

**IBIS Open Forum Minutes**

Meeting Date: **April 5, 2019**

Meeting Location: **Teleconference**

**VOTING MEMBERS AND 2019 PARTICIPANTS**

ANSYS Curtis Clark\*, Marko Marin, Miyo Kawata

Toru Watanabe, Akira Ohta

Applied Simulation Technology (Fred Balistreri)

Broadcom (Yunong Gan)

Cadence Design Systems Brad Brim, Ambrish Varma, Ken Willis

Yingxin Sun

Cisco Systems (Stephen Scearce)

Dassault Systemes (CST) Stefan Paret

Ericsson Anders Ekholm, Anders Vennergrund, Felix Mbairi

Hui Zhou, Inmyung Song, Mattias Lundqvist

Wenyan Xie, Zilwan Mahmod

GLOBALFOUNDRIES Steve Parker

Huawei Technologies Antonio Ciccomancini

Futurewei Technologies Albert Baek

IBM Michael Cohen\*, Greg Edlund

Infineon Technologies AG Anke Sauerbrey

Intel Corporation Hsinho Wu\*, Michael Mirmak\*, Nhan Phan

Kinger Cai, Eddie Frie, Wendem Beyene

Yuanhong Zhao

IO Methodology [Lance Wang]

Keysight Technologies Radek Biernacki\*, Hee-Soo Lee, Stephen Slater

Jian Yang, Ming Yan, Pegah Alavi

Maxim Integrated Joe Engert, Yan Liang, Charles Ganal

Mentor, A Siemens Business Arpad Muranyi\*, Raj Raghuram, Weston Beal

Vladimir Dmitriev-Zdorov, Mikael Stahlberg

Todd Westerhoff, Ed Bartlett, Nitin Bhagwath

Micron Technology Randy Wolff\*, Justin Butterfield\*

NXP (John Burnett)

Raytheon Joseph Aday

SiSoft (MathWorks) Mike LaBonte\*, Graham Kus, Walter Katz\*

SPISim Wei-hsing Huang

Synopsys Ted Mido, Adrien Auge, John Ellis, Sam Sim

Scott Wedge

Teraspeed Labs Bob Ross\*

Xilinx Ravindra Gali

ZTE Corporation (Shunlin Zhu)

Zuken (Michael Schaeder)

Zuken USA Lance Wang\*

**OTHER PARTICIPANTS IN 2019**

Apollo Giken Co. Satoshi Endo

Google Zhiping Yang, Songping Wu

Hitachi Norio Chujo

John Baprawski, Inc. John Baprawski

KEI Systems Shinichi Maeda

Marvell Johann Nittmann

OmniVision Sirius Tsang

Qualcomm Kevin Roselle

Renesas Genichi Tanaka

Ricoh Co. Kazuki Murata

SAE ITC (Jose Godoy)

Seagate Alex Tain

Signal Metrics Ron Olisar

Silvaco Japan Co. Yoshiharu Furui

Socionext Megumi Ono, Motoaki Matsumura, Yuji Nakagawa

Toshiba Imi Hitoshi

Toshiba Electronic Devices & Atsushi Tomishima

Storage Corp.

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

April 26, 2019 624 227 121 IBISfriday11

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.

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**INTRODUCTIONS AND MEETING QUORUM**

Randy Wolff declared that a quorum was reached.

**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 March 15, 2019 IBIS Open Forum teleconference. Radek Biernacki moved to approve the minutes. Curtis Clark seconded the motion. There were no objections.

Mike reviewed ARs from the previous meeting.

1. Michael Mirmak to produce IBIS 7.0 document with agreed and voted updates [AR].

Michael reported this as done.

1. Mike to send email solicitation for BIRD197.2 vote [AR].

Mike reported this as done.

1. Mike to send email solicitation for IBISCHK7 parser development vote [AR].

Mike reported this as done.

1. Mike to check IBISCHK7 parser development contract for IBIS-ISS file presence checking clause [AR].

Mike reported this as done.

1. Mike to put full IBIS-ISS checking on IBIS Quality task group agenda [AR].

Mike reported this as done.

**ANNOUNCEMENTS**, **CALL FOR ADDITIONAL AGENDA ITEMS**

None.

**MEMBERSHIP STATUS AND TREASURER'S REPORT**

Bob Ross reported that we have 26 members. 18 members have paid for 2019. Several payments are due in the next few weeks. We have $7,371 cash flow for 2019 and a $10,121 adjusted balance for 2019. This considers payments made in 2018 for 2019 memberships or Summits. We do expect a payment to be made soon for the European IBIS Summit of about $1,650 (1,500 Euros).

**WEBSITE ADMINISTRATION**

Mike LaBonte reported no major changes on the IBIS website. He mentioned previously setting up some FTP accounts for file transfers, and the first test failed. This was a test to deliver a large file, and Micron was not able to get it to work. This may be an SFTP issue with “@” being used in the username. A command line tool might work.

**MAILING LIST ADMINISTRATION**

Curtis Clark reported nothing new to report. Everything is working smoothly.

**LIBRARY UPDATE**

No update.

**INTERNATIONAL/EXTERNAL ACTIVITIES**

- Conferences

SPI2019 – the 23rd IEEE Workshop on Signal and Power Integrity will be held in Chambéry, France on June 18-21, 2019. An IBIS Summit will be held after the event. More information is available at:

<https://spi2019.sciencesconf.org/>

- Press Update

Mike LaBonte showed a press release from SAE ITC on the IBIS 7.0 release which has been picked up on other websites. The press release of April 4, 2019 can be found in the SAE press room at:

<https://www.sae.org/news/press-room>

- Related standards

IEC 63055/IEEE 2401, JEITA “LPB”

Michael Mirmak reported that IEEE DASC met yesterday morning. The group is tracking P2401 progress, but also P1735, the encryption standard, which is going through some testing. P2401 will have a vote later this month to approve a draft 3 document. This is the afternoon of Monday, April 15, 2019. A draft 4 is assumed to go through the wider IEEE review process with eventual standardization in 2020. Michael let the committee know that IBIS 7.0 was approved, and they were happy to hear that. There are mentions of IBIS 7.0 in the P2401 standard. This revision addresses new technical capabilities including the addition of IBIS 7.0 support.

**SUMMIT PLANNING AND STATUS**

- IEEE SPI Summit

SPI will be held in Chambéry, France on June 18-21, 2019. An IBIS Summit is planned in the afternoon on June 21, 2019. Mike LaBonte noted that 1:00 pm may be the starting time. Sponsors are welcome. Bob Ross noted the first announcement is planned to go out April 19, 2019. Mike added that Michael Schaeder has agreed to conduct the meeting if no other officers attend. Bob noted that there are delays in planning financial matters due to the university bureaucracy.

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 focus is on IBISCHK. Some discussions have started about a potential parser for IBIS-ISS. This conversation has extended to other task groups. Bob Ross mentioned the issue is how far a parser would go, such as full parsing or minimal syntax parsing. Mike added that discussion of the details would be appropriate in this task group.

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 meets on Tuesdays at 12:00 p.m. PT. Last week the discussion was about a response letter to the authors of BIRD198.

Task group material can be found at:

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

**INTERCONNECT TASK GROUP**

Michael Mirmak reported that the group meets at 8:00 a.m. PT on Wednesdays. The group is discussing Walter Katz’s proposal for EMD, an update to EBD. The update expands the technical capabilities of the format and is being considered as a BIRD. The other issue is related to Touchstone and Touchstone 2.0. They are working on a set of survey questions to go out to the industry reflectors to gauge interest in Touchstone and new features.

Michael mentioned new interconnect examples provided by Justin Butterfield and shared with the Interconnect task group. Randy Wolff described that the examples contain several package modeling formats including coupled IBIS-ISS subcircuits with and without on-die PDN models for a partial package, a coupled IBIS-ISS subcircuit for a complete package, and a Touchstone 2.0 model for a partial package. Since no parser is available, there may be syntax errors. Walter added that he downloaded the examples and parsed them with his parser. He found no syntactical errors. He is not doing much contextual checking. Walter is not parsing the IBIS-ISS files. He will rely on the simulators to do this for him. Walter added that Justin asked him to look at one of the G elements in the IBIS-ISS file. Walter noted it is not clear if a particular field is optional or not in the IBIS-ISS specification. Justin clarified for Bob that all the Interconnect Model syntax is included in the .ibs file.

Michael asked if we have a BIRD like process for IBIS-ISS. Mike LaBonte responded that we do have a IIRD process. Michael clarified that this is for ICM. Randy commented that we will need a process for changing IBIS-ISS. Walter noted we may need an errata section of IBIS mentioning upcoming changes. Michael mentioned we may want a known issues document for IBIS-ISS.

Arpad Muranyi asked if we should inquire with Synopsys if they’d want to donate parser code for IBIS-ISS. Mike thought that this would be a very large project to cut down the code from a large parser. A project to develop a simple parser for IBIS-ISS syntax would not take long.

Task group material can be found at:

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

**EDITORIAL TASK GROUP**

Michael Mirmak reported the task group remains suspended.

Task group material can be found at:

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

**NEW ADMINISTRATIVE ISSUES**

None.

**BIRD199: FIX RX\_RECEIVER\_SENSITIVITY INCONSISTENCIES**

Arpad Muranyi introduced the BIRD. In Editorial task group meetings preparing IBIS 7.0, some examples were found to be inconsistent for Rx\_Receiver\_Sensitivity. One example was fixed in IBIS 7.0, but the description of the parameter needed further clarification. The changes are not technical in the sense of changing how the parameter works, just describing it more precisely. The BIRD was discussed in the ATM task group, and it has the support of the task group.

Mike LaBonte asked if Arpad could call out the exact changes. Arpad stated that in one example, IBIS 7.0 changed a negative number so there was not an incorrect example. In this BIRD, the text portion for the Description, Usage Rules, and Example text sections changed. Arpad noted he thought showing change markup from the original text would not make it easy to read. He could consider creating a version showing some highlighted text changes.

Michael asked if we verified if the parser is not accepting negative values. Mike thought it would be a good AR for the Quality task group to see if including a negative number would pass or fail the parser. This could turn into a bug report for IBIS 7.1. Bob Ross thought the EDA tool may also be smart enough to change negative values to take the absolute value. Michael noted we are making the specification more restrictive by changing the example in IBIS 7.0, so the parser may need to raise a flag if a negative value is found in an IBIS 7.0 compliant file.

Mike will discuss this BIRD in the Quality task group as it relates to the parser [AR].

**BIRD197.2: NEW AMI RESERVED PARAMETER DC\_OFFSET**

Mike LaBonte noted there has been some discussion offline about postponing the planned vote. Walter Katz moved to suspend the vote so the ATM task group can discuss the BIRD further. Bob Ross seconded the motion. There were no objections.

Bob Ross moved to table the BIRD. Radek Biernacki seconded the motion. There were no objections.

**BIRD198: KEYWORD ADDITIONS FOR ON DIE PDN (POWER DISTRIBUTION NETWORK) MODELING**

Mike LaBonte reported there have been some discussions in the ATM task group regarding a response to the BIRD authors.

Bob Ross moved to continue discussions on the BIRD in the ATM task group. Michael Mirmak seconded the motion. There were no objections.

**BIRD166.4: RESOLVING PROBLEMS WITH REDRIVER INIT FLOW**

Discussion was tabled.

**BIRD181.1: I-V TABLE CLARIFICATIONS**

Discussion was tabled.

**BIRD190: CLARIFICATION FOR REDRIVER FLOW**

Discussion was tabled.

**IBISCHK PARSER AND BUG STATUS**

Bob Ross moved to vote on development of the IBISCHK7 parser with expenses up to $8,000. Bob noted the delivery date is planned for June 21, 2019. Michael Mirmak seconded the motion. There were no objections.

The roll call vote tally was:

ANSYS – yes

IBM – yes

Intel – yes

Keysight – yes

Mentor – yes

Micron – yes

SiSoft – yes

SPISim – yes (by email)

Synopsys – yes (by email)

Teraspeed Labs – yes

Zuken – yes

The roll call vote concluded with a vote tally of Yes – 11, No – 0, Abstain – 0. The vote passed.

Mike showed BUG203 from Lance Wang. Bob reported that there is loose checking related to C\_comp\* parameters. For example, you can use C\_comp\_pullup and C\_comp\_pulldown for an Input model. The bug report says that for dealing with Input models, there could be a Caution, Warning, or Note for this scenario. Walter Katz asked what C\_comp\_pullup should be attached to if the Pullup Reference is not defined. Radek Biernacki thought that changes to the specification need to be discussed, and the parser could be changed later if restrictions are made in the specification.

Lance added that he found this case in a model, and he thought it did not make sense that it be allowed. In talks in the Quality task group, it seemed that the specification is not clear about this situation. Lance thought the bug could be held until there is further discussion on the topic, identifying any actions.

Walter moved to discuss the issue in the ATM task group. Lance seconded the motion. There were no objections.

Bob also noted that the same issue exists for [C Comp Corner].

Mike asked about classifying the bug. Bob thought we could defer classification for now.

Bob noted we need to decide what the parser source code license will cost. Mike added that the price for the parser has been $2,500 for some time. If you pay for the source code, you usually get subsequent updates of the parser, such as getting the 6.1 parser if you paid for the 6.0 parser. Mike asked what the lifecycle cost of IBISCHK7 might be. Bob thought it could be about $20,000, including eventual additions such as EMD and C\_comp improvements for IBIS 7.1. Mike asked about potential for an IBIS-ISS parser. Bob responded that this would be a separate parser development. Mike noted the code could get integrated in IBISCHK, which could be accessed through a parser option flag. Mike asked how many source code licensees are projected. Bob responded that he expects 8.

Radek asked if historically what was the original parser contract for version 6 or 5, how does that compare to the $8,000 cost just voted on. Bob noted that the costs were variable based on needs for content parsing. Mike noted that we try to keep the parser self-funding by selling licenses for the source code. Michael Cohen asked how long it has been set at $2,500 for the parser source code. Bob thought it has been this cost since IBISCHK4. Michael Cohen thought it could be considered to raise the cost to make sure development is funded properly. Bob added that the parser contract bid came in lower than expected, so that helped with anticipating break even with a license cost of $2,500.

Arpad noted that he did some parser checking during the meeting, and the existence of negative numbers in the Rx\_Receiver\_Sensitivity parameter are not flagged.

**NEW TECHNICAL ISSUES**

Walter Katz noted that he looked at the G-element syntax in IBIS-ISS, and the parameter field he was looking at is optional. So, it does not need to be discussed in the Interconnect task group.

**NEXT MEETING**

The next IBIS Open Forum teleconference meeting will be held on April 26, 2019. The following teleconference meeting is tentatively scheduled for May 17, 2019.

Michael Cohen moved to adjourn. Bob Ross seconded the motion. The meeting adjourned.

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**NOTES**

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This meeting was conducted in accordance with SAE ITC guidelines.

All inquiries may be sent to [info@ibis.org](mailto: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](mailto:ibis@freelists.org) and/or [ibis-users@freelists.org](mailto:ibis-users@freelists.org) email lists (formerly [ibis@eda.org](mailto:ibis@eda.org) and [ibis-users@eda.org](mailto:ibis-users@eda.org)).
* To subscribe to one of the task group email lists: [ibis-macro@freelists.org](mailto:ibis-macro@freelists.org), [ibis-interconn@freelists.org](mailto:ibis-interconn@freelists.org), or [ibis-quality@freelists.org](mailto: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** | **February 1, 2019** | **February 22, 2019** | **March 15, 2019** | **April 5, 2019** |
| ANSYS | User | Active | X | X | X | X |
| Applied Simulation Technology | User | Inactive | - | - | - | - |
| Broadcom Ltd. | Producer | Inactive | - | - | - | - |
| Cadence Design Systems | User | Inactive | X | - | - | - |
| Cisco Systems | User | Inactive | - | - | - | - |
| Dassault Systemes | User | Inactive | X | - | - | - |
| Ericsson | Producer | Inactive | X | - | - | - |
| GLOBALFOUNDRIES | Producer | Inactive | X | X | - | - |
| Huawei Technologies | Producer | Inactive | X | - | - | - |
| IBM | Producer | Active | X | X | X | X |
| Infineon Technologies AG | Producer | Inactive | X | - | - | - |
| Intel Corp. | Producer | Active | X | X | X | X |
| IO Methodology | User | Inactive | - | - | - | - |
| Keysight Technologies | User | Active | X | X | X | X |
| Maxim Integrated | Producer | Inactive | X | - | - | - |
| Mentor, A Siemens Business | User | Active | X | X | X | X |
| Micron Technology | Producer | Active | X | X | X | X |
| NXP | Producer | Inactive | - | - | X | - |
| Raytheon | User | Inactive | - | - | - | - |
| SiSoft | User | Active | X | X | X | X |
| SPISim | User | Inactive | X | X | - | - |
| Synopsys | User | Active | X | - | X | - |
| Teraspeed Labs | General Interest | Active | X | X | X | X |
| Xilinx | Producer | Inactive | X | - | - | - |
| ZTE Corp. | User | Inactive | - | - | - | - |
| Zuken | User | Active | X | X | 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.