ARM Cortex-M7 Hardware Design

Summary:
This course is designed for those who are designing hardware based around the ARM Cortex-M7 core. Including an introduction to the ARM product range and supporting IP, the course covers the ARMv7-M instruction set and exception handling, Cortex-M7 implementation, power management, memory protection and AMBA on-chip bus architecture. The Cortex-M7 debug architecture is also covered. The course includes a number of worked examples to reinforce the lecture material.

Prerequisites:
- Some knowledge of embedded systems
- Familiarity with digital logic and hardware/ASIC design issues
- A basic awareness of ARM is useful but not essential

Audience:
Hardware design engineers who need to understand the issues involved when designing SoC's around the ARM Cortex-M7 core.

Length:
3 days

Modules:
- Cortex-M7 Overview
- ARMv7-M Programmers’ Model
- ARMv7-M Assembly Programming
- Cortex-M7 Processor
- AHB-Lite
- APB
- AXI Protocol
- AXI Interconnection Architectures
- Cortex-M7 L1 Sub-Systems
- Cortex-M7 L2 Interfaces
- Cortex-M7 Clocks, Resets, Power
- ARMv7-M Exception Handling
- SysTick Timer
- ARMv7-M Memory Model
- ARMv7-M Memory Protection Unit
- Introduction to CoreSight
- ARMv7-M Debug
- Cortex-M7 Implementation
- Cortex-M7 Integration
- ARMv7-M Extensions (Optional)