IBIS Open Forum Minutes

Meeting Date: **February 21, 2014**
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2014 PARTICIPANTS

Agilent Technologies	Radek Biernacki*, Nilesh Kamdar, Colin Warwick, Graham Riley, Pegah Alavi, Fangyi Rao, Heidi Barnes
Altera	David Banas*, Kundan Chand, Hsinho Wu
ANSYS	(Steve Pytel)
Applied Simulation Technology	Fred Balistreri, Norio Matsui
Cadence Design Systems	Ambrish Varma, Brad Brim*, Joy Li, Kumar Keshavan, Ken Willis, Yingxin Sun, Joshua Luo, John Phillips
Ericsson	Anders Ekholm, Zilwan Mahmod
Foxconn Technology Group	(Sogo Hsu)
Huawei Technologies	Jinjun Li, Xiaoqing Dong
IBM	Adge Hawes*
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Michael Mirmak*, Jon Powell, Riaz Naseer Udy Shrivastava, Mustafa Yousuf, Jimmy Jackson
IO Methodology	Lance Wang*, Michelle Coombs
LSI	Xingdong Dai, Min Huang*, Anaam Ansari*
Maxim Integrated Products	Hassan Rafat
Mentor Graphics	Arpad Muranyi*, John Angulo, Fadi Deek
Micron Technology	Randy Wolff*
Signal Integrity Software	Mike LaBonte*, Walter Katz*, Todd Westerhoff, Michael Steinberger
Synopsys	Ted Mido, Scott Wedge
Teraspeed Consulting Group	Bob Ross*, Tom Dagostino, Scott McMorrow
Toshiba	(Yasumasa Kondo)
Xilinx	Ravindra Gali
Zuken	Michael Schaeder, Amir Wallrabenstein, Griff Derryberry

OTHER PARTICIPANTS IN 2014

ECL Advantage	Thomas Iddings
Hewlett Packard	Ting Zhu
KEI Systems	Shinichi Maeda
Lattice Semiconductor	Xu Jiang
Mellanok Technologies	Piers Dawe
Pangeya	Edgar Aguirre
Proficient Design	Kishor Patel
SAE International	Chris Denham
Vitesse	Siris Tsang

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
March 14, 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 January 10, 2014 IBIS Open Forum teleconference. The minutes were approved without changes. Randy also called for comments regarding the minutes of the January 31, 2014 IBIS Open Forum Summit meeting at DesignCon. Michael Mirmak noted that Jimmy Johnson, an attendee from Intel should be corrected to Jimmy Jackson. The minutes were approved with the noted change.

ANNOUNCEMENTS
None.

CALL FOR ADDITIONAL AGENDA ITEMS
Bob Ross noted two additional IBISCHK bugs to discuss. Michael Mirmak requested time to discuss a short presentation entitled "Will it IBIS?"

MEMBERSHIP STATUS AND TREASURER'S REPORT
Bob Ross reported that the treasury sits at $22,383. About 9 members have paid dues for 2014 so far. Dues are $900. Michael Mirmak noted that the SAE process is very fast and efficient for membership renewals.

WEB PAGE AND MAILING LIST ADMINISTRATION
Mike LaBonte noted there are 414 subscribers in total on the mailing lists. The web page was updated to take down promotional material from DesignCon, but the link to the last Summit remains. The library page has been dressed up to have similar formatting to the rest of the website. Mike is revisiting how to implement the site in a wiki format that would allow editing privileges to more users. An example of this can be seen at:

http://www.eda.org/ibis/wiki/doku.php

Comments are appreciated.

MODEL LIBRARY UPDATE
Michael Mirmak reported that an update from Anders Ekholm was received, updated as of February 19. Mike LaBonte noted that the new content has been added, and he ran a check to make sure all the links were correct. Members may want to double check that the entry for their company is correct.

INTERNATIONAL/EXTERNAL ACTIVITIES
- Conferences
The 18th IEEE Workshop on Signal and Power Integrity (SPI 2014) will be held May 11-14, 2014 in Ghent, Belgium. There will be a European IBIS Summit in conjunction with this conference. There are typically many papers on IBIS-related algorithms presented by student researchers. More information is available at:

http://spi2014.org

- Press Update
None.

SUMMIT PLANNING AND STATUS
- DesignCon 2014 Summary
Michael Mirmak reported that the Summit took place Friday, January 31, 2014. About 59 people representing 26 organizations attended. The Summit went well. All the presentations are posted on the website.

- 2014 Summit schedule
Michael reported that a meeting room is reserved after the SPI event on May 14, 2014 in Ghent, Belgium. Bob Ross noted that meeting attendance would be expected of about 15-20. The cost is usually small. Lance Wang recalled spending about $800 last year for the room and refreshment costs. Lance noted that he may attend. Randy Wolff mentioned that he may attend as well. Lance is already noted on our website as the main contact for registration. The group decided to move forward with planning a Summit.

Michael noted that DAC is June 1-5, 2014 in San Francisco, CA. He will find out if rooms are available for this event. Event notices would need to go out in early April if we decide to hold a Summit at DAC.

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 most of the group's activity has been on the ibischk program and documentation of it. They are using a Perl script to help create documentation of all the error, warning and note messages from ibischk.

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. In addition to package modeling questions, they have reopened discussion on BIRD147 on backchannel modeling with IBIS-AMI.

Task group material can be found at:

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

NEW ADMINISTRATIVE ISSUES
Michael Mirmak noted that Chris Denham gave a presentation at the DesignCon IBIS Summit that is very useful to understanding how IBIS fits within the SAE organization. Michael is expecting IBIS to be moved under the Industries Technology Consortia group which allows us

to maintain our entity-based membership. Chris Denham's presentation can be found at:

http://www.eda.org/ibis/summits/jan14/denham.pdf

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.

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.

IBISCHK5 PARSER AND BUG STATUS
Bob Ross reported there are three bugs to discuss and classify.

BUG149 was submitted by Michael Schaeder and Bob Ross. It describes a fatal hang when checking EBD files when a referenced .ibs file has a higher [IBIS Ver] and long file names that violate the character limits of the lower [IBIS Ver] of the .ebd file. Radek Biernacki asked how this bug could be fixed. Bob noted that there is nothing in the specification prohibiting the referenced .ibs files from having a higher [IBIS Ver] than the .ebd file. A workaround is to change the .ebd file to reference a higher IBIS version. The bug was classified as severe severity, medium priority and open status.

BUG150 was submitted by Michael Mirmak. The bug states that the IBIS 6.0 specification strongly implies that only input-only and output-only [Model]s are permitted to be AMI models. ibischk generates no errors if an I/O model is associated with an [Algorithmic Model] keyword pair; however, there is no way to communicate to the EDA software how to use such a model.

Walter Katz responded that rather than having a restriction of AMI models not allowed to be I/Os, it would be better to define a reference flow for what would happen if you used an I/O. The DLL must function properly as both an input and an output if it is truly an I/O. He didn't see any way ibischk could make sure the DLL actually functions this way. He did not think this was a bug, but actually would require a BIRD to update the specification describing the flow.

Bob noted that for traditional IBIS, this is not an issue since EDA software takes care of I/O designations on multi-directional busses. He suggested that a caution message could be considered. Walter did not think that the parser needed to be changed at all, but there would need to be changes to the AMI parameter tree when defining a new flow.

Walter moved to add this topic to the ATM task group agenda. Radek seconded the motion. There were no objections.

The bug was classified as an enhancement, low priority and 'not a bug'.

BUG151 was submitted by Randy Wolff. The bug describes how [Package Model]s in the form of RLC matrices should have only positive values in the diagonal matrix entries. IBISCHK does not check for this condition, so models with negative diagonal entries are not flagged with a warning or error. Randy thought that adding this check to IBISCHK would improve model quality.

Walter agreed that a check could be for a value to be greater than or equal to zero. Bob noted that this would be an enhancement request, and doing a simple check on the diagonal terms and issuing a warning message would be sufficient.

Arpad Muranyi stated that sign conventions for mutual elements are defined on page 143 of the IBIS 6.0 specification. He wondered if conditions for the diagonal entries should be defined. Brad Brim noted that diagonal entries must be positive, but the full matrix should also be

passive. You'd need to calculate the Eigen vectors of the full matrix to check for this condition. Walter suggested that a BIRD should be written to clarify the specification, and ibischk should be changed to add a check for negative diagonal entries.

The bug was classified as an enhancement, low priority and open status.

Walter moved to add the BIRD writing task to the ATM task group. Brad Brim seconded the motion. There were no objections.

IBISCHK6 PARSER STATUS
Bob Ross reported that a target release date is May 15 for the parser. There have been no questions from the developer yet.

NEW TECHNICAL ISSUES
Michael Mirmak shared a presentation entitled "Will it IBIS?" Michael showed a buffer structure that included a Cpad, Rpad, Ron and a stimulus driving through a filter to the output pad. His initial finding is that Rpad cannot be modeled with traditional IBIS (pre 4.0) keywords. The buffer would require something like IBIS-ISS, [External Circuit], [External Model], or some other post-4.0 feature.

Walter Katz noted that his solution would be to use [External Model] with IBIS-ISS. You would use the rise/fall times of [External Model] to define the stimulus going into the filter. Bob Ross added that V-t tables could be considered if a B-element was used with IBIS-ISS (not official IBIS). Walter noted that the B-element would need to be added to IBIS-ISS. Bob added that Cpad and Rpad would need to be added as a load external to the B-element.

Arpad Muranyi questioned why we couldn't enhance C_comp to add an ESR element. However, the compensation algorithms for C_comp de-embedding from V-t curves would need to handle the ESR element. Walter added that he felt this model could be supported in IBIS 6.0 since the circuit does not include any non-linearities.

The presentation is available at:

http://www.eda.org/ibis/minutes/min2014/m022114_docs/will-it-ibis-feb-21-2014.pdf

NEXT MEETING
The next IBIS Open Forum teleconference will be held March 14, 2014 from 8:00 a.m. to 10:00 a.m. US Pacific Time. The following meeting will be held April 4, 2014.

Radek Biernacki moved to adjourn. David Banas seconded the motion. There were no objections.

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NOTES

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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/bugsplt.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

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IBIS – SAE STANDARDS BALLOT VOTING STATUS

I/O Buffer Information Specification Committee (IBIS)

Organization	Interest Category	Standards Ballot Voting Status	December 6, 2013	January 10, 2014	January 31, 2014	February 21, 2014
Agilent Technologies	User	Active	X	X	X	X
Altera	Producer	Active	-	-	X	X
ANSYS	User	Inactive	-	-	-	-
Applied Simulation Technology	User	Inactive	-	-	X	-
Cadence Design Systems	User	Active	X	X	X	X
Ericsson	Producer	Inactive	-	-	X	-
Foxconn Technology Group	Producer	Inactive	-	-	-	-
Huawei Technologies	Producer	Inactive	-	-	X	-
IBM	Producer	Active	X	X	X	X
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	-	X	X	X
IO Methodology	User	Active	-	X	X	X
LSI	Producer	Inactive	-	X	-	X
Maxim Integrated Products	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	Inactive	-	-	X	-
Teraspeed Consulting	General Interest	Active	X	X	X	X
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	Inactive	-	-	X	-
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.