

Advanced Workshop  
on Modern FPGA-  
Based Technology for  
Scientific Computing



# *System on a Programmable Chip (SoPC)*

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# Some background from you....

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Who knows about VHDL/Verilog?

Who knows about FPGA?

Who knows about SoC?

Who knows about 'C'?

# ASIC SoC vs System on Programmable Chip

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## ASIC SoC

- Development Time
- Cost
- Lack of flexibility
- Great performance
- Tiny size
- Very large amount of logic

## SoPC

- Great flexibility
- Fast time-to-market
- Upgrade-ability
- Availability of IP cores
- Cheap and easy to use development tools

Zynq (Xilinx)

Stratix (Intel)

Ultra Scale(Xilinx)

SmartFusion2 (MicroSemi)

# System on Chip (SoC)

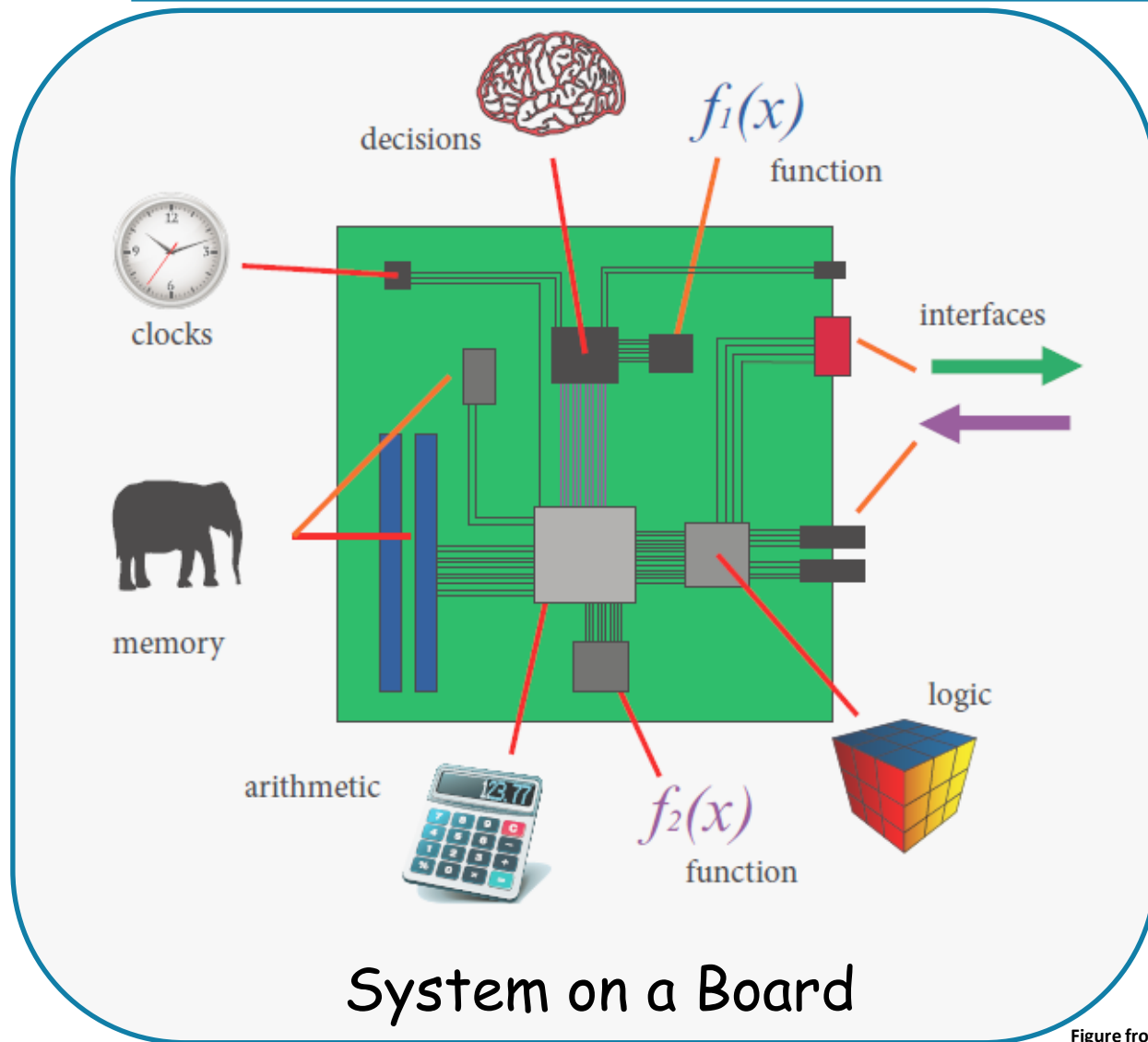


Figure from the "The Zynq Book"

# A *SIMPLE* View of an Embedded SoC

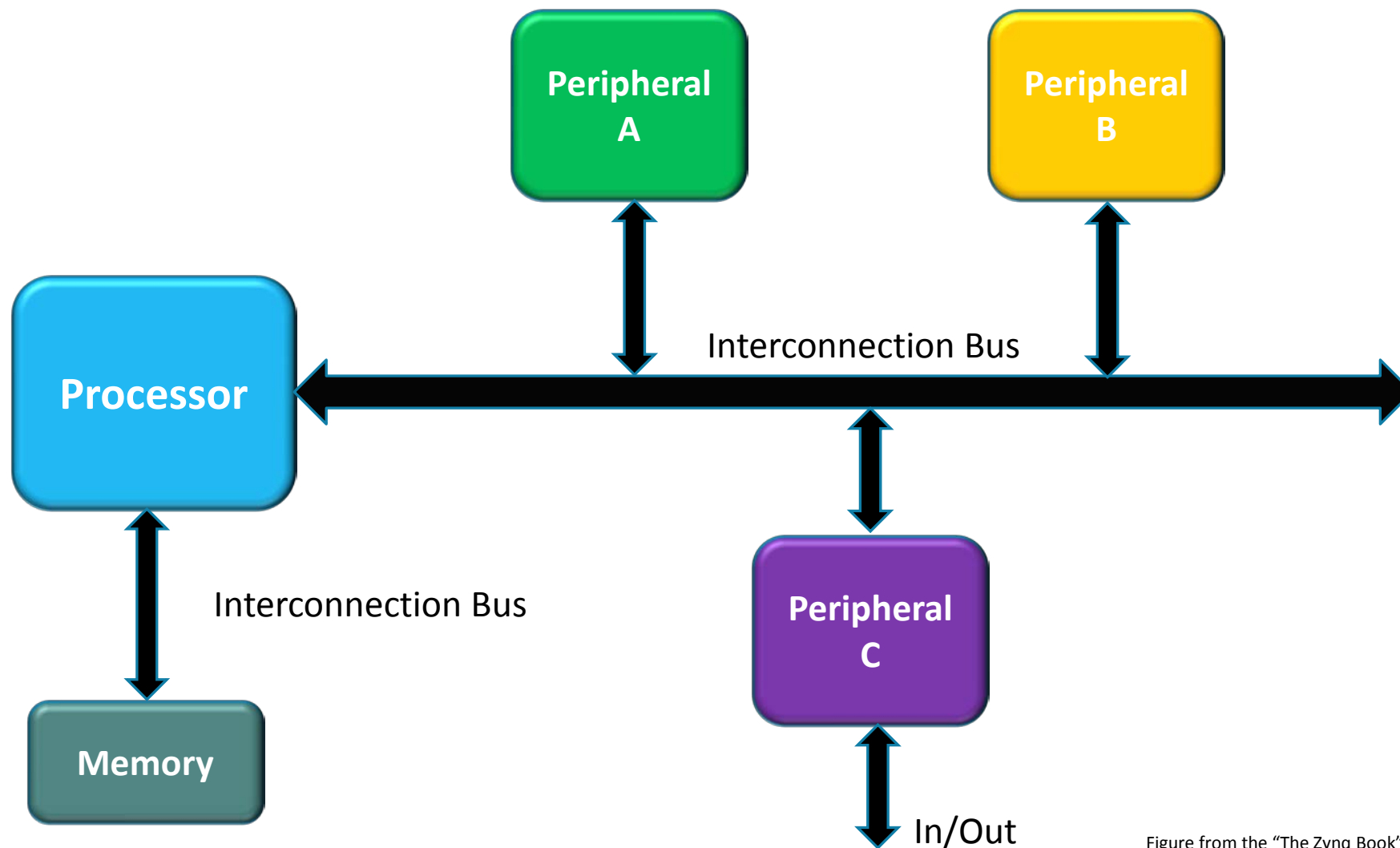
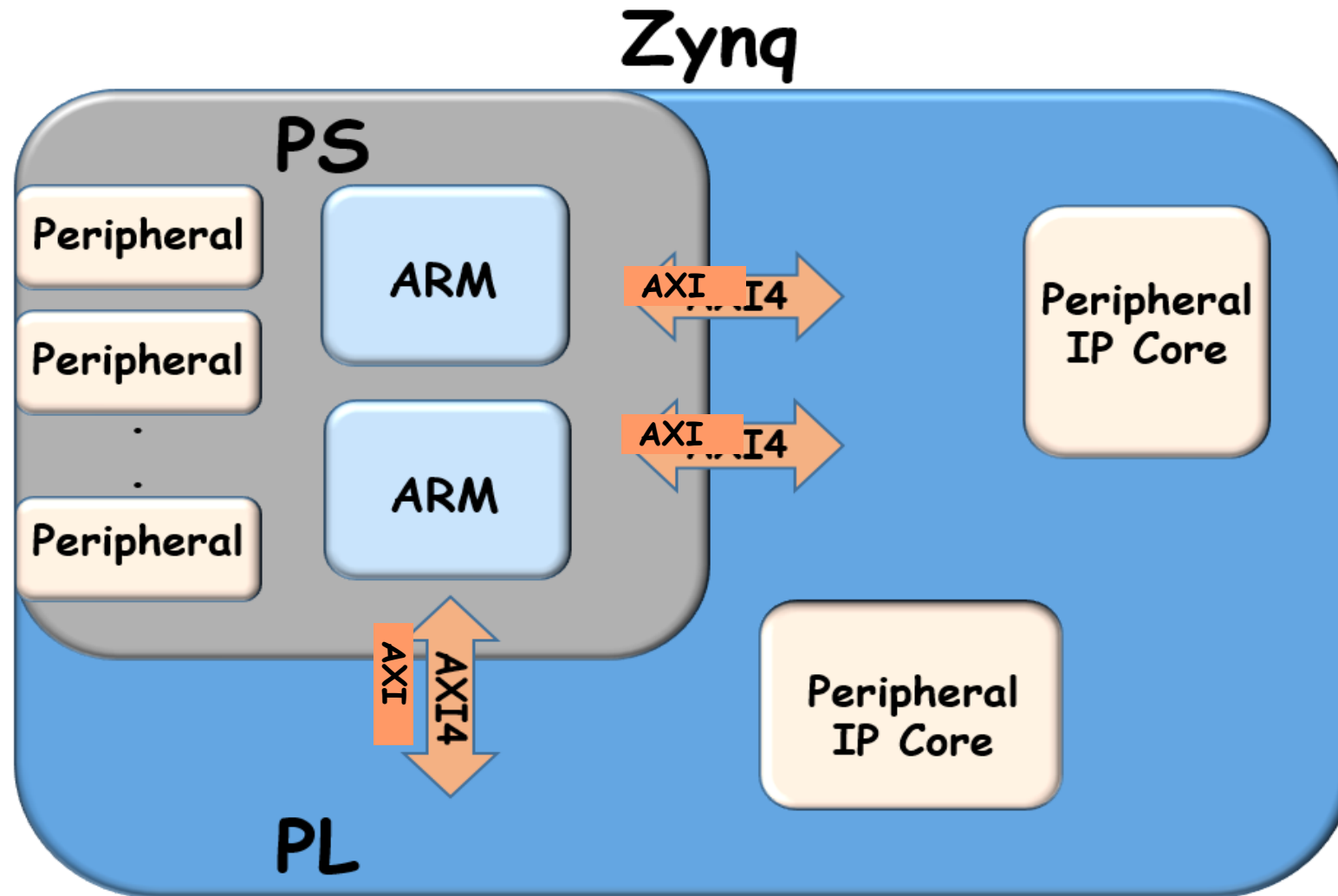


Figure from the "The Zynq Book"

# A Simple View of the Xilinx Zynq SoPC



# Software System, Hardware System and Zynq

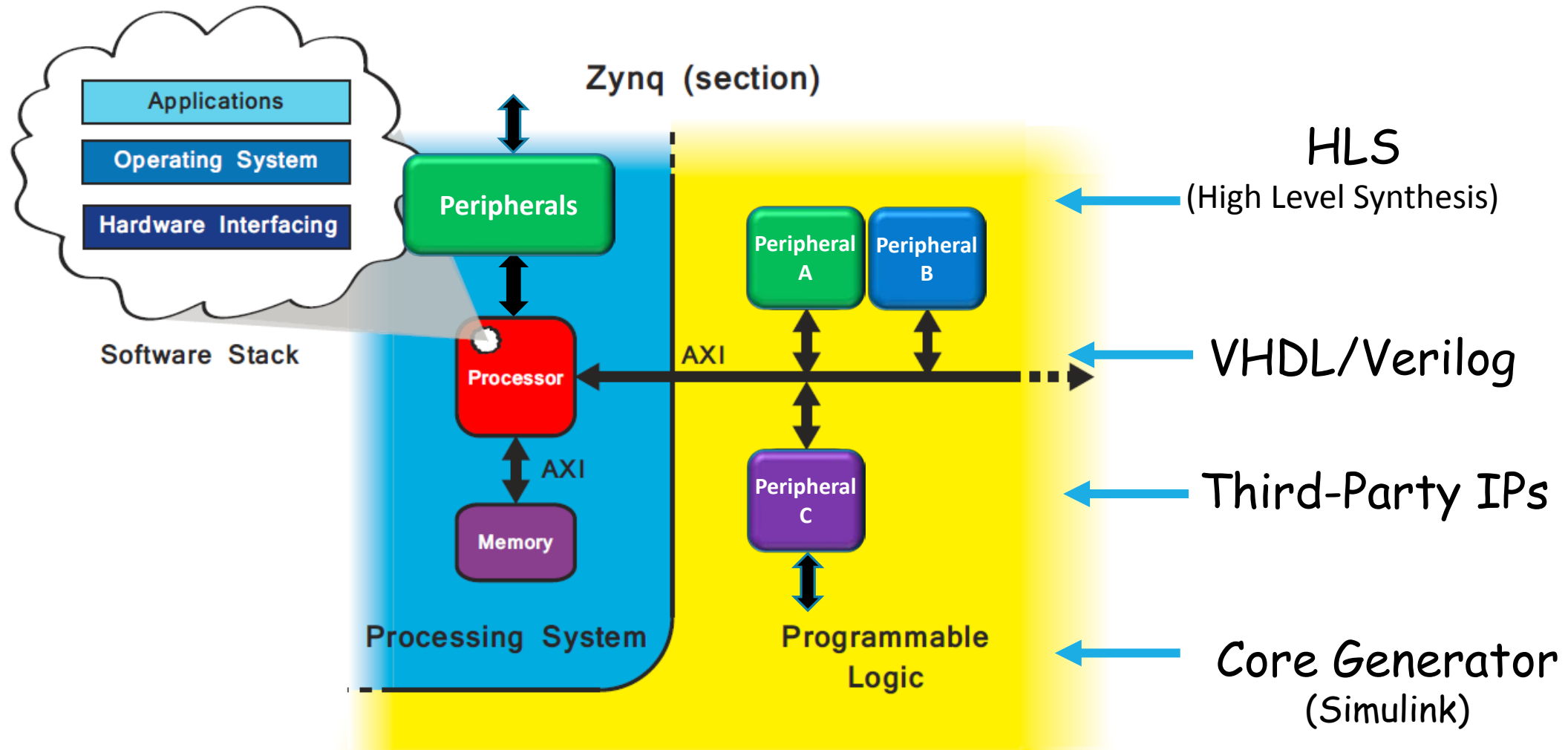
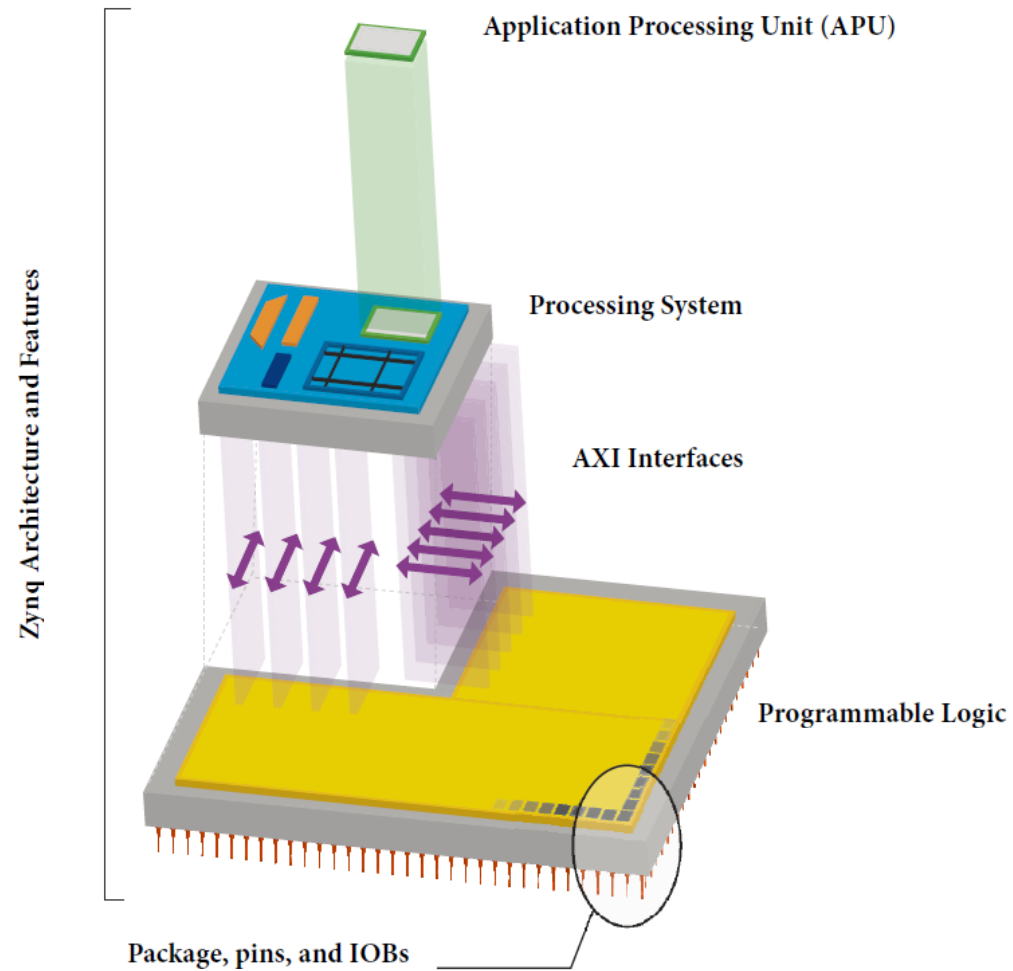


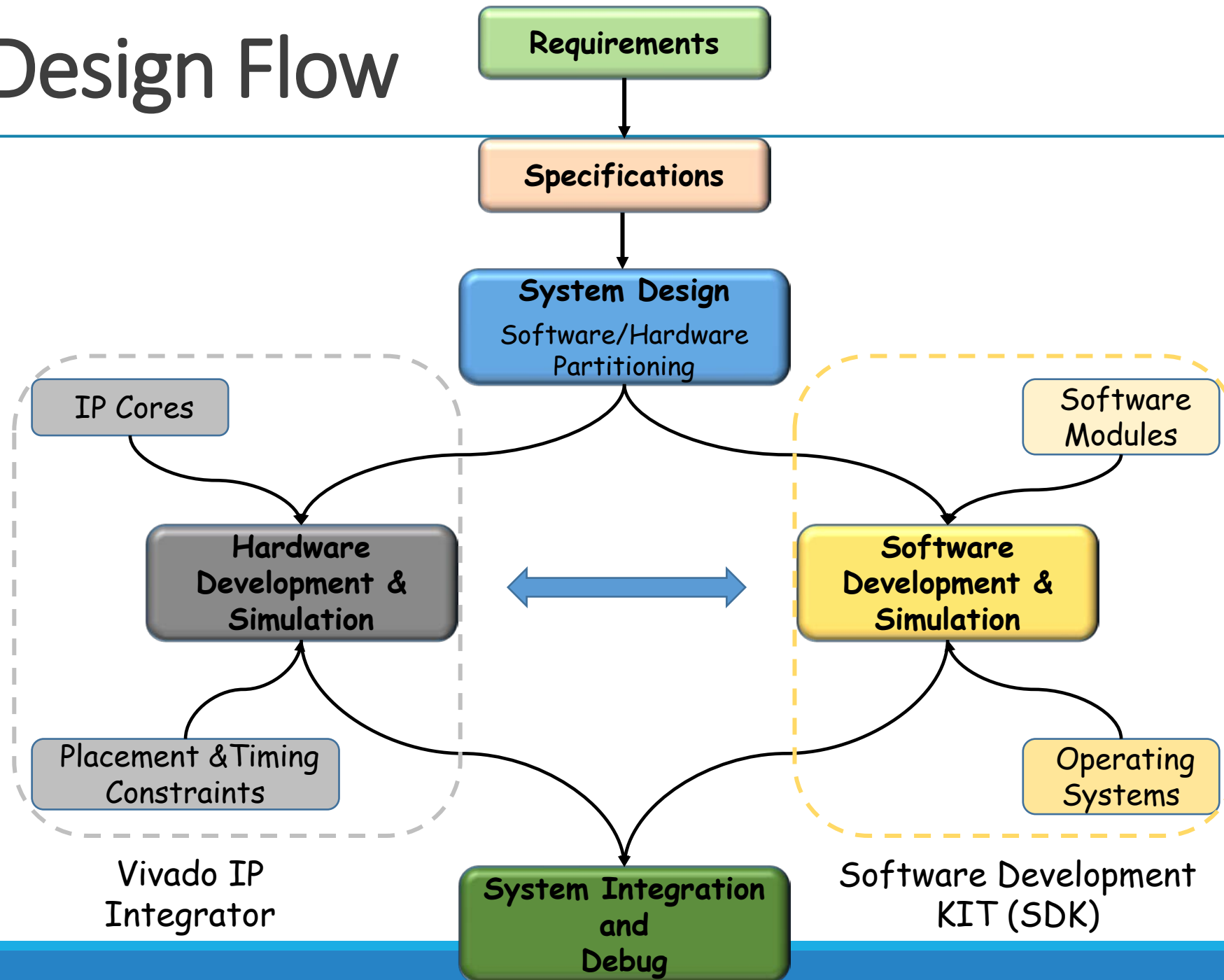
Figure from the "The Zynq Book"

# Architectural View of the Zynq





# SoC Design Flow



# Hardware and Software Layers in a SoC

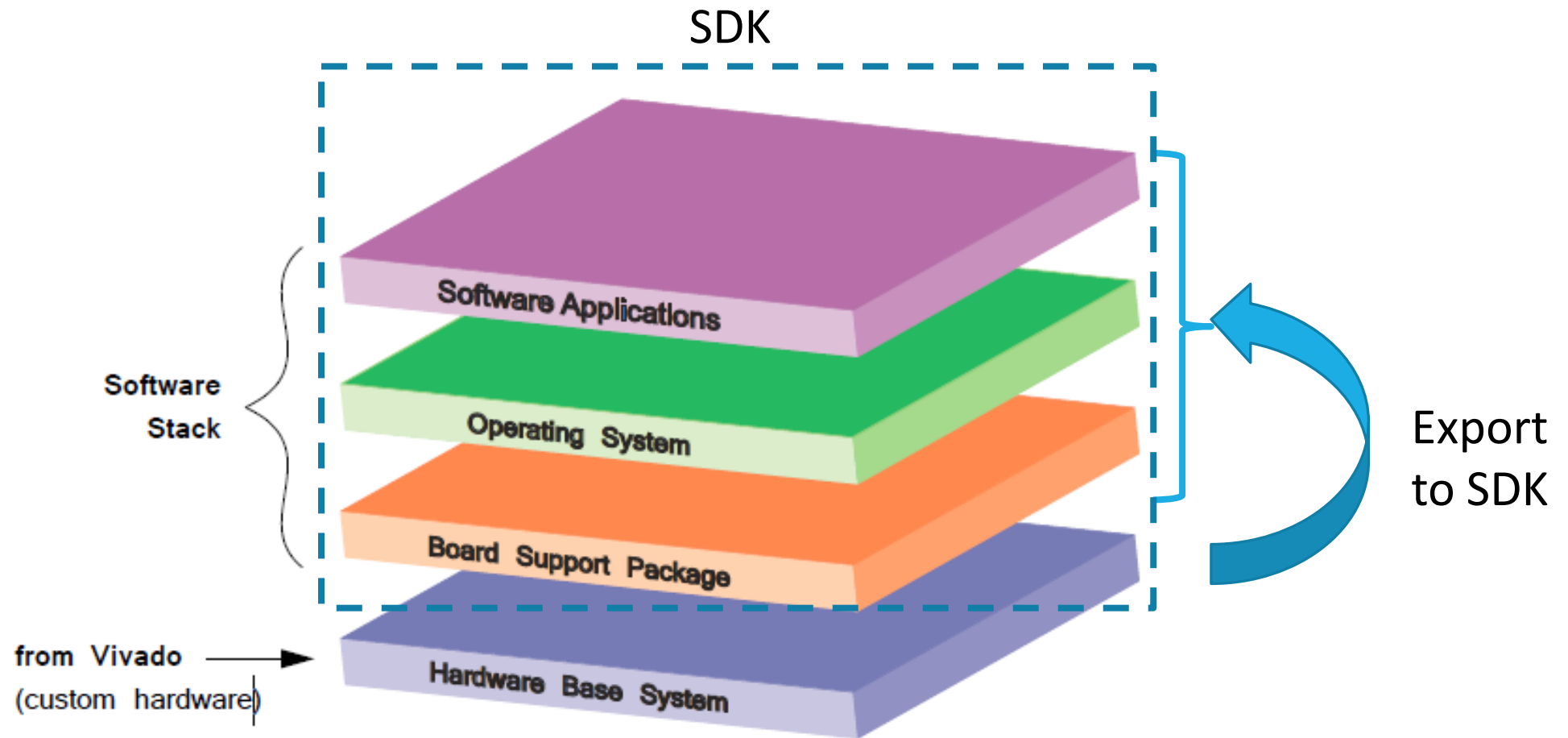


Figure from the "The Zynq Book"

# IP Availability for SoC Designs

