

IBIS Update



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

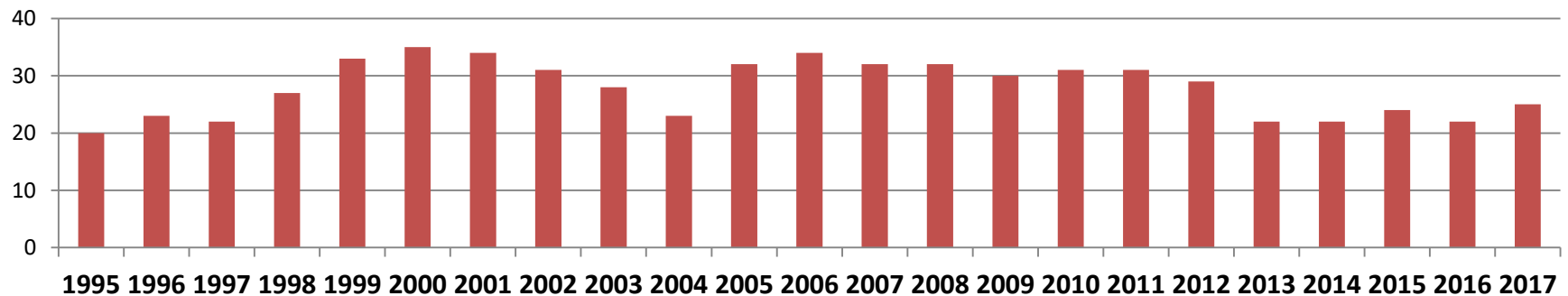
Mike LaBonte
Signal Integrity Software
Chair, IBIS Open Forum

IEEE SPI 2017 IBIS Summit
Baveno, Italy
May 10, 2017

25 IBIS Members

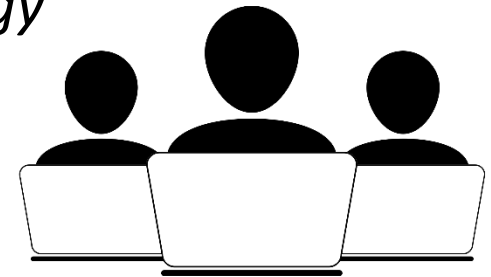


Number of Members by Year



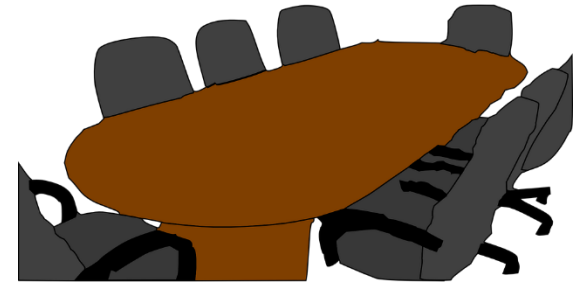
IBIS Officers 2016-2017

Chair: *Mike LaBonte, Signal Integrity Software*
Vice-Chair: *Lance Wang, IO Methodology Inc.*
Secretary: *Randy Wolff, Micron Technology*
Treasurer: *Bob Ross, Teraspeed Labs*
Librarian: *Anders Ekholm, Ericsson*
Postmaster: *Curtis Clark, ANSYS*
Webmaster: *Mike LaBonte, Signal Integrity Software*



2017 Officer Election nominations open May 17

IBIS Meetings



- Weekly teleconferences
 - Quality Task Group (Tuesdays)
 - Advanced Technology Modeling Task Group (Tuesdays)
 - Interconnect Task Group (Wednesdays)
 - Editorial Task Group (some Fridays)
- IBIS Open Forum teleconference every 3 weeks
 - 451 meetings so far
- IBIS Summit meetings: DesignCon, SPI, Shanghai, Taipei, Tokyo, EPEPS?, EDI-CON USA?

SAE ITC

- SAE Industry Technologies Consortia is the parent organization of the IBIS Open Forum
- IBIS is assisted by SAE employees Thomas Munns, Phyllis Gross, Dorothy Lloyd
- SAE ITC provides financial, legal, and other services
- <http://itc.sae.org/>



Task Groups

- Interconnect Task Group
 - Chair: Michael Mirmak
 - http://ibis.org/interconn_wip/
 - Develop on-die/package/module/connector interconnect modeling BIRDs
- Advanced Technology Modeling Task Group
 - Chair: Arpad Muranyi
 - http://ibis.org/atm_wip/
 - Develop most other technical BIRDs
- Quality Task Group
 - Chair: Mike LaBonte
 - http://ibis.org/quality_wip/
 - Oversee IBISCHK parser testing and development
- Editorial Task Group
 - Chair: Michael Mirmak
 - http://ibis.org/editorial_wip/
 - Produce IBIS Specification documents

IBIS Milestones

I/O Buffer Information Specification

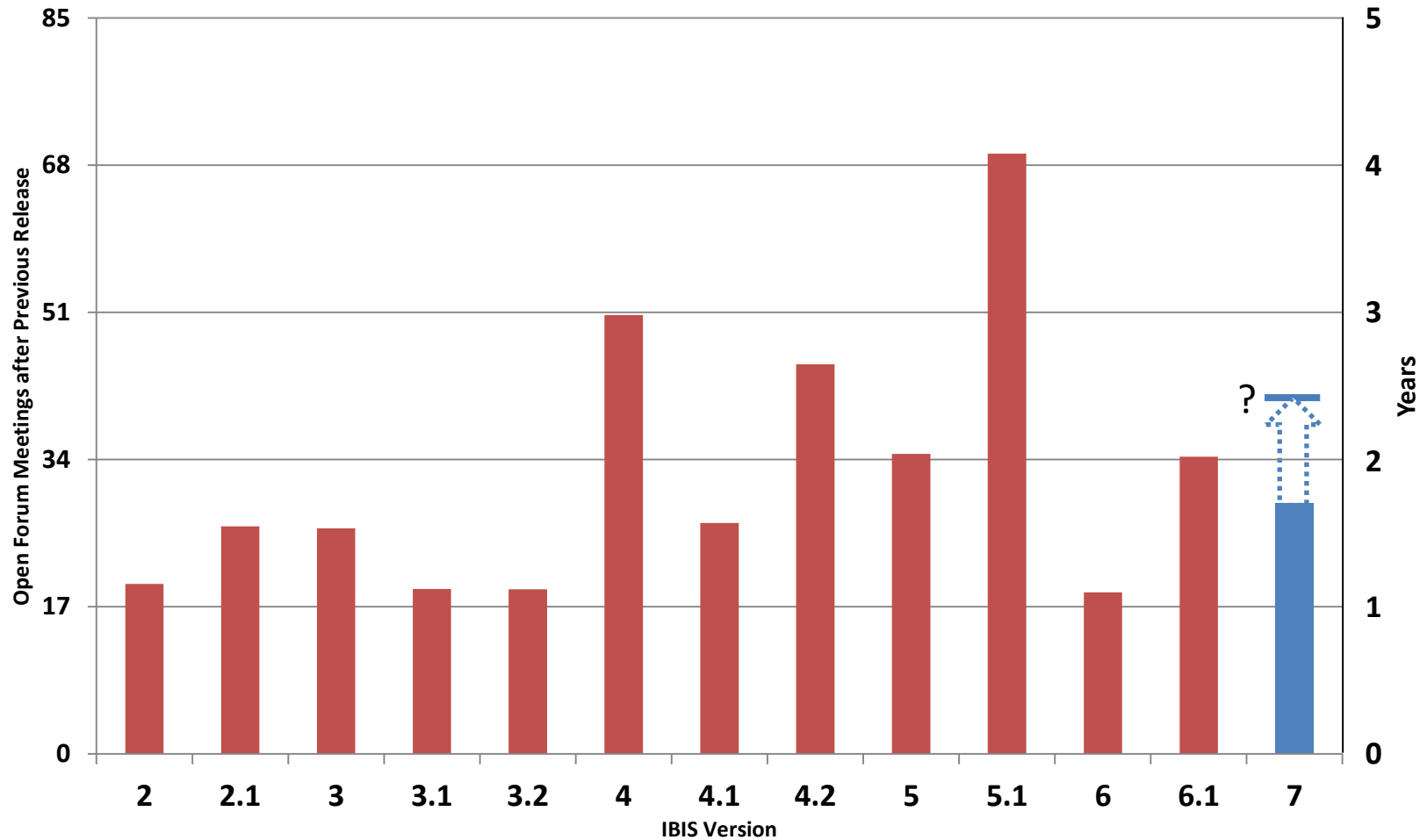
- 1993-1994 **IBIS 1.0-2.1:**
 - Behavioral buffer model (fast simulation)
 - Component pin map (easy EDA import)
- 1997-1999 **IBIS 3.0-3.2:**
 - Package models
 - Electrical Board Description (EBD)
 - Dynamic buffers
- 2002-2006 **IBIS 4.0-4.2:**
 - Receiver models
 - AMS languages
- 2007-2012 **IBIS 5.0-5.1:**
 - IBIS-AMI SerDes models
 - Power aware
- 2013-2015 **IBIS 6.0-6.1:**
 - PAM4 multi-level signaling
 - Power delivery package models
- 2017? **IBIS 7.0**

*Current
development*

Other Work

- 1995: **ANSI/EIA-656**
 - IBIS 2.1
- 1999: **ANSI/EIA-656-A**
 - IBIS 3.2
- 2001: **IEC 62014-1**
 - IBIS 3.2
- 2003: **ICM 1.0**
 - Interconnect Model Specification
- 2006: **ANSI/EIA-656-B**
 - IBIS 4.2
- 2009: **Touchstone® 2.0***
- 2011: **IBIS-ISS 1.0**
 - Interconnect SPICE Subcircuit specification

IBIS Version Development



As of 10-May-2017

Possible IBIS 7.0 Timeline

Meeting Date	Milestone
4/21/2017	Vote to establish 7.0 as the next IBIS version passes
5/12/2017	<i>BIRD review and acceptance</i>
6/2/2017	<i>BIRD review and acceptance</i>
6/23/2017	<i>BIRD review and acceptance</i>
7/14/2017	Vote to approve 7.0 BIRD set is scheduled for next meeting
8/4/2017	7.0 BIRD set accepted. Editorial work begins
8/25/2017	
9/15/2017	
10/6/2017	Editorial announces 7.0 ready. Review period begins
10/27/2017	
11/17/2017	Vote to ratify 7.0 scheduled for next meeting
12/8/2017	7.0 ratified



BIRDs Possibly Included in IBIS 7.0

BIRD	Title
147.6	Back-channel Support
158.5	AMI Ts4file Analog Buffer Models
166.2	Resolving problems with Redriver Init Flow
179	New IBIS-AMI Reserved Parameter Special_Param_Names
180	Require Unique Pin Names in [Pin]
182	POWER and GND [Pin] signal_name as [Pin Mapping] bus_label
183	[Model Data] Matrix Subparameter Terminology Correction
184.2	Model_name and Signal_name Restriction for POWER and GND Pins
185.2	Section 3 Reserved Word Guideline Update
186.3	File Naming Rules
187.3	Format and Usage Out Clarifications
188.1	Expanded Rx Noise Support for AMI
189.3	Interconnect Modeling Using IBIS-ISS and Touchstone

Green = currently accepted BIRD

BIRDs Possibly Excluded from IBIS 7.0

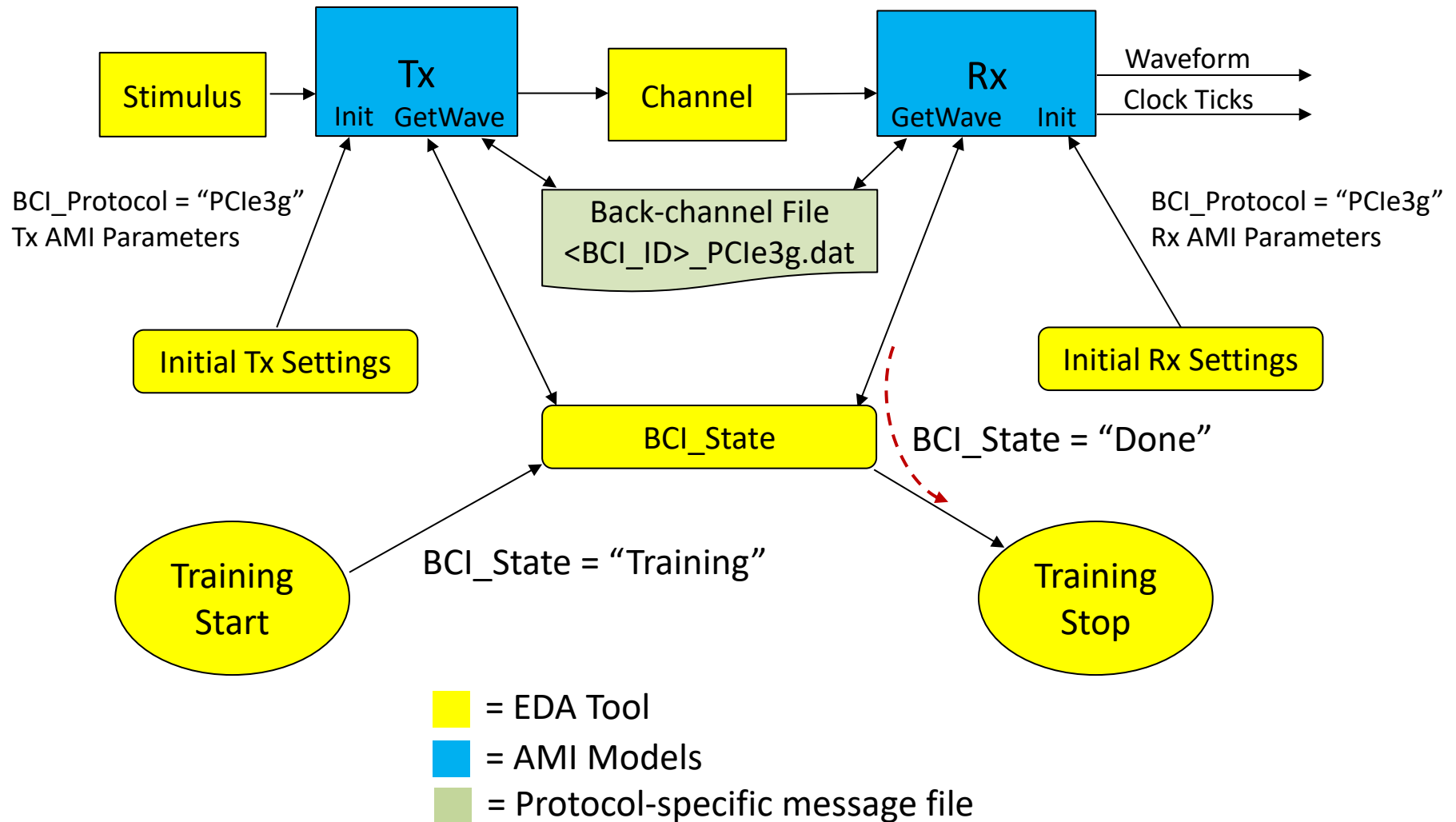
BIRD	Title
125.1	Make IBIS-ISS Available for IBIS Package Modeling
145.3	Cascading IBIS I/O buffers with [External Circuit]s using the [Model Call] keyword
161.1	Supporting Incomplete and Buffer-only [Component] Descriptions
163	Instantiating and Connecting [External Circuit] Package Models with [Circuit Call]
164	Allowing Package Models to be defined in [External Circuit]
165	Parameter Passing Improvements for [External Circuit]s
181.1	I-V Table Clarifications

White = currently not an accepted BIRD

BIRD 147.6, Back-channel Support

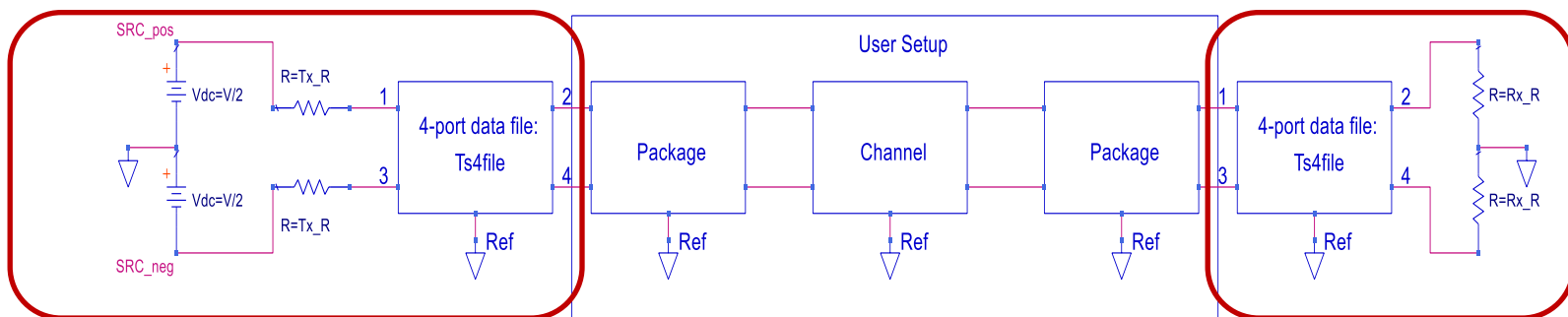
- Enable back-channel link training messages between the Tx and Rx executable models to enable link training to optimize equalization settings during time domain (AMI_GetWave) simulations.
- New AMI Parameters:
 - BCI_Protocol, BCI_State, BCI_ID,
BCI_Message_Interval_UI, BCI_Training_UI

Link Training Back-channel



BIRD 158.5, AMI Ts4file Analog Buffer Models

- Touchstone on-die analog models for IBIS-AMI models directly included from the AMI file, bypassing the analog model in the IBIS file.
- Same as “TStoneFile” models, now “Ts4file”.



BIRD 188.1, Expanded Rx Noise Support for AMI

- Bounded (uniform) Rx Noise must be supported by IBIS-AMI, separately from the existing Gaussian random Rx Noise parameter.

<i>Parameter:</i>	Rx_Noise, Rx_GaussianNoise
<i>Required:</i>	No, and Rx_Noise is illegal before AMI_Version 6.0; Rx_GaussianNoise is illegal before AMI_Version 6.2

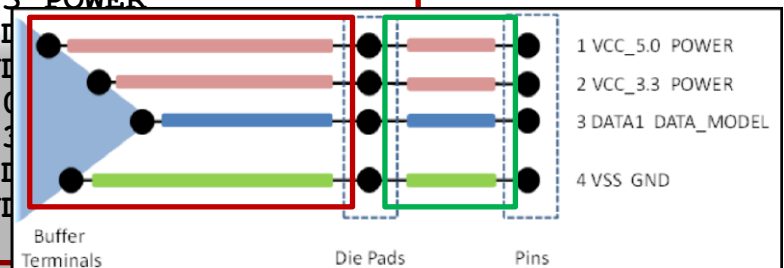
<i>Parameter:</i>	Rx_UniformNoise
<i>Required:</i>	No, and illegal before AMI_Version 6.2

BIRD 189.3, Interconnect Modeling Using IBIS-ISS and Touchstone

[Interconnect Model Set] Full_ISS_buf_pad_pin_PDN_4

```
[Interconnect Model] Full_ISS_pad_pin_IO
File_IBIS-ISS full_pad_pin_io.iss full_pad_pin_IO_typ
Number_of_terminals = 8
1 Pin_Rail pin_name 1 | VCC_5.0 POWER
2 Pin_Rail pin_name 2 | VCC_3.3 POWER
3 Pin_I/O pin_name 3 | DATA1 DATA_MODEL
4 Pin_Rail pin_name 4 | VSS GND
5 Pad_Rail pad_name VCC1 | VCC_5.0 POWER
6 Pad_Rail pad_name VCC2 | VCC_3.3 POWER
7 Pad_I/O pin_name 3 | DATA1 DATA_MODEL
8 Pad_Rail pad_name VSS1 | VSS GND
[End Interconnect Model]
```

```
[Interconnect Model] Full_ISS_buf_pad_IO
File_TS full_buf_pad_io.s8p | full_buf_pad_IO_typ
Number_of_terminals = 8
1 Pad_Rail pad_name VCC1 | VCC_5.0 POWER
2 Pad_Rail pad_name VCC2 | VCC_3.3 POWER
3 Pad_I/O pin_name 3 | DATA1 DATA_MODEL
4 Pad_Rail pad_name VSS1 | VSS GND
5 Buffer_Rail pin_name 1 | VCC_5.0 POWER
6 Buffer_Rail pin_name 2 | VCC_3.3 POWER
7 Buffer_I/O pin_name 3 | DATA1 DATA_MODEL
8 Buffer_Rail pin_name 4 | VSS GND
[End Interconnect Model]
```



[End Interconnect Model Set]

[Thank You]



IBIS Open Forum:

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

Email: ibis-info@freelists.org

We welcome participation
by all IBIS model makers,
EDA tool vendors, IBIS model
users, and interested parties.