IBIS Open Forum Minutes

Meeting Date: **November 4, 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
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
December 2, 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 October 14, 2016 IBIS Open Forum teleconference. Curtis Clark moved to approve the minutes. Bob Ross seconded the motion. There were no objections.

Randy Wolff reviewed ARs from the previous meeting.

1. Mike LaBonte to add links to the Summit announcements to the Summits webpage [AR]. Mike reported this as done.
2. Bob Ross to issue BIRD185.1 to address editorial comments [AR]. Bob reported this as complete.

ANNOUNCEMENTS, CALL FOR ADDITIONAL AGENDA ITEMS
Bob Ross noted that another IBIS-AMI package was sent out to the IBIS model reviewers list for review.

MEMBERSHIP STATUS AND TREASURER'S REPORT
Bob Ross reported that we have 22 members. Two potential members that have not renewed are in merger talks. Bob has not followed up with either company. Our account is at $27,004 for 2016. Actual cash flow of $23,693 has been collected this year. There is a parser payment pending. There is potential parser income coming in, but there is legal review by the company, so he is not sure when the payment will be made. There may be some Summit payments upcoming too.

WEBSITE ADMINISTRATION
Mike LaBonte reported that we had our first known issue presented for IBIS-ISS. This is noted in a new known-issues file for IBIS-ISS posted on the website. There have been other changes

to the roster and events pages.

MAILING LIST ADMINISTRATION
Curtis Clark reported we had three addresses go stale and three new signups. Everything is going smoothly. Bob Ross asked the number of people on the lists. Curtis noted he did not have that information readily available, but he'd send out that information by email.

LIBRARY UPDATE
No update.

INTERNATIONAL/EXTERNAL ACTIVITIES
- Conferences
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
Bob Ross noted a paper available through IEEE Xplore that mentions IBIS. The paper is "Macromodeling of I/O Buffers via Compressed Tensor Representations and Rational Approximations" by Gianni Signorini, Claudio Siviero, Stefano Grivet-Talocia and Igor Stievano. The authors participate in the SPI IBIS Summit and EPEPS meetings and research macromodeling that references IBIS and adds additional features. The paper is found at:

> http://ieeexplore.ieee.org/document/7570195/

- 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 the agenda has been sent out. There is a full program of 12 presentations. Huawei Technologies is the primary sponsor and additional sponsors include Cadence Design Systems, IO Methodology, SPISim, Synopsys, Teledyne LeCroy, Xpeedic Technology and ZTE Corporation.

- Asian IBIS Summit (Taipei)
The meeting will take place November 14, 2016 at the Sherwood Hotel. The agenda has been sent out and there are 8 presentations. 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 reported that there are 10 presentations. Registration is closed since the 140 person room capacity has been reached. An agenda will be sent out Sunday night. Primary sponsors are JEITA and the IBIS Open Forum. Additional sponsors are ANSYS, Inc., Cadence Design Systems, Cybernet Systems, Keysight Technologies, Mentor Graphics Corporation, MoDeCH, Inc., Toshiba Corporation and ZUKEN, Inc.

Mike LaBonte expressed his appreciation for Bob and Lance Wang for all their work organizing the meetings.

- DesignCon IBIS Summit

Bob moved to schedule a vote to hold a Summit meeting at the DesignCon 2017 conference on the Friday after the event with costs not to exceed $10,000. Mike noted that we had a room in the Hyatt last year. He needs to contact the DesignCon organizers to work out the details. Radek Biernacki asked what the approximate sponsorship has been in the past. Bob responded that there was roughly $3,000 in sponsorships and costs of $7,000-8,000. Our costs were higher last year than in previous years. Radek seconded the motion. There were no objections.

Bob reported that he had been in contact with the SPI organizers. He unofficially responded that IBIS plans to attend. We need to find out more details on sponsorship costs and can discuss further and schedule a vote at the next meeting.

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 improving quality through having the best IBISCHK parser.

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 has a new BIRD proposal about relaxing file naming rules for IBIS files. This may have effects on the line length rules in IBIS. The group is also discussing editorial work for specification cleanup.

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 reviewing the draft 42 version of the Interconnect BIRD. Comments are being addressed in the document. Other issues are being discussed as the document is being reviewed.

Task group material can be found at:

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

EDITORIAL TASK GROUP

Mike LaBonte reported that the group remains suspended. Mike shared a table of BIRDs for IBIS 6.2. Some have not been officially created yet.

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 there are a few issues that still need board discussion before the document is sent out for further review.

The document can be found at:

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

BIRD185.1: SECTION 3 RESERVED WORD GUIDELINE UPDATE

Bob Ross noted that only the indentation of a paragraph was changed from the previous version. Hsinho Wu said that Michael Mirmak preferred to postpone the vote to have more time to review the BIRD. Hsinho moved to defer the vote on the BIRD. Brad Brim seconded the motion. There were no objections. Radek noted that the BIRD is deferred until a future meeting, not necessarily the next meeting based on our rules.

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

Hsinho Wu reported for Michael Mirmak that Michael objected to the language stating that all pins on a component shall be specified. He did not think this was reasonable.

Bob Ross responded that a legal IBIS model is intended to cover all pins of a component. A

legal IBIS model can also be issued with just one or two pins. Bob noted that we have already approved BIRD180 with the same language. There is no way to know that an IBIS model actually has all the pins. Radek Biernacki noted that the language Michael is objecting to is not part of this BIRD. A separate BIRD should be issued if another change is needed. Hsinho Wu moved to defer the vote on the BIRD. Bob Ross seconded the motion. There were no objections.

BIRD147.3: BACK-CHANNEL SUPPORT

Bob Ross noted that no further work has been done on the BIRD. We should defer a vote on this BIRD until some file name rules being discussed are finalized. Mike LaBonte asked Arpad Muranyi if BIRD147.3 was still on the ATM task group agenda. Arpad did not recall. Mike questioned if we should move the BIRD back to the ATM task group. Bob thought we should hold off on discussing it further.

Bob moved to table discussion on BIRD147.3. Radek Biernacki seconded the motion. There were no objections.

BIRD181.1: I-V TABLE CLARIFICATIONS

Mike LaBonte noted that he thought the BIRD needed further work. Bob Ross and Radek Biernacki are working on some changes.

Bob moved to table discussion on BIRD181.1. Radek Biernacki seconded the motion. There were no objections.

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 the release of IBISCHK 6.1.3 has been held up. Bob is concerned that the IBIS model sent out for AMI review included one parser check error on Bob's 32-bit system. The reviewers need to be careful with these errors. Mike LaBonte reported that the new release fixes a number of bugs. One was an enhancement to look into .dll and .so files to make sure they have the proper functions. The first code drop had an issue where the parser attempted checks in cases that would fail but were not correct situations to check. This issue has been fixed. Now there is a .so file with dynamic dependencies that fails to load. The issue with the parser is a usability issue with the messages from the parser. For this particular model being checked, the message is confusing, and a slight improvement should say the file has failed to load and the operating system message string should print out. Mike noted that issues with 32 versus 64 bit systems has been fixed. Walter Katz suggested making the parser issue warnings instead of errors. Mike noted that the parser issues messages stating that files that can't be checked are not checked. Walter said that issuing warnings helps prevent unknown issues with matching files to operating systems.

Bob reported that BUG182 needs to be classified. The bug report identified that an executable file named with a slash (indicating a subdirectory) passed the parser. This is in violation of IBIS version 6.1 file naming rules. One possible resolution is for the parser to identify illegal characters in file names. Radek Biernacki noted that this is definitely an error since it is unknown what EDA tools would do with a "/" or "\" in a file name. Mike thought this should be a warning. Bob did not have an issue with a warning instead of an error.

Bob proposed classifying the BUG as annoying severity and low priority. Radek Biernacki preferred keeping the message an error. Bob moved to classifying the bug as written 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 December 2, 2016. A vote is scheduled on holding a Summit at DesignCon. The following IBIS Open Forum teleconference meeting will tentatively be held December 16, 2016.

Bob Ross moved to adjourn. Curtis Clark seconded the motion.

===
NOTES

IBIS CHAIR: Mike LaBonte
mlabonte@sisoft.com
IBIS-AMI Modeling Specialist, Signal Integrity Software
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, Signal Integrity Software
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:

Other trademarks, brands and names are the property of their respective owners.

SAE STANDARDS BALLOT VOTING STATUS

Organization	Interest Category	Standards Ballot Voting Status	September 2, 2016	September 23, 2016	October 14, 2016	November 4, 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	X
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
IBM	Producer	Active	X	X	X	X
Intel Corp.	Producer	Active	X	X	X	X
IO Methodology	User	Active	X	X	X	X
Keysight Technologies	User	Active	X	X	X	X
Maxim Integrated	Producer	Inactive	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.