



IBIS Open Forum Minutes

Meeting Date: **January 10, 2014**

Meeting Location: **Teleconference**

VOTING MEMBERS AND 2014 PARTICIPANTS

| | |
|-------------------------------|-------------------------------------|
| Agilent Technologies | Radek Biernacki* |
| Altera | (David Banas) |
| ANSYS | (Steve Pytel) |
| Applied Simulation Technology | (Fred Balistreri) |
| Cadence Design Systems | Ambrish Varma*, Brad Brim*, Joy Li* |
| Ericsson | (Anders Ekholm) |
| Foxconn Technology Group | (Sogo Hsu) |
| Huawei Technologies | (Jinjun Li) |
| IBM | Adge Hawes* |
| Infineon Technologies AG | (Christian Sporrer) |
| Intel Corporation | Michael Mirmak* |
| IO Methodology | Lance Wang* |
| LSI | Xingdong Dai* |
| Maxim Integrated Products | (Mahbubul Bari) |
| Mentor Graphics | Arpad Muranyi*, John Angulo* |
| Micron Technology | Randy Wolff* |
| Signal Integrity Software | Mike LaBonte*, Walter Katz* |
| Synopsys | (Andy Tai) |
| Teraspeed Consulting Group | Bob Ross* |
| Toshiba | (Yasumasa Kondo) |
| Xilinx | (Raymond Anderson) |
| Zuken | (Michael Schaefer) |

OTHER PARTICIPANTS IN 2014

| | |
|-----|----------------|
| SAE | (Chris Denham) |
|-----|----------------|

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 |
|-------------------|---|------------------|
| January 31, 2014 | DesignCon IBIS Summit – no teleconference | |
| February 21, 2014 | 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:

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

Michael Mirmak called for any patents or pending patents related to the IBIS 3.2, IBIS 4.2, IBIS 5.1, IBIS 6.0, Touchstone 2.0 or ICM 1.1 specifications. No patents were declared.

REVIEW OF MINUTES AND ARS

Randy Wolff called for comments regarding the minutes of the December 6, 2013 IBIS Open Forum teleconference. The minutes were approved without changes.

ANNOUNCEMENTS

None.

CALL FOR ADDITIONAL AGENDA ITEMS

Bob Ross noted that the DesignCon IBIS Summit was missing on the agenda but needs to be discussed.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Bob Ross reported that we have 22 members at the end of the year with one membership pending. We have \$15,400 in the treasury now. Invoices for new memberships went out this week. Two membership dues payments for 2014 have already been made, so that means we will have \$17,200 currently. We will have an unknown allocation to SAE to cover later in the year.

WEB PAGE AND MAILING LIST ADMINISTRATION

Mike LaBonte thanked Cisco for continuing to host the meetings with WebEx. For the mailing list, there is nothing unusual to report. Changes have been made to the web page. Copyrights on pages have been updated to read 2014. Changes are being made related to our contract with UBM for DesignCon. Mike updated the events page to make it look better, since this page is linked in advertisements on the DesignCon website.

Michael Mirmak noted that with the additional advertising about the IBIS Summit through DesignCon, we might expect better attendance.

MODEL LIBRARY UPDATE

No update.

INTERNATIONAL/EXTERNAL ACTIVITIES

- Conferences

None.

- Press Update

None.

Michael Mirmak noted that he gave an overview of IBIS to the Si2 organization in the last week. Brad Brim noted that further discussion may lead to a presentation at the DesignCon IBIS Summit about Si2.

SUMMIT PLANNING AND STATUS

- DesignCon 2014

Michael Mirmak reported that the Summit is scheduled for Friday, January 31, 2014 from 8:00 a.m. to 5:00 p.m in the Mission City Ballroom M1. Agilent Technologies and IBIS are official co-sponsors of the Summit.

Lance Wang noted there are 14 registrations so far. He asked people on the call to send registrations for planning purposes. Michael added that there are 5-6 presentations scheduled so far, but there is room for more presentations. Chris Denham from SAE (our parent organization) will be attending. Chris will be presenting information about our SAE relationship.

Bob Ross tallied up the presentations, and he found there were around 10 already possible. There are several presentations focused on packaging. The deadline to submit presentations is Tuesday, January 21. Presenters should plan to bring 50 copies to the Summit 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 working on a presentation for the upcoming Summit. The Quality group has taken on responsibility for ibischk. They are also dealing with matters related to the ibischk contract. They will resume work on an ibischk specification document soon that should be finished around the same time the new ibischk6 parser is released. The group is continuing to meet weekly on Tuesdays at 8:00 am PT.

The Quality Task Group checklist and other documentation can be found at:

http://www.eda.org/ibis/quality_wip/

ADVANCED TECHNOLOGY MODELING TASK GROUP

Arpad Muranyi reported that the group is meeting regularly on Tuesdays at 12:00 p.m. PT. They are still discussing IBIS package modeling related proposals.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES

Bob Ross asked if the Agilent Technologies name change to Keysight Technologies will impact anyone. Radek Biernacki noted that he will be associated with the Keysight Technologies name sometime in the future.

Bob also inquired about the LSI merger with Avago Technologies. Xingdong Dai noted that he expects membership in the IBIS Open Forum to continue.

BIRD163: INSTANTIATING AND CONNECTING [EXTERNAL CIRCUIT] PACKAGE MODELS WITH [CIRCUIT CALL]

Arpad Muranyi introduced the BIRD. The BIRD proposes using [External Circuit]s for package models. The main change to [External Circuit] is adding the option of packaging as a use for [External Circuit]s in its description. One new technical feature is syntax to allow [Model] terminals to be named in [Circuit Call]s for connections to them. This keeps instantiation of the [Model]s from [Pin] but allows explicit connections to [Model]s in series with [External Circuit]s.

Approval of this BIRD assumes BIRD145 will be rejected. BIRD164 would also need to be approved at the same time. BIRD125 would not be needed as well.

The major improvement over BIRD145 is that it does not require [Model Call] to instantiate buffer models, so every instance of [Model] doesn't need a unique instantiation. [Model]s are instantiated in the [Pin] list.

Walter Katz asked if the BIRD addressed having different number of supply die pads than supply pins. He also noted that this is an alternative syntax to his proposal, and there will need

to be many examples put together to understand it better. Arpad noted this BIRD allows co-existence of the legacy syntax as well as the new syntax. Walter noted it is extremely important that IC vendors give input as to the functionality they are requiring for package models. Arpad noted he is preparing a presentation for the DesignCon IBIS Summit on this BIRD as well as BIRDs 164 and 165.

Bob Ross asked about supply connections to [External Model]s, and what happens if analog supplies are not specified. Ambrish Varma noted that the voltage connections can be assumed as ideal from the [Voltage Range] or other keywords.

Joy Li asked from user's point of view, if all this new syntax is used properly, is it transparent to the user, as if they are hooking up the normal [Pin] keyword? Ambrish responded yes, if [External Circuit] is used for the package model, and the [Node Declarations] are done properly, then the user just connects to the [Pin] as normal.

Radek Biernacki asked what is the mechanism for using the new [External Circuit] package model? Arpad responded that if the package model exists in the [External Circuit], it overrides any package model for a signal path found in the [Pin], [Package] or [Package Model] keywords. Ambrish added that a subparameter described in BIRD164 tells the software that an [External Circuit] is being used for a package model.

Mike LaBonte noted that BIRD163 and BIRD164 are separate BIRDs, but they are related. Arpad noted that they would need to be passed together, and they could be combined.

BIRD164: ALLOWING PACKAGE MODELS TO BE DEFINED IN [EXTERNAL CIRCUIT]

Arpad Muranyi introduced the BIRD. The BIRD adds a subparameter to [External Circuit] indicating to the software that the circuit is being used for a package model.

Mike LaBonte commented that he recommended defining a 'Circuit_type' for which Package_Model would be a value. Bob Ross commented that he thought Language should be limited to IBIS-ISS. Arpad felt that opening up the language options would allow a user to create a package model using AMS languages with custom equations.

BIRD165: PARAMETER PASSING IMPROVEMENTS FOR [EXTERNAL CIRCUIT]S

Arpad Muranyi introduced the BIRD. IBIS 6.0 defines a parameter passing capability for [External Model] and [External Circuit] through Parameters and Converter_Parameters. This mechanism passes the parameters to all instances globally. BIRD165 defines a mechanism for passing independent parameters to each instance of an [External Circuit]. Parameters and Converter_Parameters subparameters are made available to [Circuit Call]. This BIRD is not required for BIRD163 and BIRD164, but it would expand their capabilities.

Bob Ross asked if these proposals could co-exist with Walter Katz's proposals in the specification. Arpad and Walter both felt that one proposal would need to be picked over another. Walter expressed concern that these proposals needed to be carefully examined for their usefulness, and he thought they were moving IBIS in the wrong direction.

Radek Biernacki moved to refer BIRDS 163, 164 and 165 to the ATM task group for further technical discussion. Bob Ross seconded the motion. There were no objections.

Walter moved to table discussion on BIRDS 163, 164 and 165. Bob Ross seconded the motion. There were no objections.

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

Discussion was tabled.

BIRD128: 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.

BIRD157: PARAMETERIZE [DRIVER SCHEDULE]

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.

IBISCHK5 PARSER AND BUG STATUS

Bob Ross reported no new bugs.

IBISCHK6 PARSER PLANNING

Michael Mirmak reported that parser planning is proceeding thanks to Bob Ross and Mike LaBonte. The parser contract language has been approved by SAE. The contract is in the hands of the developer to sign. Bob noted that the deadline is extended to May 15 for delivery

of the parser code. The contract includes a 60 day warranty period for code fixes once the code is delivered. Bob added that there is sufficient commitment from purchasers to fund the code development.

NEW TECHNICAL ISSUES

None.

NEXT MEETING

The DesignCon IBIS Summit will be held January 31, 2014. No teleconference will be available for the Summit meeting. The next IBIS Open Forum teleconference will be held February 21, 2014 from 8:00 a.m. to 10:00 a.m. US Pacific Time.

Arpad Muranyi moved to adjourn. Mike LaBonte seconded the motion. There were no objections.

NOTES

IBIS CHAIR: Michael Mirmak (916) 356-4261, Fax (916) 377-3788

michael.mirmak@intel.com

Data Center Platform Applications Engineering
Intel Corporation
FM5-239
1900 Prairie City Rd.,
Folsom, CA 95630

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, Fax: (208) 368-3475

rrwolff@micron.com

Principal Engineer, Modeling Group Lead, Micron Technology, Inc.
8000 S. Federal Way
Mail Stop: 01-711
Boise, ID 83707-0006

LIBRARIAN: Anders Ekholm (46) 10 714 27 58, Fax: (46) 8 757 23 40

ibis-librarian@eda.org

Digital Modules Design, PDU Base Stations, Ericsson AB
BU Network
Färögatan 6
164 80 Stockholm, Sweden

WEBMASTER: Mike LaBonte

mikelabonte@eda.org

IBIS-AMI Modeling Specialist, Signal Integrity Software
6 Clock Tower Place
Maynard, MA 01754

POSTMASTER: Mike LaBonte

mikelabonte@eda.org

IBIS-AMI Modeling Specialist, Signal Integrity Software
6 Clock Tower Place
Maynard, MA 01754

This meeting was conducted in accordance with ANSI guidance.

The following e-mail addresses are used:

majordomo@eda.org

In the body, for the IBIS Open Forum Reflector:
subscribe ibis <your e-mail address>

In the body, for the IBIS Users' Group Reflector:
subscribe ibis-users <your e-mail address>

Help and other commands:
help

ibis-request@eda.org

To join, change, or drop from either or both:
IBIS Open Forum Reflector (ibis@eda.org)
IBIS Users' Group Reflector (ibis-users@eda.org)
State your request.

ibis-info@eda.org

To obtain general information about IBIS, to ask specific questions for individual response, and to inquire about joining the IBIS Open Forum as a full Member.

ibis@eda.org

To send a message to the general IBIS Open Forum Reflector. This is used mostly for IBIS Standardization business and future IBIS technical enhancements. Job posting information is not permitted.

ibis-users@eda.org

To send a message to the IBIS Users' Group Reflector. This is used mostly for IBIS clarification, current modeling issues, and general user concerns. Job posting information is not permitted.

ibis-bug@eda.org

To report ibischk parser BUGs as well as tschk2 parser BUGs. The BUG Report Form for ibischk resides along with reported BUGs at:

<http://www.eda.org/ibis/bugs/ibischk/>
<http://www.eda.org/ibis/bugs/ibischk/bugform.txt>

The BUG Report Form for tschk2 resides along with reported BUGs at:

http://www.eda.org/ibis/tschk_bugs/
http://www.eda.org/ibis/tschk_bugs/bugform.txt

icm-bug@eda.org

To report icmchk1 parser BUGs. The BUG Report Form resides along with reported BUGs at:

http://www.eda.org/ibis/icm_bugs/
http://www.eda.org/ibis/icm_bugs/icm_bugform.txt

To report s2ibis, s2ibis2 and s2iplt bugs, use the Bug Report Forms which reside at:

<http://www.eda.org/ibis/bugs/s2ibis/bugs2i.txt>
<http://www.eda.org/ibis/bugs/s2ibis2/bugs2i2.txt>
<http://www.eda.org/ibis/bugs/s2iplt/bugspl.txt>

Information on IBIS technical contents, IBIS participants and actual IBIS models are available on the IBIS Home page:

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

Check the IBIS file directory on eda.org for more information on previous discussions and results:

<http://www.eda.org/ibis/directory.html>

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

IBIS – SAE STANDARDS BALLOT VOTING STATUS

I/O Buffer Information Specification Committee (IBIS)

| Organization | Interest Category | Standards Ballot Voting Status | November 19, 2013 | November 22, 2013 | December 6, 2013 | January 10, 2014 |
|-------------------------------|-------------------|--------------------------------|-------------------|-------------------|------------------|------------------|
| Agilent Technologies | User | Active | X | X | X | X |
| Altera | Producer | Inactive | - | - | - | - |
| ANSYS | User | Inactive | X | X | - | - |
| Applied Simulation Technology | User | Inactive | - | - | - | - |
| Cadence Design Systems | User | Active | X | X | X | X |
| Ericsson | Producer | Inactive | X | X | - | - |
| Foxconn Technology Group | Producer | Inactive | X | - | - | - |
| Huawei Technologies | Producer | Inactive | - | - | - | - |
| IBM | Producer | Active | - | - | X | X |
| Infineon Technologies AG | Producer | Inactive | - | - | - | - |
| Intel Corp. | Producer | Active | X | X | - | X |
| IO Methodology | User | Inactive | X | - | - | X |
| LSI | Producer | Inactive | - | - | - | X |
| Maxim Integrated Products | Producer | Inactive | - | - | - | - |
| Mentor Graphics | User | Active | - | - | X | X |
| Micron Technology | Producer | Active | - | - | X | X |
| Signal Integrity Software | User | Active | - | - | X | X |
| Synopsys | User | Inactive | - | - | - | - |
| Teraspeed Consulting | General Interest | Active | - | - | X | X |
| Toshiba | Producer | Inactive | - | X | - | - |
| Xilinx | Producer | Inactive | - | - | - | - |
| Zuken | User | Inactive | - | X | - | - |

CRITERIA FOR 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 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.