SystemC Evolution Day
Wrap-up and Next Steps

accellera SYSTEMS INITIATIVE

SYSTEMC™ EVOLUTION DAY
MAY 3, 2016 | MUNICH | GERMANY

Technical sessions

- **SystemC/TLM and Language Standards (C++11/14)**
- **TLM Standard for Serial Interfaces**
- **Multi-Threaded SystemC and External Interfaces**
- **UVM-SystemC & Config., Control and Inspection**

SystemC/TLM and Language Standards (C++11/14)

- Using Modern C++ in SystemC Modeling
  - Significant producitivity gain seen in modeling domain
- C++ standard in IEEE 1666-20XX
  - Base next version of standard on C++14
  - compatibility not seen too critical, as standard moves slowly anyway
- C++14 SystemC API extensions should focus on enabling designer productivity
  - Detailed feature discussions in extended minutes
  - Incremental addition of new features, without immediate compatibility break on old compilers

TLM Standard for Serial Interfaces

- Summary
  - ~20 attendees
  - Several approaches
    - TLM-2 using OSI layers to define abstraction levels.
      - Having a blueprint that should be followed by each protocol implementation.
      - Minimize GP, use extensions for protocol specific details.
    - Bottom-up – implement dedicated protocols without the need for a generic umbrella.
  - Many questions e.g.
    - Router model needed required for all protocols?
    - Which limitations are acceptable?
    - Different abstraction level due to orthogonal use cases.
      - Multiple timing points
- Next Steps
  - Address questions in TLMWG
  - Source code examples to discuss more concrete issues

Multi-Threaded SystemC and External Interfaces

- Two Views on Parallelism
  - Fine-grained automatic
    - Not really discussed in the session
  - Coarse-grained manual
    - Controlled by the modeler
- The proposed synch mechanism is a good thing and should be moved on to the standards working group
- Exact rules for how to sync simulator time varies with the use case, no consistent picture emerged in the discussions

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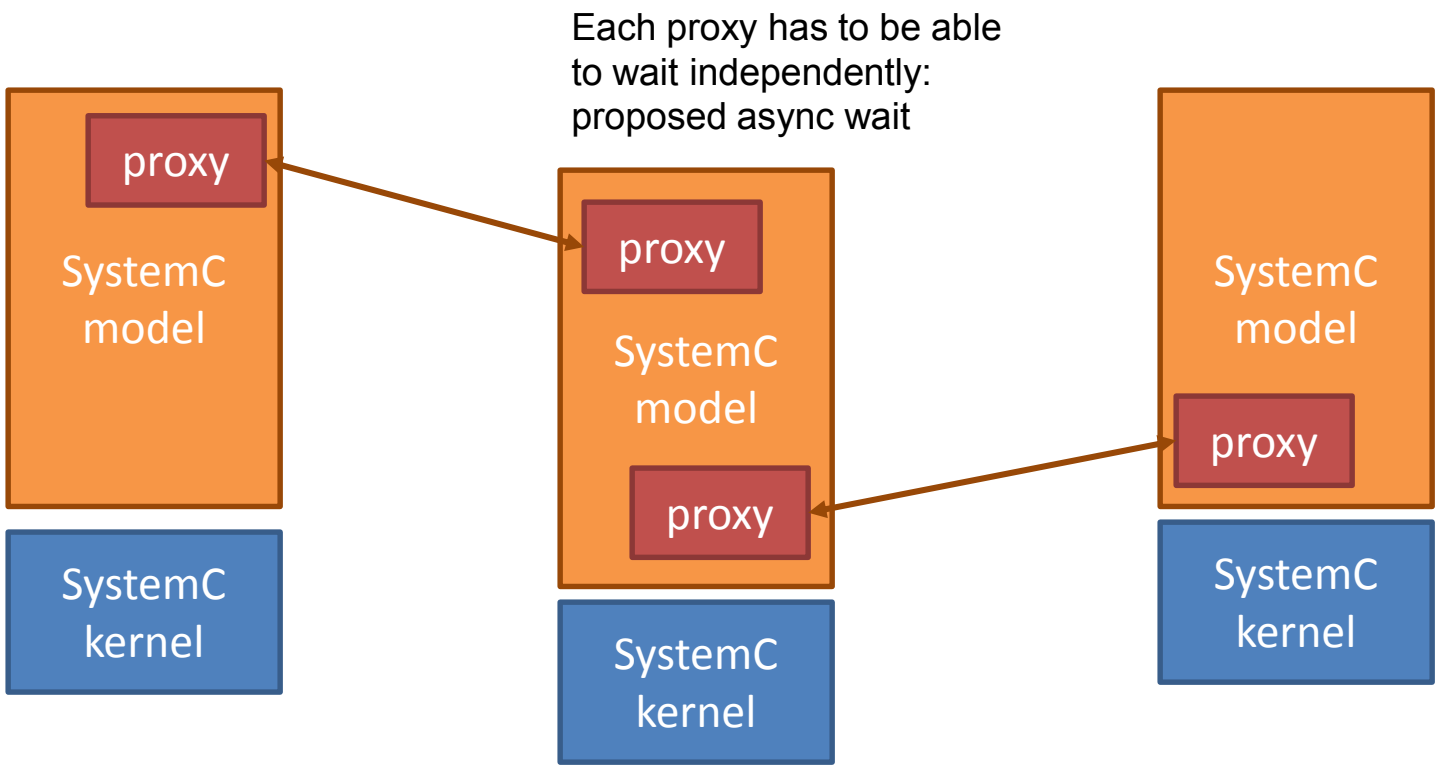
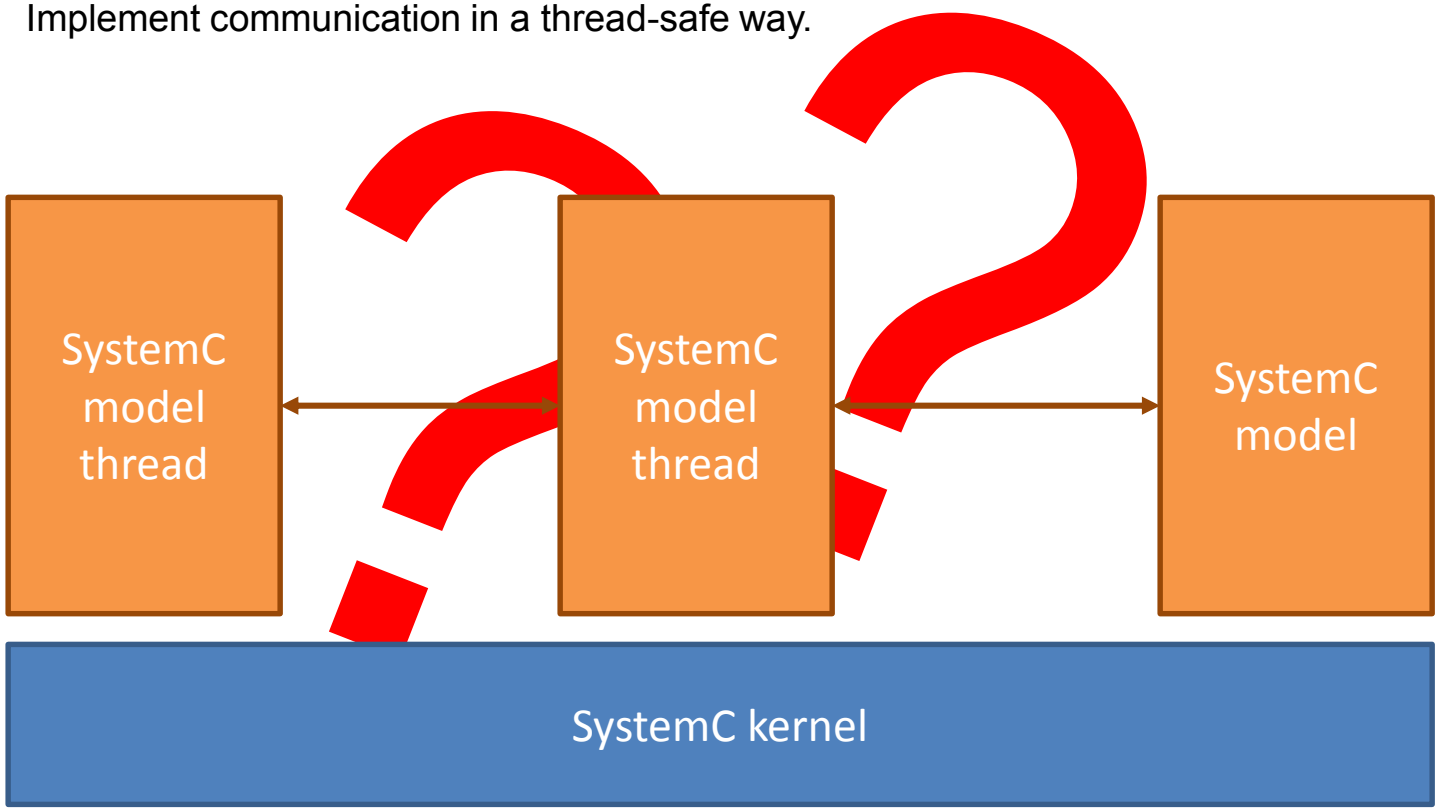
Coarse-Grained Manual

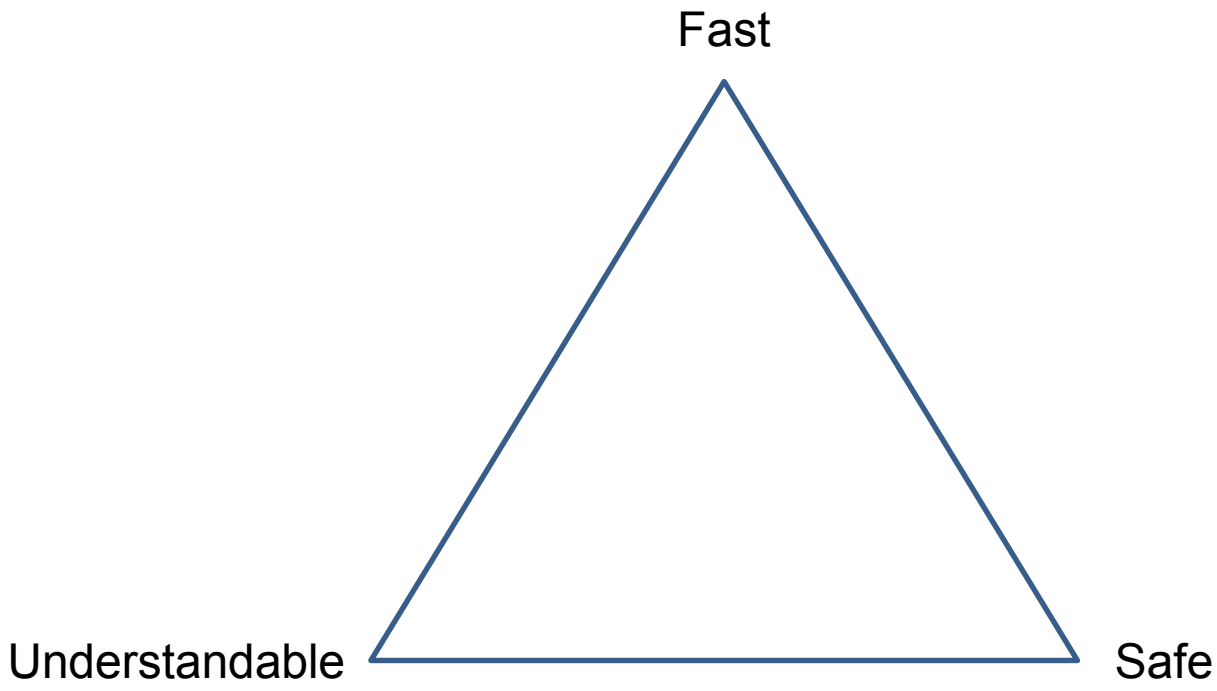


Coarse-Grained Manual II

Manually set up threads on top of a kernel, implement thread safety in some way.
Implement communication in a thread-safe way.



Trade-Off



UVM-SystemC & Config., Control and Inspection

- SystemC Configuration Use Models
  - Combine or separate UVM-SC and CCI approach
  - Use model: Tool/model interface and/or tool/testbench interface
- Register interface
  - uvm_reg versus sci_reg: combine or separate
  - Use model: connect UVM-SC backdoor to a HDL or SystemC objection via the HDL path

Main Points (Configuration)

- UVM primarily aimed at testbench (e.g. blackbox testing)
  - Type agnostic, simple set & get, global database, DUT-non-intrusive
- CCI primarily aimed at IP model configuration
  - More sophisticated (e.g. broker layer, access controls, …)
- Are both configuration developments too far to cancel one of them?
  - Can one be based on the other?
  - Both access philosophies needed to fulfil requirements
- Where/how should seed values be configured? (e.g. variation simulation)
  - Some CCI-parameter control from UVM-SC may be necessary

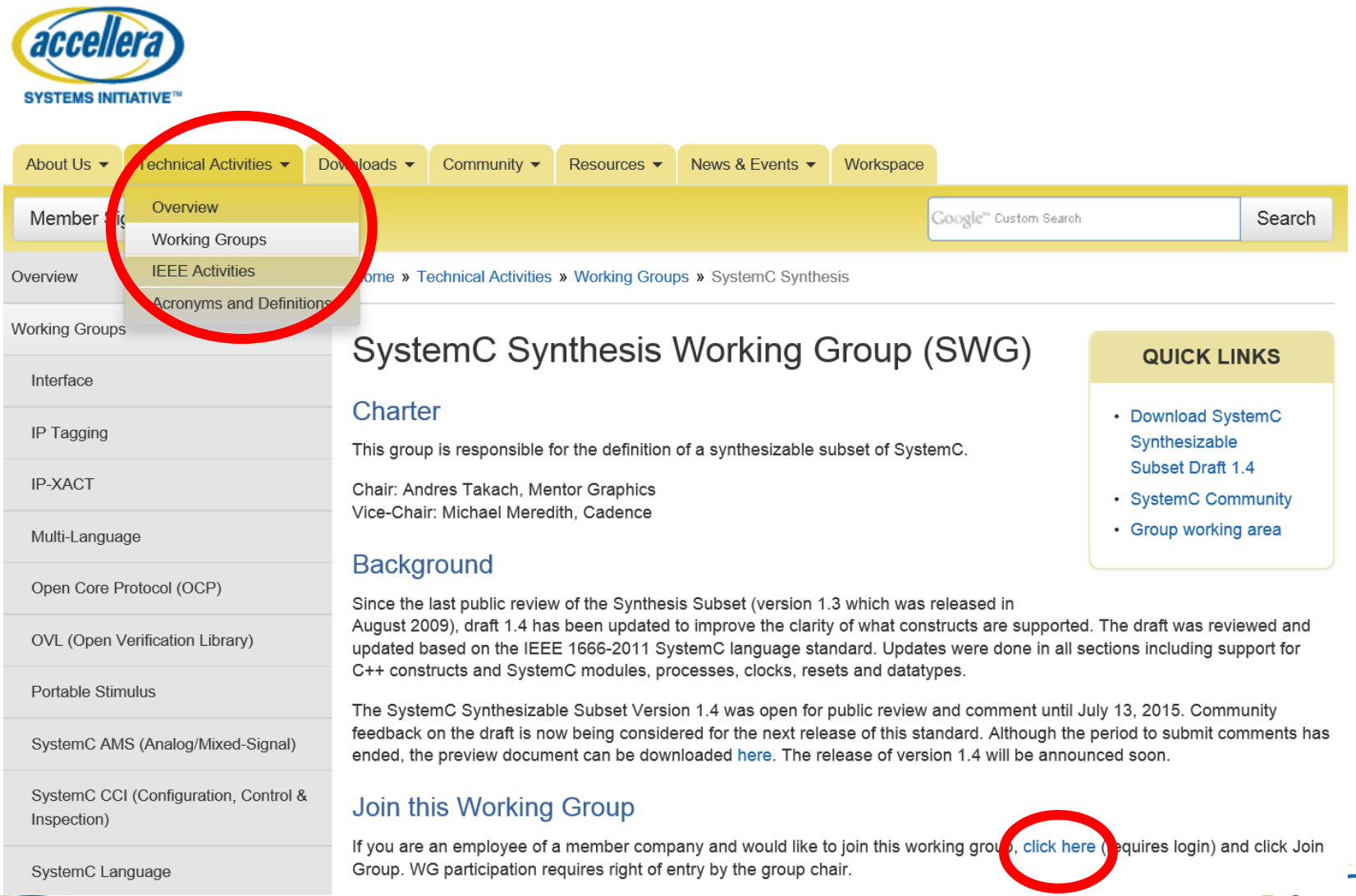
Main Points (Register interface)

- Register API available from Cadence & ST
  - Layer between model and tool

Next Steps

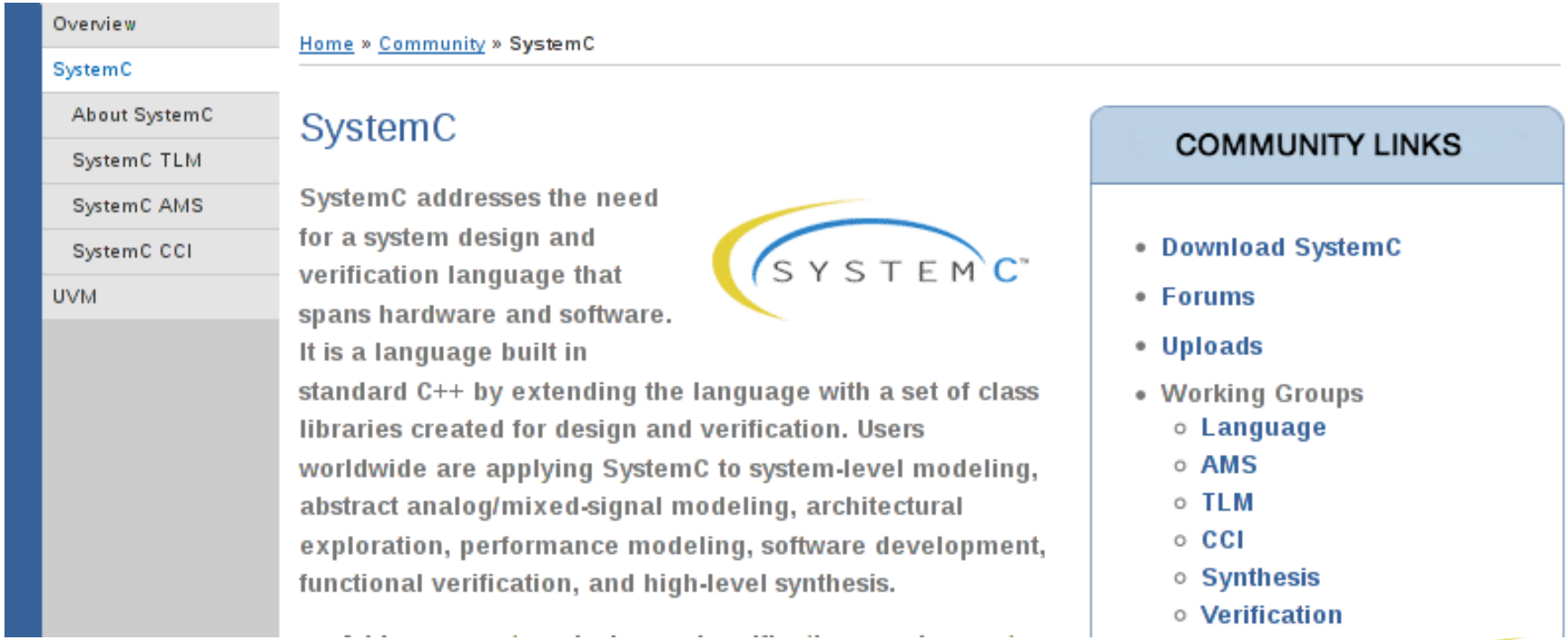
- Access of DUT configuration from the UVM-Testbench (CCI)
- Features/Function Matrix of UVM-SC and CCI config methods/APIs needed to prove if implementation can be based on each other (CCI&VWG)

Join A Working Group And Contribute!



SystemC Community

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



Advancing Standards Together

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

Dinner

- **Taj am Campeon** – http://www.taj-am-campeon.de
- **19:30 – 21:30**
- Building 10 –
  here on campus

- **Please announce your participation until 11:00!**
- *(Food/drinks not included – self-paid)*

Thank you!

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