



**IEEE DASC P1076.1 Working Group**  
<http://www.eda-twiki.org/vhdl-ams/>

**Working Group Meeting**  
**April 26, 2017**

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 WG Chair  
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**Agenda**

- ◆ Call to order
- ◆ Approval of agenda
- ◆ Administrative issues
  - Minutes of March 15, 2017 meeting
  - IEEE patent policy
  - Time line to approval by IEEE
- ◆ IEEE ballot
  - Ballot pool
  - Mandatory Editorial Coordination
  - Readiness for ballot
  - Ballot execution
  - Beyond the ballot
- ◆ Next meeting
- ◆ AOB
- ◆ Adjourn

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**Administrative Issues**

- ◆ Approval of WG meeting minutes
  - [Meeting of March 25, 2017](#)
  - Available at <http://www.eda-twiki.org/vhdl-ams>
- ◆ Review of IEEE patent policy
  - <http://standards.ieee.org/board/pat/pat-slideset.pdf>

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**Time Line to Approval by IEEE-SA RevCom**

#	Task	Depends on	Start Date	Duration	End Date
1	Reviews				
2	Copyright Permission Letter Synopsis missing		7/2016	10w	10/2016
3	Completion of draft LRM and packages				2/10
4	Approval of draft standard by WG	3	2/4/12	4w	3/4/12
5	Document preparation for ballot	3	2/4/12		
6	Mandatory Editorial Coordination Includes resolving LRM formatting	2, 3, 4, 5	3/4/20		3/31/9
7	Formation of ballot pool	3, 4	3/4/20	30d	4/4/19
8	First ballot	6, 7	4/1/26	1m	5/4/26
9	Public review	6, 7	4/4/26	2m	6/4/26
10	Ballot resolution	8, 9	5/4/26	6w	7/1
11	Recirculation ballot	10	7/1	2w	7/14
12	Preparation for RevCom	10	7/1		
13	Submission to RevCom	10, 11, 12			7/28
14	RevCom	13	9/7		9/7
15	PAR expires				12/31

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### Ballot Pool: Requirements

- ◆ **Participation**
  - Interest in the subject
  - An IEEE Account
  - IEEE-SA membership or payment of the per-ballot fee.
- ◆ **Balloters usually fall into one of several interest categories (e.g. producers, users)**
- ◆ **A balloting group must consist of a balance of a variety of interests, with no domination by any one group or company**
- ◆ **No interest category can comprise over one-third of the balloting group**
- ◆ **Individual balloting groups should have at least 10 members to help ensure this balance**
- ◆ **Once formed, ballot pool cannot change through duration of ballot**



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### Ballot Pool: Formation

- ◆ **Formation initiated March 19, 2017**
- ◆ **Interest categories**
  - Academic, General Interest, Government, Producer, Service Provider, User
- ◆ **Invitation**

The IEEE Computer Society Society/Standard VHDL Analog and Mixed-Signal Extensions invites you to participate in the Revision Sponsor Ballot for: P1076.1

Title: Standard VHDL Analog and Mixed-Signal Extensions

Scope: This standard defines the IEEE 1076.1(TM) language, a hardware description language for the description and the simulation of analog, digital, and mixed-signal systems. Informally called VHDL-AMS, (VHSIC Hardware Description Language for Analog and Mixed-Signal, where VHSIC stands for Very High Speed Integrated Circuits), the language is built on the IEEE 1076(TM)(VHDL) language and extends it to provide capabilities of writing and simulating analog and mixed-signal models.

Purpose: To support the design and verification of complex electronic systems containing a mixture of analog and digital devices, the IEEE 1076.1(TM) language provides, as an extension of the IEEE VHDL 1076 language, a comprehensive set of capabilities for the description and simulation of mixed-signal and mixed-technology systems. The revision adds selected new features to the language definition of the 1076.1-2007 standard, and updates the 1076.1-2007 standard to reflect changes in the VHDL 1076-2008 specification.
- ◆ **Formation of ballot pool closed on April 18, 2017**



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### Ballot Pool: Members

Name	Classification	Affiliation
Christen, Ernst	General Interest	Retired
Deng, Zhichao	Producer	Mentor Graphics
Groves, Randall	Government	Grant County Public Utility District
Haase, Joachim	User	Fraunhofer-Gesellschaft
Hoelzl, Werner	Producer	ams AG
Hupcey, Joseph	Producer	Mentor Graphics
Ikeuchi, Noriyuki	General Interest	101 Consulting Company
Karocki, Piotr	General Interest	Independent
Krolikoski, Stanley	General Interest	Cadence Design Systems, Inc.
Lai, Haobo	User	Haobo Lai Associates
Lemiengre, Lieven	Producer	Sigasi
Lewis, Jim	Service Provider	Synthworks Design Inc.
Tanaka, Genichi	User	Japan Electronics and Information Technology
Vergis, John	User	Powell Electrical Systems, Inc.



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### Ballot Pool: Composition

- ◆ **By classification**
- | Classification   | Eligible Voters | Percent |
|------------------|-----------------|---------|
| Academic         | 0               | 0.0%    |
| General Interest | 4               | 28.6%   |
| Government       | 1               | 7.1%    |
| Producer         | 4               | 28.6%   |
| Service Provider | 1               | 7.1%    |
| User             | 4               | 28.6%   |
|                  | 14              | 100.0%  |
- ◆ **By Affiliation**
- |                        |        |
|------------------------|--------|
| Mentor Graphics        | 2      |
| All other affiliations | 1 each |
- ◆ **According to my interpretation, the pool is balanced**



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## Mandatory Editorial Coordination

- ◆ **Material submitted March 19, 2017**
  - Draft document D1.1
  - Collateral files: packages, UML files
  - Copyright Permission Letters
- ◆ **Response received April 12, 2017**
  - Upon review, I have found no editorial issues that would prevent the draft from moving on to ballot
- ◆ **We are still in the process of understanding our options to mark the document such that 1076.1 text can be distinguished from 1076 text**



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## Readiness for Ballot

- ◆ **Draft LRM**
  - P1076.1/D1.2, created 4/26/2017
  - To be uploaded to IEEE-SA
- ◆ **Collateral files (packages, UML, etc.)**
  - Available on Twiki
  - Not sure yet whether the files should be sent to balloters or just a link
- ◆ **Cover letter**
  - To be completed from
    - Text used to introduce LRM for WG ballot
    - Information about how collateral files are provided
- ◆ **Anything else?**



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## Ballot Execution

- ◆ **Ballot is initiated by Chair**
- ◆ **Ballot by Ballot Pool**
  - Duration 30 days
- ◆ **Public review**
  - Duration 60 days
  - Starts concurrently with ballot by Ballot Pool, initiated by IEEE-SA



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## Beyond the Ballot

- ◆ **General principle: reach consensus**
  - 75% if eligible voters must return their ballot
    - Approve (w/wo comment); Disapprove (w comment); Abstain
  - 75% of returned votes must approve
  - Concerns, expressed by comments, must be addressed
    - Technical or editorial
  - There is no obligation to satisfy all concerns once a 75% approval has been gained
- ◆ **Ballot resolution**
  - All comments (from ballot pool and public review) must get response
  - All negative comments must be resolved
- ◆ **Recirculation ballot if**
  - Technical changes in the document
  - Negative votes/comments



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### Next Steps

- ◆ **Technical and administrative work**
  - Ballot
  - Ballot resolution
  - Work with IEEE to
    - Get web site for packages
    - Allow packages to be shipped with a product
- ◆ **Next meetings (announced at [www.eda-twiki.org/vhdl-ams/](http://www.eda-twiki.org/vhdl-ams/)):**
  - After ballot by ballot pool completes



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### P1076.1-201x Draft LRM Status: Per LCS (1)

LCS Nr.	Title	WG status	Clauses	Status
201x-01	External names	Approved	8.7	
201x-02	Simulation cycle	Approved	14.7.5	
201x-03	Architecture statements	Approved	3.3.3 11 14.5.3 Glossary	
201x-04	Types and natures	Revised	5	v2.1 integrated.
201x-05	Expressions	Approved	9	
201x-06	Sequential statements	Approved	10	
201x-07	Specifications	Revised	7	v1.1 integrated.
201x-08	Scope and visibility	Approved	12	
201x-09	Design units and their analysis	Approved	13	
201x-10	Lexical elements	Approved	15	
201x-11	Declarations	Approved	4.2.1 6 11.13 16.2.6	
201x-12	Design units	Revised	3 4	v2.1 integrated. v2.1 integrated.
201x-13	Predefined language environment	Revised	6 16	v2.1 integrated. v2.1 integrated.



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### P1076.1-201x Draft LRM Status: Per LCS (2)

LCS Nr.	Title	WG status	Clauses	Status
201x-14	Elaboration and execution	Approved	14	
201x-15	Standard tool directives	Approved	24	
201x-16	VHPI	Approved	Annex H 19	
201x-17	Integration of IEEE Std 1076.1.1	Approved	16 Annex A Annex G Annex J	
201x-18	Resolution of IRs	Approved	5 6 7	
201x-19	Frequency Domain Modeling	Approved	14 16	
201x-20	Quantities at ASP	Revised	14 16	v1.1 integrated. v1.1 integrated.
201x-21	Alternate Forms of Lapl. and Z-Dom. Transfer Functions	Revised	16	
201x-22	Clauses 1 and 2	Revised	1 2	v1.2 integrated. v1.2 integrated.
201x-23	Glossary	Submitted	Annex I	Integrated. Remaining issue with index markers.



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### P1076.1-201x Draft LRM Status: Per Clause

LRM clause	Notes
Frontmatter	Acknowledgements added
1. Overview	LCS 201x-22_v1.2 integrated.
2. Normative references	LCS 201x-22_v1.2 integrated.
3. Design entities and configurations	LCS 201x-12_v2.1 integrated.
4. Subprograms and packages	LCS 201x-12_v2.1 integrated.
5. Types and natures	
6. Declarations	
7. Specifications	LCS 201x-07_v1.1 integrated.
8. Names	
9. Expressions	
10. Sequential statements	
11. Architecture statements	
12. Scope and visibility	
13. Design units and their analysis	
14. Elaboration and execution	LCS 201x-20_v1.1 integrated.
15. Lexical elements	
16. Predefined language environment	LCS 201x-13_v2.1 and 201x-20_v1.1 integrated.
17-23. VHPI	
19. VHPI information model	
24. Standard tool directives	



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### P1076.1-201x Draft LRM Status: Per Annex

LRM annex	Version	Notes
A. Description of accompanying files		
B. VHPI header file		
C. Syntax summary		
D. Potentially nonportable constructs		
E. Changes from IEEE Std 1076.1, 2007 Edition		
F. Features under consideration for removal		
G. Guide to use of standard packages		
H. Guide to use of protect directives		
I. Glossary		LCS 201x-23 integrated.
J. Bibliography		

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### Mandatory Changes: LRM Clauses

Clause	Title	LCS	LRM Review
1	Overview of this Standard	201x-22, 25	Reviewed
2	Normative references	201x-22	Reviewed
3	Design entities and configurations	201x-03, 12	Reviewed
4	Subprograms and packages	201x-12	Reviewed
5	Types and natures	201x-04	Reviewed
6	Declarations	201x-11	Reviewed
7	Specifications	201x-07	Reviewed
8	Names	201x-01	Reviewed
9	Expressions	201x-05	Reviewed
10	Sequential statements	201x-06	Reviewed
11	Architecture statements	201x-03	Reviewed
12	Scope and visibility	201x-08	Reviewed
13	Design units and their analysis	201x-09	Reviewed
14	Elaboration and execution	201x-14, 02	Reviewed
15	Lexical elements	201x-10	Reviewed
16	Predefined language environment	201x-13, 17, 25	Reviewed
17-23	VHPI	201x-16	Reviewed
24	Standard tool directives	201x-15	Reviewed

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### Mandatory Changes: Annexes

Annex	Title	Status
A Informative	Description of accompanying files	201x-17 covers 1076.1.1, 25
B Normative	VHPI header file	Related to 201x-16
C Informative	Syntax summary	Reviewed in D0.2
D Informative	Potentially nonportable constructs	201x-24
E Informative	Changes from IEEE Std 1076.1-2007	201x-24
F Informative	Features under consideration for removal	No candidates
G Informative	Guide to use of standard packages	201x-17 covers 1076.1.1
H Informative	Guide to use of protect directives	201x-15
I Informative	Glossary	201x-23
J Informative	Bibliography	Reviewed in D0.2
K Informative	Index	Needs review

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### Status of LCSs

LCS	Title	LRM Clauses	Status	Review in LRM
201x-01	External names	8,7	Approved	Reviewed
201x-02	Simulation cycle	14,7.5	Approved	Reviewed
201x-03	Architecture statements	3.3.3, 11, 14.5.3	Approved	Reviewed
201x-04	Types and natures	5	Approved	Reviewed
201x-05	Expressions	9	Approved	Reviewed
201x-06	Sequential statements	10	Approved	Reviewed
201x-07	Specifications	7	Approved	Reviewed
201x-08	Scope and visibility	12	Approved	Reviewed
201x-09	Design units and their analysis	13	Approved	Reviewed
201x-10	Lexical elements	15	Approved	Reviewed
201x-11	Declarations	6, 11.13, 16.2.6	Approved	Reviewed
201x-12	Design units	3, 4	Approved	Reviewed
201x-13	Predefined language environment	16	Approved	Reviewed
201x-14	Elaboration and execution	14	Approved	Reviewed
201x-15	Standard tool directives	24	Approved	Reviewed
201x-16	VHPI	17-23	Approved	Reviewed
201x-17	Integration of IEEE Std 1076.1.1	Annex A, Annex G	Approved	Reviewed
201x-18	Resolution of IRs	5, 6, 7	Approved	Reviewed
201x-19	Frequency Domain Modeling	14	Approved	Reviewed
201x-20	Working with Quantities at an ASP	14, 16	Approved	Reviewed
201x-21	Alternate forms for transfer functions	16	Approved	Reviewed
201x-22	Introduction, Clauses 1 and 2	1, 2	Approved	Reviewed
201x-23	Glossary	Annex I	Approved	Reviewed
201x-24	Annexes D, E	Annexes D, E	Approved	Reviewed
201x-25	STD_LOGIC_TEXTIO	front matter, 16, A	Submitted	

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## Project Discussion: Other Projects

Project	Status	Review in LRM
Errata (IRs)	IRs 07.01...07.03: LCS 201x-18 Unfiled IR on Q'SLEW: Analyzed, incomplete	Reviewed No action
IEEE Std 1076.1.1 integration	LCS 201x-17	Reviewed
Table-driven modeling	Open Source	
Vector/Matrix operations	Open Source	
Frequency-domain modeling	LCS 201x-19	Reviewed
Minor enhancements	LCS 201x-20 Working with Quantities at an ASP	Reviewed
	LCS 201x-21 Alternate forms for 'LTF'/ZTF	No action



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## Standard Collateral: Status of Packages

- ♦ **Packages that are part of IEEE Std 1076-2008**
  - No technical changes
  - None of the P1076.1 Copyright Permission Letters requires any acknowledgement in package
  - Package copyright left unchanged for now
- ♦ **Packages migrated from IEEE Std 1076.1.1-2011**
  - Updated header in all packages
    - Uniform text
    - Uniform formatting
    - Copyright
  - Fixed erratum in package MATERIAL\_CONSTANTS
    - AMBIENT\_LUMINANCE → AMBIENT\_ILLUMINANCE
  - Created package body for package MATERIAL\_CONSTANTS
    - Informative



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