



SystemC Standardization Update Including UVM for SystemC

Accellera Systems Initiative SystemC Standards Update

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Presentation Overview

- Accellera Overview
 - Membership list
 - How to join a WG
 - Global SystemC events
- Number of IEEE-1666 standard downloads
- Accellera SystemC Working Group updates
 - Language & Transaction-Level Modeling
 - Configuration, Control & Inspection
 - Synthesis
 - Analog/Mixed-Signal
 - Verification
- Proposed Working Group information
 - Transaction Level Protocols

All Members Can Join SystemC WGs!

Corporate Members



Associate Members



Join A Working Group And Contribute!

The screenshot shows the Accellera Systems Initiative website. The Accellera logo is at the top left. Below it is a navigation menu with items: ABOUT US, TECHNICAL ACTIVITIES, DOWNLOADS, COMMUNITY, NEWS & EVENTS, FORUMS, and WORKSPACE. The 'TECHNICAL ACTIVITIES' menu is expanded, showing a list of items: Overview, Technical Committees, IEEE Activities, Acronyms and Definitions, and SystemC Synthesis. The 'Technical Committees' item is circled in red. Below the navigation is a search bar with the text 'Google™ Custom Search' and a 'SEARCH' button. The main content area is titled 'SystemC Synthesis Working Group (SWG)'. It has a 'Charter' section with the text: 'This group is responsible for the definition of a synthesizable subset of SystemC.' and lists the Chair as 'Andres Takach, Mentor Graphics' and Vice-Chair as 'Michael Meredith, Forte Design Systems'. It also has a 'Background' section with text about the 'Synthesis Subset Draft 1.3' standard. A 'Join this Working Group' section contains the text: 'If you are an employee of a member company and would like to join this working group, [click here](#) (requires login) and click Join Group. WG participation requires right of entry by the group chair.' The 'click here' link is circled in red. On the right side, there is a 'QUICK LINKS' box with two links: 'Download SystemC Synthesizable Subset Draft 1.3' and 'Group working area'. A left sidebar contains a list of SystemC-related topics, including 'SystemC Synthesis', 'SystemC Transaction-level Modeling (TLM)', and 'SystemC Verification'.

SystemC Community

- Online at <http://accellera.org/community/systemc>
- Community forums, upload area for contributions, SystemC news

Overview

SystemC

About SystemC

SystemC TLM

SystemC AMS


SystemC CCI

UVM

[Home](#) » [Community](#) » SystemC

SystemC

SystemC addresses the need for a system design and verification language that spans hardware and software. It is a language built in standard C++ by extending the language with a set of class libraries created for design and verification. Users worldwide are applying SystemC to system-level modeling, abstract analog/mixed-signal modeling, architectural exploration, performance modeling, software development, functional verification, and high-level synthesis.



COMMUNITY LINKS

- [Download SystemC](#)
- [Forums](#)
- [Uploads](#)
- [Working Groups](#)
 - [Language](#)
 - [AMS](#)
 - [TLM](#)
 - [CCI](#)
 - [Synthesis](#)
 - [Verification](#)

Global SystemC Presence 2014+

- DVCon USA March in Silicon Valley
- DAC June in San Francisco
- **DVCon India** September in Bangalore
- **DVCon Europe** October in Munich
- SystemC Japan June 19, 2015
- Accellera Day Taiwan 1st half of 2015



IEEE 1666 SystemC Downloads

IEEE STANDARDS ASSOCIATION



IEEE Standard for Standard SystemC® Language Reference Manual

IEEE Computer Society

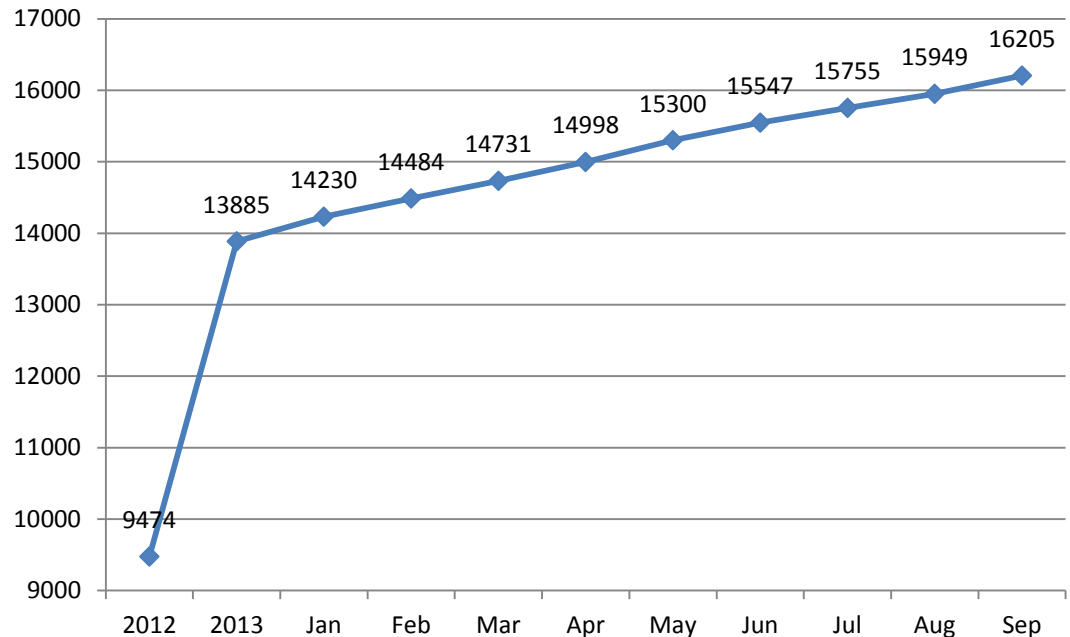
Sponsored by the Design Automation Standards Committee

IEEE
3 Park Avenue
New York, NY 10016-5997
USA

IEEE Std 1666™-2011
(Revision of
IEEE Std 1666-2005)

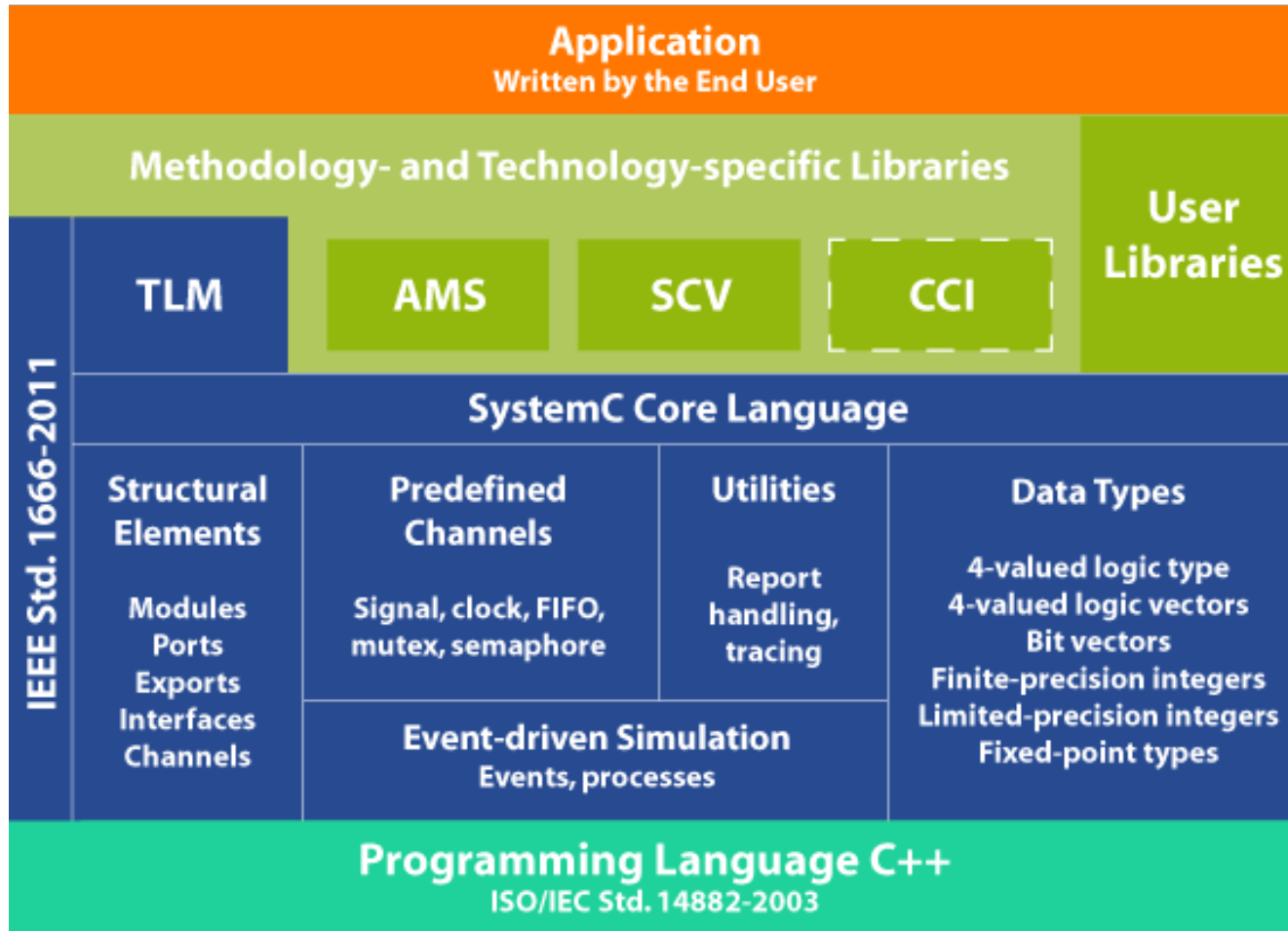
9 January 2012

Cummulative Downloads - 2012-14



<http://standards.ieee.org/getieee/1666/download/1666-2011.pdf>

SystemC Overview



--- CCI standardization effort is underway

SystemC Language & TLM WG

- **Charter:** Responsible for the definition and development of the SystemC core language, the foundation on which all other SystemC libraries and functionality are built.
- **Current status**
 - Maintenance release version 2.3.1 of the proof-of-concept simulator in April 2014 (bug fixes, experimental features)
- **Plans for 2014/2015**
 - Discuss new concepts affecting simulation performance
 - Collect, address, refine proposals and errata towards IEEE 1666-201x


SystemC 2.3.1 Maintenance Release

- Release of 2.3.1 in April 2014
 - Bug fixes for known issues wrt. IEEE 1666-2011
 - Some feature additions beyond IEEE 1666-2011 (may require explicit configuration during library build)
 - Code cleanups, deprecation of non-standard

2.3.1

Closed on 7 Feb  Last updated about 5 hours ago

Maintenance release


100% complete 0 open 71 closed

[Edit](#) [Mark as open](#) [Delete](#)

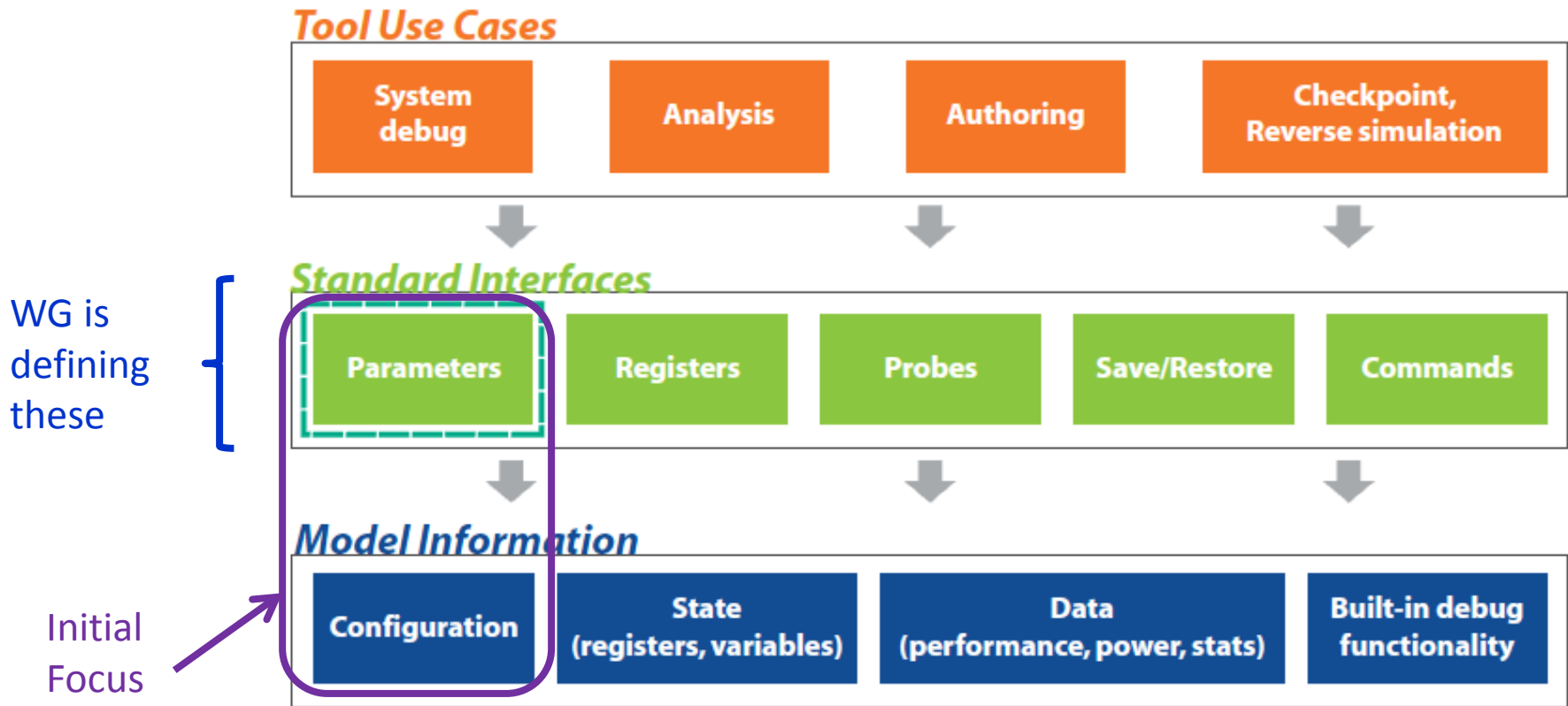
Roadmap for IEEE 1666-201x

- Next IEEE 1666 update later this decade
 - Several errata and proposals already addressed in 2.3.1
 - Formal standardization will be moved to IEEE when sufficient input is available
- LWG/TLMWG are currently collecting proposals
 - Report your favorite missing feature/extension/annoyance
 - Non-Accellera members can use the community forums
- Parallelization of SystemC could be significant driver
 - More contributors needed!

SystemC Synthesis WG

- Charter: To define the SystemC synthesis subset to allow synthesis of digital hardware from high-level specifications.
- Current status
 - Releasing draft standard for 3-month public review
 - www.accellera.org/apps/org/workgroup/swg
- **Plans for 2015**
 - Process feedback from review in Q2 2015
 - Release standard in Q3 2015
 - Start work on new topics for the second version of the standard

Configuration, Control & Inspection WG



Goal: Standardizing interfaces between models and tools

SystemC Analog/Mixed-Signal WG

- **Charter:** The SystemC AMS Working Group is responsible for the standardization of the SystemC AMS extensions, defining and developing the language, methodology and class libraries for analog, mixed-signal and RF modeling in SystemC
- **Current status**
 - Released the SystemC AMS 2.0 standard in March 2013
- **Plans 2014/2015**
 - Publish User's Guide update based on SystemC AMS 2.0
 - IEEE P1666.1 SystemC AMS Working Group started –
Accellera contributed SystemC AMS standard to IEEE-SA

SystemC Verification WG

- **Charter:** The Verification Working Group (VWG) is responsible for defining verification extensions to the SystemC language standard, and to enrich the SystemC reference implementation by offering an add-on libraries (SystemC Verification (SCV) library, etc.) to ease the deployment of a verification methodology based on SystemC.
- **Current Status**
 - Released version 2.0 of SystemC Verification library (SCV) in April 2014
- **Plans for 2014/2015**
 - Integrate the UVM verification methodology in SystemC
 - Standardization of coverage APIs (coverage groups, bins, etc.)
 - Further explorations of needs regarding SystemC/TLM

UVM SystemC

- New standard under discussion in VWG
- Materializes the UVM methodology natively in SystemC
- Open source proof-of-concept implementation and LRM have been donated to Accellera
- Language Reference Manual under review/discussion right now
 - Please join us if you are interested!

Transaction Level Protocols PWG

- Proposed Charter

Provide a blueprint for the creation of SystemC Transaction Level Protocols, provide interoperable interfaces, develop best practices for SystemC interfaces and provide a process to ensure the timely delivery of those interfaces.

- Proposed Scope

- The working group will be narrowly focused on interfaces implemented in SystemC
- We will not cover the existing TLM-2.0 'generic bus protocol'
- The scope will be to define best practices and provide a procedure to ensure that interfaces are written to that standard

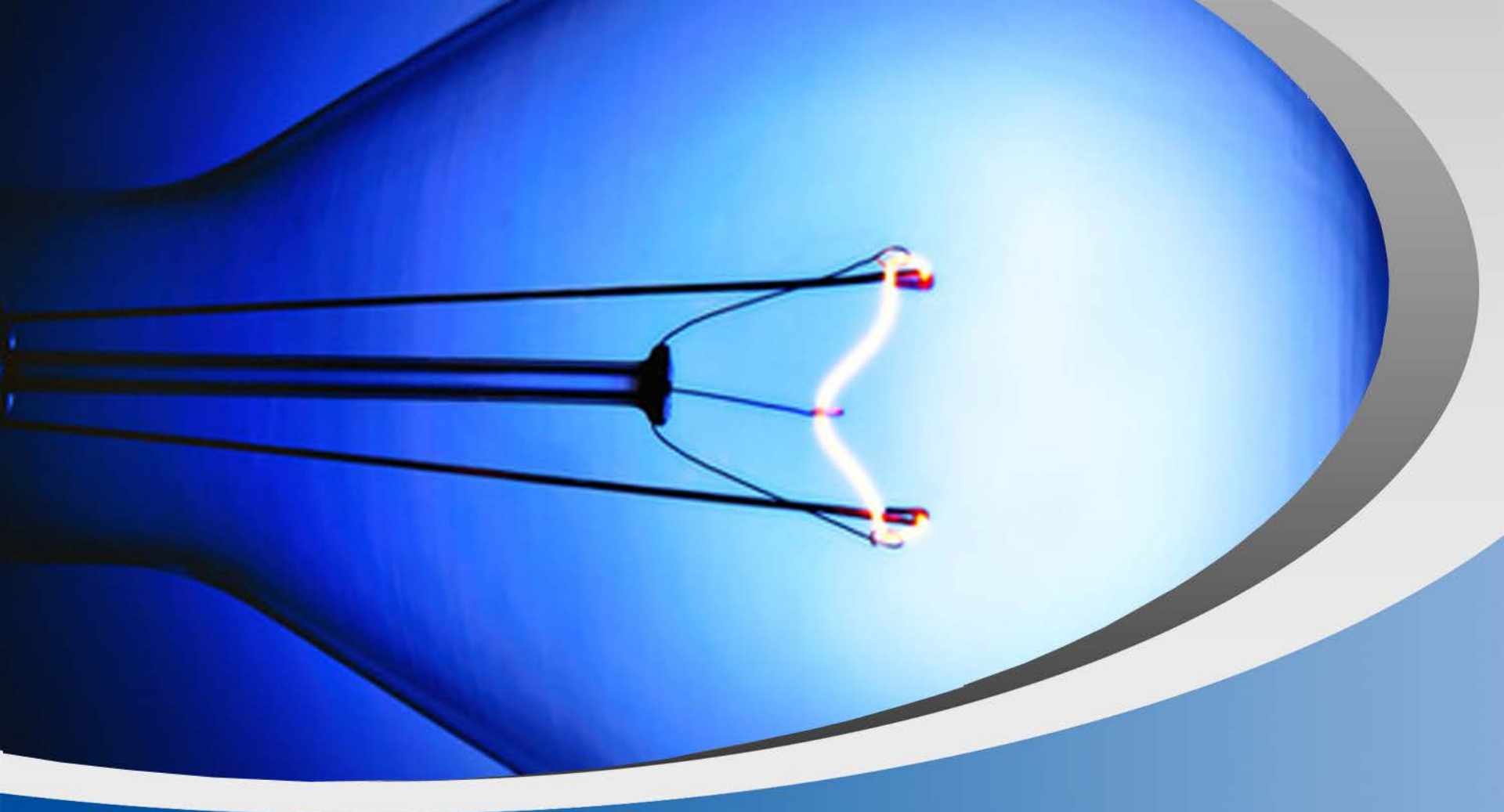
Transaction Level Protocols PWG – cont'd

- Proposed Goals
 - Establish a well-known location for SystemC Transaction Level Protocol (TLP) interfaces
 - Define and ensure TLP blueprint best practices as new TLP interfaces are standardized
 - Eliminate duplication of development effort and the necessity for adapters between divergent implementations of protocols
 - Establish timely process to incorporate contributions and feedback from wider open source community
 - Have the TLP blueprint used as the standard for interfaces developed outside the Accellera TLP working group (proprietary interfaces)

More info: http://www.accellera.org/activities/proposed_working_groups

Advancing Standards Together

- Share your experiences
 - Visit www.accelera.org and register to post on community forums at forums.accelera.org
- Show your support
 - Record your adoption of standards
- Become an Accellera member
 - Join working groups



Thank you!

