IEEE DASC P1076.1 Working Group

http://www.eda.org/vhdl-ams/

Working Group Meeting
February 18, 2015

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Agenda

- **Call to order**
- **Approval of agenda**
- **Administrative issues**
  - Minutes of January 14, 2015 meeting
  - Review of IEEE patent policy
  - P1076.1 bank account
  - Elections
- **Project discussions and planning**
- **Next meeting**
- **AOB**
- **Adjourn**

Administrative Issues

- **Approval of minutes of WG meeting**
  - Meeting of January 14, 2015, available at http://www.eda.org/vhdl-ams
- **Review of IEEE patent policy**
  - http://standards.ieee.org/board/pat/pat-slideset.pdf
- **P1076.1 bank account**
  - Diane Mistretta, IEEE Finance Manager, has taken ownership of the request to transfer the funds to DASC
  - Current status unknown
- **Elections**
  - Secretary
    - Joachim reelected for 2 year term starting January 1, 2015
  - P&Ps
    - Update needed to remove position of Treasurer
    - No urgency

Project Discussion and Planning: Active Projects

Project	Champion	Status	Importance
LRM	Alain Vachoux		required
Mandatory changes	Ernst Christen	2 LCSs done, needs baselined LRM	required
VHPI-AMS	Ernst Christen	Part of mandatory changes, needs baselined LRM	work to support 1076.1 objects required
1076.1.1 integration	Ernst Christen	Part of mandatory changes	high
Table-driven modeling	Joachim Haase	Rework to use protected types under way	medium-high
Frequency-domain modeling	Ernst Christen	Done, needs approval	low-medium
Vector/matrix operations	Zhichao Deng	Updating after review	medium-high

LRM – Baseline P1076.1-201x LRM

- **Tasks**
  - Start from the FrameMaker sources of the P1076-2008 LRM with P1076.1-2007 text except Clause 15 (Simultaneous statements) and Annex D (Changes from IEEE Std 1076.1-1999)
  - Update condition tags to align with LCSs
  - Add Chapter 15 in Clause 11 (renamed as "Architectural statements")
  - Merge Annex D of P1076.1-2007 with Annex E of P1076-2008
  - Recreate a new index
  - Verify generated P1076-2008 and P1076.1-2207 LRMs against official LRMs
- **Expected deadline end of March 2015**

LRM – Complete Draft P1076.1-201x LRM

- **Tasks**
  - Integrate LCSs
    - Simulation cycle, external names, generic natures, new forms for Q'LTF and Q'ZTF, frequency-domain modeling, etc.
  - Integrate packages (textual overview)
    - P1076.1.1-2010
    - New packages (table-driven modeling, vector-matrix operations)
- **Status**
  - Two LCSs already available (simulation cycle, external names) but not yet reviewed
  - Frequency-domain modeling support yet to be validated
  - Other LCSs to be defined
  - New packages yet to be finalized
- **Expected deadline end of April 2015**
  - Integration of P1076.1.1-2010 and LCSs on simulation cycle and external names
  - Remainder will depend on availability of material

Mandatory LRM Changes – Overview

- **Participants**
  - Ernst Christen (champion), David Smith (former champion of VHPI, 1076.1.1 integration), Yaseen Zaidi
- **Goals**
  - Update 1076.1-specific definitions to reflect 1076-2008 enhancements
  - Extend VHPI data model and definitions to include VHDL-AMS objects
  - Integrate IEEE Std 1076.1.1 into LRM
  - Address errata
  - Minor enhancements. Candidates:
    - Other forms of 'ltf, 'ztf: with poles and zeros
    - Postponed simultaneous procedural statement: to report simul. results
    - Q'integ variant for periodic waveforms
    - Support for real number modeling: conversion of cont. waveform to RN
- **Status**
  - Analyzed integrated document to understand major alignment issues
  - Created 2 LCSs: External names, Initialization and simulation cycle

Mandatory LRM Changes – Estimates

Task	Poss. Start	Duration
Generic natures	B-LRM	4w
Unconstrained, unbounded, fully constrained natures	B-LRM	8w
External names	done	
Support for new operators in • simultaneous if statements • simultaneous case statements • sequential and concurrent break statements	now	4w
Elaboration	B-LRM	4w
Initialization and simulation cycle (VHPI integration)	done	
Miscellaneous alignments	B-LRM	8w
Errata	B-LRM	4w
Minor enhancements	now	8w
VHPI enhancements	now	6w+UML
1076.1.1 integration	now	2w
Total		48w+UML

Mandatory LRM Changes – Plan

- **Generate LCSs for major alignment items, enhancements, errata**
  - Identify and document changes by LRM section
- **VHPI**
  - LCS to define extension and LRM work
  - Update UML and C interface package
- **IEEE Std 1076.1.1 integration**
  - LCS to define work, including LRM text (derived from 1076.1.1)
  - Update packages to reflect hew home
- **Coordination**
  - Alain regarding LRM work
  - WG members for reviews
- **Resources**
  - Ernst Christen
- **Time line according to table**

Table-Driven Modeling – Organization & Goal

- **Participants in TDM subcommittee activities:**
  - Joachim Haase (champion), Ernst Christen, Arpad Muranyi, Alain Vachoux, David Smith, Thuy Tran, Zhichao Deng
- **Meetings**
  - First meeting June 2, 2010
  - Last meeting August 6, 2014
- **Twiki site**
  http://www.eda.org/twiki/bin/view.cgi/P10761/ProjectTableDrivenModeling
- **Goals given by document**
  Requirements for Table-Driven Modeling (v1.0 – 2010-11-08)
  http://www.eda.org/twiki/pub/P10761/ProjectTableDrivenModeling/TDM_Requirements.txt

Table-Driven Modeling – Status

- **Test implementation**
  - Re-implementation of TDM packages with protected types
  - Review with existing test cases is still open
  - Final check is open
- **Open issues**
  - Declaration of function interfaces to handle [TDM-R14]
    - IBIS files
    - Excel CSV files
  - Coordination with 1076 WG
  - Preparation of a final document for evaluation by the WG

Table-Driven Modeling – Plan to complete work

- **Resources**
  - Availability of stable tool for test implementation
- **Time line**
  - Decision on open issues concerning IBIS and CSV files 03 - 04.2015
  - Completion of test implementation 06.2015
    - Test with existing test-cases
  - Final check of code 08.2015
  - Collection of feedback from WG 09.2014
  - Preparation of proposal for standardization 11.2014
- **Expected results**
  - Proposal for standardization
  - Package header for TABLE_INTERPOLATION_PKG

Frequency Domain Modeling

- **Participants**
  - Ernst Christen (champion), Joachim Haase, David Smith, Zhichao Deng, Brian Mulvaney, Subramanian Sivaramakrishnan
- **Goals**
  - Extend language definition to support models whose small-signal frequency domain behavior is defined by a general complex transfer function that is an explicit function of the simulation frequency
- **Status**
  - Investigations and LCS completed
  - Needs approval by Working Group
- **Plan**
  - Review LCS
  - WG approval
  - LRM update

Vector-Matrix Operations

- **Participants**
  - Zhichao Deng (champion), David Bishop (main developer), Ernst Christen, P1076 WG
- **Goals**
  - Define a collection of vector/matrix operation useful in VHDL models
  - Create reference implementation
- **Status**
  - Original package and user manual completed 2013
  - Reviewed by P1076 WG in summer/fall of 2014
  - Currently being updated based on review comments
- **Timeline**
  - 04/2015: finalize the required functions in the package
  - 06/2015: get approval from VHDL-AMS committee
  - 08/2015: get approval from VHDL committee

Administrative Overhead

- **Lead time to get to an approved standard**
  - About 3 months to review and finalize LRM after all enhancements have been integrated
  - About 2 months for balloting
  - About 4 months for ballot resolution and recirculation ballot
  - About 2 months lead time for RevCom
- **Copyrighted material**
  - Requires letter granting permission to use copyrighted material
  - Kodak
    - FIXED_GENERIC_PKG, FIXED_PKG, FLOAT_GENERIC_PKG, FLOAT_PKG, FIXED_FLOAT_TYPES (permission exists for P1076)
    - REAL_MATRIX, COMPLEX_MATRIX, FIXED_MATRIX (coord. needed)
  - Synopsys
    - STD_LOGIC_TEXTIO (permission exists for P1076)
  - Cadence
    - Protect tool directives (permission exists for P1076)
  - Fraunhofer
    - TABLE_INTERPOLATION_PKG (coordination with P1076 needed?)

Project Planning – Summary

Project	Scheduling information
LRM • Baselined LRM • Completed LRM	 Ready by March 31, 2015 Available material April 30, 2015, rest depending on availability
Mandatory changes	Tasks that can start now: 12w duration Tasks that depend on availability of B-LRM: 28w duration Total about 1 year duration
VHPI-AMS	6w duration, can start now. Uncertainty/risk: UML update
1076.1.1 integration	2w duration, can start now
Table-driven modeling	Ready by November 2015
Frequency-domain modeling	Done
Vector/matrix operations	Ready by August 2015
Balloting, etc.	1 year after completing all projects and LRM

Project Planning – PAR

- **PAR status**
  - Granted 3/31/2011
  - Expiration 12/31/2015 → Need PAR extension
- **PAR extensions**
  - Extensions may be requested for a period of one to four years (usually one or two)
  - Extension requests shall include sufficient information to provide reasonable confidence that the project will be completed with the additional time requested in the extension
  - Extension requests will not be granted if a draft document has not been generated after four years

Project Planning – Proposed Time Line

- **Completion of projects:** **Q1 2016**
  - Based on today's data
- **Completion of LRM and other documents:** **Q2 2016**
  - Packages, UML
- **First ballot:** **Q3 2016**
- **Second ballot:** **Q1 2017**
- **RevCom:** **Q2 2017**
- **Expiration of extended PAR:** **Q4 2017**
  - 2 year extension

Next Steps

- **Baselined LRM**
- **Initiate PAR extension**
- **Handling of copyrighted material**
- **P&P revision**
- **Next meetings (announced at www.eda.org/vhdl-ams):**
  - Wednesday, March 11, 2015, 8:00am PDT (15:00 UTC)
  - Wednesday, April 8, 2015, 8:00am PDT (15:00 UTC)