Joint ICTP-IAEA School on FPGA-based SoC and its Applications for Nuclear and Related Instrumentation

System on a Programable Chip (SoPC)

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Some background from you....

Who knows about VHDL/Verilog?

Who knows about FPGA?

Who knows about SoC?

Who knows about 'C'?

ASIC SoC vs System on Programmable Chip

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)

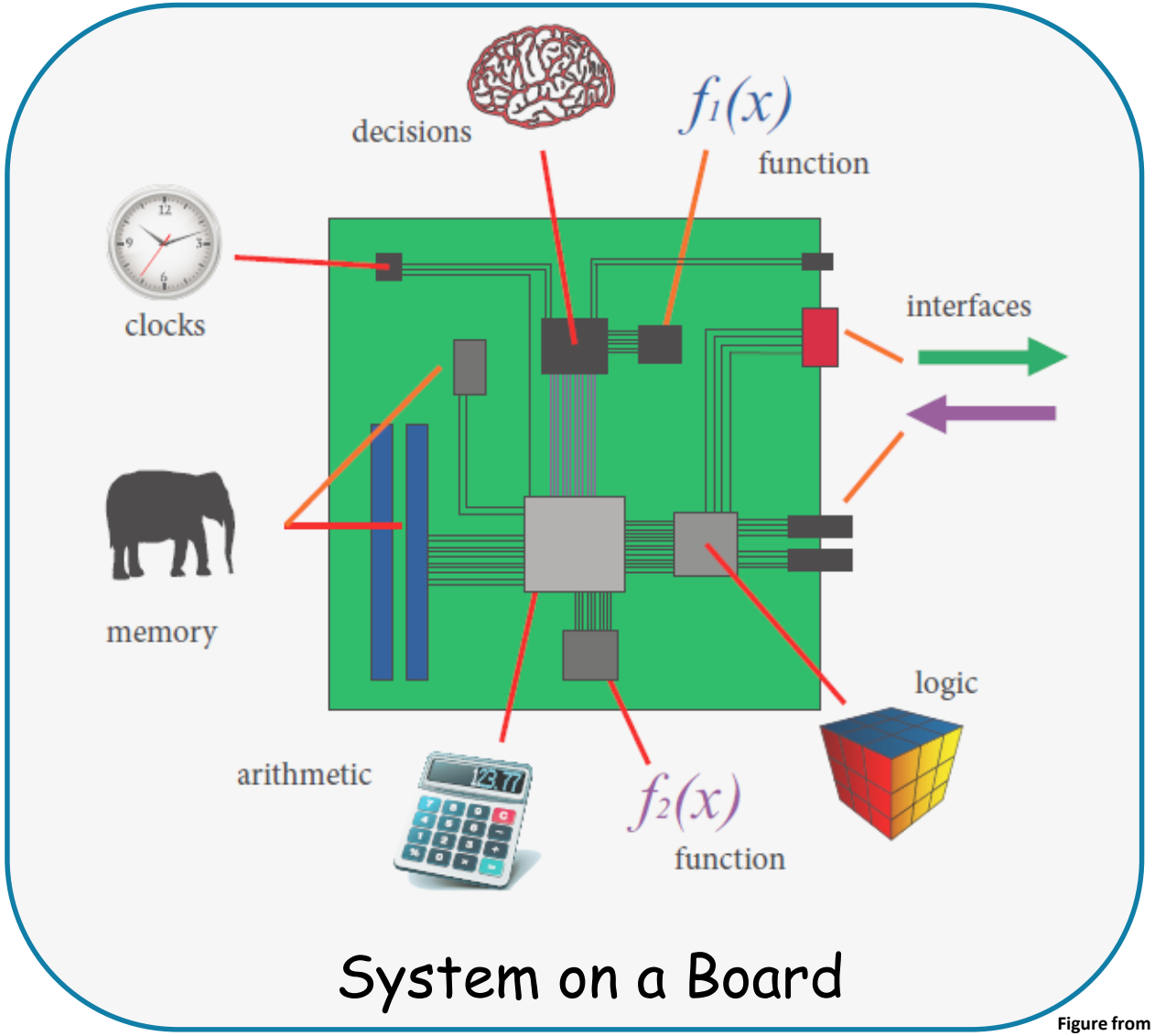


Figure from the "The Zynq Book"

A *SIMPLE* View of an Embedded SoC

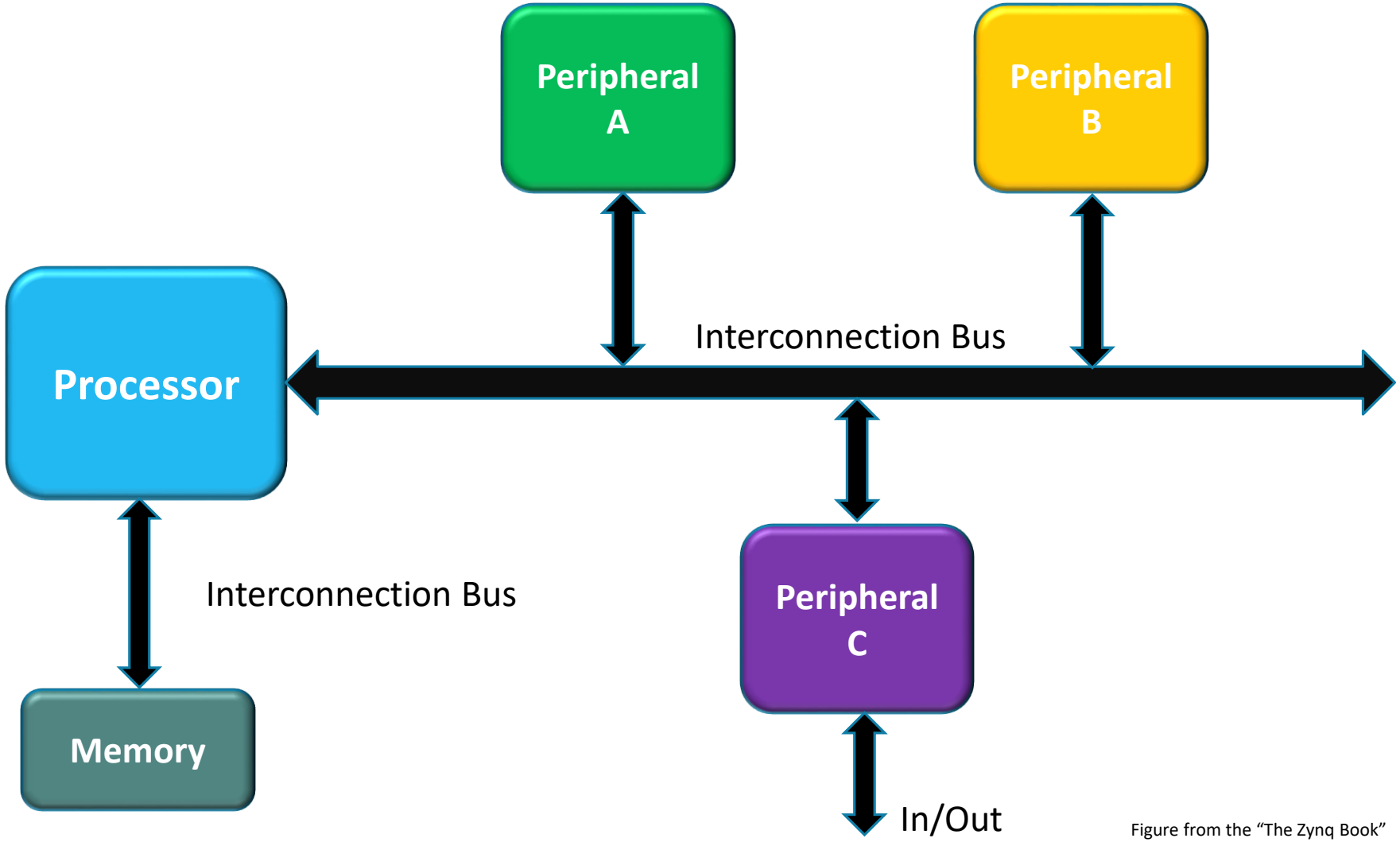
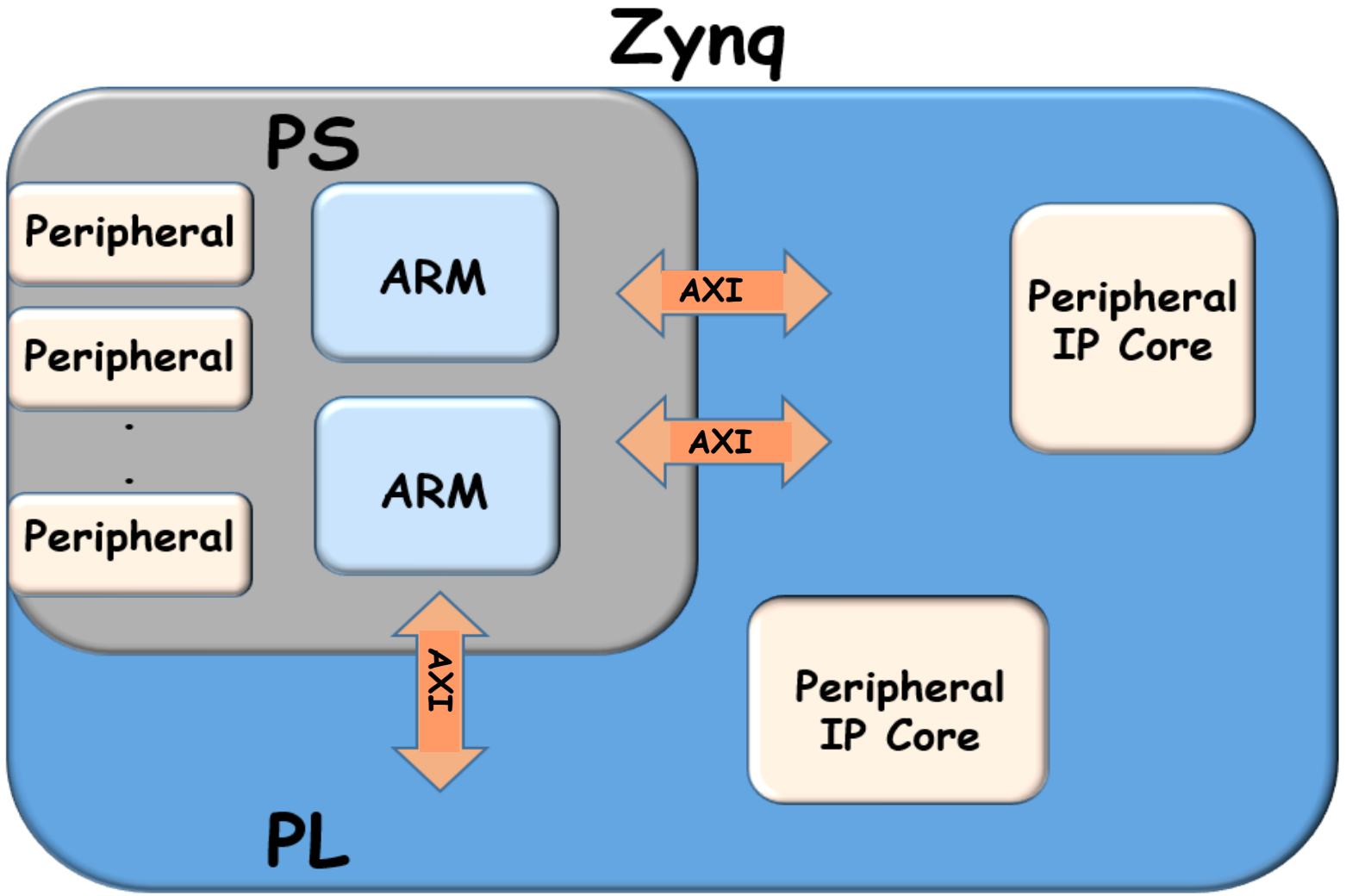


Figure from the "The Zynq Book"

A Simple View of the Xilinx Zynq SoPC



Software System, Hardware System and Zynq

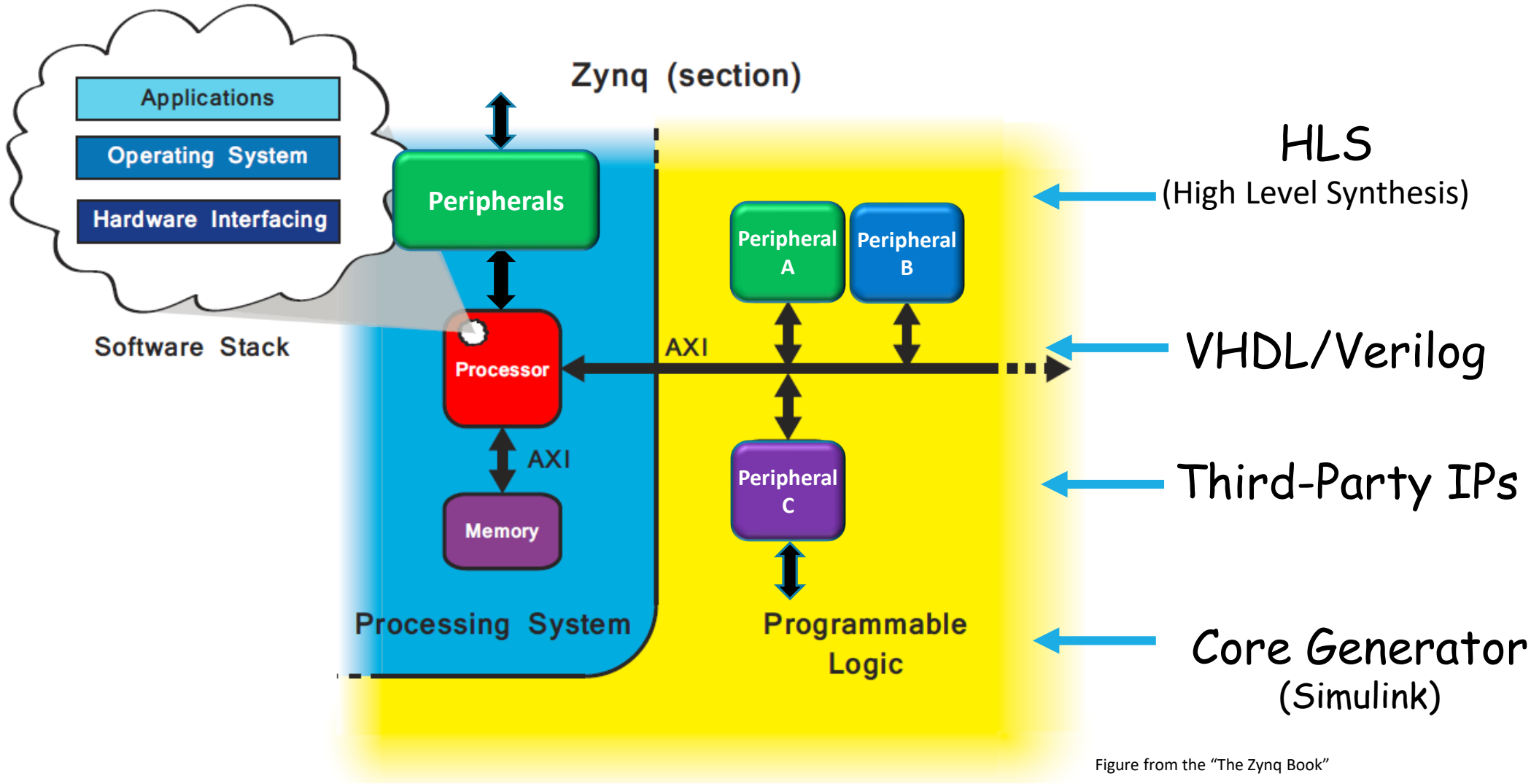


Figure from the "The Zynq Book"

Architectural View of the Zynq

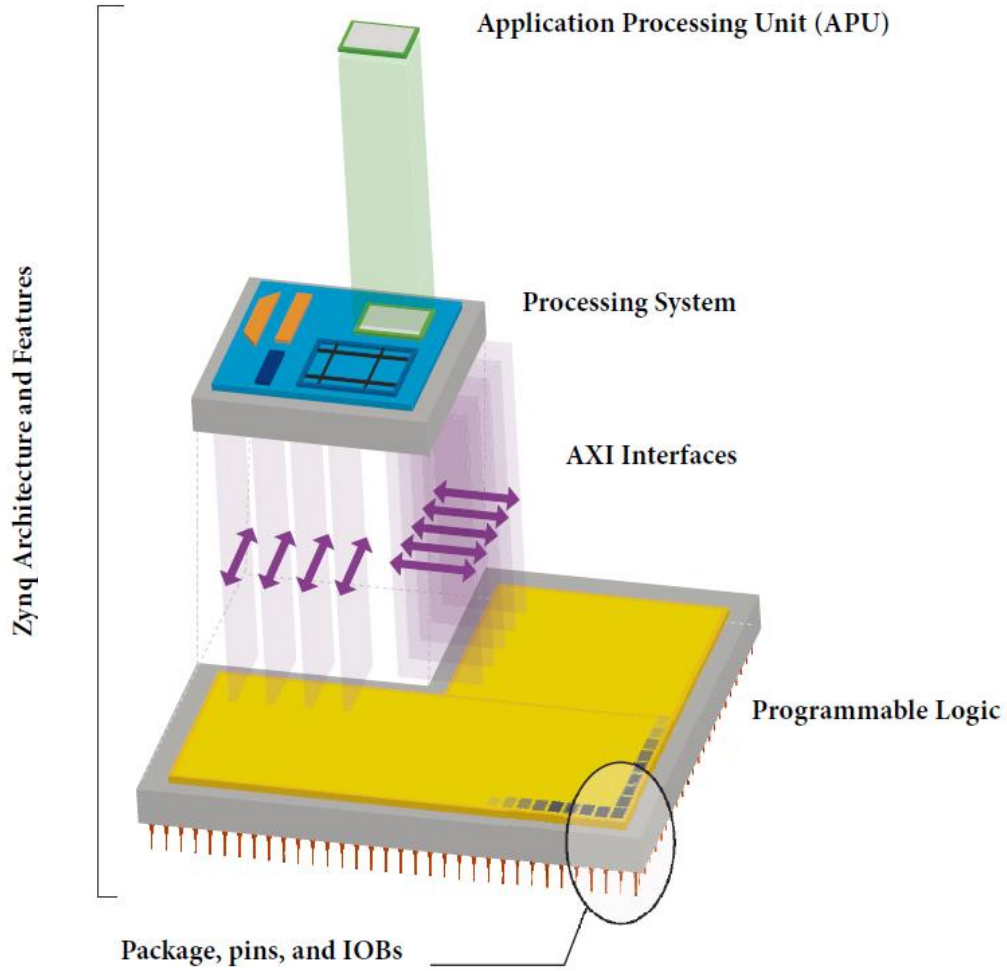
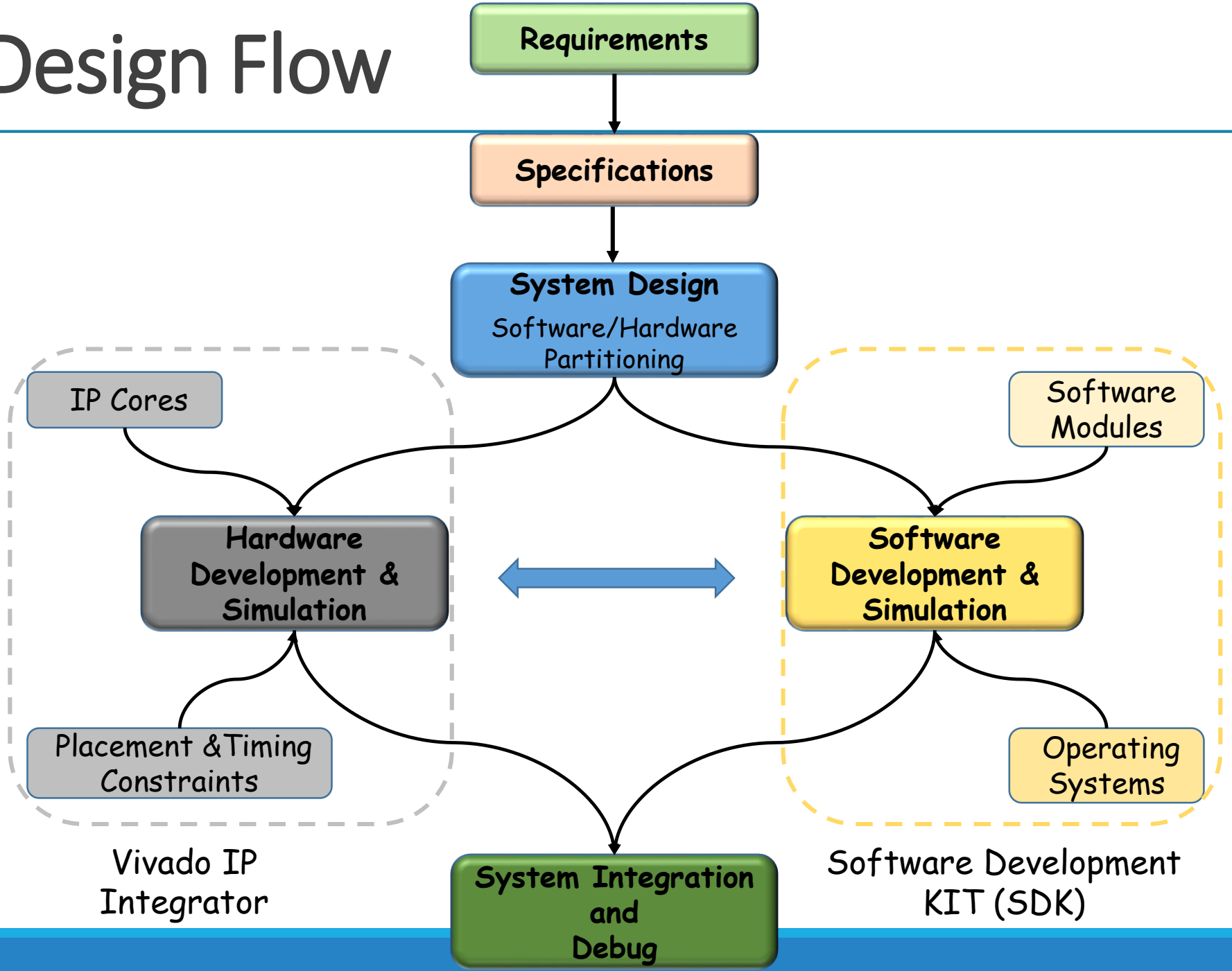


Figure from the "The Zynq Book"

SoC Design Flow



Hardware and Software Layers in a SoC

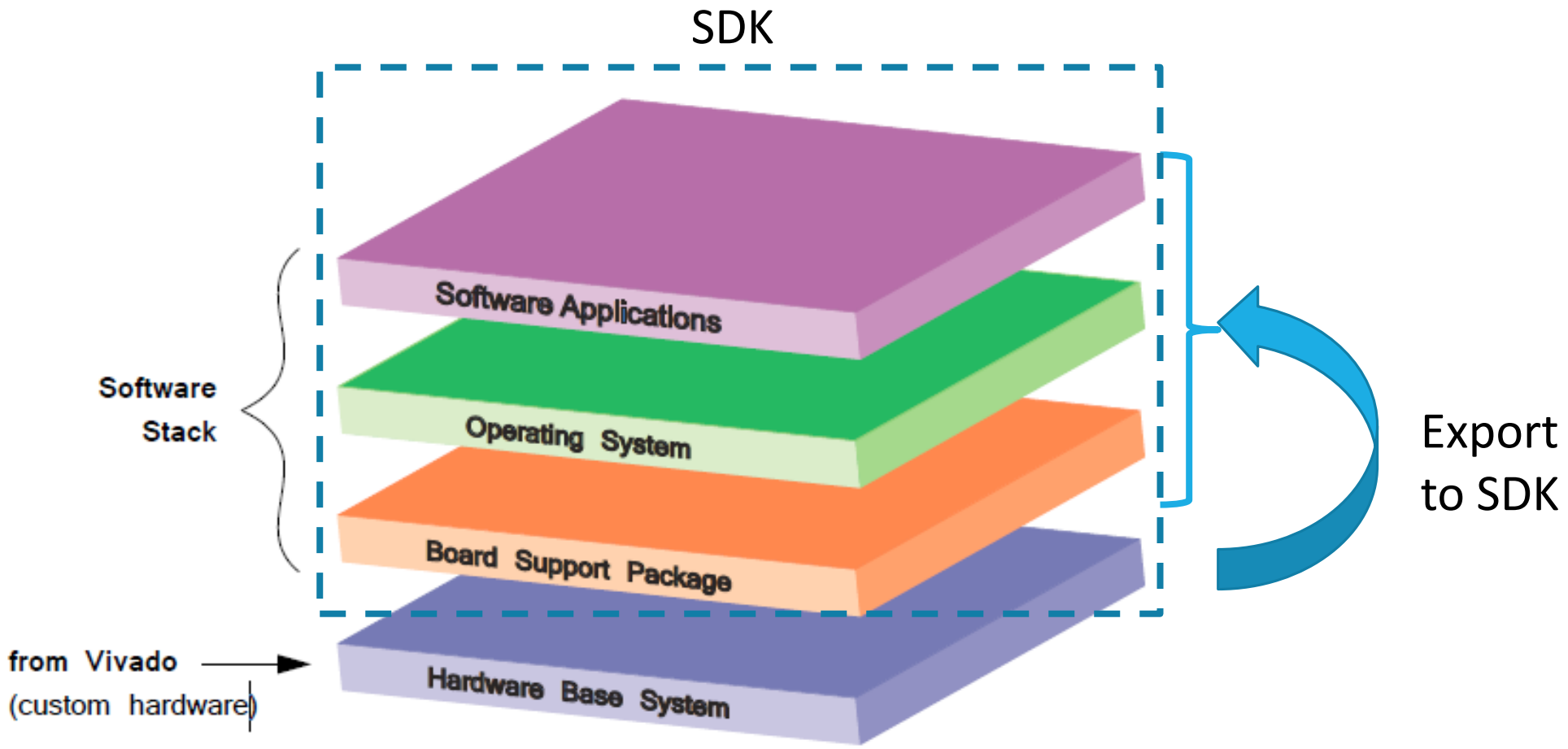


Figure from the "The Zynq Book"

IP Availability for SoC Designs