

# IBIS Chair's Report and Roadmap



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IBIS Summit  
DAC 2005  
June 14, 2005

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

## Agenda



- \* Organizational Health
- \* Key Recent Events
- \* Status of IBIS & ICM Today
- \* Short-term Direction of IBIS
- \* IBIS Timeline
- \* Long-term Issues
- \* Thanks to Key Participants
- \* Questions
- \* Backup – Linking ICM and IBIS

# Organization Health



- \* Membership
  - IBIS Open Forum has 27 members
    - \* Four renewals are under discussion
  - Renewal window closes **June 24**
- \* ICM and IBIS Parsers
  - New ICM licensing policy: US\$1000 per license
    - \* Previous GPL license highly restrictive for EDA community
    - \* Intent now is to maintain consistency with IBISCHK parser license
  - IBISCHK parser fee now US\$2500
- \* Finances
  - Income: US\$20,168 from members, US\$1024 from parser
  - Outlays: US\$27,828 (expected for 2005)
    - \* Non-GEIA outlays: parser development (\$7600), Summits

Membership trend is good, but additional  
parser purchases needed

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# Key Recent Events



- \* ICM 1.1 Draft completed January 28
- \* IBIS 4.1 Parser released March 14
- \* ICM 1.1 Parser released March 16
  - Will be officially announced at specification approval
- \* JEITA IBIS Conference
  - Held in Tokyo at JEITA Headquarters March 24
  - Very successful!
    - \* ~40 attendees from many parts of Japanese industry
    - \* US delegates S. Huq, M. Mirmak and L. Wang
  - Thanks to **Atsuji Ito**, **Takeshi Watanabe** and **Norio Matsui** for strong support!

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## Status of IBIS & ICM



- \* IBIS
  - IBISCHK4 now at version 4.1.1
    - \* Supports IBIS 4.1 plus one bug fix
    - \* Thanks to Jon Powell for parser development and support!
  - Free executables are now available on-line
  - IBIS Quality Subcommittee now assembling list of parser improvements to be proposed for next release
- \* ICM
  - ICM 1.1 draft specification undergoing “readings”
    - \* Includes frequency-dependent RLGC
    - \* Third “reading” at June 24 Open Forum
    - \* Approval vote scheduled for July 15 Open Forum
  - ICM 1.1 parser now available on-line
    - \* “Unofficially” supports ICM 1.1 features
    - \* Thanks to Kelly Green for parser development and support!
- \* Source code licenses for both parsers may be purchased from the IBIS Open Forum

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## Short Term Direction



- \* Over the next six months...
  - Complete ICM 1.1 approval
    - \* After approval vote, EIA and ANSI balloting
  - Distribute IBIS 4.0 Cookbook
    - \* A free guide to making IBIS models
    - \* Improves on IBIS 2.1 Cookbook (1997)
    - \* Describes extraction of differential buffer data (examples: Serial ATA, PCI Express®)
    - \* Adds details on use of 3.2, 4.0 keywords (examples: [Diff Pin], [Driver Schedule])
    - \* Estimated ready for Open Forum review July 15
  - Complete draft of IBIS 4.2
    - \* What should it include? See “Long Term Direction”

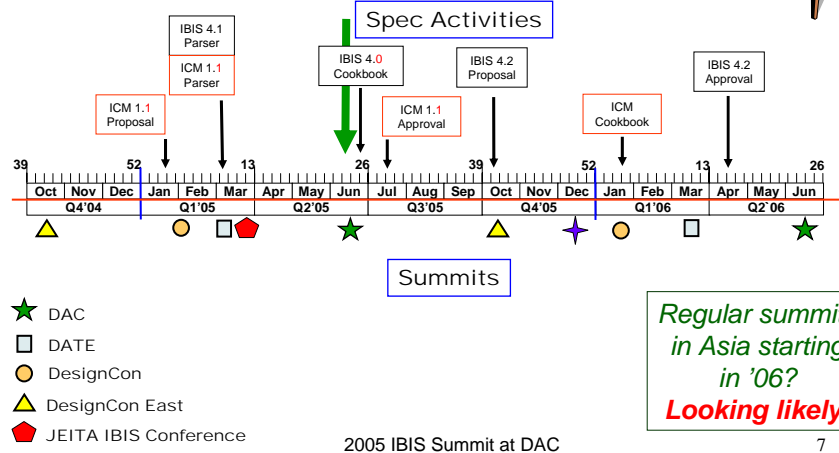
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# IBIS Timeline

Not Shown

- July, 2002: IBIS 4.0 approved
- Sep., 2003: ICM 1.0 approved
- Jan., 2004: IBIS 4.1 approved



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## Short Term Direction



### \* BIRDS Under Consideration

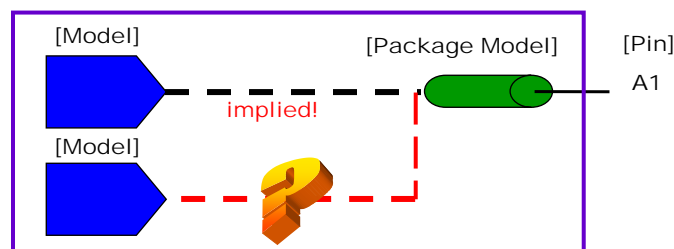
- **BIRD94: Clarifications on [Diff Pin] Parameters**
  - \* Corrects text, examples for [Diff Pin] keyword
  - \* At this point, technical changes are minor
- **BIRD95: Power Integrity Analysis Using IBIS**
  - \* Adds table for current from source through buffer
  - \* Adds RLGC values to describe buffer power-ground path
- **BIRD97/98: Gate Modulation Effect**
  - \* New parameters change I-V tables as supply voltages change
  - \* Example: Power\_coeff\_typ = 0.8
  - \* I-V table reduced by 8% for a 10% change in supply voltage
  - \* BIRD98 is table-based; BIRD97 is equation-based

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## Long Term Issues

- \* Link between ICM and IBIS
  - Need ICM for best description of power rail current data (BIRD95)
  - Many users want ICM for package modeling
  - Creating new syntax for ICM link is very difficult!
    - \* IBIS 4.0 assumptions are very limited
    - \* Each [Model] has ONLY one pin – no pad name!
    - \* Futures Committee developing working proposal



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## Long Term Issues

- \* IBIS 4.1 Cookbook
  - IBIS community needs guidance on behavioral modeling with AMS
  - IBIS 4.1 keywords can be confusing
  - See recent IBIS Reflector discussions
- \* What should the next revision of IBIS include?
  - Need power delivery (BIRD95, BIRD97/98) features
  - Need ICM-IBIS links soon
    - \* 4.1 specification actually implies ICM without naming it
  - User-defined measurements for [Ext. Circuit]?
    - \* Many tools need these for SI analysis
  - Major changes will increase cost of a new parser



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## Long Term Issues



- \* A path under discussion...
- \* IBIS 4.2 would...
  - Remove implied ICM support
  - “Clean up” language to save parser costs
    - \* BIRD94, BIRD99 and bug fixes only
- \* IBIS 5.0 would...
  - Add BIRD95, BIRD97/98
  - Add explicit support for ICM
  - Include user-defined measurements
  - Support [External Circuit] with [Model]
- \* Do we need these features earlier than 5.0?
- \* Do we need syntax for BIRD95, BIRD97/98 outside of AMS, macromodel languages?

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## Long Term Issues



- \* SPICE Macromodeling
  - What is the new syntax?
  - Can a proposal be developed quickly?
  - How does it relate to AMS?
  - Can it be more successful than transistor SPICE?
- \* Can IBIS 5.0 be “revolutionary?”
  - IBIS 1.1-4.0 syntax is very limiting
    - \* Examples: Package format, [Diff Pin], no pad names
  - Should IBIS 5.0 support all 1.1 – 4.0 features?

What does the IBIS baseline need to be  
for the next five years?  
We must live with our choices!

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## Thanks to Key Players

### \* Our members and parser owners

- Actel
- Agere
- Agilent\*
- AMD
- Ansoft
- Aplac\*
- Applied Simulation Technology
- Cadence Design Systems
- Cisco
- Fluent
- Freescale
- Hitachi ULSI Systems
- Huawei
- ICS
- IBM
- Intel
- Legend Design\*
- LSI Logic
- Marvell
- Mentor Graphics
- Micron
- NEC
- Panasonic (Matsushita)
- Samtec
- Siemens
- Signal Integrity Software
- Sigrity
- Silego
- Silvaco\*
- Synopsys
- Teraspeed Consulting Group
- Texas Instruments
- Xilinx
- Zuken



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\* non-member parser licensee

## Thanks to Key Players

### \* Our board staff

- Syed Huq – Vice-Chair
  - \* *especially for coverage during the Chair's absence*
- Randy Wolff – Secretary
  - \* *handling official documents plus EIA/ANSI relations*
- Lance Wang – Model Librarian
  - \* *keeping our external IBIS model library up-to-date*
- Bob Ross – Postmaster/"Parliamentarian"
  - \* *maintaining reflectors and our institutional memory*



... and of course to you, the IBIS Community!  
Thanks for another great year!

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**QUESTIONS?**

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**BACKUP**

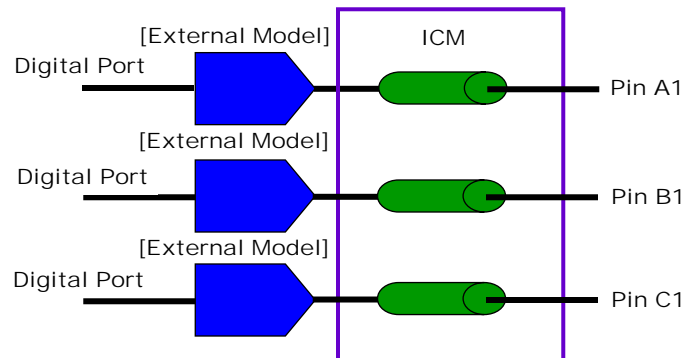
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## ICM & IBIS

- \* We must handle these four cases
- \* Case 1 – Coupling

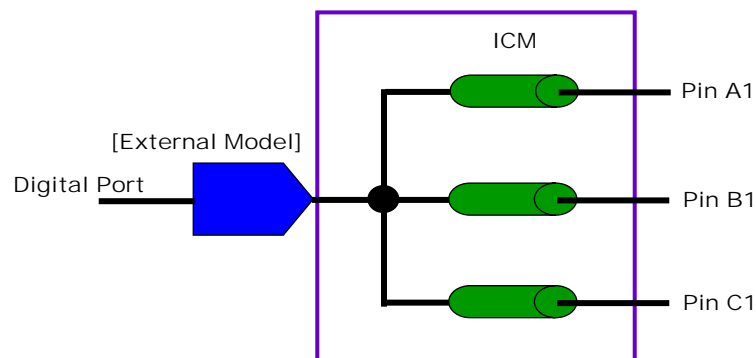


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## Four Cases

- \* Case 2 – Wired-or or “mux”
  - Multiple pins, single [Model]

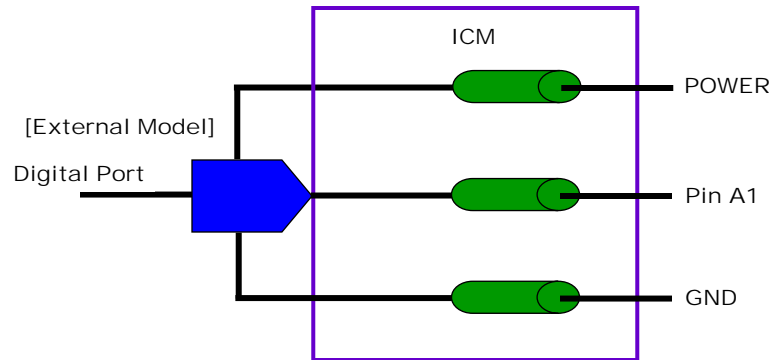


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## Four Cases

- \* Case 3 – Power distribution
  - Single model, single signal pin

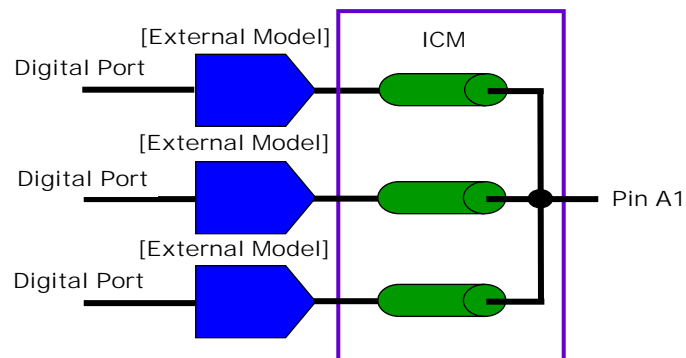


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## Four Cases

- \* Case 4 – Wired-or or “mux”
  - Single pin, multiple [Model]s

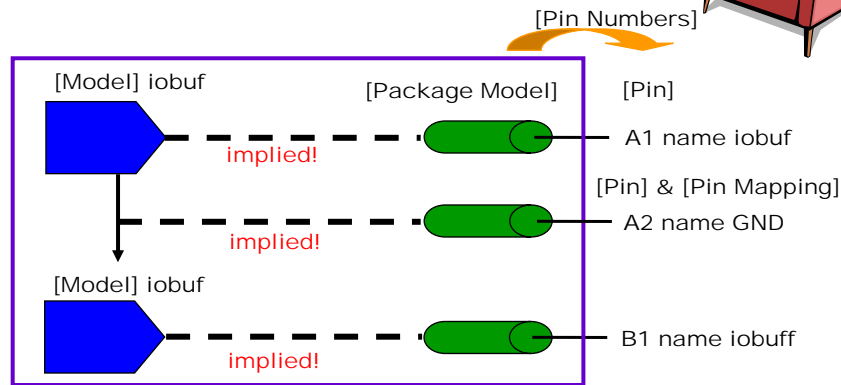


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# Packages Today

## \* IBIS 3.2 & 4.0 Approach



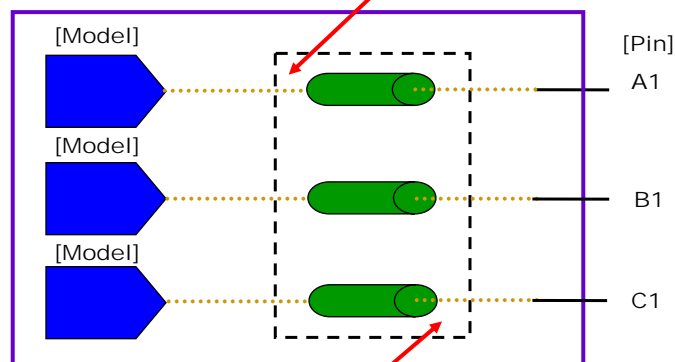
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# What do we need?

## \* The General Case...

Need explicit link to [Model] instance



Need explicit link to [Pin] instance

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