IBIS Open Forum Minutes

Meeting Date: **April 22, 2011**
Meeting Location: **Teleconference**

VOTING MEMBERS AND 2011 PARTICIPANTS

Agilent	Radek Biernacki*, Fangyi Rao
AMD	Nam Nguyen*
Ansys (Ansoft Corporation)	Samuel Martens
Apple Computer	(Matt Herndon)
Applied Simulation Technology	Norio Matsui
ARM	(Nirav Patel)
Cadence Design Systems	Terry Jernberg, Ambrish Varma, Dennis Nagle
Cisco Systems	Syed Huq, Mike LaBonte*, Luis Boluna, Ashwin Vasudevan, Zhiping Yang
Ericsson	Anders Ekholm
Freescale	(Jon Burnett)
Green Streak Programs	Lynne Green
Hitachi ULSI Systems	(Kazuyoshi Shoji)
Huawei Technologies	Xiaoqing Dong
IBM	Adge Hawes, Greg Edlund
Infineon Technologies AG	(Christian Sporrer)
Intel Corporation	Michael Mirmak*, Udy Shrivastava
IO Methodology	Lance Wang*
LSI	Brian Burdick
Mentor Graphics	Arpad Muranyi*, Ed Bartlett, Vladimir Dmitriev-Zdorov, Steve Kaufer, Chuck Ferry
Micron Technology	Randy Wolff
Nokia Siemens Networks GmbH	Eckhard Lenski
Signal Integrity Software	Walter Katz*, Todd Westerhoff, Mike Steinberger, Barry Katz
Sigrity	Raymond Chen, Kumar Keshavan, Yingxin Sun*
Synopsys	Andy Tai, Ted Mido, Scott Wedge
Teraspeed Consulting Group	Bob Ross*, Kellee Crisafulli, Tom Dagostino, Scott McMorrow
Texas Instruments	Casey Morrison, Alfred Chong
Toshiba	(Yasumasa Kondo)
Xilinx	(Raymond Anderson)
ZTE	(Huang Min)
Zuken	(Michael Schaeder)

OTHER PARTICIPANTS IN 2011

AET	Mikio Kiyono
Altera	Hui Fu, Zhuyuan Liu, Julia Nekrylova

Avago	Weiping He, Minh Quach, Sari Tocco
Bayside Design	Elliot Nahas
Broadcom	Mohammad Ali
Exar Corporation	Helen Nguyen
Granite River Labs	Johnson Tan, Mike Engbretson, Quintin Anderson
High Speed Design Center	Ben Chia
ICT-Lanto	Steven Wong
KEI Systems	Shinichi Maeda
Maxim Integrated Products	Hassan Rafat
National Semiconductor	Hsinho Wu, Pegah Alavi, John Goldie
Oracle	Gustav Blando
Pristine Signals	AbdulRahman (Abbey) Rafiq
Renesas Electronics	Takuji Komeda
Simberian	Yuriy Shlepnev
TechAmerica	(Chris Denham)
Vitesse Semiconductor	Sirius Tsang
Independent	Yoichi Niioka

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
May 11, 2011	IBIS Summit at SPI, Naples – no teleconference	
May 13, 2011	601 116 211	IBIS

For teleconference dial-in information, use the password at the following website:

> https://cisco.webex.com/cisco/j.php?J=601116211

All teleconference meetings are 8:00 AM to 9:55 AM 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
Yingxin Sun of Sigrity introduced himself. He has worked with IBIS for several years, running simulations. Today we have 8 of 12 eligible members present. Walter recalled that there was a difference between being a member and being able to vote. Michael Mirmak said that this is because TechAmerica sets standards for voting. Also, we are migrating toward using TechAmerica's KAVI system for checking voting eligibility and for voting. TechAmerica is rigid about the rules because they are audited by ANSI.

CALL FOR PATENTS
Michael Mirmak called for any patents or pending patents related to the IBIS 3.2, IBIS 4.2, IBIS 5.0, Touchstone 2.0 or ICM 1.1 specifications. No patents were declared.

REVIEW OF MINUTES AND ARS
Mike LaBonte called for comments regarding the minutes of the April 1, 2011 IBIS Open Forum teleconference. The minutes were approved with no changes.

MEMBERSHIP STATUS AND TREASURER'S REPORT

Michael Mirmak said membership stands at 30. Please contact Michael if you have not received the membership form or for any issues. Michael asked TechAmerica if credit cards can be taken. They have a problem with their financial systems. Michael has regular meetings with Chris Denham. There is no immediate solution. Bob Ross reported that there is a lack of information from TechAmerica for the treasurer's report.

WEB PAGE UPDATES
No update.

MAILING LIST ADMINISTRATION
Mike LaBonte said that things are going smoothly and a few new subscribers were added to the IBIS mailing lists, bringing the total to 452. He ran some tests to see if better organized web email archives could be extracted from the raw mailbox files but found that they are not organized well and do not even seem to contain all of the list emails. The HTML files maintained on the fly by Hypermail seem to be complete, however. Mike intends to write a script that will maintain a CSV spreadsheet file of all emails, extracted from the HTML files. New Perl modules may have to be installed for this. A second script will generate new HTML files organizing the emails by various categories including year and month. This approach may allow us to integrate emails prior to 2001 into the final product. Michael Mirmak asked if eda.org has an existing tool that may help. Mike said Hypermail is the only tool they have. Bob Ross said Hypermail no longer stores attachments. Mike will look into that. Asked about previous practices, Bob said that when he was postmaster he manually divided email into monthly archives and also purged spam.

MODEL LIBRARY UPDATE

No update.

MISCELLANY/ANNOUNCEMENTS
None.

OPENS FOR NEW ISSUES
Bob Ross brought up BIRD 131, and it was added to the agenda.

INTERNATIONAL/EXTERNAL ACTIVITIES
- DASC
Michael Mirmak said there is nothing very interesting on the agendas of upcoming meetings. There has been discussion about entity vs. individual memberships. The DASC file and e-mail archive may be found at:

    http://www.dasc.org/

- P1735 Encryption
Michael Mirmak: No update. The IEEE Study Group on Encryption web reflector archives are found at:

    http://www.eda-stds.org/ip-encrypt/hm/

-VHDL-AMS Table-Driven Models
Arpad Muranyi had no update. More information can be found at:

    http://www.eda.org/twiki/bin/view.cgi/P10761/ProjectsArea#Table_driven_Modeling_Champion_J

-Conferences
Bob Ross said the 2011 IEEE Workshop on Signal Propagation on Interconnects (SPI) will be held in Naples, Italy on May 8-11, 2011. The call for papers is out and the preliminary program has been posted. We are co-located with SPI, not associated. More information can be found at:

    http://www.spi2011.unina.it/

EMCCompo2011, the 8th International Workshop on Electromagnetic Compatibility of Integrated Circuits, will be held in Dubrovnik, Croatia, November 6-9, 2011. Organizers of the event have contacted the IBIS Open Forum to see if there is interest in having a tutorial session on IBIS. April 1 is the deadline for registration. More information can be found at:

    http://www.emccompo2011.org

-Press Update

Electronic Design editor David Maliniak wrote about Model Connection Protocols, IBIS, IBIS processing, mentioning Brad Brim and Brad Griffin. The article is "Treat ICs, Packages, and PCBs as System Designs", April 7, 2011, Electronic Design, pp. 32-40, linked at:

http://electronicdesign.com/article/eda/Treat-ICs-Packages-And-PCBs-As-System-Designs.aspx

IEC APPROVAL ACTIVITIES
Michael Mirmak said there is ongoing discussion with TechAmerica about improving the process.

TECHAMERICA UPDATE
Michael Mirmak said the KAVI roster should be up to date. TechAmerica will migrate members-only traffic to KAVI. This implies balloting activities. TechAmerica may use opt-in info for marketing. Michael checked the privacy policy. We have an updated sign-in form from TechAmerica but not a privacy policy. TechAmerica will formalize the determination of who can vote. Bob Ross said we operate as-is until this is established, and that we want to run an open society. Michael said the definition of "accessible" may involve creating a login to download. KAVI is not ready to track meeting attendance. An update is expected. Bob added that we are not sure if a few members have paid. We should not move to KAVI until this is resolved. Michael said that IBIS membership is distinct form TechAmerica membership.

KAVI members' login is at:

http://workspace.techamerica.org/apps/org/workgroup/ibis-members

SUMMIT STATUS
-SPIE IBIS Summit
The 15th IEEE Workshop on Signal Propagation on Interconnects will be held in Naples, Italy, May 8-11, 2011. The IBIS Summit is scheduled for May 11. Michael thanked Lance Wang for sending out notices and tracking responses. Bob said we will have a full program from 1:00 to 6:00PM with quite a few attendees from Italy. The agenda will go out a few weeks in advance. Zuken is a co-sponsor of the event.

-DAC IBIS Summit
The Design Automation Conference (DAC) is June 6-9, 2011 in San Diego, CA. The IBIS Summit will be held June 7. Michael reported that a conference room has been secured at the Omni Hotel. Lance has sent notices. Michael thanked Mentor Graphics for sponsoring the room. Another call for papers will be sent out next week. This meeting will include the annual election of officers, including some non-member positions. Contact the board if you are interested in running for an office. Sponsorship opportunities are available.

Sponsorship opportunities for all upcoming IBIS summits are available, with sponsors receiving free mentions in the minutes, agenda, and other announcements. This includes upcoming events in Asia. Contact the IBIS Board for further details.

IBIS QUALITY TASK GROUP

Mike LaBonte reported that Anders Ekholm will present a quality group status report at the European summit meeting. Meeting attendance this year averages four people and the group is progressing slowly towards an External Test file format that would be able to provide reference test data not only for IBIS models but also for packages, connectors, and maybe EBDs. The group is meeting weekly on Tuesdays at 8AM PDT.

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

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

IBIS MODEL REVIEW TASK GROUP

No update.

ADVANCED TECHNOLOGY MODELING TASK GROUP

Arpad Muranyi reported that regular meetings continue as usual. BIRD 130, "Crosstalk Clarification with respect to AMI" has been submitted. The group task list is shrinking significantly, hopefully complete by June. Michael Mirmak said we should have time to discuss this today.

Task group material can be found at:

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

INTERCONNECT TASK GROUP

Michael Mirmak reported weekly meetings continue on IBIS-ISS. Most Open Forum comments have been disposed of. The current task is to update the draft. A few items require more research. A revision 1.1 review draft is to be ready next week, then it will be submitted to the Open Forum soon after. Then, Touchstone and MCP will be closed out.

Task group material can be found at:

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

IBIS EDITORIAL UPDATE

Michael Mirmak reported there have been regular meetings and contact with the TechAmerica tech writer. The next meeting topic will include which IBIS version number scheme should be used.

New IBIS 5.0 documentation can be reviewed at:

NEW ADMINISTRATIVE ISSUES

Michael Mirmak said he may be able to show the Mantis system that we have access to for BUG tracking. Bob Ross said we should put the currently discussed BIRDs first. Walter Katz suggested that we defer discussion on BIRDs 116, 117, 118, 122, 125 and 129. He will present on these at the next summit. Michael asked for a motion to defer these. Bob Ross said we should not absolutely table these. Arpad Muranyi said he is willing to defer his BIRDs until BIRD122 is clear. We do not yet have a final BIRD 122 from Walter. Michael clarified that tabling discussion is just for this meeting. Arpad motioned to table BIRDs 116, 117, 118, 122, 125 and 129. Walter seconded. There was no objection.

BIRD116: ADD IBIS-ISS TO [EXTERNAL MODEL] AND [EXTERNAL CIRCUIT] AS A SUPPORTED LANGUAGE
Tabled.

BIRD117.3: PARAMETERIZE A_TO_D AND D_TO_A CONVERTERS
Tabled.

BIRD118.2: ANALOG PARAMETER ASSIGNMENTS
Tabled (See BIRD117.3 for related discussion).

BIRD120.1: IBIS-AMI FLOW CORRECTION
Walter Katz said this was approved by the ATM group. Radek Biernacki asked what the latest changes were. Michael Mirmak showed the one line that has been changed. Radek asked what the status was regarding comments from TI. Arpad Muranyi said they announced they would not push their suggestions. Arpad motioned to vote. Radek seconded.

Vote tally:

Agilent	Y
AMD	Y
Cisco Systems	Y
Intel Corporation	Y
IO Methodology	Y
Mentor Graphics	Y
Micron (by email)	Y
Signal Integrity Software	Y
Sigrity	Y
Teraspeed Consulting Group	Y

The vote passed and the BIRD is approved.

BIRD121: IBIS-AMI NEW RESERVED PARAMETERS FOR DATA MANAGEMENT

Walter Katz explained that this BIRD contains generic items needed to make models work. This should be considered after BIRD123.

BIRD122: IBIS-AMI NEW RESERVED PARAMETERS FOR ANALOG MODELING

Tabled.

BIRD123.1: IBIS-AMI NEW RESERVED PARAMETERS FOR JITTER/NOISE

Walter Katz expects an updated BIRD123.2. It has not changed for a year but the Rx_Noise_Pad parameter has been moved to another BIRD.

BIRD124: IBIS-AMI NEW RESERVED PARAMETERS FOR DEPENDENCY TABLES

Walter Katz intends to rewrite this.

BIRD125: MAKE IBIS-ISS AVAILABLE FOR IBIS PACKAGE MODELING

Tabled.

BIRD127: IBIS-AMI TYPOGRAPHICAL CORRECTIONS

Arpad Muranyi said that this is a large BIRD. The ATM group is finished with this and there is no new discussion. He suggested that it should be scheduled for a vote. Michael said it is eligible for a vote today. Arpad was hoping for more discussion and would prefer a delay, maybe until after the other key BIRDs in play are voted. Bob Ross said there might be some overlap with other BIRDs, but Arpad felt that would not be a problem.

BIRD128: ALLOW AMI_PARAMETERS_OUT TO PASS AMI_PARAMETERS_IN DATA ON CALLS TO AMI_GETWAVE

Walter Katz reported that this is related to back channel implementations by both SiSoft and Sigrity. Arpad Muranyi motioned to put this on hold until further discussion. Radek Biernacki agreed that the ATM group needs to work on it more. Walter expressed a hope for closure on the matter. Arpad said it is controversial.

BIRD129: ADD "POLARITY" ARGUMENT TO D_TO_A CONVERTERS

Tabled.

BIRD130: CROSSTALK CLARIFICATION WITH RESPECT TO AMI

Arpad Muranyi said that this BIRD describes in good detail how to handle crosstalk, and much time was spent developing it. Arpad encouraged more comments and asked to schedule a vote. Bob Ross pointed out that some characters in the BIRD text do not display correctly.

Michael Mirmak took an AR to fix it. It will be eligible for vote at the next meeting, but no vote was scheduled.

BIRD 131: IBIS-AMI Repeaters
Walter Katz asked people to read this and said there would be further discussion in ATM meetings. This file also has character issues. Arpad Muranyi thought translation from MS Word might be a cause. Michael Mirmak said IBIS 5.x may make this easier by allowing rich-text formats. Walter would like to be able to send rich-text formats now. Michael said these could be sent in PDF form. Radek Biernacki said the keyword name [Repeater Pin] was too generic and should be more specific. This will be discussed in ATM meetings.

IBISCHK5 BUG STATUS
Bob Ross reported that a bunch of BUGs were closed March 17 in version 5.0.6. There is no feedback so far about the fixes. Sometimes that takes a few weeks. Some BUGs are still open. AMI BUGs are fundamental syntax problems. We need to improve the level of testing for AMI files. Bob may have found an old BUG documented as fixed may still be broken. He plans to investigate.

IBIS-ISS SPECIFICATION DRAFT
Michael Mirmak reported that the latest comments list version is not yet posted. A new draft will come up in the interconnect task group soon. An announcement will follow.

The draft 1 revision can be reviewed at:

http://www.eda.org/pub/ibis/ibis-iss_wip/IBIS_ISS_review_draft_1.pdf

NEW TECHNICAL ISSUES
Arpad Muranyi said it would be good to discuss what BIRDs should be in IBIS 5.1. Michael Mirmak showed the BIRD list. Quite a few are pending. Arpad said it was expected that 5.1 would have been released years ago. The AMI corrections held this up. Meanwhile new BIRDs have offered good changes. One question is if we should issue only the corrections first, then consider others later. Michael said there are 4 correction BIRDs approved. Arpad said BIRD 126 would have to be included. Michael noted aside that Micron had sent an email in favor of BIRD120.1. Walter Katz said he has a presentation that will turn into a significant BIRD on packaging. It will not be hard to write. Arpad was hesitant to go into new features like backchannel too quickly. It might take 2 or 3 months. Michael said we could have a motion and vote to cut off new BIRDs for inclusion in 5.1. He also asked if other BIRDs are expected in the next 2 months.

Bob Ross said a C_comp corners proposal will appear, although there has been little discussion. Bob suggested that we can defer document reformatting until 6.0 if we want. We have to proceed incrementally. Alternatively, Bob proposed that a reformat-only revision 5.1 might be a good idea, although it might not be a satisfactory document because of problems in the AMI section 6c. Michael suggested that there could be corrections in 5.1, then the

reformatting in 5.2. Walter suggested that other than the definition of the executable statement, most of AMI should be in a separate document. Michael asked if Walter could write a BIRD to accomplish this, adding language to reference the external document. Walter agreed to this. Bob thought this might cause a delay of a few years. Walter felt it was a simple straightforward change. Bob recalled that the original idea of having AMI in a separate document proved to be troublesome.

Walter said SiSoft anticipated no other BIRDs near-term. Michael asked Bob, Walter and Arpad to provide their lists of suggested BIRDs for including in future IBIS versions, by the next Open Forum meeting. Arpad proposed that repeaters and backchannels should not be in the next version. Walter agreed. Bob suggested creating a template structure to simplify the process for creating new documents in a new format. Arpad expressed concern about vendors operating outside the specification, and that repeaters and backchannel BIRDs may not be finalized soon enough. Michael reminded him that these changes have parser implications, which have to be described to the developer.

Mike LaBonte said the Quality group probably would have no new BIRDs soon, and also that they might propose their new External Test format as a new file, not part of the IBIS specification.

NEXT MEETING
The next IBIS Summit will be held at SPI in Naples, Italy on May 11, 2011. No teleconference bridge will be provided. The next IBIS Open Forum teleconference will be held May 13, 2011 from 8:00 to 10:00 AM US Pacific Standard Time. The following Open Forum teleconference will be held June 3, 2011. There was no objection to these dates, but Bob Ross said Randy Wolff may not make it for the May 13 meeting and Mike LaBonte might be needed to take minutes. Radek Biernacki motioned to adjourn and Arpad Muranyi seconded.

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NOTES

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This meeting was conducted in accordance with the GEIA Legal Guides and GEIA Manual of Organization and Procedure.

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 EIA-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

To create an account on the TechAmerica KAVI workspace, check out:

http://workspace.techamerica.org/kwspub/join/

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IBIS CURRENT MEMBER VOTING STATUS

I/O Buffer Information Specification Committee (IBIS)

Organization	Interest Category	Standards Ballot Voting Status	February 18, 2011	March 11, 2011	April 1, 2011	April 22, 2011
Advanced Micro Devices	Producer	Active	-	-	X	X
Agilent Technologies	User	Active	X	X	X	X
Ansys	User	Inactive	-	-	-	-
Apple Computer	User	Inactive	-	-	-	-
Applied Simulation Technology	User	Inactive	-	-	-	-
ARM	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Inactive	-	X	-	-
Cisco Systems	User	Active	X	X	X	X
Ericsson	Producer	Active	-	X	X	-
Freescale	Producer	Inactive	-	-	-	-
Green Streak Programs	General Interest	Inactive	-	-	-	-
Huawei Technologies	Producer	Inactive	-	-	-	-
Hitachi ULSI Systems	Producer	Inactive	-	-	-	-
IBM	Producer	Active	X	X	X	-
Infineon Technologies AG	Producer	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	X	X
IO Methodology	User	Active	X	X	X	X
LSI	Producer	Inactive	X	X	-	-
Mentor Graphics	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	-
Nokia Siemens Networks	Producer	Active	-	X	X	-
Signal Integrity Software	User	Active	X	X	X	X
Sigrity	User	Inactive	-	-	-	X
Synopsys	User	Inactive	-	-	-	-
Teraspeed Consulting	General Interest	Active	X	X	X	X
Texas Instruments	Producer	Inactive	-	-	-	-
Toshiba	Producer	Inactive	-	-	-	-
Xilinx	Producer	Inactive	-	-	-	-
ZTE	User	Inactive	-	-	-	-
Zuken	User	Inactive	-	-	-	-

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 TECHAMERICA 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.