Profiling Tools for Ubuntu-on-ARM

OProfile and Perf-Events

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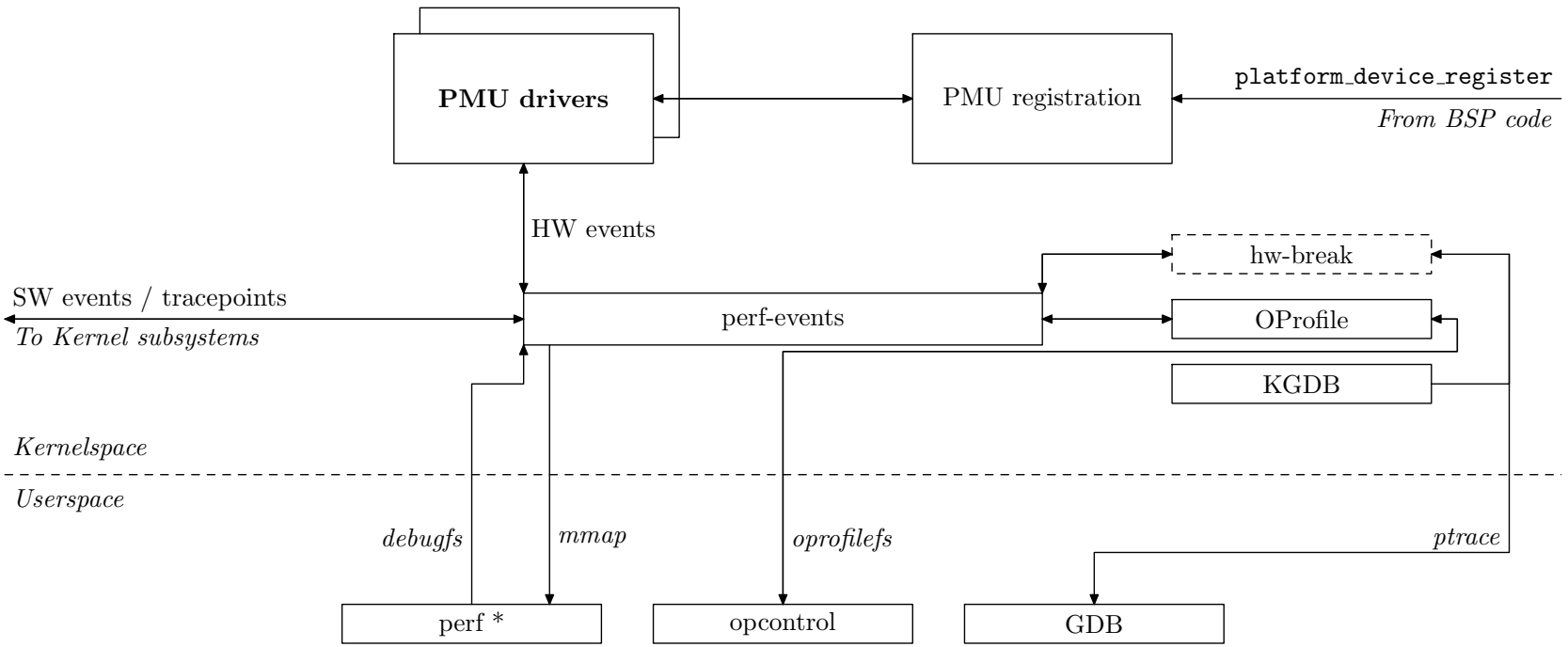
UDS-M: May, 2010

Let's talk about. . .

1. Upstream Today
2. Ubuntu Tomorrow
   - Kernel
   - Userspace
3. How are we going to do this?

Architecture



Profiling Support

Currently, the mainline ARM Kernel supports:

- SW perf-events and tracepoints
- HW perf-events for v5, v6 and v7 cores (UP and SMP)
- OProfile (userspace needs updating)
- PMU device registration for OMAP2/3, PXA, Realview, IOP3xx, BCMRING platforms

Action #1: PMU Support in BSP Code

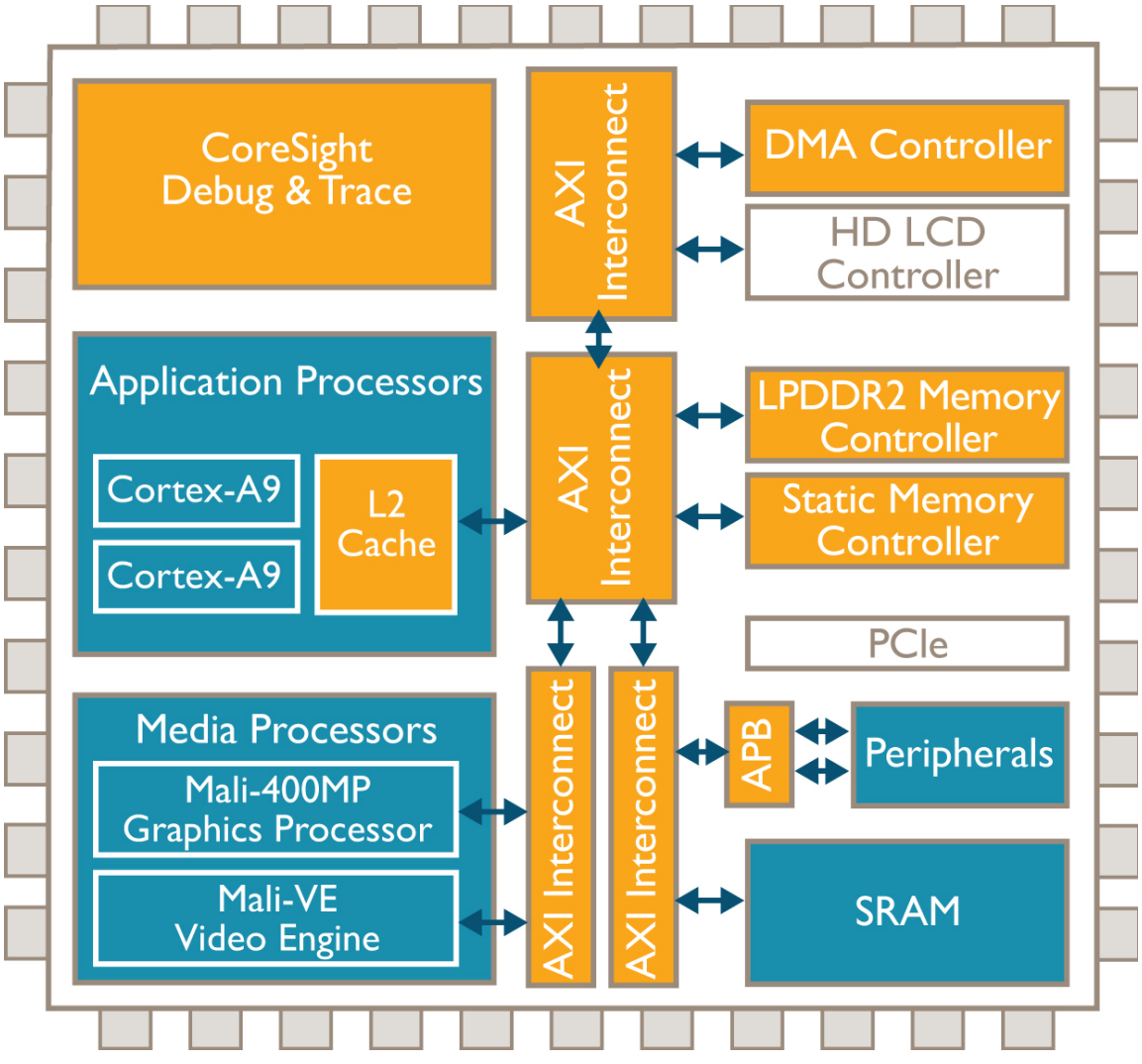
Registering your PMU device with the Kernel is easy[1]!

- *Please go and edit your BSP immediately after this presentation*

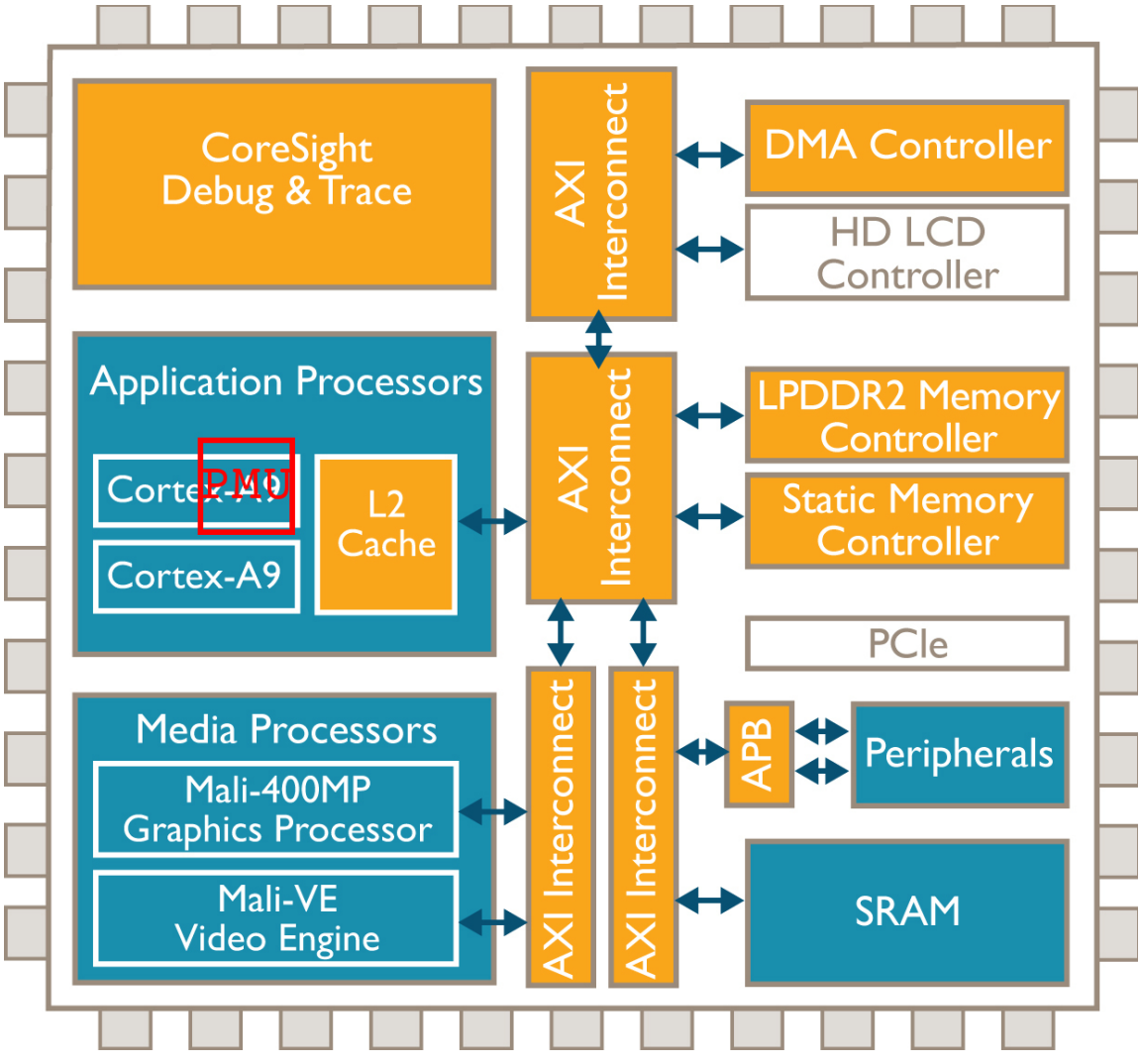
Difficulty: 0

[1] Might not be easy

Action #2: System Events



Action #2: System Events



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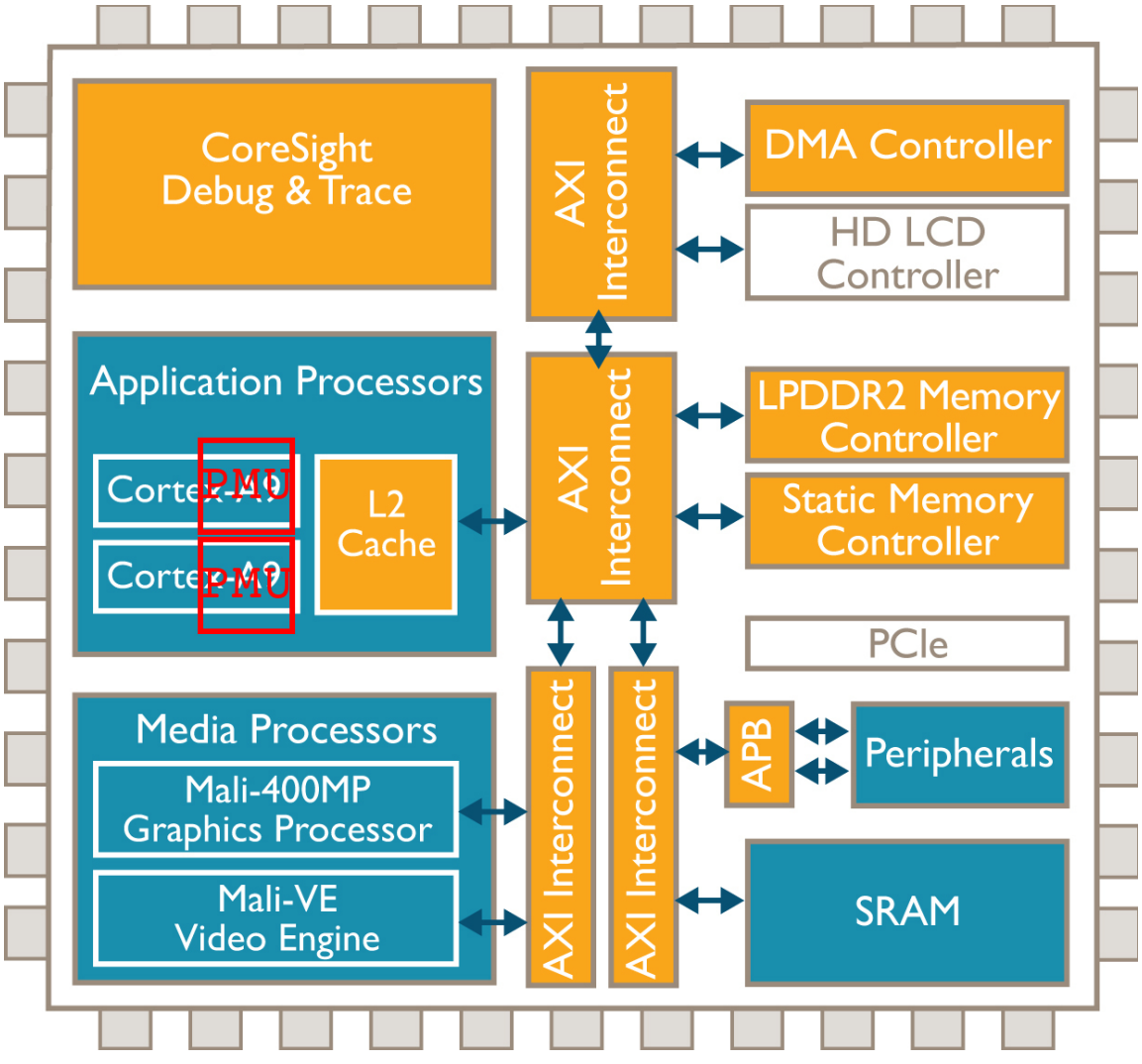

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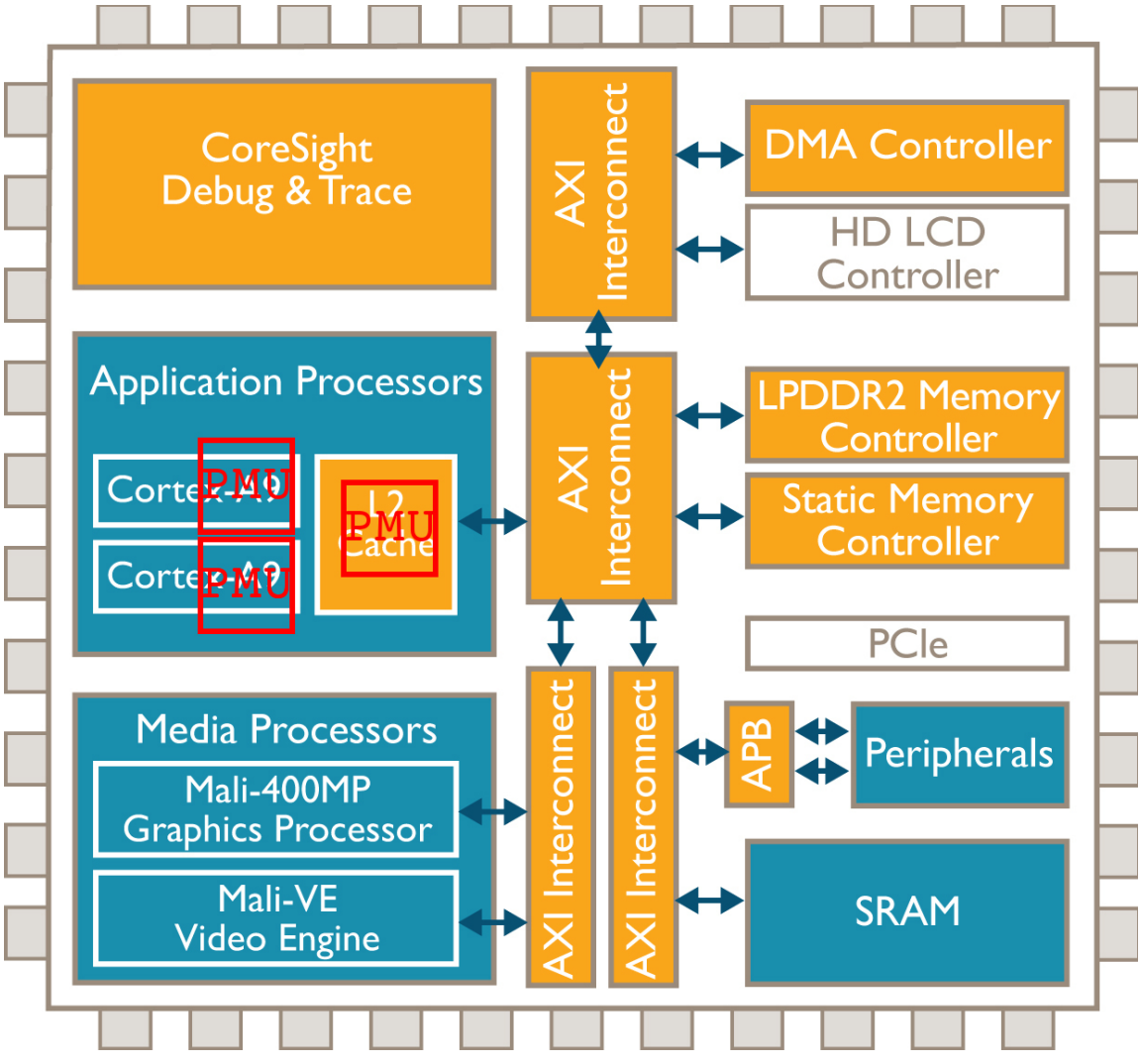

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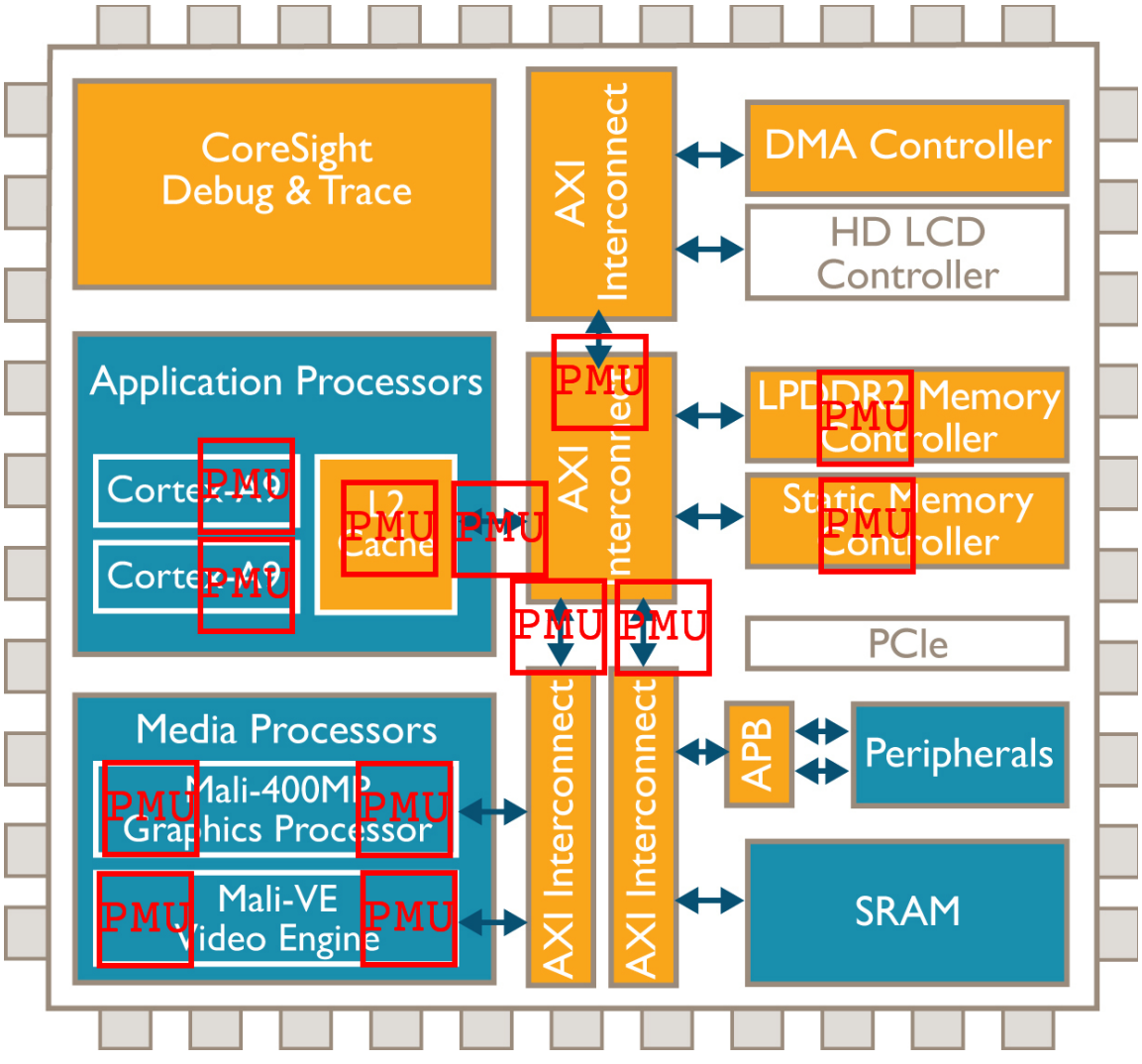

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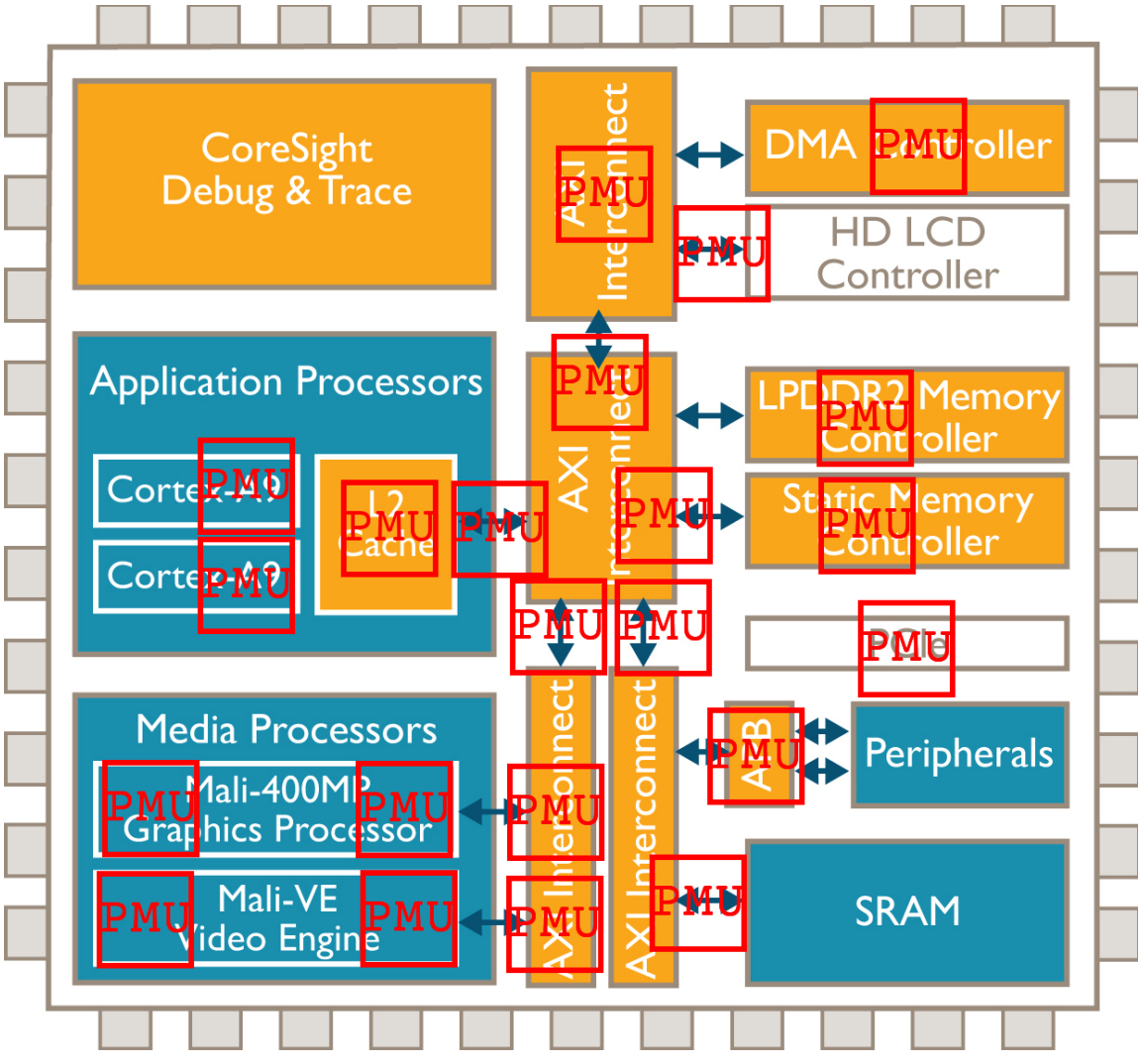


Action #2: System Events

Uncore/nest/system events are painful:

- No standard set of event sources
- Restricted access to PMU device
- Interrupt handling?
- Reporting results in a meaningful way
- Making sense of the data wrt programmer's model

Difficulty: 1

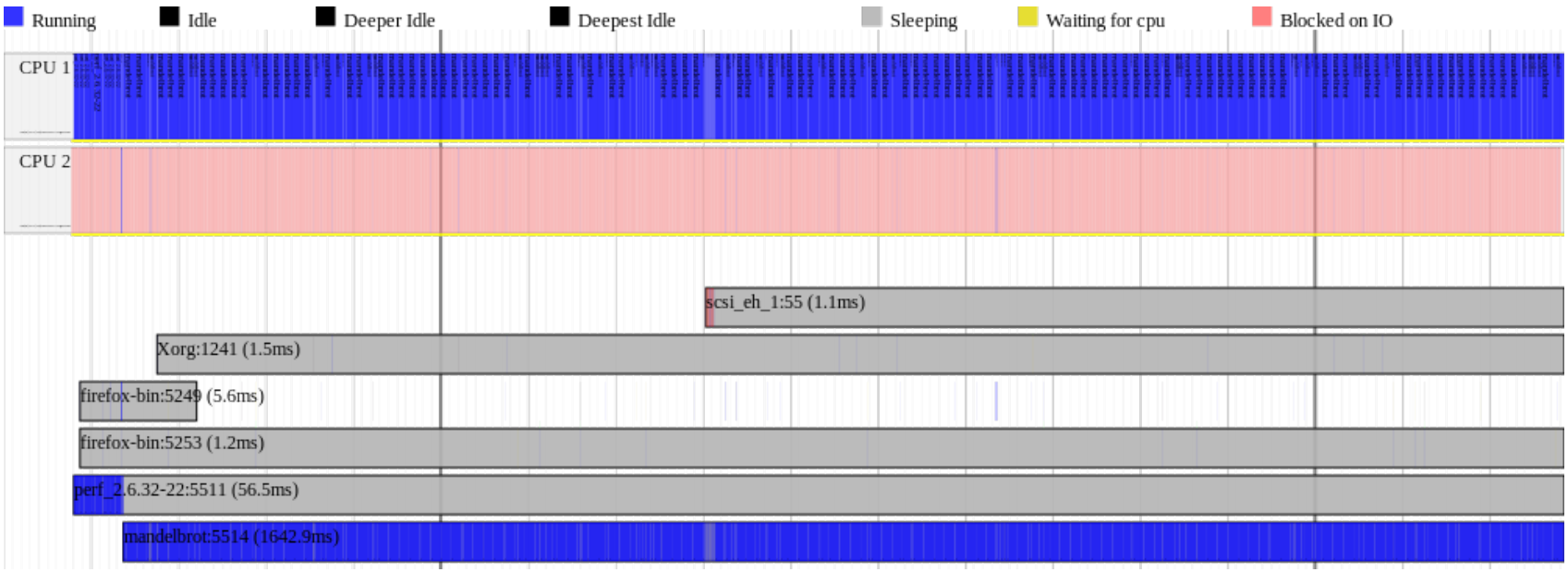
Action #3: linux-tools for ARM

Current perf tools exist in linux-tools package for x86.

For recent Kernels, it should be easy to support this package for ARM.

Difficulty: 0

Action #4: GUIs!



Difficulty: 1

Tool Concerns

Profiling tools must address:

- Architectural portability
- Enumeration of device-specific event space
- Meaningful visualisation

Discuss!