Cortex-M DesignStart

Selecting the right system

May 2018

DesignStart Processor IP

The DesignStart program makes it easier and quicker to access Arm processor IP.

If you're new to working with Arm, you may be trying to work out the best starting point for a commercial evaluation[1].

- How do the Eval and Pro versions of DesignStart compare?
- Is Cortex-M0 or Cortex-M3 right for me?
- What is the software story?
- How do the systems compare?

[1]For private study, Cortex-M3 DesignStart Eval is a good place to start. There are also other options for academic use.

Summarizing DesignStart Eval and Pro

If you chose DesignStart Pro, you can also refer to the example system in DesignStart Eval.

DesignStart Eval

A simple but full system design. No configuration is required.

- Aimed at hardware and software developers
- Ideal for learning about Arm systems
- Show your peripheral added to an existing design
- Several typical peripherals already integrated
- Out-of-the-box support for Arm MPS2+ FPGA Prototyping Board, and mbed OS on Cortex- M3
- ETM Trace support included with Cortex-M3 for FPGA debug
- Available via a click-through EULA for evaluation only

DesignStart Pro

A baseline system ready for configuration and expansion.

- Aimed at hardware developers
- Fully configurable processor
- Subsystem design and components included
- Support for mbed in Cortex-M3 subsystem
- Accurate implementation results
- Permits SoC manufacture
- Available to corporations through a streamlined licensing process
  - $0 license fee + success-based royalty model.

Cortex-M0 and Cortex-M3

Comparison focusing on evaluation. Each application will have specific requirements

Cortex-M0 DesignStart

- Uses a simple single-master AHB system
- The Cortex-M System Design Kit (CMSDK) allows you to configure a system as you choose
- Tarmac trace only available in Cortex-M0 DesignStart Pro

Cortex-M3 DesignStart

- Includes the SDK-100 System Design Kit subsystem
  - SSE-050 Subsystem including interconnect
  - Ready for expansion with own peripherals
- Optional peripherals are included to target the design of connected endpoints
- Tarmac trace supported in both Eval and Pro
  - Improved debug flow
- Better choice for a ramp-up exercise

Software Options

All the DesignStart deliverables include low-level ‘integration tests’. These are bare-metal tests written in ‘C’, using the CMSIS hardware abstraction layer. These aim to demonstrate simple functionality rather than provide exhaustive testing.

The integration tests can be compiled with gcc, Arm DS-5, or Keil MDK.

Any RTOS will be dependant to some extent on the peripheral set you include in an end device. The Cortex-M3 DesignStart Eval example system will run mbed out-of-the-box when used on the MPS2+ FPGA platform.

Cortex-M3 DesignStart Pro

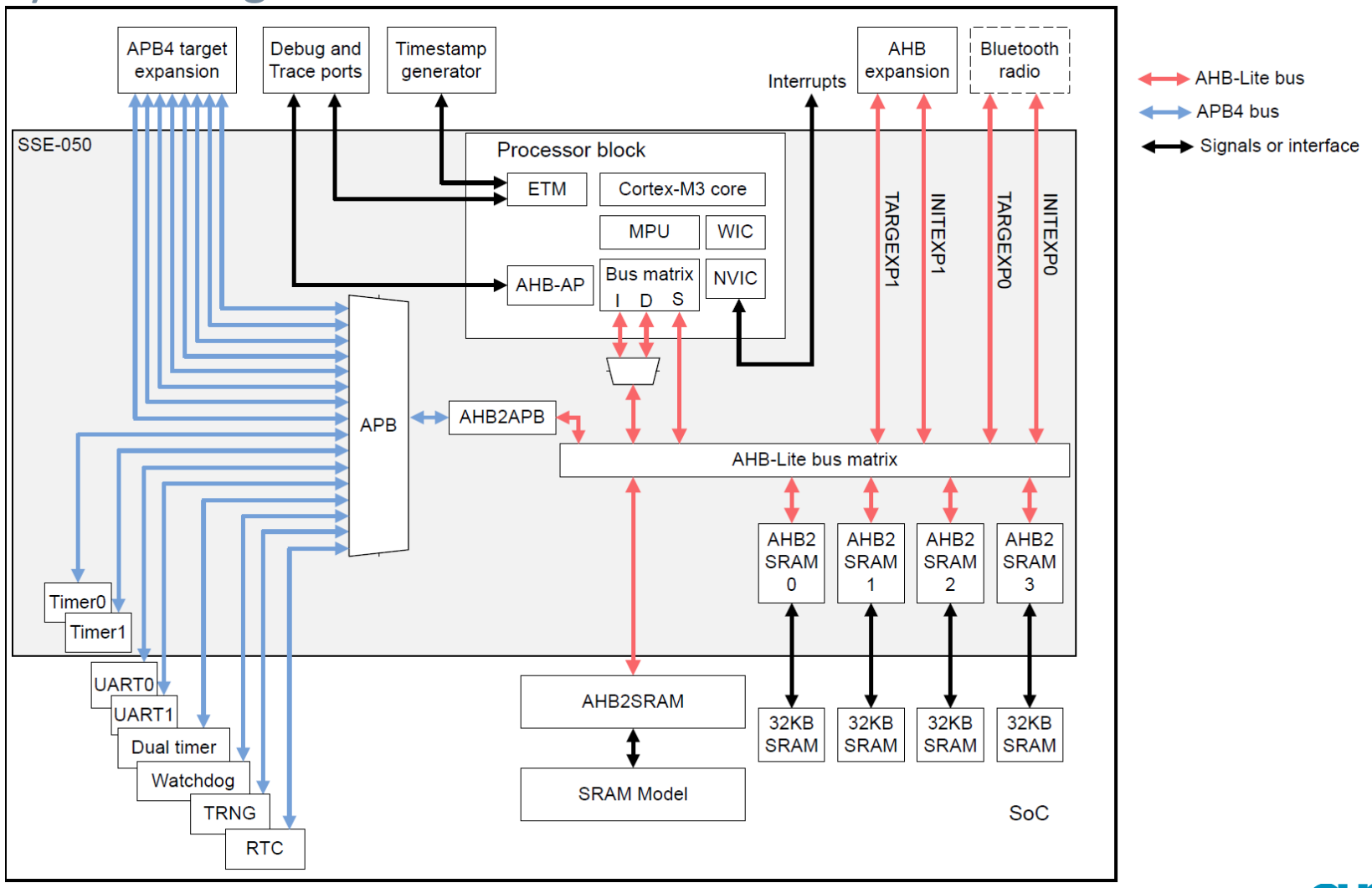
A complete system, ready for configuration

SSE-050 integrates:

- Processor
  - Without ETM
- SRAM interface
- Timers

Expansion for:

- Flash
- AHB Masters
- AHB, APB slaves

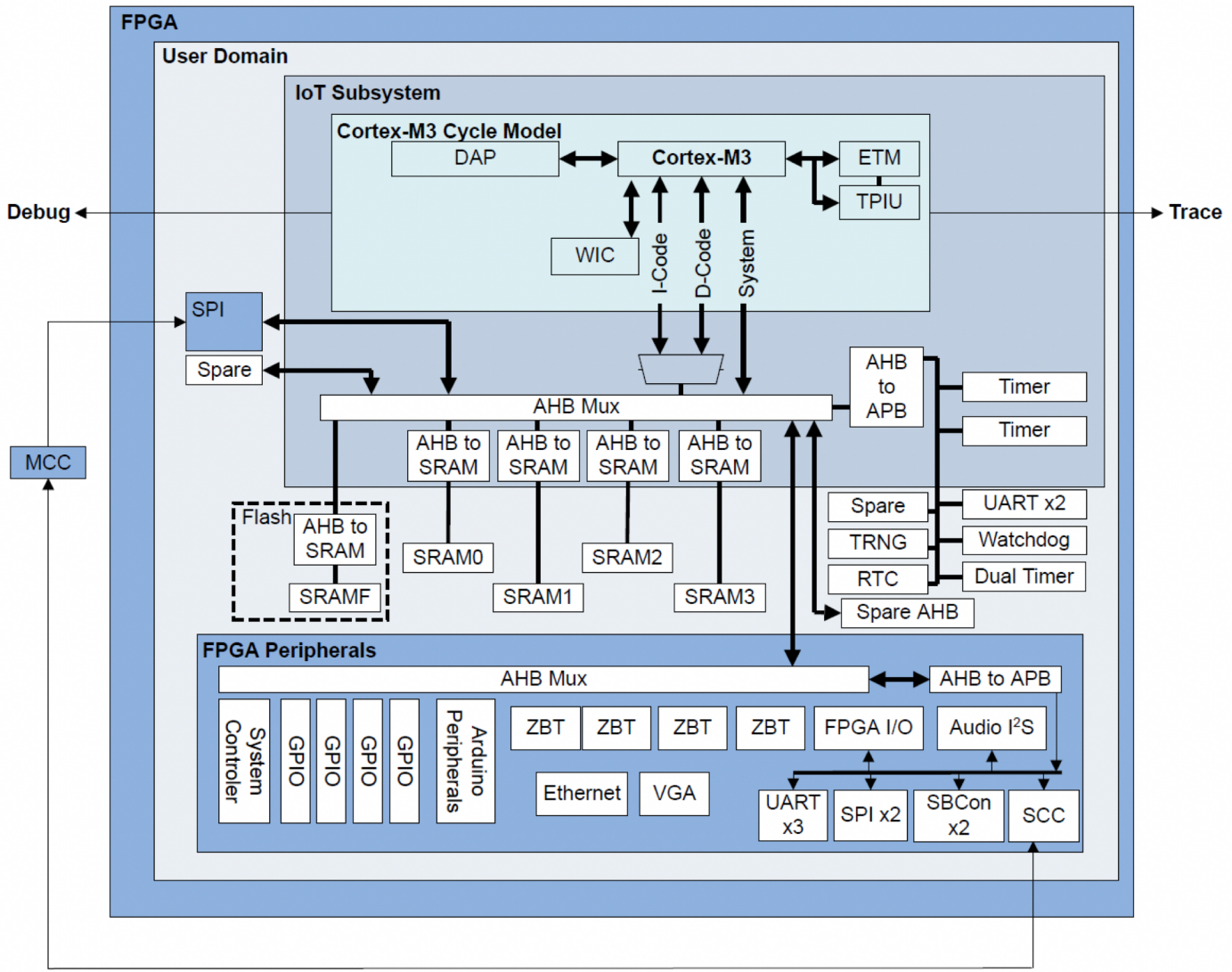


Cortex-M3 DesignStart Eval

FPGA example suitable for prototyping a connected device

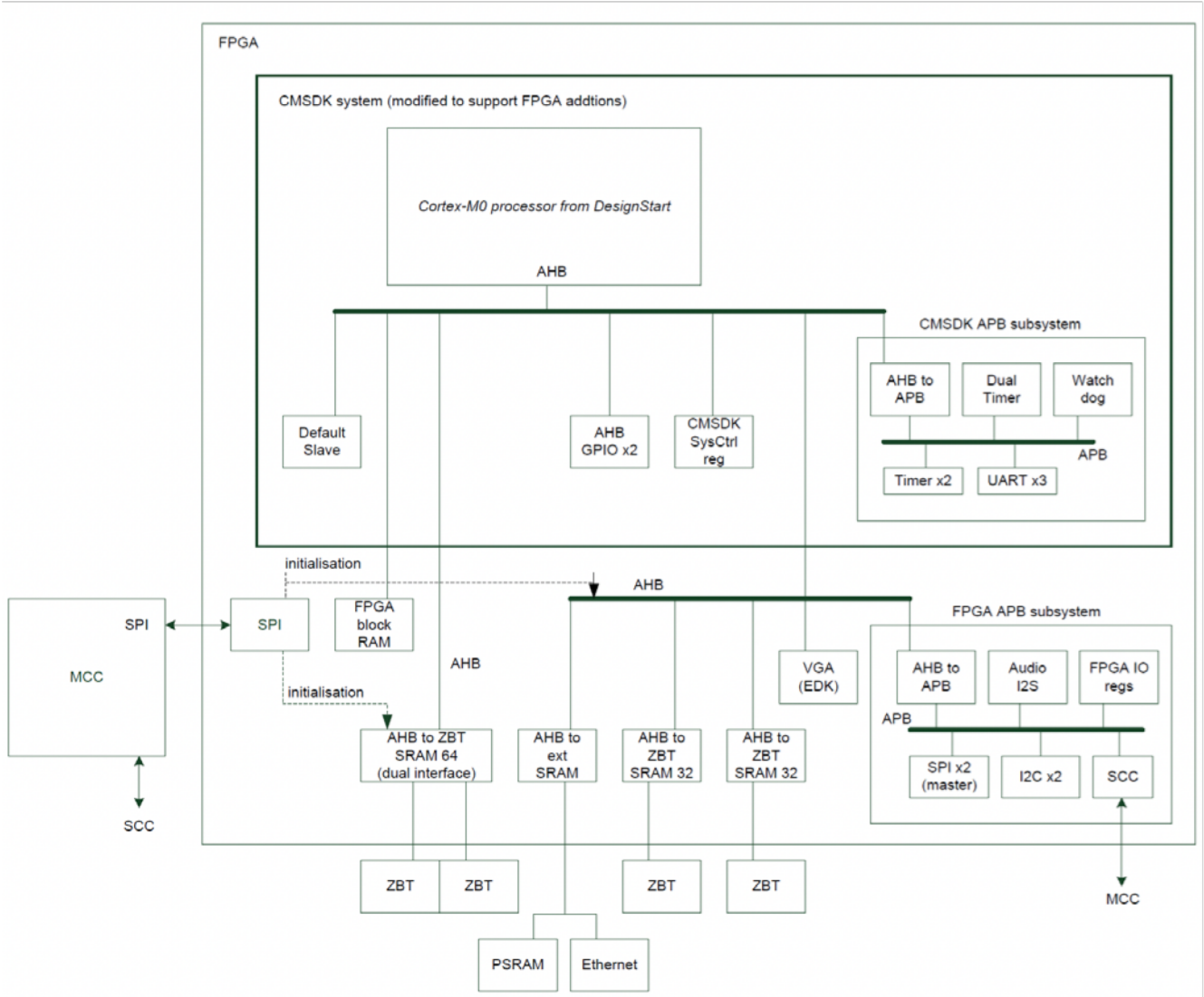
Example full system

- Supports software development and RTL simulation
- Extra peripherals for FPGA platform
- Example TRNG and RTC included
- Most comprehensive of all DesignStart systems



Cortex-M0 DesignStart

FPGA example suitable for prototyping a connected device



Based on Cortex-M system design kit

- Single master AHB
- Example peripherals
- Cortex-M0 DesignStart Eval adds peripherals for FPGA