



OSCI Update and SystemC Directions

March 2006

Mike Meredith, President

www.systemc.org

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- Cadence Design Systems
- CoWare
- Forte Design Systems
- Mentor Graphics
- Philips
- Summit Design Inc
- STMicroelectronics
- Synopsys

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■ OSCI Officers

- Chairman, Alain Clouard
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- President, Mike Meredith
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- Treasurer, Stan Krolikoski
 - ◆ stank@chipvision.com
- Secretary, Paul Tauber
 - ◆ Legal counsel

SystemC Language is IEEE 1666 !

- **Approved by IEEE on Dec. 6, 2005**
- **See IEEE and OSCI press releases Dec. 12, 2005**
- **IEEE LRM available in Q2'06 from IEEE**

- **International standardization at IEEE provides clear benefits for the SystemC community**
 - **Stability of the language**
 - **Furthers SystemC adoption**
 - **Grows community and ecosystem**

Vendor Commitment to IEEE 1666

- Actis
 - Atrenta
 - ARM
 - Cadence
 - Calypto
 - Carbon
 - Celoxica
 - Chip Vision
 - CoWare
 - Doulos
 - ESLX
 - Forte
 - Jeda
 - Mentor
 - Summit
 - Synfora
 - Synopsys
 - Tensilica
- ... and more !

Partial list, based on OSCI IEEE 1666 PR Quote Sheet, 12/12/05

OSCI's Continued Role...

... Your Opportunity to Participate

- **We develop consensus within the SystemC community, and work with the IEEE with respect to the SystemC language standard to enable growth**
- **We define layered standards for SystemC to**
 - **Bring existing layers forward to IEEE 1666**
 - **Enable interoperability of transaction-level IP models and tools from various sources**
 - **Extend the usage of SystemC into new areas, as driven by our members**
- **We foster and help promote a healthy ecosystem of commercial tools, IP, silicon and systems**

SystemC Layered Standards

User	System and Semiconductor IP		
IP Providers	APIs for Specific Bus Standards	TLM Models of IP	
OSCI	TLM Transport Standard 1.0	SCV Standard 1.0	...
IEEE	1666 SystemC Core Language Standard		
ANSI	C++ Language Standard		

- Where appropriate, OSCI provides open-source, proof-of-concept libraries to promote SystemC adoption**
 - SystemC library, TLM library, SCV library...

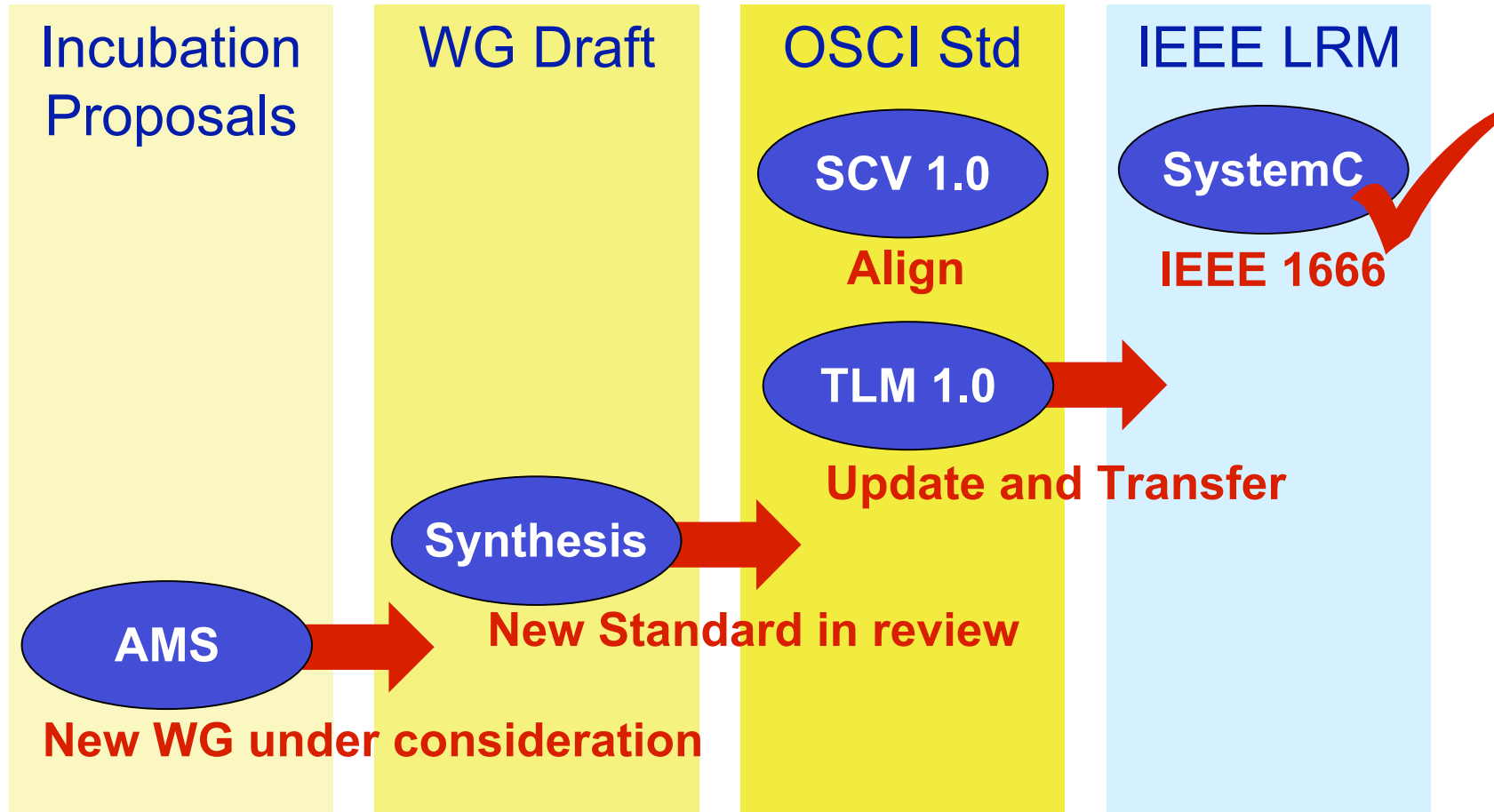


Key Objectives for OSCI (FY06)

- **Achieve standardization of IEEE 1666 SystemC**
 - Consolidating usage and promoting compatible tools
 - Aligning layered standards to this foundation

- **Continue SystemC adoption and further grow SystemC community**
 - Enable and promote interoperability of SystemC models
 - ◆ across use models, across tools
 - Guide protocol & IP owners to provide TLM view of their protocol
 - ◆ reduce barriers to SystemC models distribution
 - Facilitate interoperability of SystemC and non-SystemC models
 - ◆ eg. C-based ISS, VHDL/Verilog RTL
 - Improve information on website

OSCI Technical Agenda – FY06 Summary



Language WG Status

- **Current standard is IEEE 1666**
 - OSCI 2.1v1 proof-of-concept library has some incompatibilities
- **Library update in progress**
 - Repair all known incompatibilities with IEEE 1666
 - Remove lambda expressions
 - ◆ Substantial body of code not needed to support IEEE 1666 semantics
 - 64-bit support
- **LWG review begun in January**

TLM WG status

- **Current standard is OSCI TLM 1.0**
 - OSCI has a goal to transfer TLM standard to IEEE in FY06
- **Company representatives presented requirements for next TLM release, including internal existing solutions**
 - Intel, CoWare, ST, Mentor, ChipVision, OCP-IP, GreenSocs, Cadence, Tuebingen University, ESLX, Philips
- **Face-to-face meeting for initial code review of proposals here at DATE**

Current Areas of Activity

- IEEE standardization of TLM 1.0

How do we move transactions about ?

- Standard Bus Modeling APIs

- Generic PV
- Generic PVT
- Interrupt Modeling
- Memory Map Services
- Memory / Register Modeling

What transactions do we move about ?

- Standard Configuration and Control APIs

- Configuration Interface
- Debug Interface
- Analysis Interface

How do we *control* and *analyse* the transactions moving through the TLM ?

Verification WG Status

- **Current standard is OSCI SCV 1.0**
- **Aligning SCV kit for compatibility with 2.1v1**
 - Major contribution by Mentor Graphics
- **Items under consideration for future SCV releases**
 - IEEE 1666 compatibility
 - Coverage support
 - Simplification of existing features
 - ♦ Transaction Recording
 - ♦ Simulation Introspection
 - Temporal Assertion Support
 - Co-simulation API and debugging standard for the kernel

Synthesis WG Status

- **Latest Version: Draft 1.1.21**
 - In OSCI member review; Preparing for public review
 - Goal: produce a synthesisable subset specification standard in 2006
- **Defining a Synthesizable Subset for SystemC**
 - **C++ Base**
 - ♦ Templates, namespaces, classes, and much more...
 - ♦ Memory allocation and exception handling not supported
 - **Bit-Accurate Data Types provided by SystemC dt:**
 - ♦ Integer types: `sc_(u)int`, `sc_big(u)int`
 - ♦ Fixed-Point types: `sc_(u)fixed`
 - ♦ Logic: `sc_bv`, `sc_lv`, `sc_logic`
 - **SystemC core:**
 - ♦ Modules, events, signals, wait, ports, `SC_CTHREAD`
 - ♦ Supported reset styles for behavioral level

The logo for SYSTEM C features the text "SYSTEM C" in a white, sans-serif font, enclosed within a white, stylized speech bubble or oval shape. The logo is positioned at the top center of the slide, overlapping the yellow and blue background sections.

SYSTEM C™

THANK YOU