

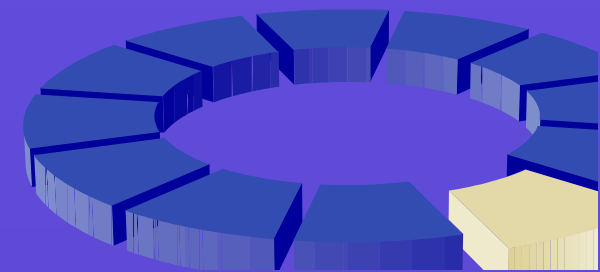
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This Qualis presentation was developed for a client, Xilinx. This presentation was a key piece in helping Xilinx management change their engineer's development process. It presented a new methodology for developing FPGAs that leveraged previous work. This excerpt is the first ten slides of a two-day seminar. Qualis (www.qualis.com) is a verification IP, consulting, and training firm.

Designing With Reuse in Mind

Qualis Design Corporation

Xilinx Inc.



QUALIS™

Qualis Design Corporation

Lake Oswego, Oregon USA

<http://www.qualis.com>

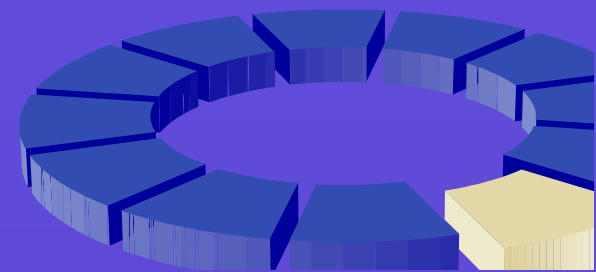
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Xilinx Inc.

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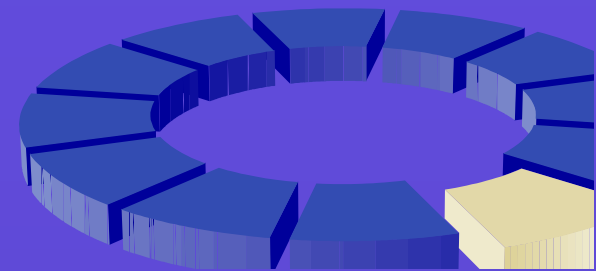
<http://www.xilinx.com>

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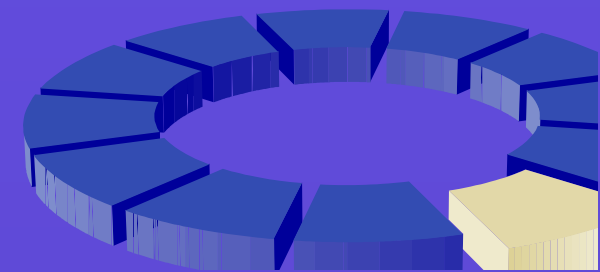
What is Design for Reuse?

- ◆ Designing something using pieces that are already designed or made
 - Similar to building something using pre-fabricated parts
 - Analogy: pre-fabricated housing
 - Issues:
 - Integration of the parts
 - Integrity of the parts



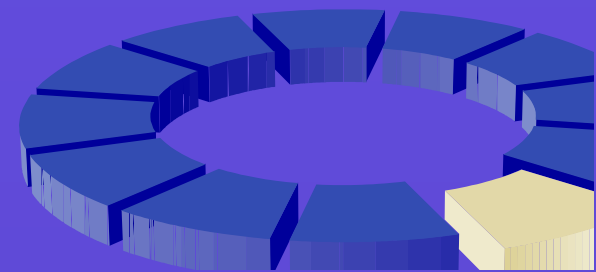
Design for Reuse Implications

- ◆ Architect to facilitate reuse
 - Interchangeable parts
 - Plug and play
 - Using what's available
- ◆ Package for use by others
- ◆ Use common practices so designs can be shared
- ◆ Use coordinated practices so downstream processes go smoothly



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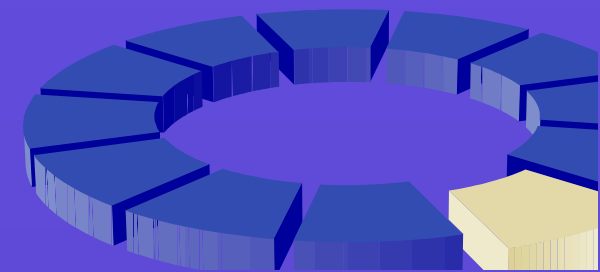
Design for Reuse



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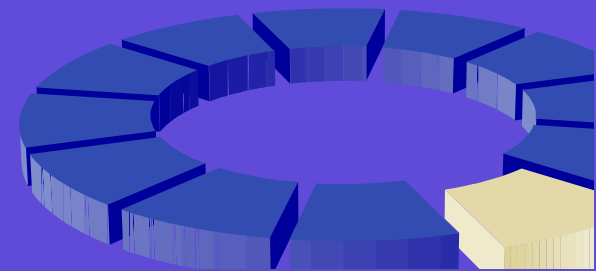
Overview

- ◆ Justification for reuse
- ◆ SoC/SoRC/VC design process
- ◆ SoC/SoRC/VC verification
- ◆ SoC/SoRC/VC project infrastructure
- ◆ Coding and designing for reuse
- ◆ Common methodology



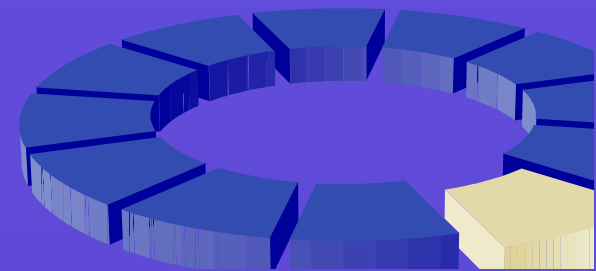
Justification for Reuse

- ◆ Productivity gap
- ◆ Time to market
- ◆ Source of value
- ◆ FPGA size increase

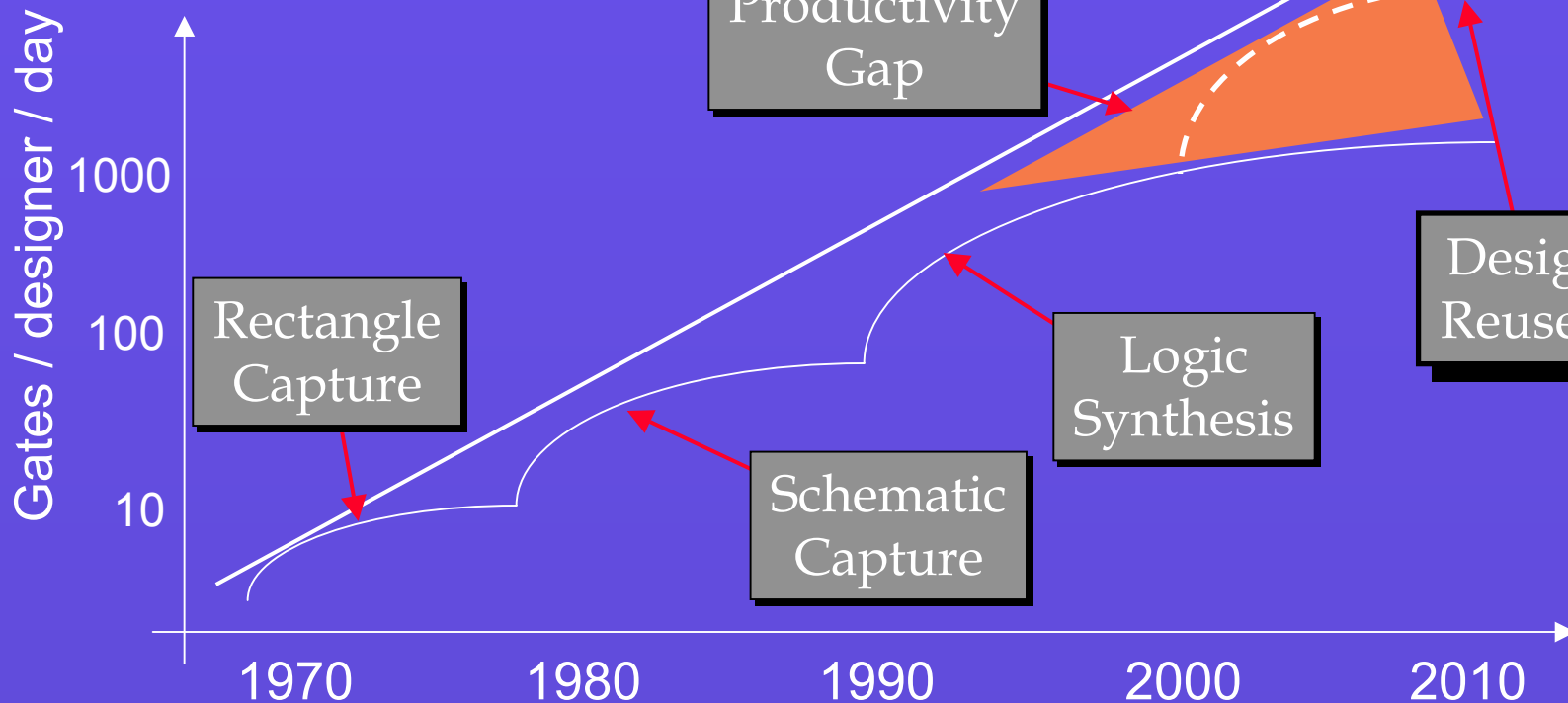


Productivity Gap

- ◆ Number of transistors on a chip doubles every 18 months
 - Moore's law
- ◆ Number of gates that can be designed in a day is constant, unless:
 - More designers
 - Design faster
 - Greater efficiency
 - Higher levels of abstraction



Productivity Gap



Moore's Law

Engineering Productivity

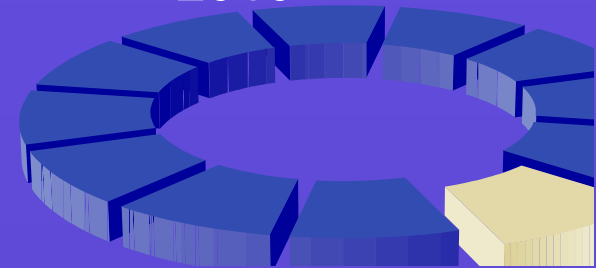
Productivity Gap

Rectangle Capture

Logic Synthesis

Design Reuse ?

Schematic Capture



Productivity Gap

- ◆ Why worry about productivity gap?
 - It's there for everybody
 - It's a level playing field
- ◆ Because it is a source of competitive advantage
 - The playing field can be tipped
 - History is full of competitors gaining upper hand by exploiting productivity gaps
 - Walmart and distribution productivity
 - Southwest Airlines and schedule productivity
 - Dell and customization productivity
 - Opportunity to reduce time-to-market

