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The Direction of IBIS as a Standard

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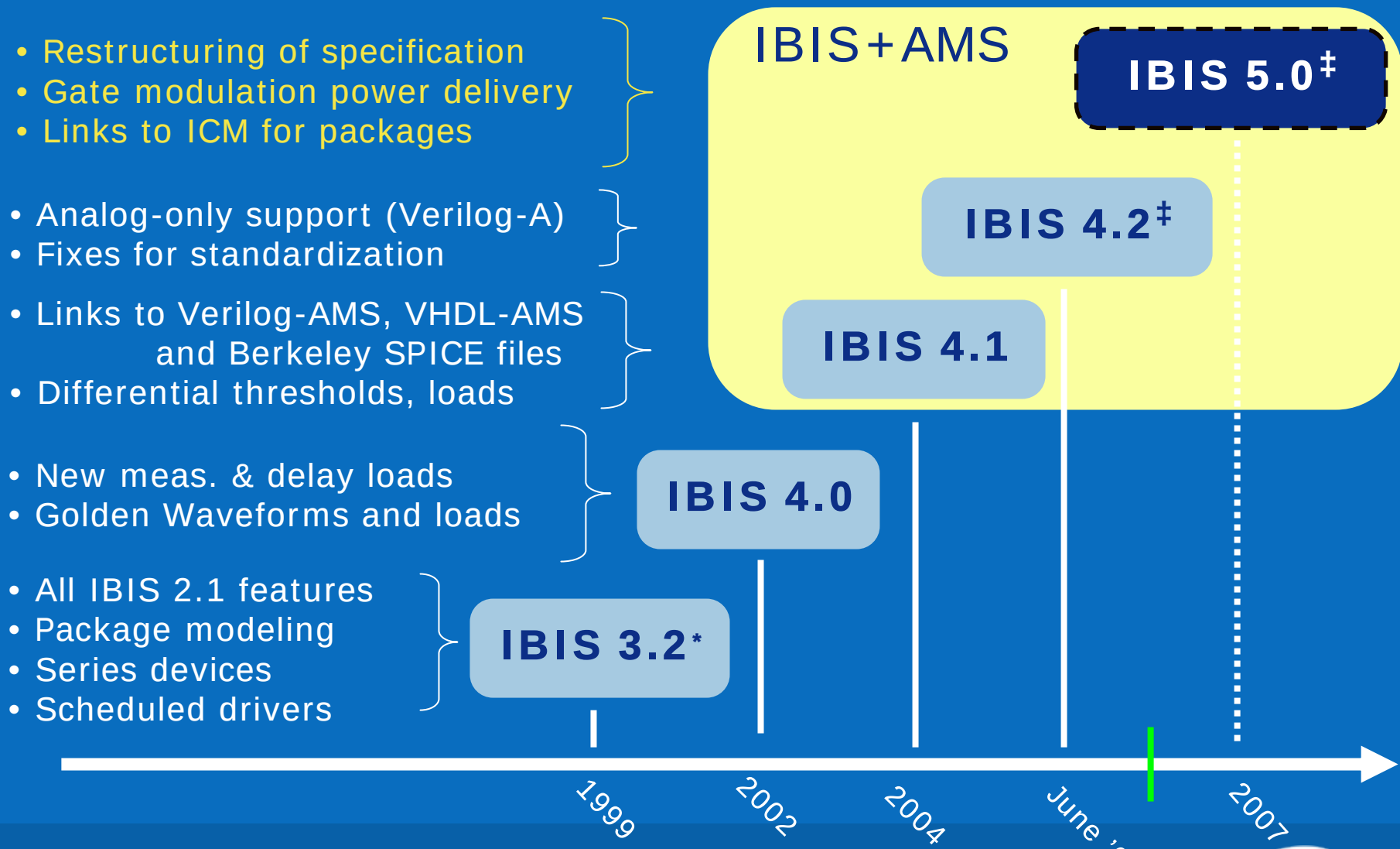
IBIS Development

* ANSI standard
‡ will be submitted for ANSI std.



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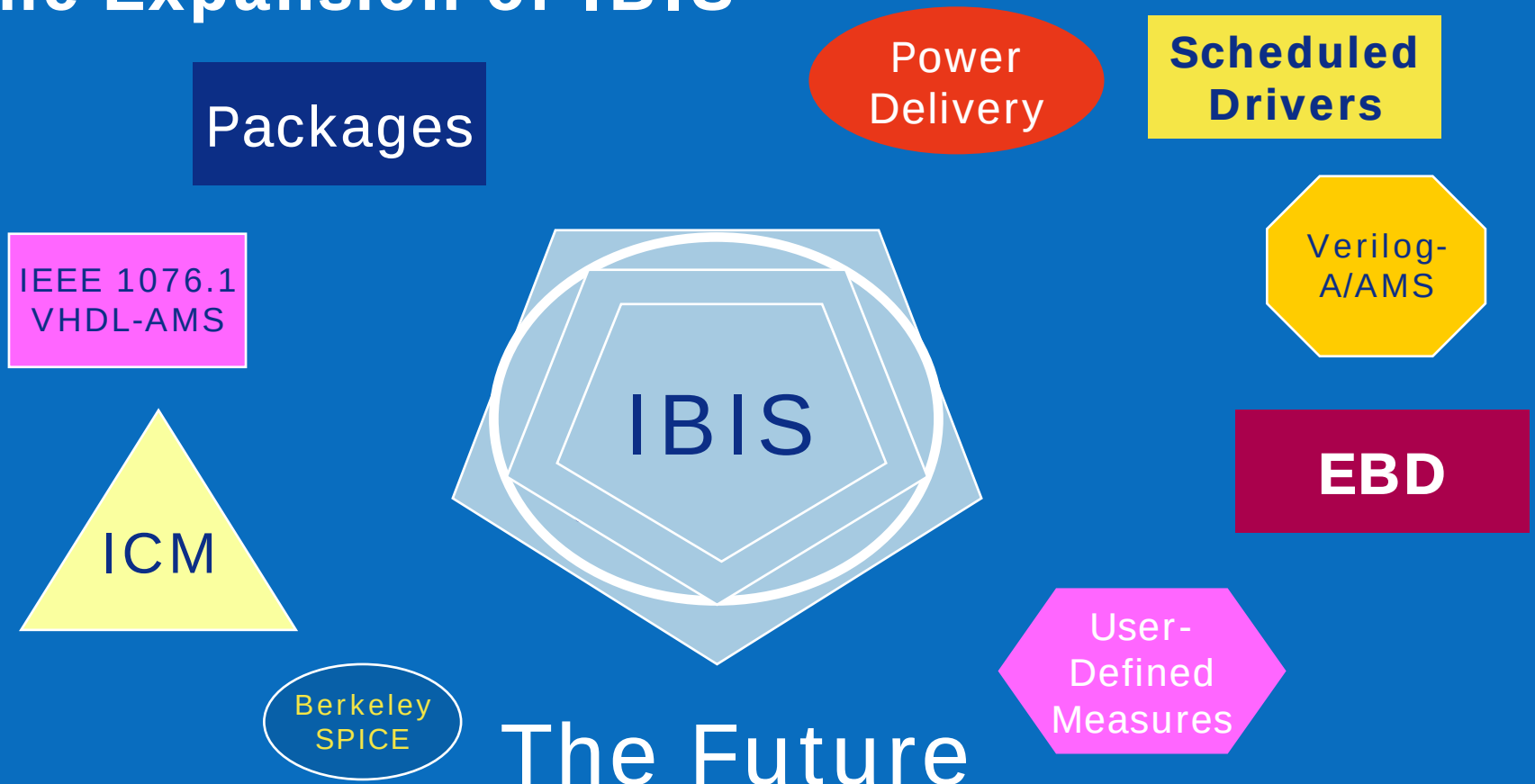
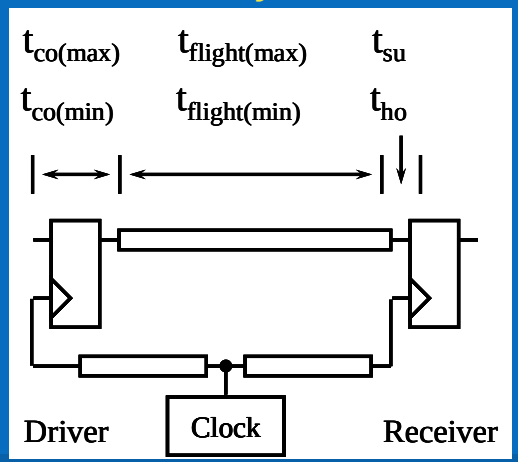
The Expansion of IBIS

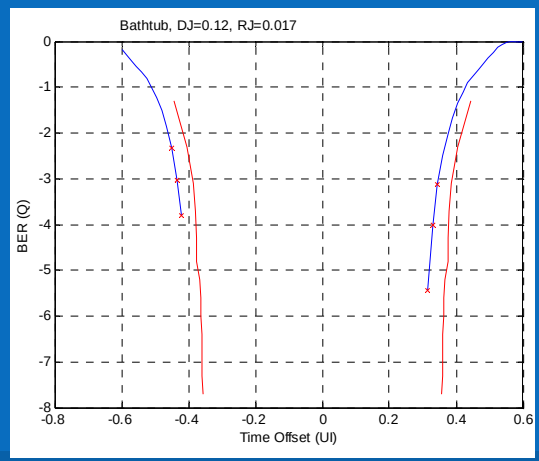


To support new circuit design technologies, IBIS has grown and will continue to grow

Industry Needs Are Changing Again

- Today's IBIS Technology Enables Today's Analysis Methods
  - *Single-ended, source-synchronous interfaces slower than 1 GHz*
  - *Setup and hold timing equations using pin measurements*
  - *Worst-case corners analyzed using a few hundred or thousand bits*
  - *Tools process analog waveform data taken at pins, pads*
- Newer Technologies Suggest New Techniques
  - *Differential, low-swing interfaces at 1 GHz and above*
  - *Eye diagram and statistical, BER analyses using 1e5, 1e6+ bits*
  - *Response of entire channel is often analyzed as a unit*
  - *Models are usually linear and may even support digital logic*





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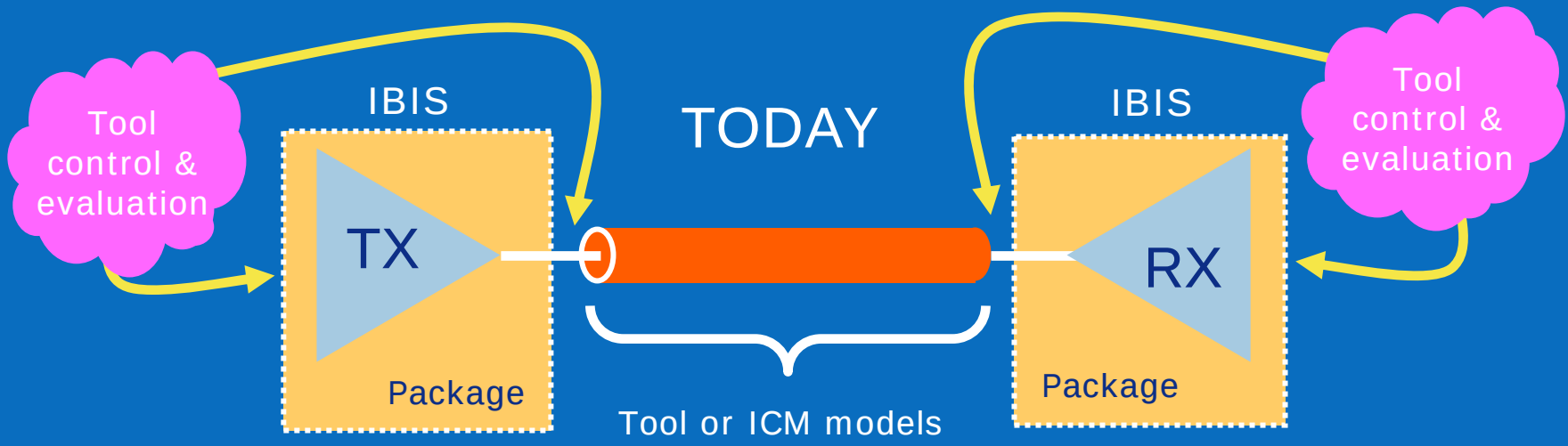
How Do We Support the New Methods?

- A new discussion in the IBIS Advanced Technology Modeling group
  - *Expand IBIS to include an API (application programming interface)*
  - *The API would link to external C code for signal processing analysis*
  - *Example: clock data recovery and bit-error rate (BER) estimation*
  - *Similar effort underway in VHDL (IEEE 1076c)*
- This would expand IBIS beyond circuits into systems



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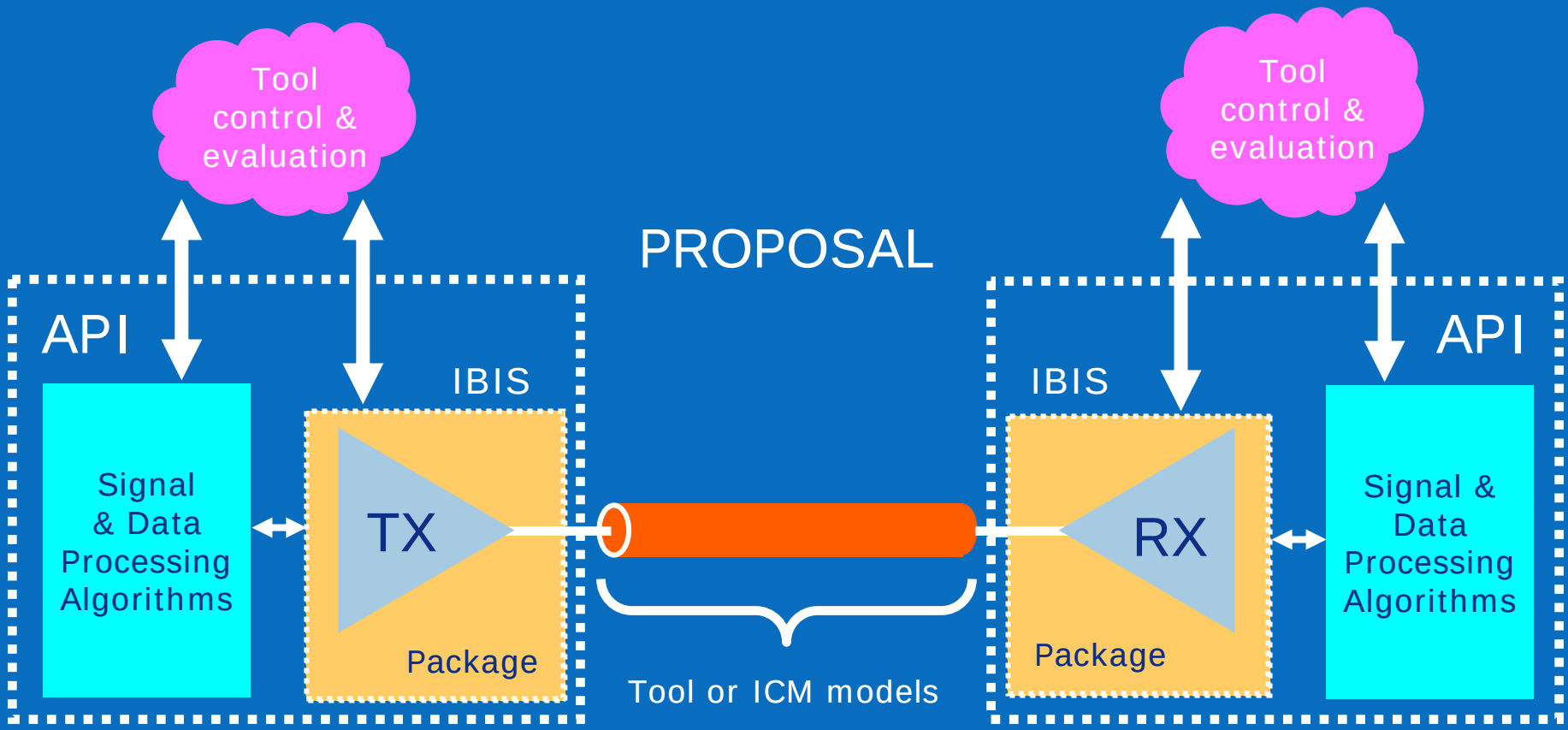

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Critical Choices

- Should IBIS remain a circuit analysis standard or expand to systems?
  - *Would creating a new specification be more appropriate?*
- Is an API needed?
  - *AMS languages under IBIS can support complex equations*
  - *Can the AMS languages handle these new analysis needs?*
- Where should the “model” end and the “tool” begin?
  - *Both AMS and an API would allow analysis procedures inside a model*
  - *Should models include both circuit functions and tool functions?*
  - *Example: tool or model API/AMS code could handle BER estimation*

This issue will be discussed at this Summit and arises frequently in the IBIS community.

Your opinion matters!

References

- Official IBIS Website, including tools, articles, IBIS & ICM specs
  - http://www.eigroup.org/ibis/
- The IBIS 4.0 Cookbook – recommended for model creation!
  - http://www.eda-stds.org/ibis/cookbook/
- IBIS Summit presentations
  - http://www.eda-stds.org/ibis/summits/index-bydate.htm
- Accelera* Verilog-AMS Working Group
  - http://www.eda-stds.org/verilog-ams/
- IEEE* 1076.1 (VHDL-AMS) Working Group
  - http://www.eda-stds.org/vhdl-ams/
- Behavioral Modeling and Simulation Conference 2006
  - http://www.bmas-conf.org/2006/
- On-line signal integrity classes & references
  - http://www.intel.com/education/highered/signal/elct762.htm
  - http://www.intel.com/education/highered/signal/elct865.htm
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