

**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**

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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

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MathWorks Mike Mulligan, Corey Mathis

Monsoon Solutions Nathan Hirsch

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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.

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**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](http://www.ibis.org/%20bugs/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.