

# System-On-Chip / NIOS II Workshop

**El Camino**  
Training - Engineering - Consultancy



## Course Description

This course will teach you how easy it is to design in a soft-core microprocessor with an Altera FPGA. This course is focused on the hands-on development of Nios II hardware and software using the Nios Development Kit. You will learn how to integrate a Nios II 32-bit microprocessor and test it using an Altera FPGA. You will learn how to configure and compile designs using the Quartus II software and to write and debug embedded software code. You will participate in discussions about the features and capabilities of the development board. After taking this course, you will feel confident tackling your next system-on-a-programmable-chip (SOPC) design.

## Skills Developed

- Describe the Nios® II softcore processor
- Use the SOPC Builder tool to create complex systems
- Create and debug software for the Nios II processor
- Perform an RTL Simulation in the ModelSim® simulator
- Build custom peripherals
- Tie in custom peripherals to the system interconnect fabric (SIF) and utilize its multi-mastering capabilities
- Append a custom instruction to the Nios II instruction set
- Program the development board
- Program Flash memory

## Skills Required

- Background in digital logic design
- Working knowledge of the Quartus II design software
- Some knowledge of programming in C for embedded systems

Course Length	2 days	
Language	Presentation in German or English Slides and documentation in English	
Platform	PC Windows XP / Windows 7	
Pricing	Public In-House	1050,- EUR/attendee On Request
Dates	See schedule at <a href="http://www.elcamino.de">http://www.elcamino.de</a>	

## Exercises

- Creating a NIOS II Processor System
- Software Flow
- RTL Simulation
- Adding a User Peripheral
- Hardware Breakpoints and Trace
- Custom Instructions
- Direct Memory Access (DMA)
- FLASH Programmer

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