New Needs for Measurements and Parameter Passing in IBIS

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Measurement Support in IBIS

- Historically IBIS has supported measurement by adding new keywords
  - E.g. Vinh, Vinh_ac, Vinh_dc
- We are all aware of the difficulties keeping IBIS up to date to meet new measurement requirements
- Alternatives to new measurement keywords include:
  - Creating or adopting an IBIS measurement language
  - Intelligent AMS* models that make their own measurements

*Analog VHDL, Analog Verilog, VHDL-AMS, Verilog AMS or possibly ‘C’ language models
New IBIS measurements and SI tools

- Historically SI tools have supported IBIS measurements through specialized code
  - Requires the SI tool to be enhanced before support for the new keyword becomes available

- The alternatives to adding new IBIS measurement keywords can be complemented by enhancing SI tools to dynamically add new measurements

- If each new measurement were accompanied by the following information it would allow the SI tools to deploy a user friendly interface:
  - For results: keyword, description, usage, data type and valid range
  - For AMS parameters: keyword, description, usage, data type and valid data entry range
Hypothetical Example of a Result

- Monotonicity, specified by Vt integral

Keyword: “monotonic_vti”
Description: “Maximum non-monotonicity”
Usage: Constrained simulation result
Data type: floating point number
Valid Range: less than 0.021
Value (from simulation): 0.17 - Violation!
Hypothetical Example of an AMS Parameter

- Monotonicity, specified by Vt integral

Keyword: “monotonic_vti_max”
Description: “Maximum non-monotonicity”
Usage: Maximum value constraint
Data type: floating point number
Data Entry Valid Range: 0 to 2.0
Default Value: 0.0
Entered Value (from Constraint Spreadsheet): 0.021
The Big Questions

- Does the IBIS Open Forum wish to investigate alternatives to continuing to add measurement keywords?
- Does the IBIS Open Forum wish to add to the multi-lingual extensions to support better integration with SI tools?
Backup Slides
IBIS Parameter Passing

- **Model Selector**
  - Supports selection of one model from a list of available models
  - Popular for changing termination
  - Inefficient if there are lots of values as each alternative requires a full instantiation of a model

- **VHDL-AMS and Verilog AMS Multi-lingual parameters**
  - IBIS supplies parameter names
  - AMS source provides parameter name, data type and default value