**BUFFER ISSUE RESOLUTION DOCUMENT (BIRD)**

**BIRD NUMBER:** 179

**ISSUE TITLE:** New IBIS-AMI Reserved Parameter Special\_Param\_Names

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**DATE REVISED:**

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**STATEMENT OF THE ISSUE:**

The IBIS specification allows Model\_Specific parameters to be (Usage In/Out/InOut/Info) which opens the door for AMI models to include EDA tool specific features which cannot be described in the IBIS specification. This can undermine the IBIS specification's promise of model portability and interoperability. However, without these parameter types the IBIS specification would become less flexible, especially in the areas of bleeding edge technologies and innovation when new features and capabilities are not available in the specification.

**ANALYSIS PATH/DATA THAT LED TO SPECIFICATION:**

One possible solution would have been to reduce the number of allowed Usage types for Model\_Specific parameters so that models would be guaranteed to be portable or interoperable and let model makers and EDA vendors work outside the IBIS specification with non-standard model features until the IBIS specification incorporates the new features. But the issue was raised that the process of adopting new features is very slow in IBIS and there is a need to support non-standard, EDA tool specific capabilities in the IBIS specification on a temporary bases. Ideas on how to make the specification more flexible in different ways were also discussed, but will not be captured here due to the complexity of the topic.

More recent conversations revealed that the issue is really a communications or expectations problem. The natural expectation of an end user is that all IBIS models should work in all IBIS simulators, since IBIS is a specification of a behavioral buffer modeling standard. If certain models don't work in a simulator, end users tend to complain to the model maker or the EDA tool vendor or both, which is uncomfortable to all parties involved. However, if the IBIS model had a way to communicate to the user that the model includes non-standard features and will only work in certain simulators, the end user will know what to expect from the model and how to use the model successfully.

The resolution below reflects the decisions made in these discussions.

**ANY OTHER BACKGROUND INFORMATION:**

The issue was first brought up in March 2011 in the Advanced Technology Modeling Task Group. The initial BIRD draft was written with respect to IBIS v5.0 and included two issues. One of these was the problem that the specification was vague about which AMI function would return the values Usage Out or InOut parameters. This problem was indirectly addressed in subsequent revisions of the IBIS specification, and as a result this topic was removed from later versions of the BIRD draft.

The discussion of this topic was tabled in the summer of 2011 in the ATM Task Group due to higher priority issues needing to be resolved. Discussion on this topic resumed in the summer of 2015 when the ATM group decided to check whether this issue was still valid or not. The decision described in the "ANALYSIS PATH/DATA THAT LED TO SPECIFICATION" section above is the result of that effort.

The IBIS parser should issue a note when the reserved parameter Special\_Param\_Names exists in the .ami file, and an error when any of the parameter name(s) listed in Special\_Param\_Names cannot be found in the Model\_Specific parameters section in the same .ami file.

Add the following new keyword to the **GENERAL RESERVED PARAMETERS** section which begins on pg. 202:

*Parameter:* Special\_Param\_Names

*Required:* No, and illegal before AMI\_Version ?.?

*Direction:* Rx, Tx

*Descriptors*:

Usage: Info

Type: String

Format: Table

Default: (Illegal)

Description:<string>

*Definition:* This reserved parameter identifies, by name, all Model\_Specific parameters that require EDA tools to perform special handling that is not described in the IBIS specification.

*Usage Rules:* If the .ami file contains any Model\_Specific parameters associated with special operations that the model expects the EDA tool to perform beyond what is described by the IBIS specification, the name of all such Model\_Specific parameters must be listed in this reserved parameter.

*Other Notes:* A non-standard Model\_Specific parameter may require action from the user or the EDA tool that is not described in the IBIS specification.

*Example:*

(Special\_Param\_Names (Usage Info) (Type String)

 (Description "These parameters only work in my favorite simulator.")

 (Table

 ("MyParam1")

 ("MyParam2")

 ("MyParam3")

 ("MyParam4")

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