



# Powerdebugging inside Linaro

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<https://wiki.linaro.org/WorkingGroups/PowerManagement/>

# Linaro?

**Source Consolidation**

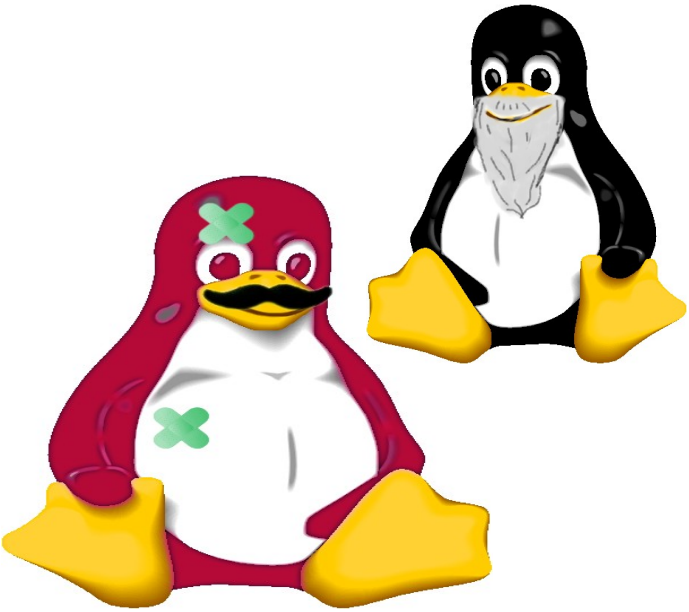
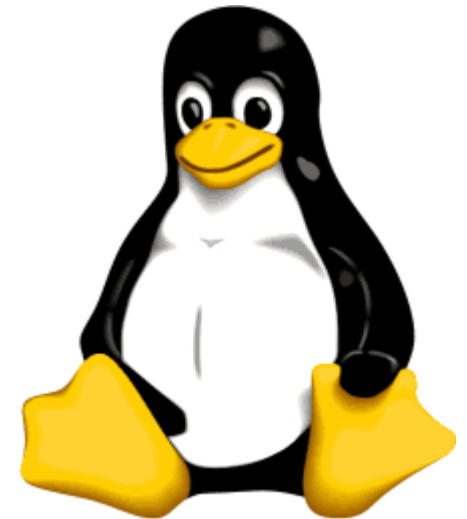
**Patches**

**Architecture consolidation**

**Optimizations**

**Tools**

**Evaluation builds**






# PM WG: Story so far...

- 1 full Linaro cycle
- Focus on consolidation and tools
- Some kernel work...

Feature	Freescala i.MX51	TI OMAP3	TI OMAP4	Samsung Orion	ST-E UX8500
Export clock tree to debugfs	Y	Y	Y	Y	Y
Cpufreq driver	Y	WIP	WIP	Y	Y
Cpuidle driver	WIP	Y	N	WIP	N
CPU Hotplug	NA	NA	Y	Y	Y





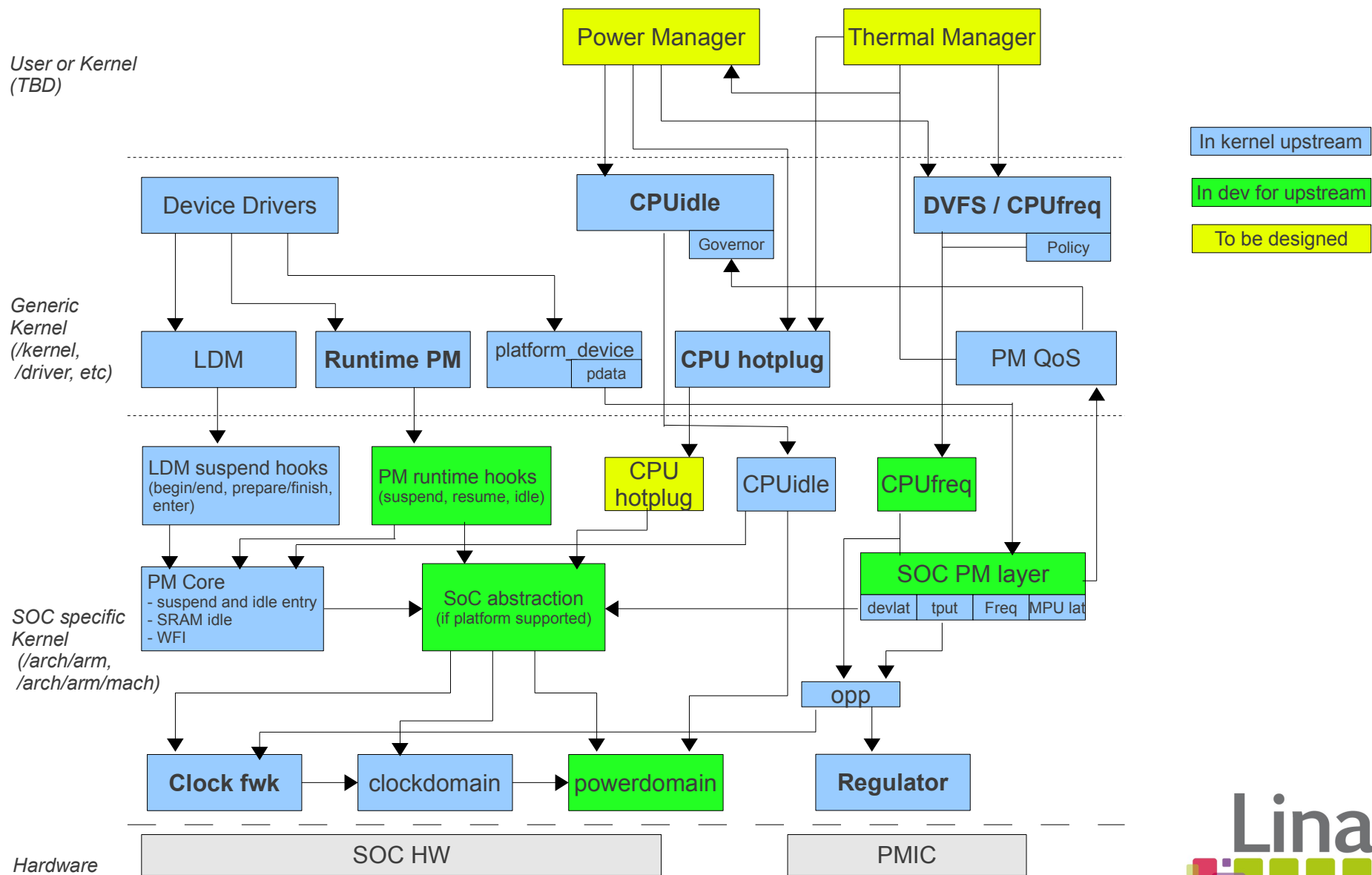
# PM WG: Story so far...

- Some tools work
  - Powertop
  - Powerdebug
- And some experiments
  - Thermal management
  - CPU Hotplug



# Survey

# Problem Statement





# Problem statement

Complexity is growing fast  
and  
it is hard to tune a product for  
optimum battery life

# Good old days

*User*

Device Drivers

LDM

LDM  
suspend hooks

SRAM idle, WFI

Clock  
Framework

*Kernel*

*Hardware*

SoC HW

PMIC

Generic  
code

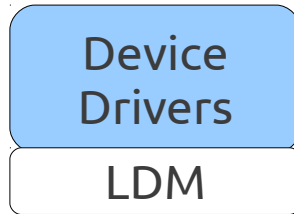
Vendor  
code



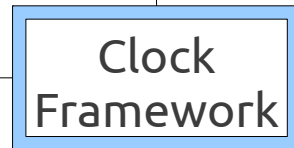
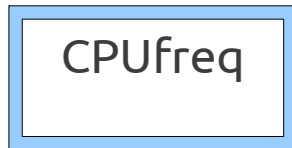
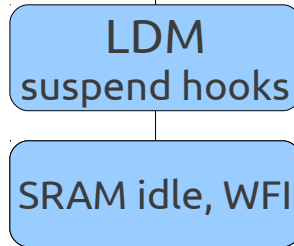


$$P \propto V^2 \cdot f$$

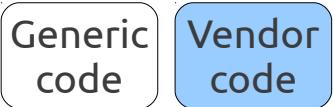
User



Kernel



Hardware

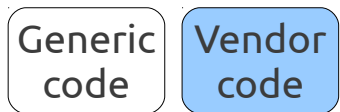
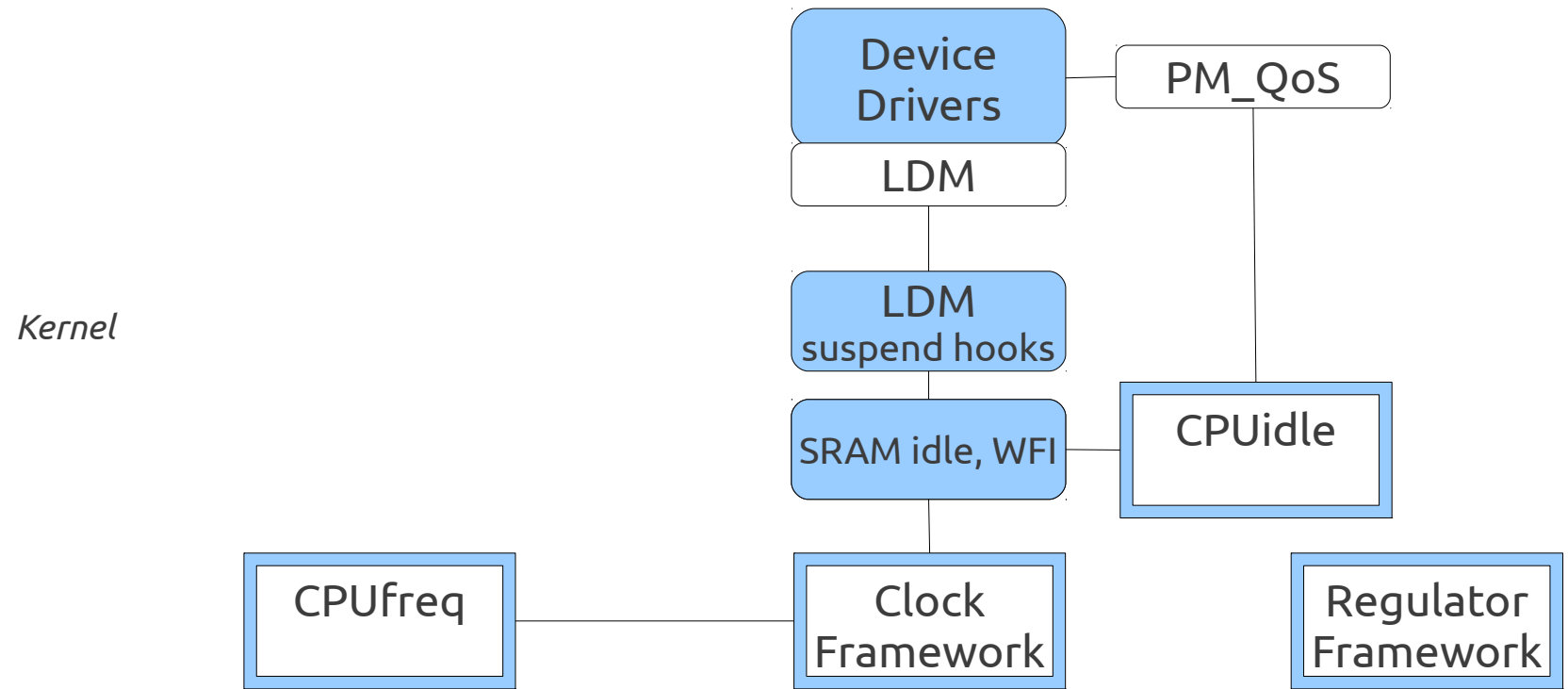


# Corralling regulators, idle states and offering latency guarantees

User

Kernel

Hardware

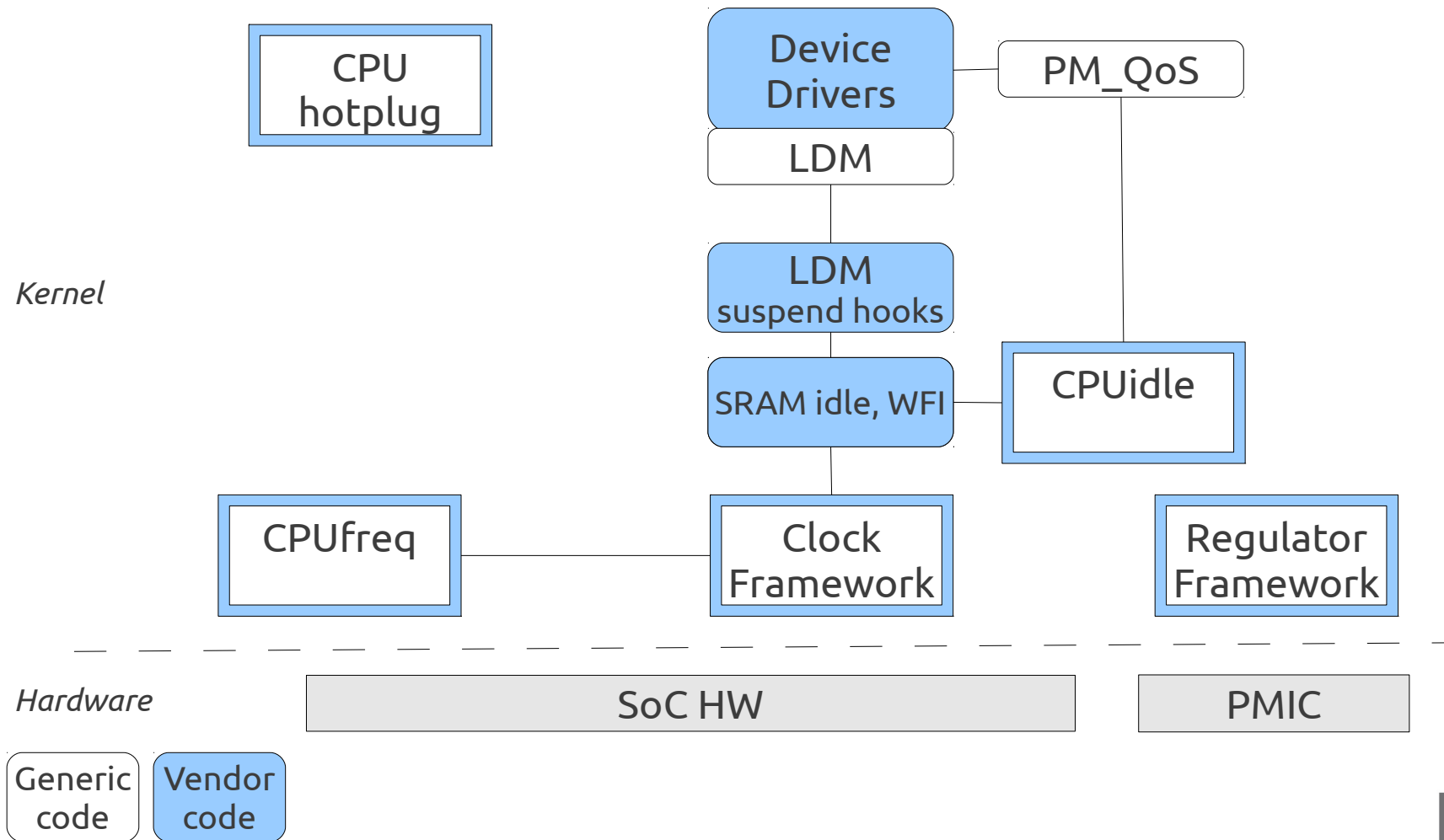


# Many hands make light work

User

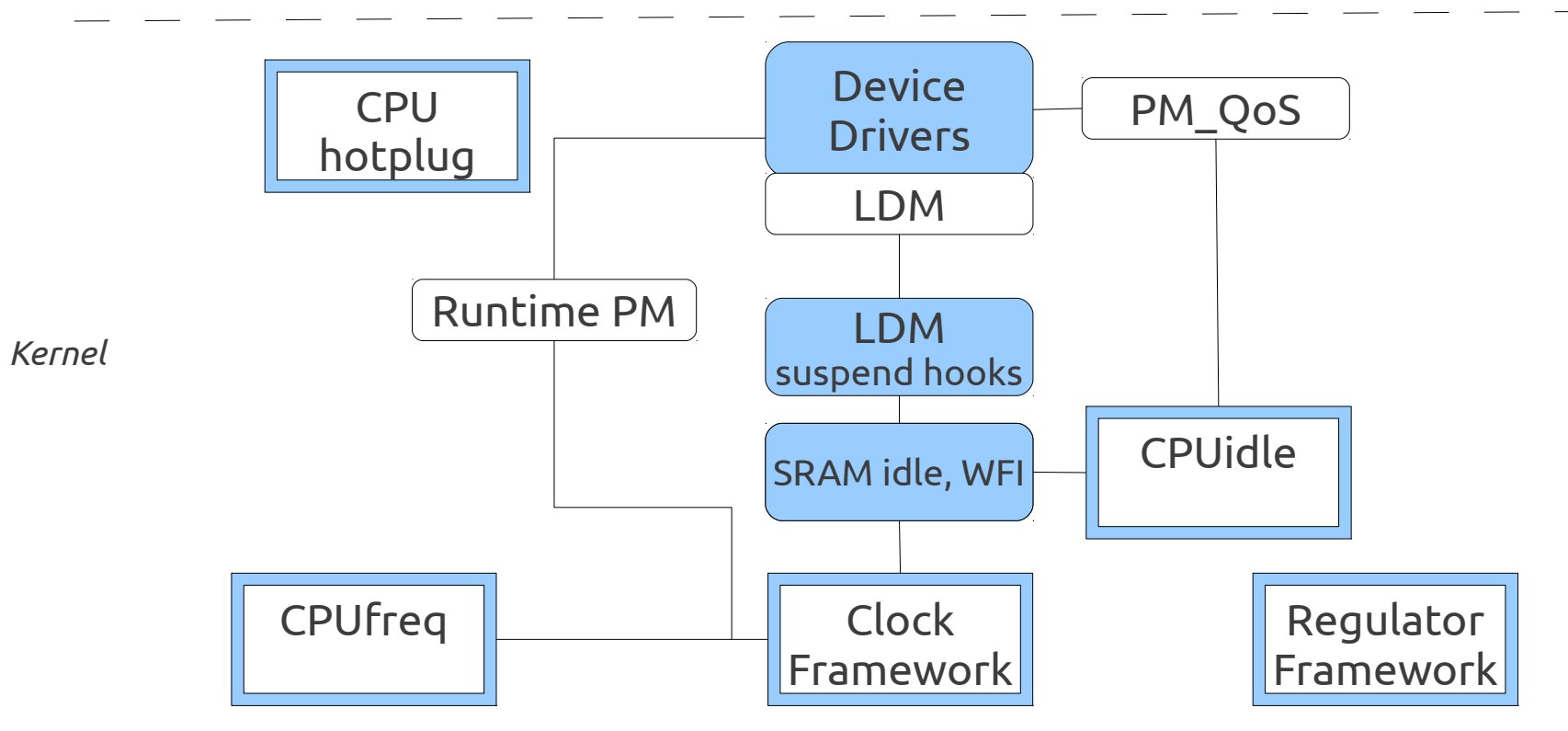
Kernel

Hardware



# Abstracting clock- & power-domain handling for peripherals

User



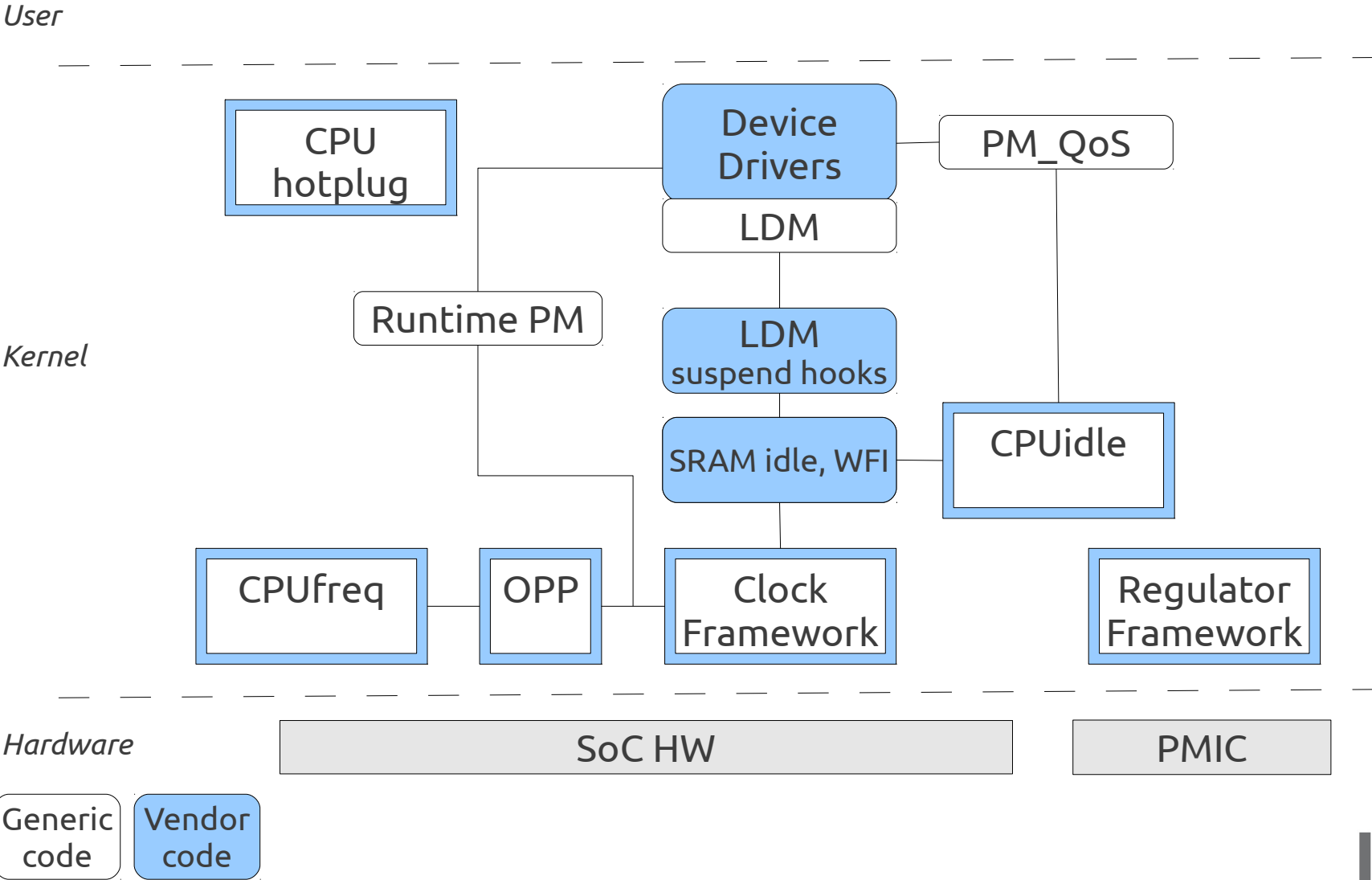
Hardware

SoC HW

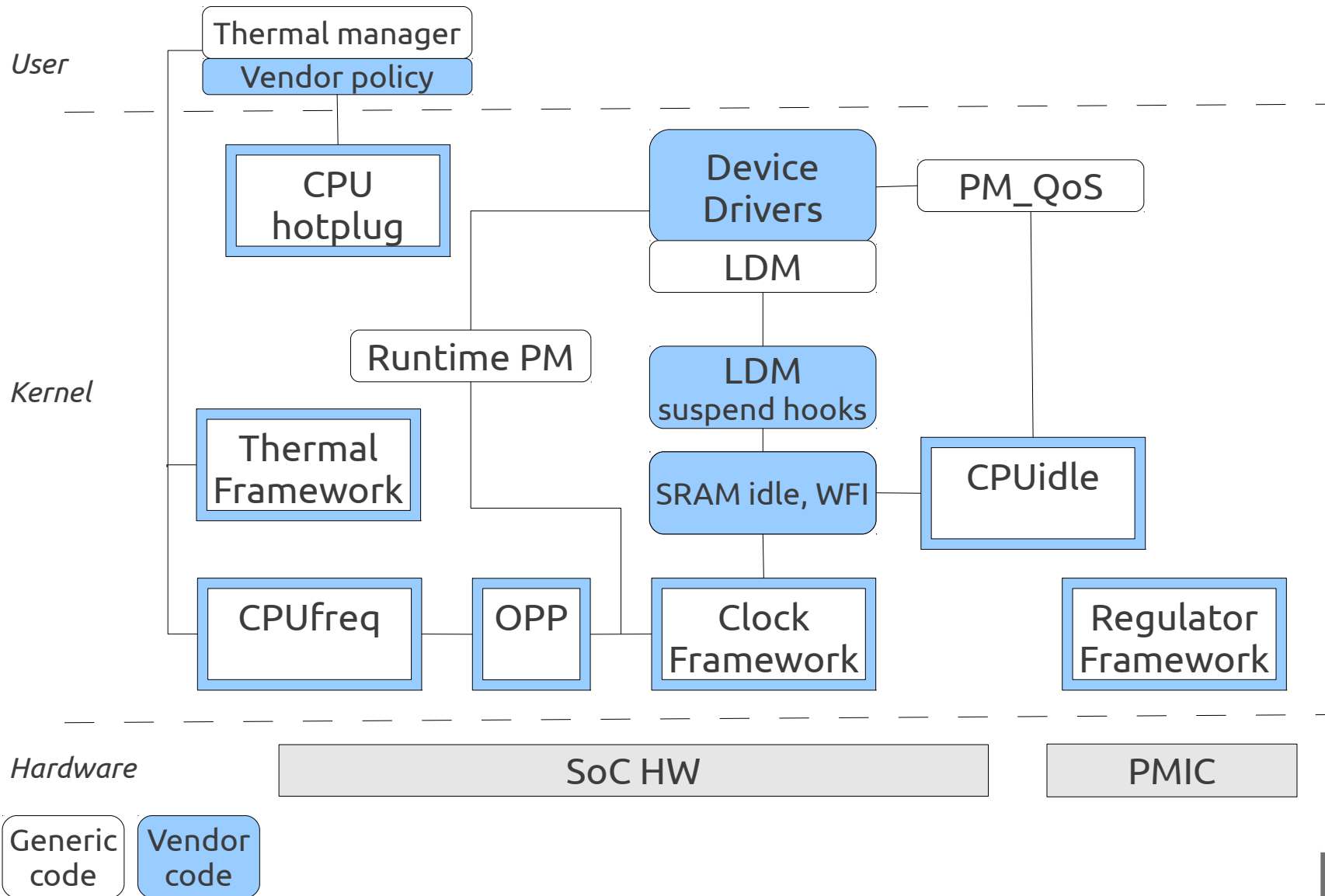
PMIC

Generic code    Vendor code

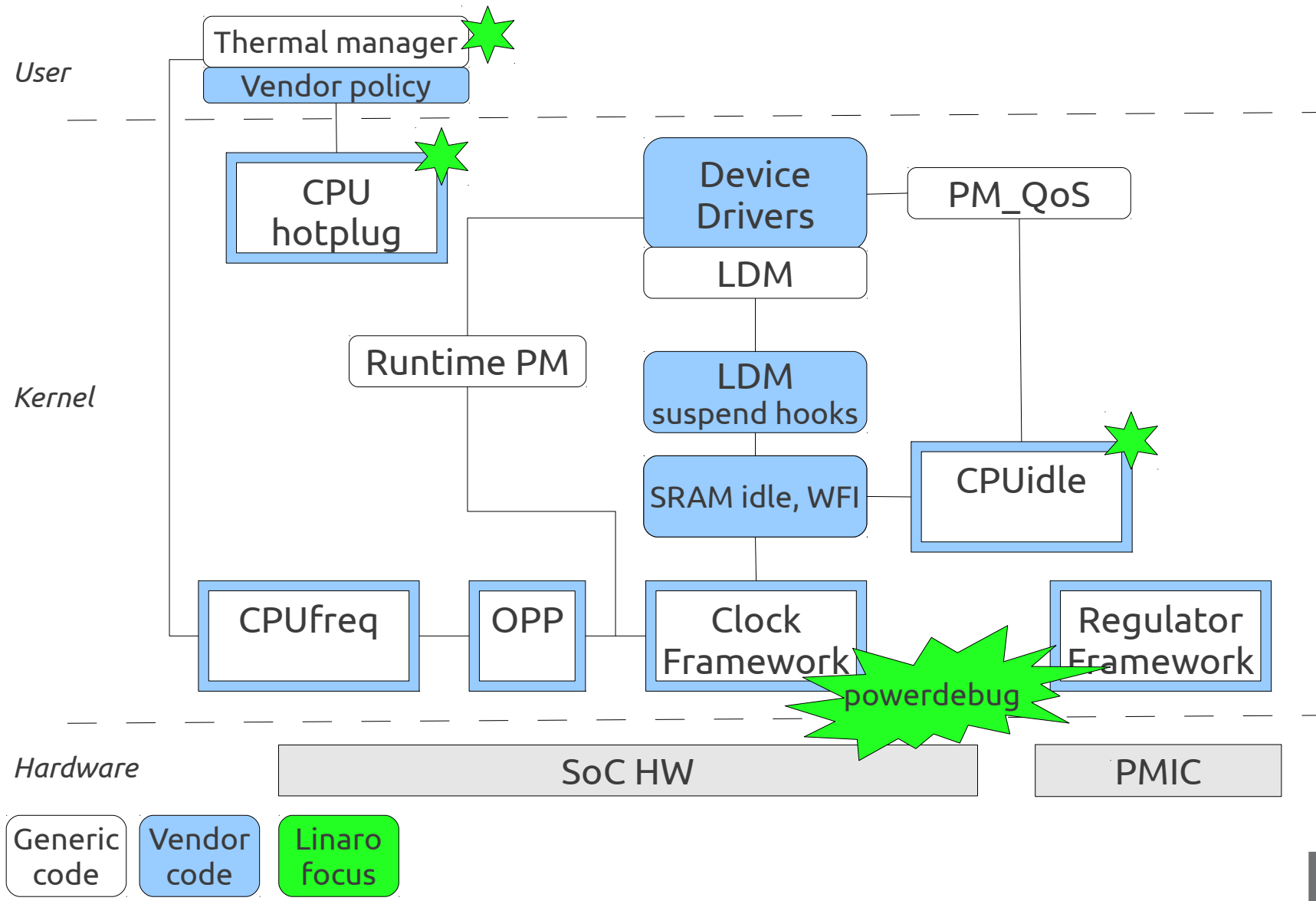
# Performance points of devices



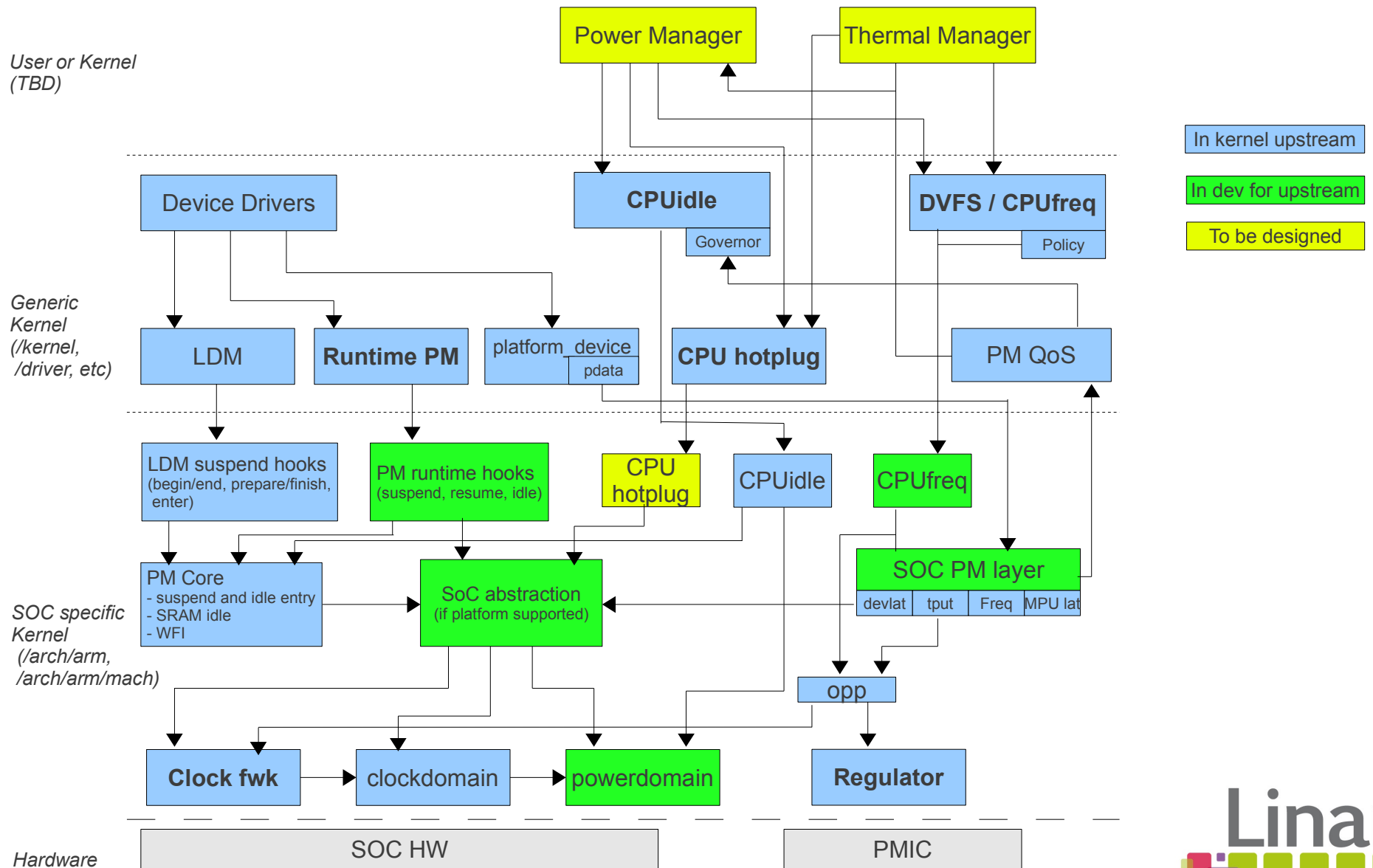
# Warmth at last!



# Focus areas for Linaro PM WG



# Remember!







We're just getting started...

<https://wiki.linaro.org/WorkingGroups/PowerManagement/>

<http://git.linaro.org>

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