

## Course Description

This workshop gives a comprehensive introduction into designing with Intel® FPGA design software and Intel programmable logic devices. It is suitable for engineers who are new to programmable logic design or who have already designed some logic and would like to gain a deeper understanding of the design flow, the available tools and how to control specific device features. The workshop is a combination of lectures and hands-on exercises.

## Agenda

- Understand programmable logic architectures
- Understand the programmable logic design flow
- Learn golden design rules for programmable logic
- Manage Quartus Prime projects
- Work with different design entry options
  - Schematic design entry
  - HDL design entry
  - IP Catalog
  - Platform Designer (fka Qsys)
- Simulate a design with ModelSim
- Plan & manage device I/O assignments using Pin Planner
- Analyze clock & input/output timing using TimeQuest
- Review compilation results
- Work with Debugging Tools
  - Sources & Probes
  - SignalTap

## Skills Required

- Background in digital logic design
- Experience with PCs and the Windows operating system

## Exercises

- Create a project using the New Project Wizard
- Design Entry
- Compilation
- Revisions and Assignments
- I/O Assignments
- Timing Assignments
- PlatformDesigner (Qsys)
- Simulation with ModelSim
- Debugging with In-System Sources & Probes and SignalTap II

|                      |                                                                |
|----------------------|----------------------------------------------------------------|
| <b>Course Length</b> | 3 days                                                         |
| <b>Language</b>      | Presentation in German or English and documentation in English |
| <b>Platform</b>      | PC Windows 10                                                  |
| <b>Pricing</b>       | Public: 2250,- EUR / attendee<br>In-House: On Request          |
| <b>Dates</b>         | See schedule at <a href="http://elcamino.de">elcamino.de</a>   |

## Intel® FPGA Technical Training