"Laboratory: GPIO IP Cores in PL"

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Objectives

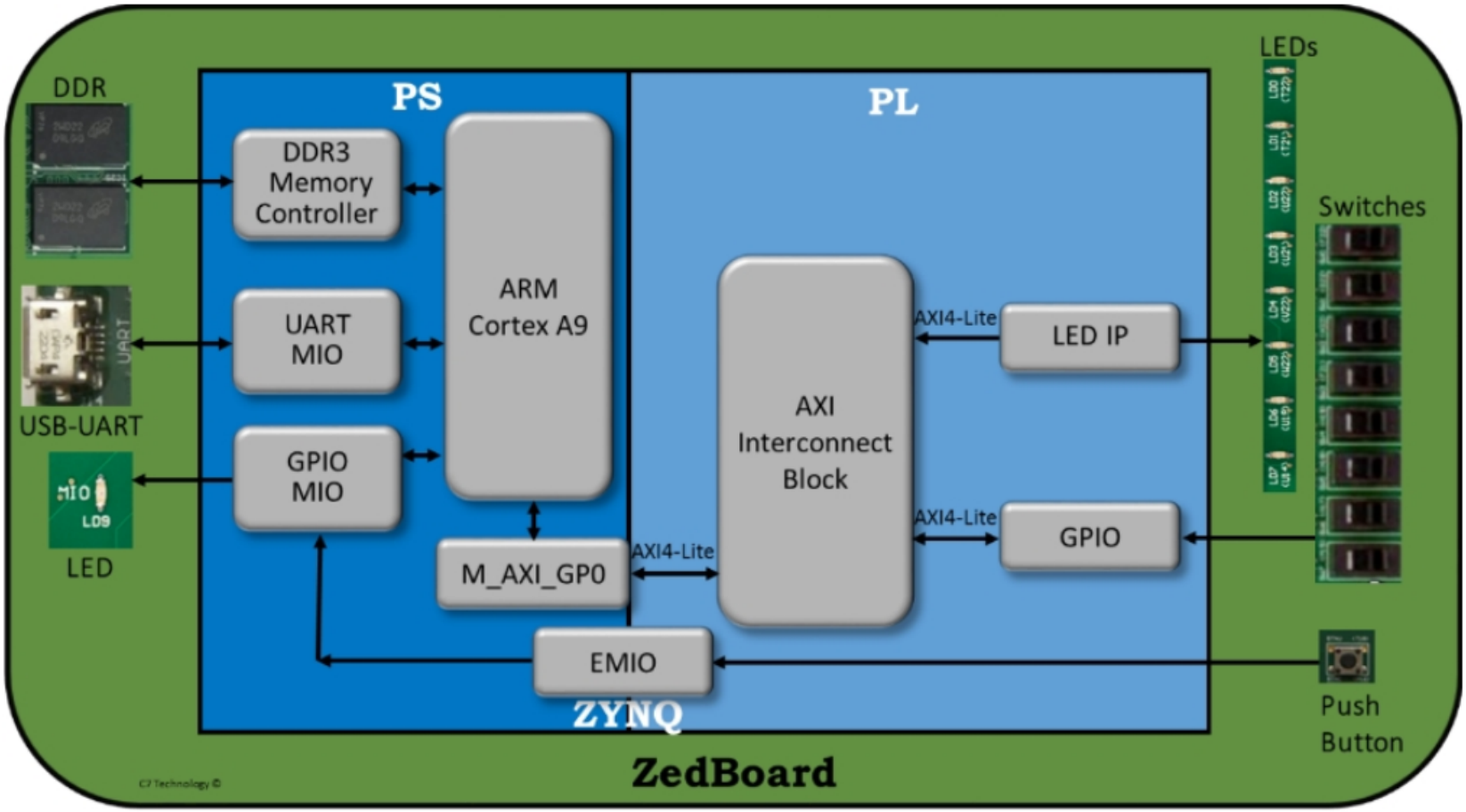
After completing this lab, you will be able to:

- Configure the GP Master port
- Add Xilinx standard IP in the Programmable Logic (PL) section
- Use and route the GPIO signal of the PS into the PL by using EMIO
- Configure some of the 'C' compiler settings in the SDK environment
- Read external inputs and outputs using a 'C' application
- Configure the FPGA from the SDK software
- Test in hardware the design

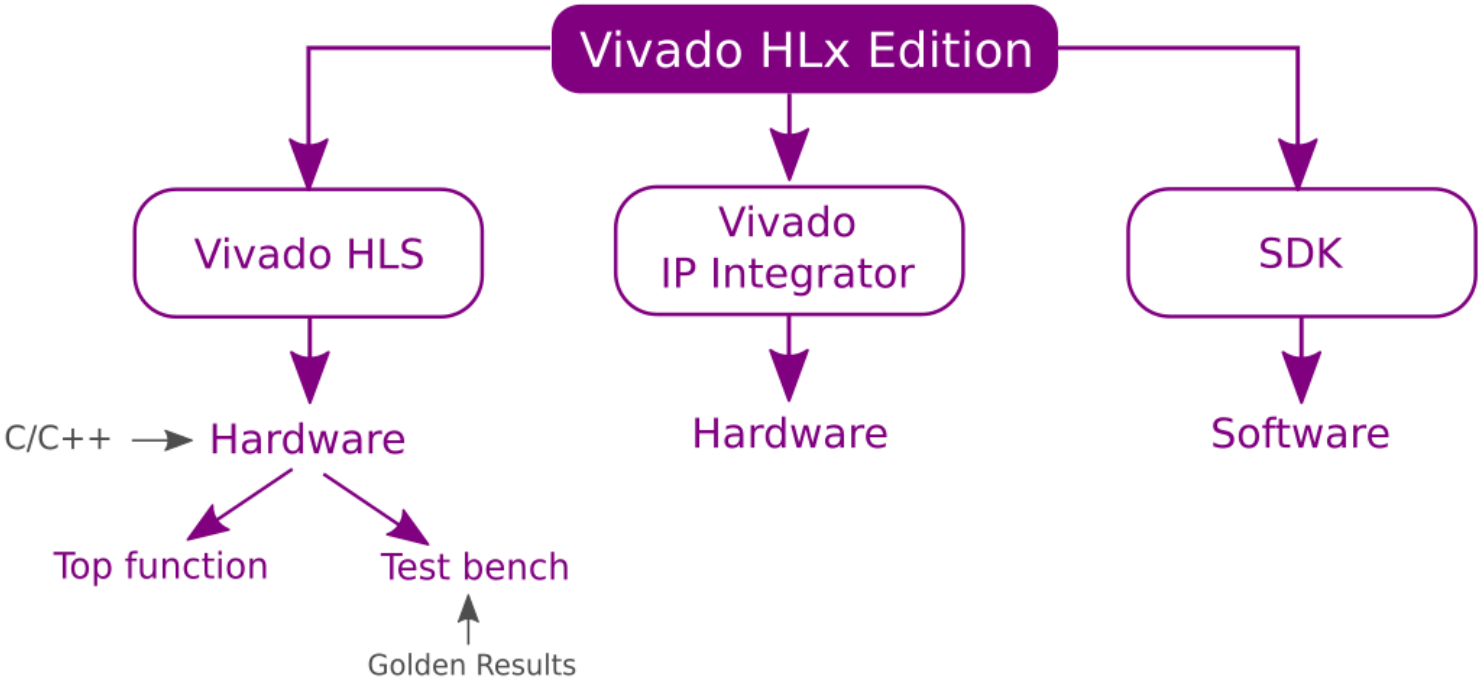
Procedure

You will create a top-level project using Vivado, create the processor system using the IP Integrator, add two instances of the GPIO IP, validate the design, generate the bitstream, export the design to the SDK, create an application in the SDK and test the design in hardware (ZedBoard).

Design Description



Vivado HLx Edition



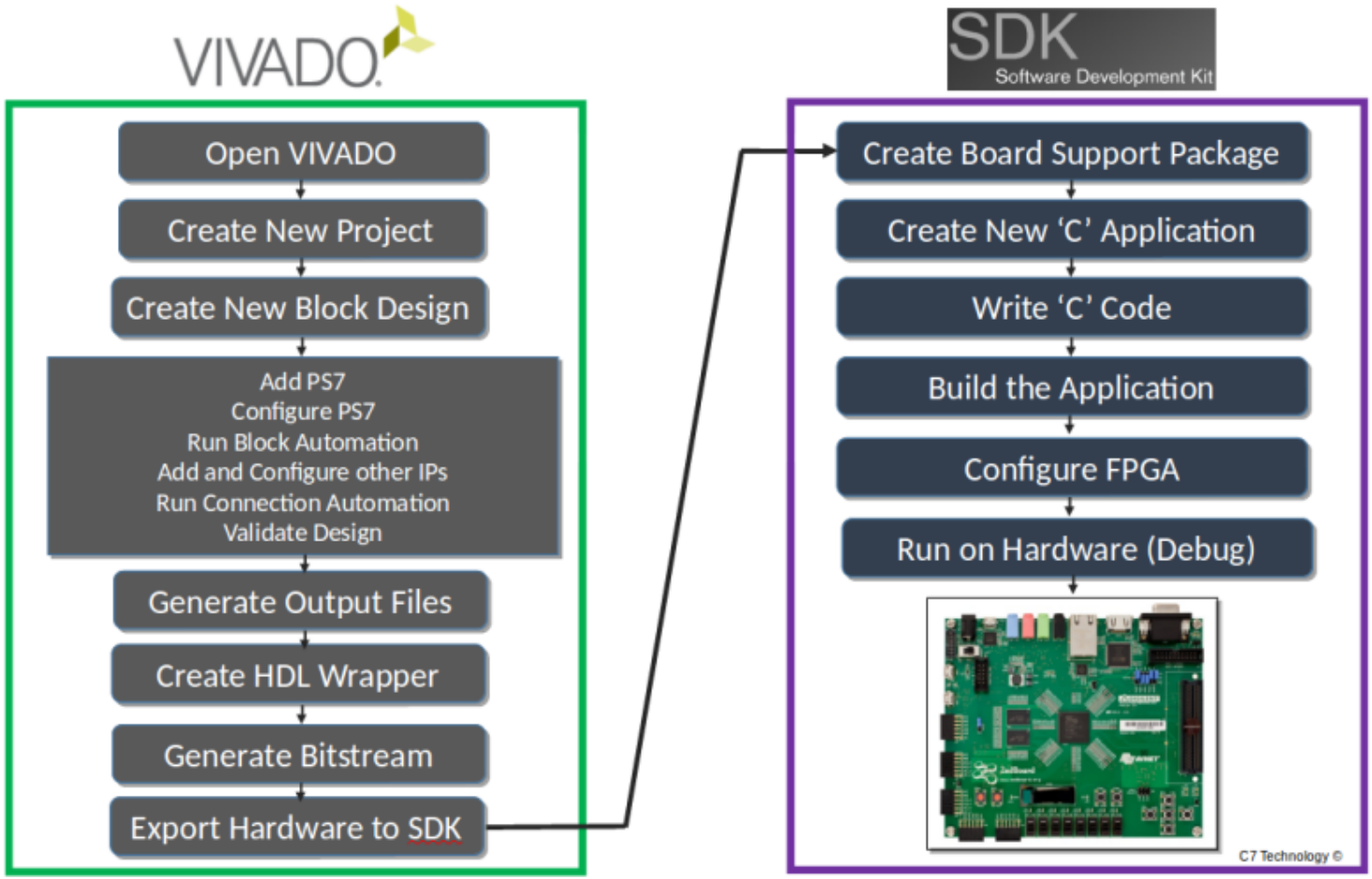
VIVADO HLx Editions

VIVADO

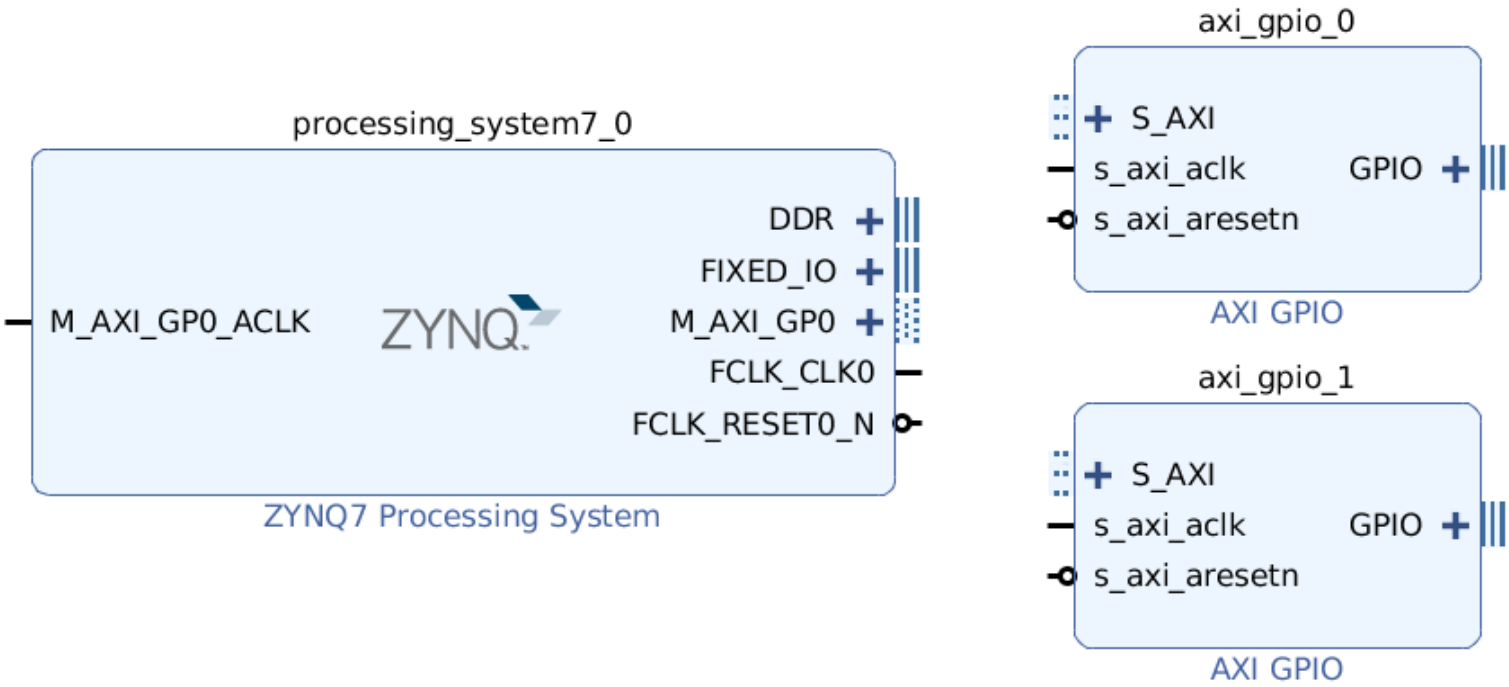
Vivado™ HLS

SDK
Software Development Kit

Vivado Design Flow

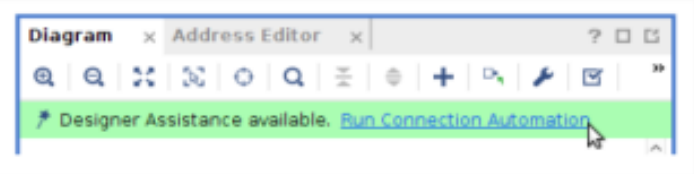


General Steps

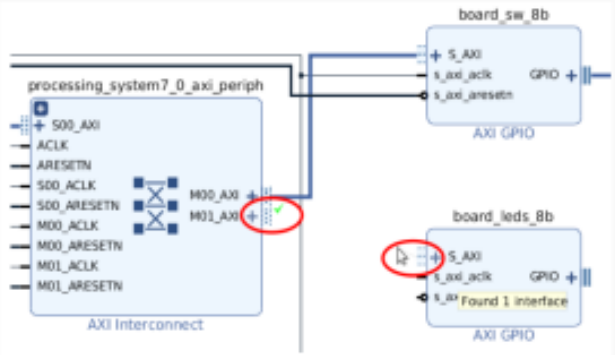


General Steps

SWITCHS

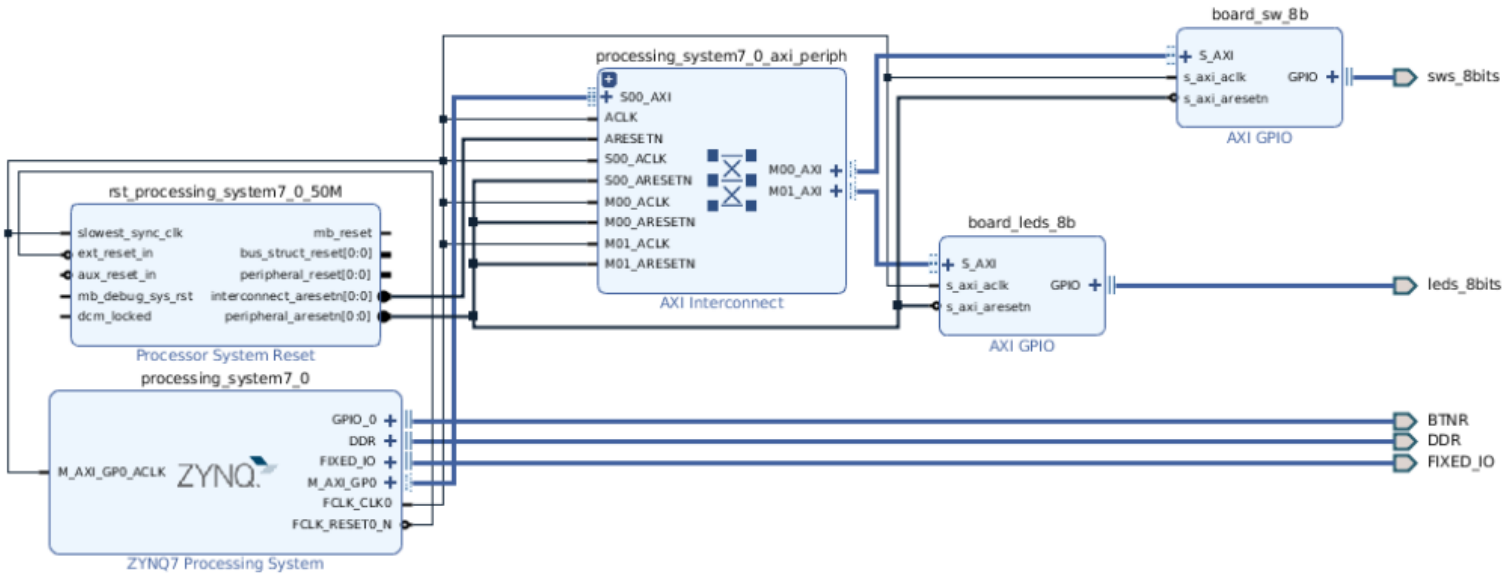


LEDS



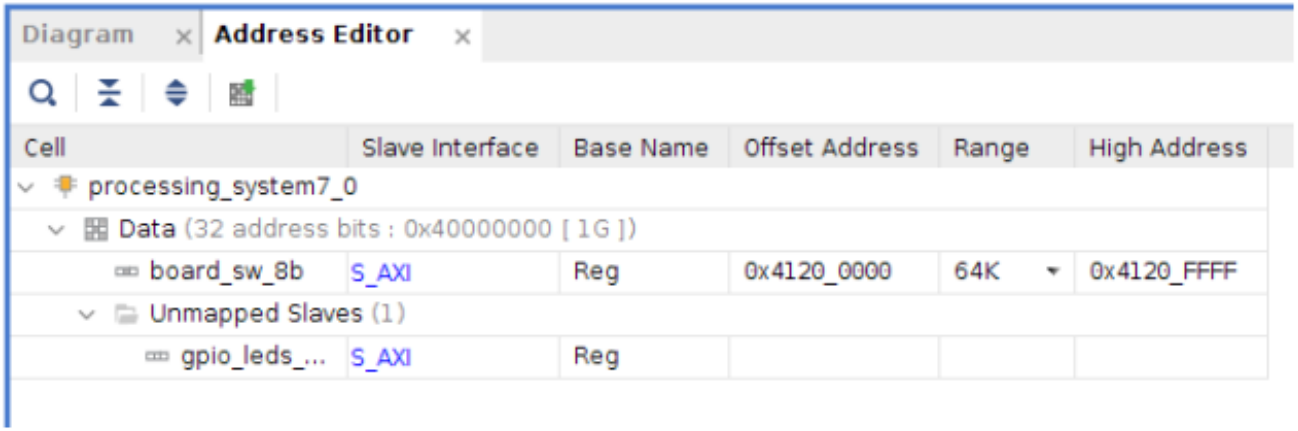
General Steps

Block Diagram



General Steps

Address Editor



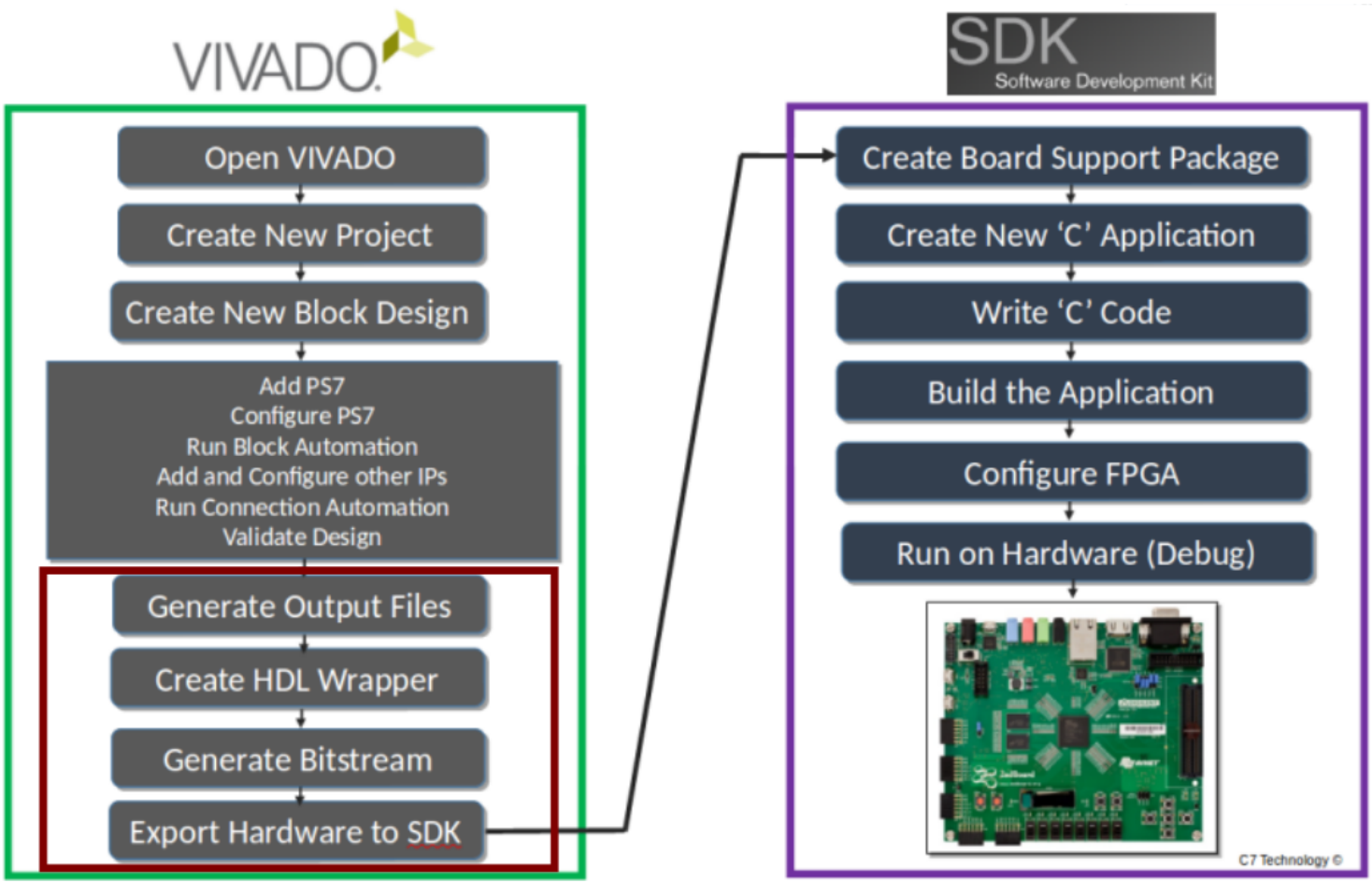
General Steps

I/O Ports

I/O Ports

Name	Dire...	Board Part...	Boar...	Ne...	Package ...	Fixed	Bank	I/O Std
sws_8bits_16670 (8)	IN					☑	(Multiple)	LVCMOS25*
Scalar ports (0)								
sws_8bits_tri_i (8)	IN					☑	(Multiple)	LVCMOS25*
sws_8bits_tri_i[7]	IN	sws_8bits_...			M15	☑	34	LVCMOS25*
sws_8bits_tri_i[6]	IN	sws_8bits_...			H17	☑	35	LVCMOS25*
sws_8bits_tri_i[5]	IN	sws_8bits_...			H18	☑	35	LVCMOS25*
sws_8bits_tri_i[4]	IN	sws_8bits_...			H19	☑	35	LVCMOS25*
sws_8bits_tri_i[3]	IN	sws_8bits_...			F21	☑	35	LVCMOS25*
sws_8bits_tri_i[2]	IN	sws_8bits_...			H22	☑	35	LVCMOS25*
sws_8bits_tri_i[1]	IN	sws_8bits_...			G22	☑	35	LVCMOS25*
sws_8bits_tri_i[0]	IN	sws_8bits_...			F22	☑	35	LVCMOS25*
GPIO_57396 (8)	OUT					☐		LVCMOS33*
Scalar ports (0)								
led_8bits_tri_o (8)	OUT					☐		LVCMOS33*
led_8bits_tri_o[7]	OUT	leds_8bits...				☐		LVCMOS33*
led_8bits_tri_o[6]	OUT	leds_8bits...				☐		LVCMOS33*
led_8bits_tri_o[5]	OUT	leds_8bits...				☐		LVCMOS33*
led_8bits_tri_o[4]	OUT	leds_8bits...				☐		LVCMOS33*
led_8bits_tri_o[3]	OUT	leds_8bits...				☐		LVCMOS33*
led_8bits_tri_o[2]	OUT	leds_8bits...				☐		LVCMOS33*
led_8bits_tri_o[1]	OUT	leds_8bits...				☐		LVCMOS33*
led_8bits_tri_o[0]	OUT	leds_8bits...				☐		LVCMOS33*

General Steps



Software Development Kit (SDK)