Open SystemC Initiative (OSCI)
Moving Up To The System-Level

European SystemC Users Group

DATE 2003

Agenda

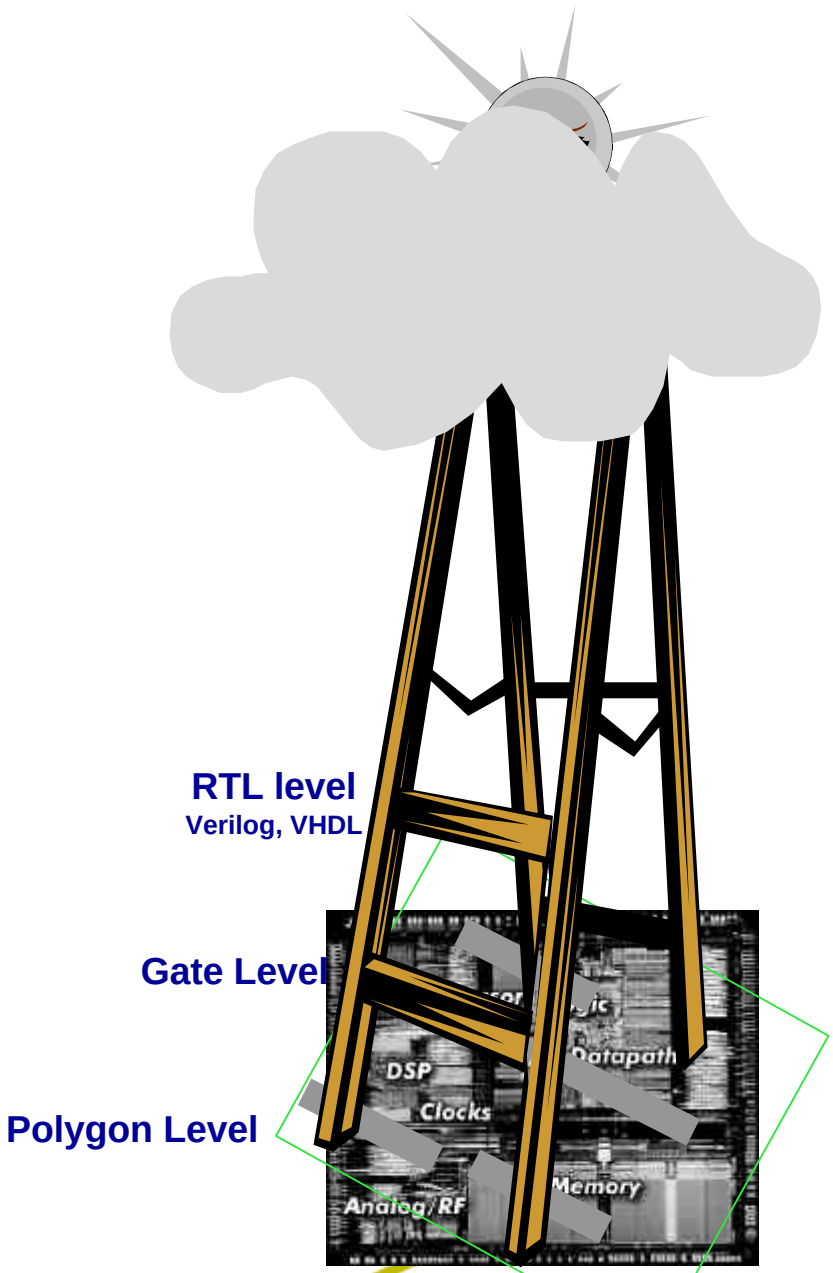
- Electronic Design: Moving Up To The System-Level
  - A Brief Historical Perspective
- OSCI: Mission, Developments & Silicon Success
  - Why SystemC?
  - Mission: Model Concept to RTL
  - OSCI Development Update and Roadmap
  - Real World SystemC Silicon Success
  - Commercial Tool Momentum
  - University Research

Moving Up To The System-Level

A Brief Historical Perspective

mid 70’s to mid 90’s

- Traditional bottom-up design replaced with HDL’s top-down design approach
- Design abstraction moves upwards
- New levels of IP emerge
- EDA tools move up to enable path to silicon



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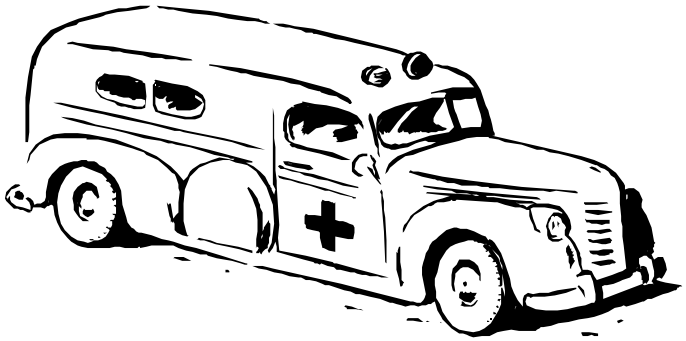
Mid 90's

- EDA confronted with:
  - System = software running on silicon!
  - Serious gap between system design & RTL



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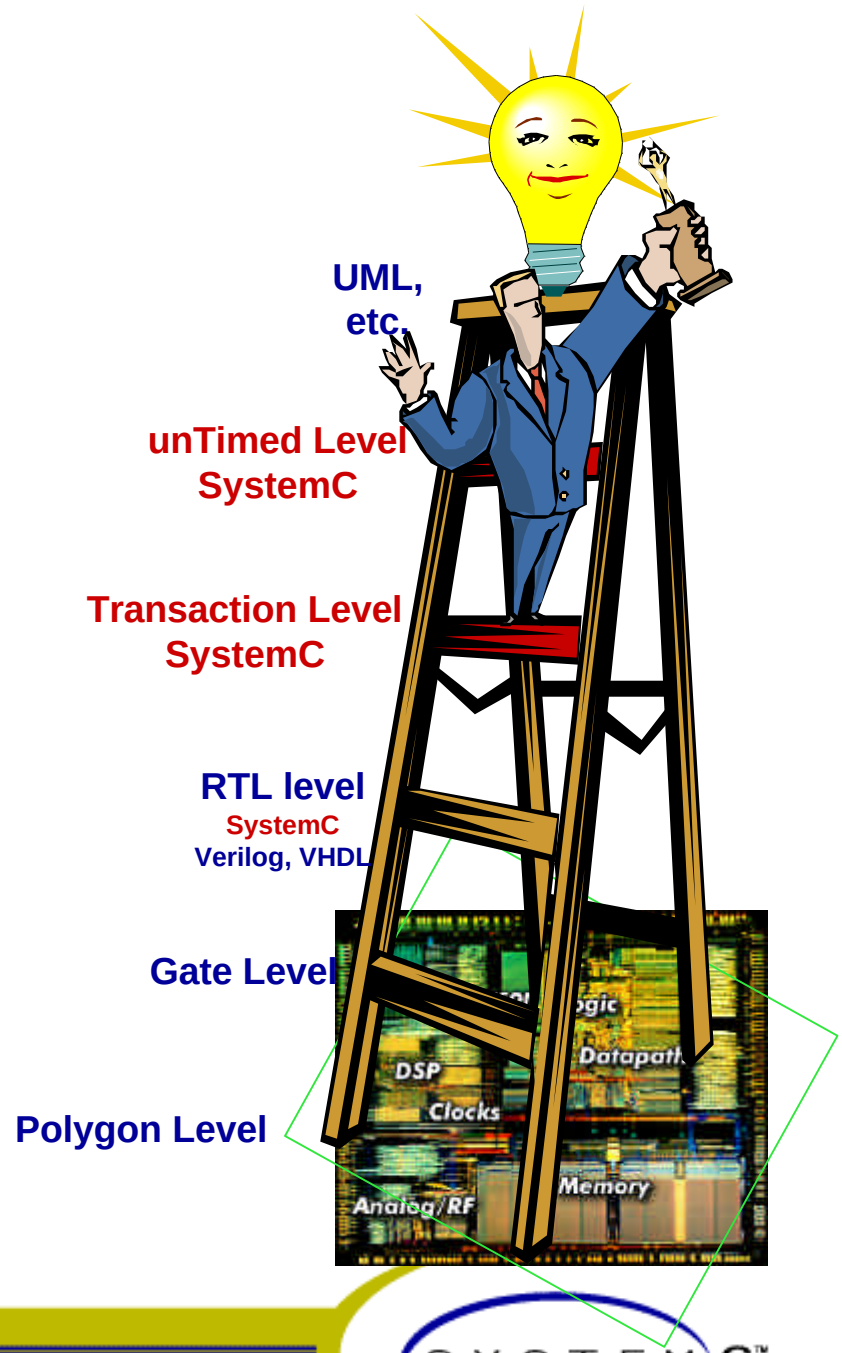
2002 & beyond

- Designs continue to move up to ever higher levels of abstraction
- SystemC bridges the gap with abstract modeling & RTL
- IP moves up, Again!
- EDA tools move up to ensure path to silicon



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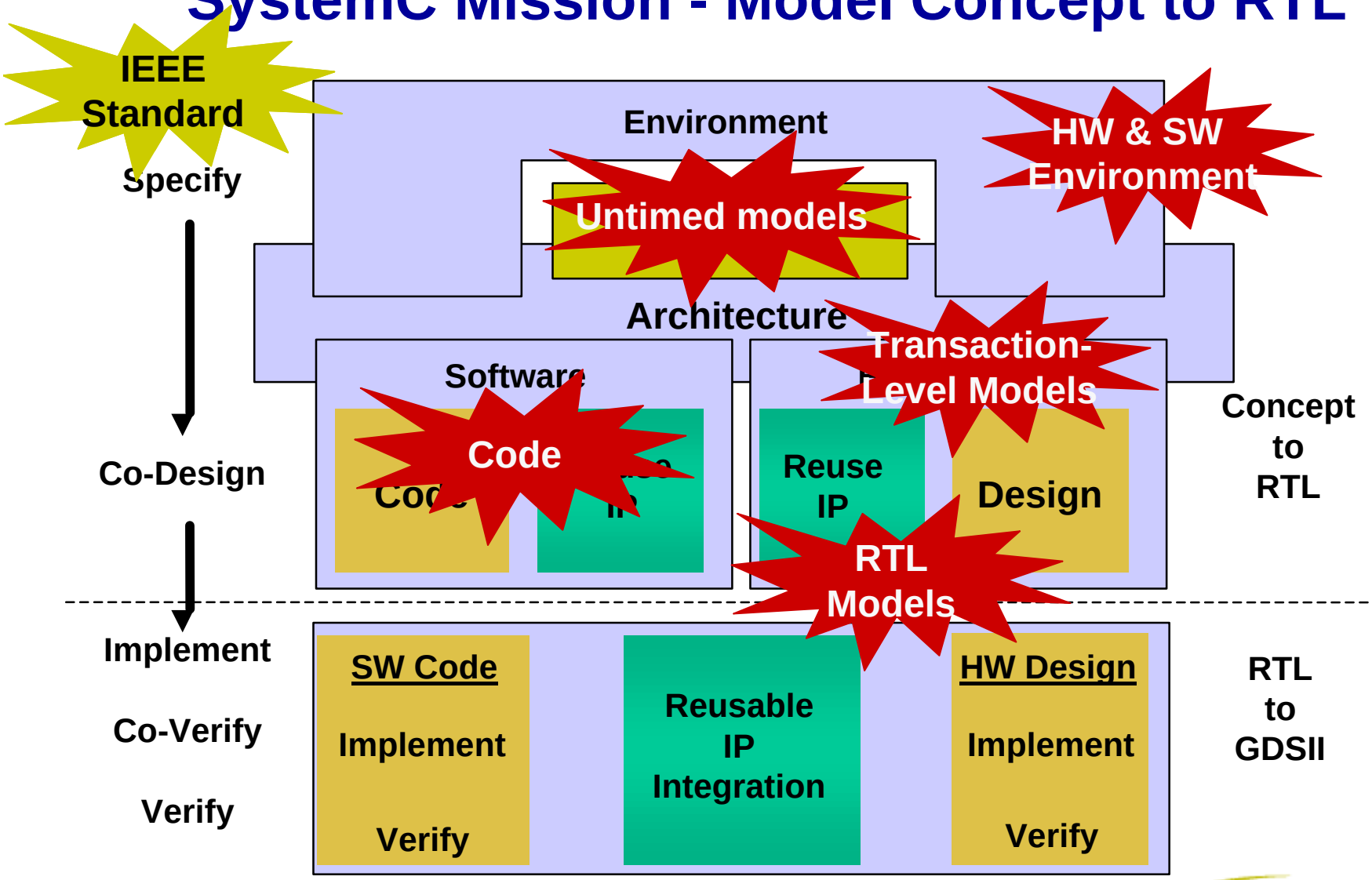
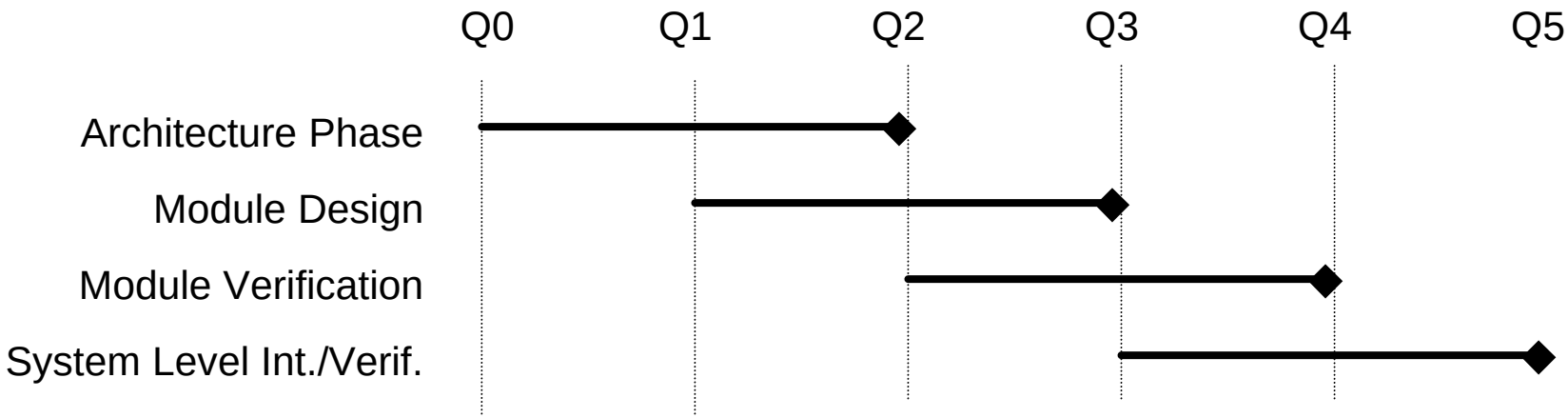
SystemC Mission - Model Concept to RTL



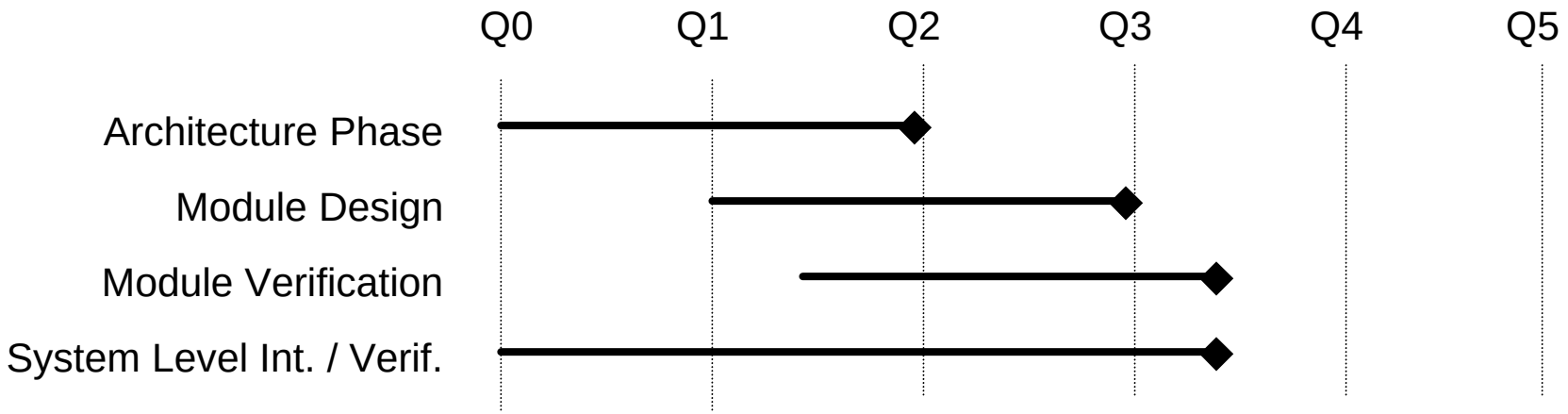
Traditional Design Flows

System Level Integration is always done last, is always on the critical path - and is always done too late for architectural redesign



Start at the System Level: Save Time / Money!

System Level Integration is done throughout the lifetime of the project



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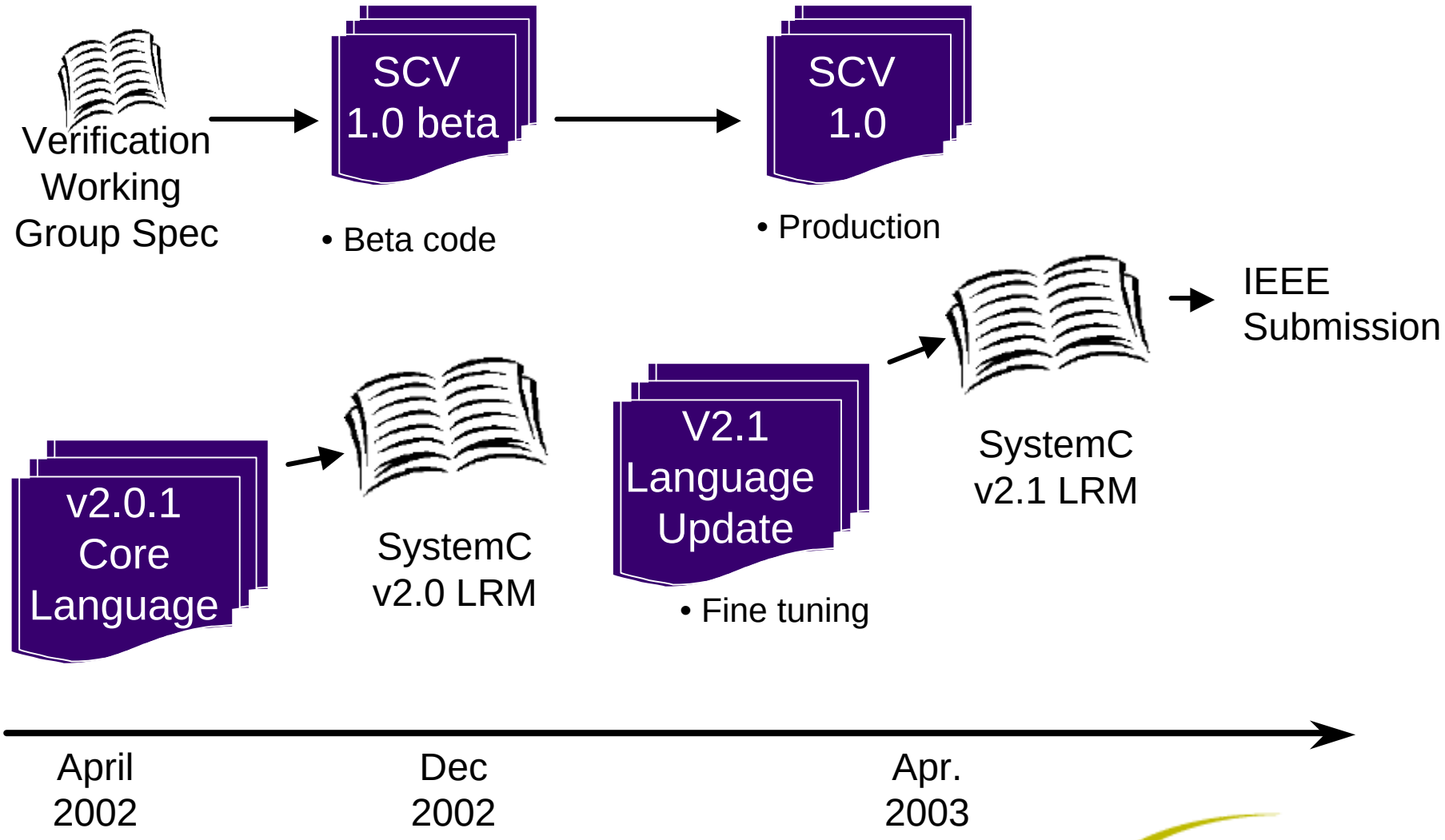
SystemC Development Highlights

- Key OSCI Development Underway
  - SCV-1.0 beta delivered
  - SystemC v2.1 underway
  - SystemC Synthesis working group formed
- Driving for submission to the IEEE in 2003
  - Complete LRM for SystemC v2.0 under review within OSCI
  - LRM for SystemC v2.1 => mid 2003
- SystemC success stories featured at ICCAD, Japan Users Group Meeting

SystemC Roadmap 2002-2003



Other OSCI activities – 2003-2004

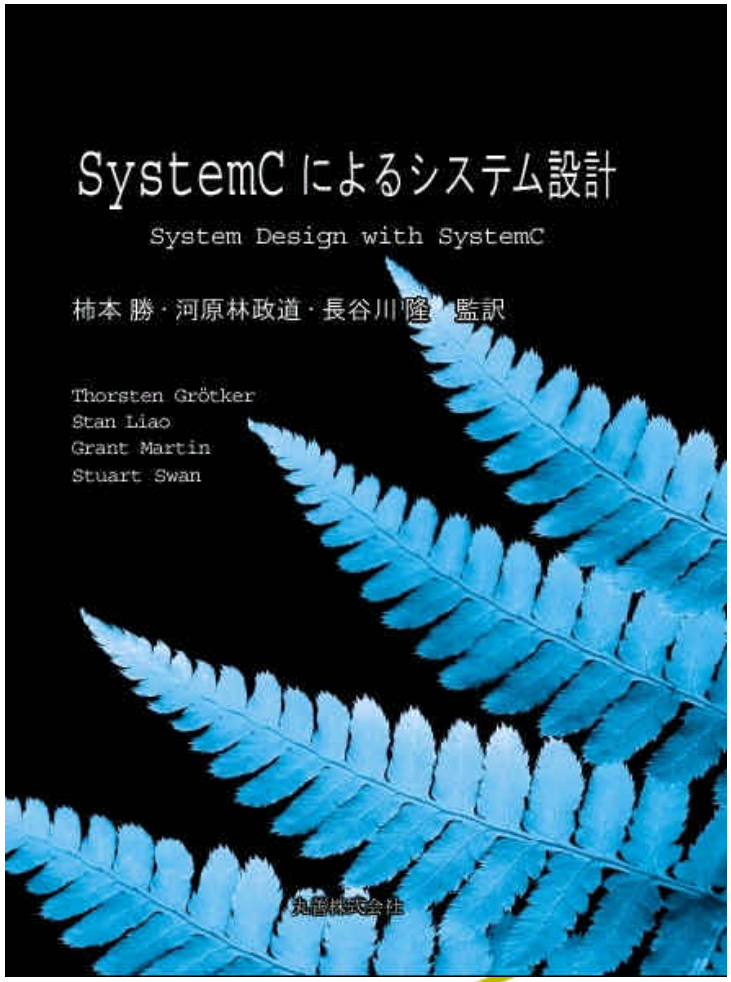
- Evolve a synthesizable subset for behavioral synthesis and logic synthesis.
- Establish a firm standard for transaction level modeling (TLM).
  - Leverage current activities around Amba and OCPIP
- Examine ways to enhance SystemC for software modeling
- Encourage community growth and contribution

Real World Success With SystemC

- **Fujitsu: development & successful tape-out of a telecommunications SoC**
  - **S/W modeling in SystemC + the new SoC design methodology**
  - **Cuts system-level-to-RTL design time by two-thirds!**
- **ARM: Transaction Level Modeling (TLM) with SystemC**
  - **Provides compelling answer to today's platform design challenges**
  - **Enables successful IP integration**
- **Motorola: captured, verified & refined a system-level design from concept**
  - **Executable functional spec to a ready-to-implement fully-specified architecture**
  - **Fast determination of commercial viability**

Recent SystemC Stories in Japan

- **Why have we chosen SystemC ?**
  - **Fumiaki Nagao**
    SANYO Electric Co.,Ltd.
- **SoC system simulator development with SystemC**
  - **Kazuyoshi Takemura,**
    Matsushita Electric Industrial Co., Ltd.
- **Key points to success valuable SoC design with SystemC**
  - **Hiroyasu Hasegawa,**
    H.D.Laboratories Co., Ltd.



Commercial Tool Momentum

- New SystemC Products and Support from:
  - Future Design Automation
  - Forte Design Systems – new Associate Corporate Member
  - Axys
  - Celoxica – new Associate Corporate Member
  - ChipVision
- New SystemC Capabilities from:
  - Synopsys
  - CoWare
  - Cadence
- Look for companies with “Powered by SystemC” signs

University Research

- See Booth #S6 for demos of:
  - OFFIS - Object-oriented SystemC Design
  - Uni Tübingen - SystemC Fixed-Point-Integer Conversion
  - TU Braunschweig - SDRAM Controller Simulation Environment
  - TU Chemnitz - SystemC Protocol Design
  - Uni Tübingen - Object-oriented SystemC Analysis and Synthesis, (OOAS Tool)
  - Uni Cantabria - SystemC Profiling Library
  - Uni Verona - LAERTE++ Testbench Environment

Summary

- Design challenges are moving up to the System Level
- SystemC provides critical capabilities for modeling, design and verification for HW/SW systems
- SystemC offers broad commercial tool support

- Join OSCI to help influence the future of System-level design at:

  www.systemc.org

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