IBIS Open Forum Minutes

Meeting Date: **October 14, 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*
Cisco Systems	Giuseppi Selli, Brian Baek
CST	Stefan Paret
Ericsson	Anders Ekholm, David Zhang, Zilwan Mahmod
GLOBALFOUNDRIES	Steve Parker*
Huawei Technologies	(Jinjun Li)
IBM	Adge Hawes*, Luis Armenta*, Trevor Timpane
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	Yan Liang, Don Greer, Thinh Nguyen, Joe Engert, Hock Seon, Ahmed Gendy
Mentor Graphics	Arpad Muranyi*, Vladimir Dmitriev-Zdorov, John Angulo, Mikael Stahlberg
Micron Technology	Randy Wolff*, Justin Butterfield
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

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 Appliquées et de Technologie de Sousse	Wael Dghais
JEITA	Yosuke Kanamaru
John Baprawski, Inc.	John Baprawski
KEI Systems	Shinichi Maeda
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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
November 4, 2016	See below	IBISOF

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

https://cisco.webex.com/ciscosales/j.php?MTID=m306c129950d90f9c3ab6ac19a60374c5

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:

http://www.cisco.com/web/about/doing_business/conferencing/index.html

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 September 23, 2016 IBIS Open Forum teleconference. Radek Biernacki moved to approve the minutes. Curtis Clark seconded the motion. There were no objections.

Randy Wolff reviewed ARs from the previous meeting.

1. Mike LaBonte and Bob Ross to incorporate Radek Biernacki's suggestions into BIRD181 [AR].
   Bob reported this as complete, with changes incorporated in BIRD181.1.
2. Mike LaBonte to add links to the Summit announcements to the Summits webpage [AR].
   Mike reported that he started to work on it but did not notice a document from Bob containing the links. This AR will remain open.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS
Mike LaBonte noted that some BIRDs have been sent with updates in the last week since the agenda went out. He also noted that the WebEx meeting reservation was cancelled, and Cisco generated a new meeting for us to use going forward.

MEMBERSHIP STATUS AND TREASURER'S REPORT
Bob Ross reported that we have 22 members. Cisco Systems has rejoined. Our account is at $27,316 for 2016. Actual cash flow of $23,005 has been collected this year. We expect a payment for web services of $312 soon and further Summit payments to come in.

WEBSITE ADMINISTRATION
Mike LaBonte reported that everything is running smoothly on the website. We just renewed the website and payment is about to be made for that.

MAILING LIST ADMINISTRATION

Curtis Clark reported that everything is going fine. Most people with hp.com addresses had a change to hpe.com addresses. He reached out to let those people know, and many have re-subscribed.

LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

The IEEE 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

The IEEE conference on Electrical Design of Advanced Packaging and Systems (EDAPS) is in Honolulu, HI December 14-16, 2016. EDAPS covers SI and PI issues, although IBIS does not affiliate with it.

> http://edaps2016.org/

- Press Update
None.

- Related standards
None.

SUMMIT PLANNING AND STATUS

- Asian IBIS Summit (Shanghai)

The meeting will take place November 11, 2016 at the Parkyard Hotel. Bob Ross reported that papers are coming in. Looks like there will be a full program of 10-12 papers. Huawei Technologies is the primary sponsor and additional sponsors include IO Methodology, Xpeedic Technology, SPISim, Synopsys and ZTE Corporation.

- Asian IBIS Summit (Taipei)

The meeting will take place November 14, 2016 at the Sherwood Hotel. Cadence Design Systems, IO Methodology, Peace Giant Corporation, Synopsys and Xpeedic Technology are sponsors.

- Asian IBIS Summit (Tokyo)

The meeting will take place November 18, 2016. This will be a half day meeting. Bob noted that there is room for more presentations. We can add presentations from the US if needed.

JEITA and IBIS are sponsors.

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 has discussed the IBISCHK parser mostly.

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. The group is discussing some BIRDs on editorial changes for the specification.

Task group material can be found at:

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

INTERCONNECT TASK GROUP
Mike LaBonte reported that the group is meeting on Wednesdays at 8:00 a.m. PT. The group is going through draft 41 of the Interconnect proposal. The group is reviewing comments in the draft document and addressing them. A draft 42 is in progress.

Task group material can be found at:

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

EDITORIAL TASK GROUP
Mike LaBonte reported that the group remains suspended. The group will start meeting again after a more complete draft of the IBIS specification is available for review.

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 was updated three weeks ago with feedback that was received. He needs to begin the email thread again to restart review of the latest draft.

The document can be found at:

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

BIRD147.3: BACK-CHANNEL SUPPORT
Mike LaBonte noted that BIRD147.2 was submitted, but some mistakes were caught in review by the ATM task group, so BIRD147.3 was submitted.

Bob Ross noted that we've adopted with language changes the notion in both versions of "all or none" for BCI parameters. If one exists the other four must be present, for instance. If any is absent, all must be absent, in other words. Defaults were removed from the Reserved Parameters rules. For the BCI_Protocol parameter, the "IBIS" prefix is reserved for protocols that are adopted and published by IBIS. A mechanism for doing this is expected. A company name prefix is recommended for naming private protocols. We might be able to check official protocols in the future if we establish an official location on the IBIS website that lists names of official protocols. Mike noted that this is a case where we'd have an official protocol but it would not be part of the IBIS specification. Bob noted that the list could change without a parser upgrade. Bob proposed that we let this BIRD sit for a while, since we are not in a hurry to vote on it.

BIRD181.1: I-V TABLE CLARIFICATIONS
Bob Ross reported that the title was changed to have "I-V" instead of "I/V". Mike LaBonte noted that the term "structure" was changed. Also, the term "Buffer_I/O terminal" was defined, since this was the first instance of it in the specification. Bob noted that under "Monotonicity Requirements", the term "axis" was changed to "value". A note about parser non-monotonicity checking was removed. The parser does different checks than what was described in the specification. A note about monotonicity was left in. Mike noted that these changes were made so the IBIS specification would not spell out what the IBISCHK parser should do. Bob stated that an ECL example was added. Radek Biernacki noted that he has not had time to review the revision, but he will do so before the next meeting.

BIRD128.2: ALLOW AMI_PARAMETERS_OUT TO PASS AMI_PARAMETERS_IN DATA ON CALLS TO AMI_GETWAVE
The previous motion from Walter Katz was to reject BIRD128.2. Walter called the motion to vote.

The roll call vote tally was:

ANSYS – yes

Broadcom – yes
Cadence – yes
GLOBALFOUNDRIES – yes
IBM – yes
Intel – no
IO Methodology – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed Labs – yes

The roll call vote concluded with a vote tally of Yes – 12, No – 1, Abstain – 0. The motion passed and the BIRD was rejected.

BIRD180: REQUIRE UNIQUE PIN NAMES IN [PIN]
Walter Katz moved to vote on BIRD180. Bob Ross seconded the motion. There were no objections.

The roll call vote tally was:

ANSYS – yes
Broadcom – yes
Cadence – yes
GLOBALFOUNDRIES – yes
IBM – yes
Intel – yes
IO Methodology – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed Labs – yes

The roll call vote concluded with a vote tally of Yes – 13, No – 0, Abstain – 0. The motion passed and the BIRD was accepted.

Randy Wolff asked if we should clarify which version of the specification we intend this BIRD to go into. Mike LaBonte responded that we usually put together a list of BIRDs that are intended for the next version and vote on that list separately. Walter Katz noted that the intention is that approved BIRDs will get incorporated into the next version. Bob Ross added that there may be an exception for BIRDs intended for a major release versus the next minor release.

BIRD182: POWER AND GND [PIN] SIGNAL NAME AS [PIN MAPPING] BUS LABEL

Walter Katz moved to vote on BIRD182. Bob Ross seconded the motion. There were no objections.

The roll call vote tally was:

ANSYS – yes
Broadcom – yes
Cadence – yes
GLOBALFOUNDRIES – yes
IBM – yes
Intel – yes
IO Methodology – yes
Keysight – yes
Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed Labs – yes

The roll call vote concluded with a vote tally of Yes – 13, No – 0, Abstain – 0. The motion passed and the BIRD was accepted.

BIRD183: [MODEL DATA] MATRIX SUBPARAMETER TERMINOLOGY CORRECTION

Radek Biernacki commented that the "Package Matrix Voltage Polarities and Current Directions" diagram shows voltages across a single terminal, lacking a reference. The diagram needs to be fixed. This could be done by the editorial committee. Bob Ross noted that the BIRD could be updated before it is voted on. Mike LaBonte noted that it may be better handled by the editorial task group. Walter Katz added that changes to the figure may be dependent on the handling of referencing being fixed in other parts of the specification.

Walter Katz moved to vote on BIRD183. Bob Ross seconded the motion. There were no objections.

The roll call vote tally was:

ANSYS – yes
Broadcom – yes
Cadence – yes
GLOBALFOUNDRIES – yes
IBM – yes
Intel – yes
IO Methodology – yes
Keysight – yes

Mentor – yes
Micron – yes
SiSoft – yes
Synopsys – yes
Teraspeed Labs – yes

The roll call vote concluded with a vote tally of Yes – 13, No – 0, Abstain – 0. The motion passed and the BIRD was accepted.

BIRD184.1: MODEL_NAME AND SIGNAL_NAME RESTRICTION FOR POWER AND GND PINS

Walter Katz moved to schedule the BIRD for a vote at the next meeting. Bob Ross seconded the motion. There were no objections.

BIRD185: SECTION 3 RESERVED WORD GUIDELINE UPDATE

Walter Katz moved to schedule the BIRD for a vote to approve at the next meeting. Bob Ross seconded the motion. There were no objections.

Arpad Muranyi asked about the paragraph added in the proposed changes, if it was indeed meant to be added to the specification. He noted that it ended in a ":". Radek Biernacki also noted that the paragraph indenting is incorrect. Bob will issue a BIRD185.1 to address the editorial comments [AR], and BIRD185.1 will then be eligible for a vote at the next meeting.

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.

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.

IBISCHK6 PARSER AND BUG STATUS
Bob Ross reported that a new parser release is close. New IBISSHK6 code from the developer
is currently being tested. There have been a number of issues with BUG179 regarding
checking executable models. The release will close out 6 bugs through BUG180. A final
version is expected to be released before the next meeting.

Mike LaBonte noted that we are dealing with changes made to fix BUG179. The latest parser
check attempts to open .dll and .so files and see if the expected functions are found in them.
The issue is that the parser was looking at the file extension, and it would only try the check for
.so files if running on Linux and .dll files if running on Windows. Mike noted that it would be safe
to look at the Platform_Compiler_Bits subparameter and look for "Linux" or "Windows". The
question is what to do for other platforms such as on Macintosh. Walter Katz noted that he
knows of no executables being developed for Macs. He thought looking at "Linux", "Windows"
or "Solaris" could be looked at. Mike added that to be conservative, we should look only at
"Linux" or "Windows". We do not deliver parsers for other platforms except Macintosh currently.
He proposed that support for other platforms could be provided by modifying the source code,
and this would be a vendor-specific implementation of the parser. Mike's intention for the parser
is that it will check a Windows executable if on a Windows platform and check a Linux
executable if on a Linux platform. The check can be skipped for other circumstances.

Bob introduced BUG181. The line number tracking of the IBISCHK6 parser appears to be
incorrect when reporting some issues. For example, the non-ASCII character """ causes
cascading issues. The error is also reported as being on the wrong line. Walter Katz suggested
that the parser should simply stop checking when it finds an illegal ASCII character in an .ami
file. Radek Biernacki added that any character should be allowed in a comment.

Bob proposed classifying the bug as annoying severity, low priority and open status. Mike
suggested medium priority. Bob moved to classify BUG181 as annoying severity and medium
priority. Curtis Clark seconded the motion. There were no objections.

Bob introduced BUG182. The bug says an error should be given if a folder is included in the
path to a .dll or .so file. The specification states that the .dll or .so file must be in the same
folder as the .ibs and .ami files. Walter Katz commented that it might be an enhancement to

allow paths.

Bob introduced BUG183. An error message is not correct related to Format Value and Default with Usage Out. The message should note that Format is missing. Bob moved to classify BUG183 as annoying severity and low priority. Radek seconded the motion. There were no objections.

NEW TECHNICAL ISSUES
None.

NEXT MEETING
The next IBIS Open Forum teleconference meeting will be held November 4, 2016. Votes are scheduled for BIRD184.1 and BIRD185.1. The following IBIS Open Forum teleconference meeting will be held December 2, 2016.

Radek Biernacki moved to adjourn. Curtis Clark 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

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SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	August 12, 2016	September 2, 2016	September 23, 2016	October 14, 2016
ANSYS	User	Active	X	-	X	X
Broadcom Ltd.	Producer	Inactive	-	-	-	X
Cadence Design Systems	User	Active	X	X	X	X
Cisco Systems	User	Inactive	-	-	-	-
CST	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
GLOBALFOUNDRIES	Producer	Active	-	-	X	X
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
IBM	Producer	Active	-	X	X	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	Producer	Inactive	X	X	-	-
Mentor Graphics	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
Signal Integrity Software	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	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.