**BUFFER ISSUE RESOLUTION DOCUMENT (BIRD)**

**BIRD NUMBER:** 221

**ISSUE TITLE:** AMI\_parameters\_in Clarification

**REQUESTOR:**  Michael Mirmak, Intel Corp.

**DATE SUBMITTED:** October 26, 2022

**DATE REVISED:**

**DATE ACCEPTED:**  December 9, 2022

**DEFINITION OF THE ISSUE:**

A key sentence in the definition for AMI\_parameters\_in is ambiguous. While the complete sentence is intended to show how the parameter string passed from EDA tool to model is formatted, the beginning of the sentence can be read to suggest that all parameters, not just Usage In and Usage InOut parameters, are to be passed with their associated values between the EDA tool and the model. This has led to at least one commercial EDA tool passing all parameters, including Usage Info, to models.

**SOLUTION REQUIREMENTS:**

The IBIS specification must meet these requirements:

Table : Solution Requirements

|  |  |
| --- | --- |
| Requirement | Notes |
| 1. The usage restrictions on parameters in AMI\_parameters\_in must be unambiguous.
 |  |
| 1. The extent of control that the IBIS document, as a specification, has over EDA tools should be kept consistent.
 | IBIS as a specification generally adheres to “shall” language regarding model formatting and “should” language regarding EDA tool behavior. |

(Enumerate each requirement in the table above, adding rows as needed.)

**SUMMARY OF PROPOSED CHANGES:**

For review purposes, the proposed changes are summarized as follows:

Table : IBIS Keywords, Subparameters, AMI Reserved\_Parameters, and AMI functions Affected

|  |  |  |
| --- | --- | --- |
| Specification Item | New/Modified/Other | Notes |
| AMI\_parameters\_in text is clarified to explicitly refer to Usage In and Usage InOut. | Modified | The phrase “[a]ll the input” is changed. |
| The AMI Format description language is made consistent with other EDA tool constraints elsewhere in IBIS. | Modified | “Shall” is changed to “should” in reference to EDA tools. |

**PROPOSED CHANGES:**

Changes are shown in highlighted text below.

The initial text defining ”AMI\_Parameters\_In” in IBIS version 7.1, page 223 should be modified from:

**AMI\_parameters\_in**

The AMI\_parameters\_in argument is a pointer to a string.  Memory for the string is allocated and de-allocated by the EDA tool.  All the input from the AMI parameter definition file is passed to the algorithmic model using a string that has been formatted as using the tree structure defined below.

… to:

**AMI\_parameters\_in**

The AMI\_parameters\_in argument is a pointer to a string.  Memory for the string is allocated and de-allocated by the EDA tool.  Input parameters ~~All the input~~ from the AMI parameter definition file (i.e., Usage In and Usage InOut parameters) and their associated values are ~~is~~ passed to the algorithmic model using a string that has been formatted ~~as using~~ according to the tree structure defined below.

The initial text defining “Format” in IBIS 7.1 page 237 should be modified from:

Format <data\_format> <data> or <data\_format><data>:
Format defines the context or arrangement of the data being presented to the EDA tool. For Usage
In and Usage InOut, the EDA tool may accept data provided by the user according to the Format
specified in the .ami file. Format is required, except for the <data\_format> selection of Value as
noted below. The word “Format” as part of the Format <data\_format> <data> sequence is
optional. Unless otherwise noted, Usage Out arguments are effectively ignored by EDA tools.
However, Format may determine how Usage Out data are presented to the user by the EDA tool,
particularly when data are returned by the executable model (for example, data of Format Table;
see “Table” below). Data of Usage Dep, Usage Info or Usage Out shall not be passed to the
executable model by the EDA tool, unlike data of Usage In or InOut, which shall always be passed
to the executable model by the EDA tool.

… to:

Format <data\_format> <data> or <data\_format><data>:
Format defines the context or arrangement of the data being presented to the EDA tool. For Usage
In and Usage InOut, the EDA tool may accept data provided by the user according to the Format
specified in the .ami file. Format is required, except for the <data\_format> selection of Value as
noted below. The word “Format” as part of the Format <data\_format> <data> sequence is
optional. Unless otherwise noted, Usage Out arguments are effectively ignored by EDA tools.
However, Format may determine how Usage Out data are presented to the user by the EDA tool,
particularly when data are returned by the executable model (for example, data of Format Table;
see “Table” below). Data of Usage Dep, Usage Info or Usage Out should ~~shall~~ not be passed to the
executable model by the EDA tool, unlike data of Usage In or InOut, which should ~~shall~~ always be passed to the executable model by the EDA tool.

**BACKGROUND INFORMATION/HISTORY:**