New Strategies for System Design

Daniel Gajski
Center for Embedded Computer Systems
University of California, Irvine
gajski@uci.edu
General System Model

Arbiter 1

PE 1.1

Transducer1-2

Arbiter 2

Interrupt 1.1

PE 2.1 (Master)

Interrupt 2.1

PE 2.2 (Slave)

Interrupt 2.2

Arbiter 3

Interrupt 3.1

Interrupt 3.2

Transducer2-3

PE 3.1

Memory 3

Memory 1

Bus 1

Bus 2

Bus 3
How many components?

Minimal set for any design
(4 is enough?)

- Processing element (PE)
- Memory
- Transducer / Bridge
- Bus / Arbiter
How many models?

Minimal set for any methodology
(3 is enough)

- System specification model (application designers)
- Transaction-level model (system designers)
- Pin&Cycle accurate model (implementation designers)
How many tools?

Minimal set for any methodology

(2 is enough?)

- **Front-End** (for application developers)
  - **Input:** C, C++, Matlab, UML, ...
  - **Output:** TLM

- **Back-End** (for SW/HW system designers)
  - **Input:** TLM
  - **Output:** Pin/Cycle accurate Verilog/VHDL
What is missing?

Software layers for complex applications

- Service layer
- SW platform layer
Thank You

Daniel Gajski
Center for Embedded Computer Systems (CECS)
www.cecs.uci.edu