



## IBIS Open Forum Minutes

Meeting Date: **January 28, 2022**

Meeting Location: **Teleconference**

### VOTING MEMBERS AND 2022 PARTICIPANTS

Analog Devices (Maxim Integrated)	(Tushar Pandey)
ANSYS	Curtis Clark*
Applied Simulation Technology	(Fred Balistreri)
Broadcom	(Yunong Gan)
Cadence Design Systems	Zhen Mu*
Celestica	(Sophia Feng)
Cisco Systems	(Stephen Searce)
Dassault Systemes	(Stefan Paret)
Ericsson	(Guohua Wang)
Google	(Hanfeng Wang)
Huawei Technologies	(Hang (Paul) Yan)
Infineon Technologies AG	(Christian Sporrer)
Instituto de Telecomunicações	(Abdelgader Abdalla)
Intel Corporation	Hsinho Wu*, Michael Mirmak*
Keysight Technologies	Radek Biernacki*
Luminous Computing	(David Banas)
Marvell	Steven Parker*
MathWorks	Mike LaBonte*, Walter Katz*
Micron Technology	Randy Wolff*
MST EMC Lab	(Chulsoon Hwang)
SerDesDesign.com	(John Baprawski)
Siemens EDA	Arpad Muranyi*
STMicroelectronics	(Olivier Bayet)
Synopsys	Ted Mido*
Teraspeed Labs	Bob Ross*
Xilinx	(Ravindra Gali)
Waymo	Zhiping Yang*
ZTE Corporation	(Shunlin Zhu)
Zuken	(Michael Schäder)
Zuken USA	Lance Wang*

### OTHER PARTICIPANTS IN 2022

None

In the list above, attendees at the meeting are indicated by \*. Those submitting an email ballot for their member organization for a scheduled vote 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 connection information for future IBIS teleconferences is as follows:

# Microsoft Teams meeting

Join on your computer or mobile app

[Click here to join the meeting](#)

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Video Conference ID: 114 666 897 5

[Alternate VTC dialing instructions](#)

Or call in (audio only)

[+1 267-768-8015,554664847#](tel:+1267-768-8015,554664847#) United States, Philadelphia

Phone Conference ID: 554 664 847#

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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

Mike LaBonte declared that a quorum had been reached.

## CALL FOR PATENTS

Randy Wolff called for declaration of any patents or pending patents related to the IBIS, IBIS-ISS, ICM, or Touchstone 2.0 specifications. No patents were declared.

## REVIEW OF MINUTES AND ARS

Randy Wolff called for comments on the minutes of the January 7, 2022, IBIS Open Forum teleconference. Curtis Clark moved to approve the minutes. Zhiping Yang seconded the motion. There were no objections.

Randy reviewed ARs from the previous meeting.

- Steve Parker to update Models page [AR]  
Steve said he had received the list and updated the page, pending review.
- Randy Wolff to contact press outlets about IBIS 7.1 article [AR]  
Not done yet.
- Steve Parker to upload DOCX files for China and Japan summit minutes [AR]  
Steve reported this was done.
- Randy Wolff to contact Suzanne Deffree about DesignCon summit contract terms [AR]  
Randy said a room was reserved for us by Informa Markets. He was still waiting for cost estimates and the partnership contract.
- Michael Mirmak to send notice of resumption of Interconnect Task Group meetings [AR]  
Randy said this was done.
- Walter Katz to contact Fangyi Rao about finalizing BIRD211.3. [AR]  
Randy said this was done.

- Randy Wolff to add Known Issue for training flow mistakes in IBIS 7.1 [AR]  
Randy said this was done. He would show the document later.

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

Bob Ross said the uploaded IBIS 7.1 PDF document had a label alignment issue in Figure 46. Randy Wolff said that needed to be added to the Known Issues document. Bob said there was no problem when he opened the DOCX file. Randy said we would need to decide whether to overwrite the posted file with a fix or wait for IBIS 7.2.

Randy said Michael Mirmak might have an IBIS-ISS topic to discuss.

## **MEMBERSHIP STATUS AND TREASURER'S REPORT**

Bob Ross reported that NXP had resigned membership. Waymo was an official member and would be represented by Zhiping Yang. Receipts for 3 payments had not yet been received from SAE ITC. Our current balance for 2022 was \$5,850.00. The balance adjusted for prior year transactions applied to 2022 was \$9,200.00. There was a \$2,000 payment for summits that was not used. Upcoming summit costs were uncertain. Randy Wolff asked if everyone had received membership invoices. Bob said they had. Bob said SAE ITC would subtract an annual fee, which might be around \$5,000.

## **WEBSITE ADMINISTRATION**

Steven Parker reported that the Waymo logo had been added. Recent summit minutes DOCX files had been posted. The ATM Task Group page was up to date, and Interconnect Task Group page updates had been started. The updated IBIS 7.1 known issues document had been posted. Steve said some links to the TSCHK page needed to point to tschk, not tschk2, and those had been fixed.

Randy Wolff showed the models web page. This had been generated by Perl script from a models.txt data file, a process last used in 2020. The generated HTML required an iframe, but the current models page did not have an iframe. Steve had manually edited the updated contents into the page. The BIRDS page was up to date.

Steve had contacted BlueHost about a problem with our info@ibis.org email account, which was forwarded to certain people, but we were unable to control the forwarding. They said an email filter was doing the forwarding. Steve removed the filters and now the emails would be forwarded only to Randy. Bob Ross said he would like to receive the emails too. Mike LaBonte said emails had been forwarded to Bob, but they had been bouncing, possibly because quite a bit of spam was received and forwarded by the account. Mike LaBonte suggested Bob could use an email client to access it as an IMAP account; that had been working well for him.

Zhiping Yang thanked Steve for updating the Models page. Steve asked Zhiping to send any feedback he had on the page. Bob said it was amazing how many model providers had dropped off the page.

## **MAILING LIST ADMINISTRATION**

Curtis Clark reported that several people had subscribed using personal addresses, requiring confirmation. He said some subscription cookies had expired before confirmation could be completed. Curtis had contacted Freelists about that, finding that the requests were timing out in

2 days, not the 15 days Curtis had set it for. Freelists might have since fixed it, so Curtis would ask some people to subscribe again.

## **LIBRARY UPDATE**

Zhiping Yang reported that the only update was the models page on the website. Mike LaBonte suggested that for future page updates Zhiping could edit the models.txt file himself and send that to Steve, as opposed to providing separate instructions for Steve to make the edits. Zhiping agreed.

## **INTERNATIONAL/EXTERNAL ACTIVITIES**

### **- Conferences**

Zhiping Yang said the upcoming IEEE EMC/SIPI conference might be in-person, asking if anyone from IBIS could contribute a presentation or workshop. Randy Wolff said he was checking on travel authorization, and he might possibly be able to present. Zhiping said there also could be an "IBIS Experts" session if there was interest. It was not certain the conference would be in-person. If we held an associated IBIS summit that could be virtual, regardless. Zhiping said proposals for EMC/SIPI were due March 7, 2022. The conference was in August. Bob Ross noted that a previous virtual EMC/SIPI had been spread out over weeks. Zhiping asked all interested to contact him. He said he would attend in person.

### **- Press Updates**

None.

### **- Related standards**

IEC 63055/IEEE 2401, JEITA "LPB"

No discussion.

## **SUMMIT PLANNING AND REVIEW**

Randy Wolff said DesignCon summit announcements might be delayed until we had a decision on whether and how it would be held. The first announcement would be scheduled for February 4. Randy said he did not yet have travel authorization. He asked whether it might be hybrid or virtual. Bob Ross felt we had to support virtual attendees. The time slot would have to be chosen to accommodate remote attendees on the East coast and Japan. Randy said with virtual attendees it would have to be shorter. Bob felt food would need to be targeted for 20 to 30 people, and it would need to be less expensive than the usual full course catering. SAE ITC would provide virtual meeting service. Randy would keep in touch with Suzanne Deffree. Bob said we would not have time for a vote.

## **QUALITY TASK GROUP**

Mike LaBonte said the group meets on Tuesdays at 9:00 a.m. PT. The group had been discussing new IBISCHK bugs. Also, the IBISCHK 7.1.0 User Guide had not yet been released. They were working on that, having received the updated message spreadsheet from the developer.

The Quality task group checklist and other documentation can be found at:

[http://www.ibis.org/quality\\_wip/](http://www.ibis.org/quality_wip/)

## **ADVANCED TECHNOLOGY MODELING TASK GROUP**

Arpad Muranyi reported that the group meets on Tuesdays at 12:00 a.m. PT. They had submitted two new BIRDS and were working on page number updates for two others. They were discussing the PAMn BIRD213. New topics included AMI root name checking, and new [Test Load] and [Test Data] provisions for IBIS-AMI. Arpad asked those interested in redrivers to review draft 1 of BIRD211.4 and contact the ATM group.

Task group material can be found at:

[http://www.ibis.org/macromodel\\_wip/](http://www.ibis.org/macromodel_wip/)

## **INTERCONNECT TASK GROUP**

Randy Wolff reported that the Interconnect task group had been meeting in its Wednesday time slot. They had discussed possible additions for a Touchstone 3 specification. One suggestion was the addition of a pole-zero format. José Schutt-Ainé had presented on pole-residue models. The group had also discussed changes to EMD including support for NC pins in [Designator Pin List], drafted by Arpad Muranyi.

Task group material can be found at:

[http://www.ibis.org/interconnect\\_wip/](http://www.ibis.org/interconnect_wip/)

## **EDITORIAL TASK GROUP**

Randy Wolff reported that the Editorial Task Group remained suspended.

Task group material can be found at:

[http://www.ibis.org/editorial\\_wip/](http://www.ibis.org/editorial_wip/)

## **NEW ADMINISTRATIVE ISSUES**

Randy Wolff showed the IBIS 7.1 Known Issues document. Items 2, 3, and 4 had been added. Item 3 was about a placeholder “X” that needed to be replaced with the intended final text. Item 4 was a File\_IBIS-ISS terminal line clarification.

Randy showed an email about the Figure 46 problem. A text label crossed the boundary of a box. We agreed that it would be OK to overwrite the uploaded file in place. Bob Ross asked how that had happened. Randy said there were some last-minute changes. Arpad Muranyi recommended checking the Microsoft Word document. Michael Mirmak said the problem may have come from the flow used in the editorial process. Randy opened and showed the DOCX file. Figure 46 looked correct. It was an image. We agreed that Michael Mirmak would regenerate and update the PDF online. Randy said he would leave it out of the IBIS 7.1 Known Issues.

Michael Mirmak to produce new IBIS 7.1 PDF with Figure 46 corrected [AR]

Michael said there was a proposal to add variable length S-parameter support to IBIS-ISS, but we did not yet have a change process for IBIS-ISS. Michael proposed calling it ISSRD. We agreed to use that. Michael said he would create a template document. Mike LaBonte asked if the template file would be DOCX, so that contents from IBIS-ISS could be pasted in without loss. Michael said we had been using text for others Issue Resolution Documents, but he agreed the new one could be Microsoft Word.

Michael Mirmak to draft template ISSRD document [AR]

## **NEW AND REVISED BIRDS**

### **BIRD216: ALPHANUMERIC PIN NAMES**

Randy Wolff showed BIRD216. The [Pin] keyword should state that names had to be alphanumeric, like newer pin list keywords. Bob Ross noted that this will require a parser change since the parser currently allows any character for pin names under the [Pin] keyword. Another change was the inclusion of a definition of alphanumeric, with the exact table of characters. There was also a change to Series\_switch, which did not require names to be alphanumeric.

Bob Ross said he had tested with IBISCHK and found that it did not flag non-alphanumeric names in [Pin]. Curtis Clark said the new rule would require a parser change. Mike LaBonte asked if that made the BIRD non-editorial in nature. Arpad agreed. Bob said some existing models might then fail IBISCHK, but the rule would be applied only for IBIS 7.2. He suggested adding a note to the BIRD about requiring a parser change. Arpad said we had not done that before, but we might add a section for that to the BIRD template. Radek Biernacki said backward compatibility should be discussed. He did not want existing files to stop passing. Arpad said the new check would not be applied until the file had [IBIS Ver] 7.2. Radek asked if the BIRD should say that. Bob said the IBIS Quality Task Group had been wrestling with a similar question, about an IBIS file that would pass when checked directly by IBISCHK, but not when it was checked as part of an EMD set. Randy said our expectation would be captured when parser requirements were written. Bob said real device pin names did not have non-alphanumeric characters anyway, so making non-alphanumeric characters an error should cause no problem. Radek agreed, as long as pre-7.2 files were not affected.

Arpad suggested allowing 3 more weeks for review, before scheduling a vote on the BIRD. That was agreed.

### **BIRD217: REQUIRE CLOCKED RX MODELS TO RETURN CLOCK TIMES**

Randy Wolff showed the BIRD. Arpad Muranyi said IBIS did not require IBIS-AMI Rx models to return clock\_times. In normal SerDes simulations the EDA tools could generate clock times using their own implementation of a CDR. But in the case of the new clocked Rx AMI models, EDA tools may not be able to generate useful clock times at all. In clock forwarded architectures the clock is not embedded in the data waveform, and the Rx model may also modify the clock times passed into it. The chosen solution was to make it required for Rx AMI models to generate clock times when Rx\_Use\_Clock\_Input AMI parameter was present, and also to highly recommend supporting clock\_times output for normal SerDes Rx Models. Randy agreed with the changes.

Michael Mirmak said “must” must be “shall” in one place. Bob said IBISCHK would not check for the requirement, it was difficult to have the parser check for this. Arpad said new proposals might change that.

Michael said we did not use “shall” for requirements of EDA tools, asking if “shall” was appropriate for AMI models. Arpad said he would make that change, asking if a BIRD217.1 was

required. Bob said it could be a language change proposed at the time of voting, noting that it would become BIRD217.1 at that time.

### **BIRDS SCHEDULED FOR VOTE**

None

### **BIRDS ELIGIBLE FOR VOTE**

#### **BIRD211.3: IBIS AMI REFERENCE FLOW IMPROVEMENTS**

No discussion.

#### **BIRD213: EXTENDING IBIS-AMI FOR PAM<sub>n</sub> ANALYSIS**

No discussion.

### **TABLED BIRDS (NO DISCUSSION WITHOUT MOTION TO "UNTABLE")**

#### **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.

#### **BIRD210: NEW REDRIVER AMI FLOW**

Discussion was tabled.

### **IBISCHK AND TSCHK PARSER AND BUG STATUS**

Bob Ross said we had received the error message file and were working on the IBISCHK 7.1.0 user guide. One message was marked as both a bug and error, and that had to be explained in the user guide. Mike LaBonte said that bugs were internal parser issues such as unexpected null pointers and memory allocation failures. The message in question seemed to be a bug, he was not sure how it could alternatively be deemed an error.

Bob said BUG228 was waiting for resolution of the requirement for AMI root name matching. It was not yet classified.

The IBIS Quality Task Group had three new bugs under development, but they were not yet ready for formal introduction. One issue was that files with a certain bus\_label issue failed IBISCHK when checked as an IBIS 7.1 file, but not when pre-7.1. The Quality Task Group was discussing a policy that IBIS files included as part of an EMD set would be checked against the [IBIS Ver] of the EMD file, with a message explaining why. Arpad Muranyi asked if an IBIS 5.1 file would then be checked against 7.1 rules. Bob said it would. Randy Wolff said IBIS files not

complying with at least IBIS 7.1 could break the EMD set when included. Arpad asked if the current parser behavior was correct. Randy said it happened to be correct for that case, but only due to a bug in the code. Bob said a message would clarify the situation. Arpad asked if requiring the IBIS file versions match the EMD file version would be better. Bob said if an older version IBIS file passed, it should work fine in the EMD set.

Mike LaBonte said BUG229 was to change IBISCHK to avoid using system calls to locate .pkg files for [Package Model]. Doing so caused failure to find the .pkg files using a UNC network path on Windows. Common POSIX C function calls could easily replace the system calls.

Bob said Michael Mirmak had sent a new bug report that would become BUG230. IBISCHK issued a caution in the case where both single ended and differential pins used the same model. He said there were valid cases in which that could happen.

## NEW TECHNICAL ISSUES

Arpad Muranyi asked if we needed permission from Synopsys to add the HSPICE syntax for the proposed IBIS-ISS variable length S-parameter feature. Michael Mirmak said it was not. Arpad asked if we would copy the HSPICE reference manual text literally. Randy Wolff said we were not required to maintain compatibility, and we could specify it as we wished. Michael Mirmak said IBIS-ISS did not have scalability parameters for Touchstone. There had been a suggestion to use subcircuits with different numbers of cascaded elements to implement variable length, but that was inconvenient. Arpad said he felt we were trying to maintain HSPICE compatibility. Bob Ross felt we should not create a new syntax that was not portable across EDA tools. Arpad thought HSPICE already had the feature, and that could be discussed in ATM meetings. Michael asked whether it should be discussed in ATM or Interconnect. Randy said it should be discussed in Interconnect.

## NEXT MEETING

The next IBIS Open Forum teleconference meeting would be held on February 18, 2022. The following teleconference meeting was tentatively scheduled for March 11, 2022.

Arpad Muranyi moved to adjourn. Bob Ross seconded the motion. The meeting adjourned.

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## NOTES

IBIS CHAIR: Randy Wolff (208) 363-1764

[rrwolff@micron.com](mailto:rrwolff@micron.com)

Principal Engineer, Silicon SI Group, Micron Technology, Inc.

8000 S. Federal Way

P.O. Box 6, Mail Stop: 01-720

Boise, ID 83707-0006

VICE CHAIR: Lance Wang (978) 633-3388

[lance.wang@ibis.org](mailto:lance.wang@ibis.org)

Solutions Architect, Zuken USA

238 Littleton Road, Suite 100

Westford, MA 01886

SECRETARY: Mike LaBonte

[mlabonte@mathworks.com](mailto:mlabonte@mathworks.com)

Senior Engineer



1 Lakeside Campus Drive  
Natick, MA 01760

TREASURER: Bob Ross (503) 246-8048

[bob@teraspeedlabs.com](mailto:bob@teraspeedlabs.com)

Engineer, Teraspeed Labs  
10238 SW Lancaster Road  
Portland, OR 97219

LIBRARIAN: Zhiping Yang (650) 214-0868

[zhipingyang@google.com](mailto:zhipingyang@google.com)

Sr. Hardware Manager, Google LLC  
1600 Amphitheatre Parkway  
Mountain View, CA 94043

WEBMASTER: Steven Parker (845) 372-3294

[sparker@marvell.com](mailto:sparker@marvell.com)

Senior Staff Engineer, DSP, Marvell  
2070 Route 52  
Hopewell Junction, NY 12533-3507

POSTMASTER: Curtis Clark

[curtis.clark@ansys.com](mailto:curtis.clark@ansys.com)

ANSYS, Inc.  
150 Baker Ave Ext  
Concord, MA 01742

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 or unsubscribe from 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)):
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  - <https://www.freelists.org/list/ibis-macro>
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  - <https://www.freelists.org/list/ibis-editorial>
  - <https://www.freelists.org/list/ibis-quality>
- 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 `s2ipt`.

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>

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](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/bugspl.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	November	December	January 7,	January 28,
			19, 2021	10, 2021	2022	2022
Analog Devices (Maxim Integrated)	Producer	Inactive	X	X	-	-
ANSYS	User	Active	X	X	X	X
Applied Simulation Technology	User	Inactive	-	-	-	-
Broadcom Ltd.	Producer	Inactive	-	-	-	-
Cadence Design Systems	User	Active	X	X	-	X
Celestica	User	Inactive	-	X	-	-
Cisco Systems	User	Inactive	-	-	-	-
Dassault Systemes	User	Inactive	-	-	-	-
Ericsson	Producer	Inactive	-	-	-	-
Google	User	Active	X	X	X	-
Huawei Technologies	Producer	Inactive	-	-	-	-
Infineon Technologies AG	Producer	Inactive	-	X	-	-
Instituto de Telecomunicações	User	Inactive	-	-	-	-
Intel Corp.	Producer	Active	X	X	X	X
Keysight Technologies	User	Active	X	X	X	X
Luminous Computing	General Interest	Inactive	-	-	-	-
Marvell	Producer	Active	X	X	X	X
MathWorks (SiSoft)	User	Active	X	X	X	X
Micron Technology	Producer	Active	X	X	X	X
MST EMC Lab	User	Inactive	-	-	-	-
SerDesDesign.com	User	Inactive	-	-	-	-
Siemens EDA (Mentor)	User	Active	X	X	X	X
STMicroelectronics	Producer	Inactive	-	X	-	-
Synopsys	User	Active	X	X	X	X
Teraspeed Labs	General Interest	Active	X	X	X	X
Waymo	User	Inactive	-	-	-	X
Xilinx	Producer	Inactive	-	-	-	-
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 (voting by email counts as attendance)

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.