disallowing multiple

repeated pin names in the [Pin] section. The parser issues an error for this circumstance. So, either the parser needs to change or the specification needs to change. Mike noted that Arpad Muranyi mentioned in previous discussion that there could be uses for repeated pins in the pin list. Arpad added that he had a BIRD related to improving package modeling, and he made use of this omission in the specification. He felt that this BIRD should not be passed until his BIRD is voted down. He noted that the Interconnect BIRD in progress is only for 1:1 pin to buffer connections and that EBD (or some extension) is targeted for modeling of splits in packages. He thought it would be premature to vote on this BIRD in case the Interconnect BIRD goes a different direction. Walter Katz added that he thought the BIRD should be reviewed by the Interconnect task group, and to let them issue a recommendation to the Open Forum.

Walter objected to un-tabling the BIRD.

The roll call vote tally was:
ANSYS – no
Cadence – abstain
GLOBALFOUNDRIES – abstain
Intel – abstain
Keysight – abstain
Mentor – no
Micron – abstain
SiSoft – no
Teraspeed Labs – yes

The roll call vote concluded with a vote tally of Yes – 1, No – 3, Abstain – 5. The motion passed.

IBISCHK6 PARSER AND BUG STATUS
Bob Ross reported that we are ready to proceed with a parser update. This update will add some DLL checking and fix six bugs. The parser work was quoted at $2,000.

Bob moved to vote on the following motion:

"IBIS and SAE International shall issue a contract to Adept Software Avenues Pvt. Ltd., a subsidiary of APT Software for updates to the IBISCHK6 software, to address currently open bugs as well as one enhancement request, at a cost of $2,000."

Curtis Clark seconded the motion. Radek Biernacki asked if the vote can be conducted at this meeting. Mike LaBonte noted that the motion was sent out more than a week in advance of the meeting, so it is eligible for a vote. Bob added that we have accumulation of parser development funds to pay for this parser enhancement.

The roll call vote tally was:
ANSYS – yes
Cadence – yes
CST – yes (by email)
GLOBALFOUNDRIES – yes

Infineon – yes (by email)
Intel – yes
IO Methodology – yes (by email)
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes (by email)
Teraspeed Labs – yes
Zuken – yes (by email)

The roll call vote concluded with a vote tally of Yes – 14, No – 0, Abstain – 0. The motion passed.

Bob will continue the signature process on the contract [AR].

Michael Mirmak asked about the parser adding DLL checking. Does it pass any waveforms into the model for checking or pass parameters into it for checking? Mike LaBonte clarified that the DLL checking is simple and checks that required functions exist in the DLL or SO file. Doing the checking that Michael is mentioning would be significantly more expensive. Bob added that there could be platform dependencies with IBISCHK due to 32/64 bit executable differences. Mike noted that the parser will only check the executable associated with the platform IBISCHK is run on. Michael noted that we should be careful about messaging if there is a DLL or SO file included for only one platform and the user runs IBISCHK on a different platform. We should not indicate errors. Mike noted that a message will indicate which DLL or SO file is checked and which files are not checked. Mike added that review of BUG179 would be helpful in case there are any suggestions for the parser developer.

NEW TECHNICAL ISSUES
Michael Mirmak asked if there was any mention of the IEEE package board standard. He noted seeing a notice of the IEEE P2401 LSI-Package-Board standard vote approval. Brad Brim noted this vote was held several months ago. Michael asked if this standard should be reviewed by the Interconnect task group. Mike LaBonte asked if the standard was available for free. Michael added that he found the document is not available for free. Mike noted that it possibly could be shared during a meeting by someone with access to the document if that is allowed.

NEXT MEETING
The next IBIS Open Forum teleconference meeting will be held July 22, 2016. The following IBIS Open Forum teleconference meeting will be held August 12, 2016.

Curtis Clark moved to adjourn. Brad Brim seconded the motion.

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NOTES

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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	May 11, 2016	May 20, 2016	June 10, 2016	July 1, 2016
ANSYS	User	Active	-	X	X	X
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	-	X	X	X
CST	User	Inactive	X	-	-	-
Ericsson	Producer	Inactive	X	-	-	-
GLOBALFOUNDRIES	Producer	Active	-	-	X	X
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
IBM	Producer	Inactive	-	-	X	-
Intel Corp.	Producer	Active	X	X	X	X
IO Methodology	User	Active	X	X	X	-
Keysight Technologies	User	Active	X	X	X	X
Maxim Integrated Products	Producer	Inactive	-	-	-	-
Mentor Graphics	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
Signal Integrity Software	User	Active	X	-	X	X
Synopsys	User	Active	X	X	X	-
Teraspeed Labs	General Interest	Active	-	X	X	X
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	-	-	-	-
Zuken	User	Inactive	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.