

# Embedded Software Essentials

*Introduction to Embedded Systems*

C1 M1 V2

# Definition of an Embedded System

- “An Embedded System is a computerized system that is purpose built for it’s application.”<sup>[1]</sup>

- Limited Resources

- Processing
- Memory
- Peripherals



Personal Computer<sup>2</sup>



Computer Server<sup>3</sup>

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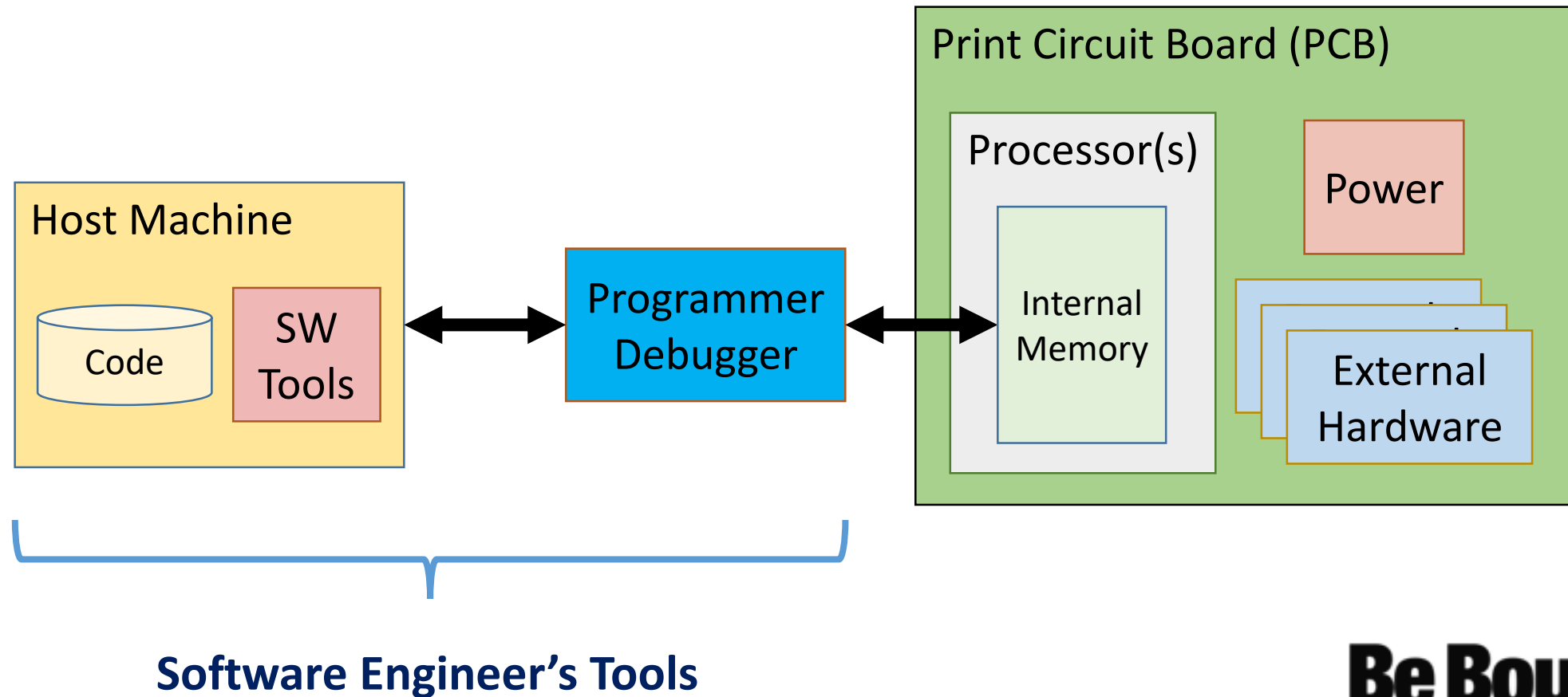


Personal Computer<sup>2</sup>

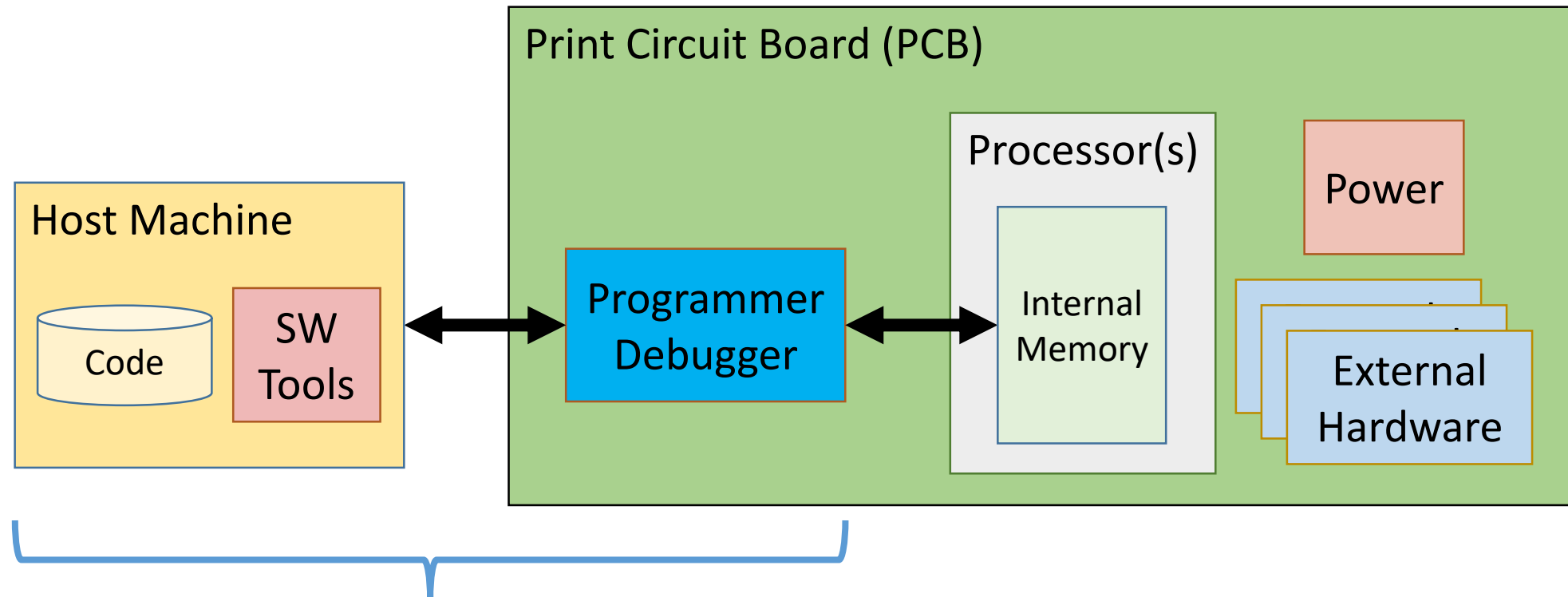


Computer Server<sup>3</sup>

# Embedded System Development Platform

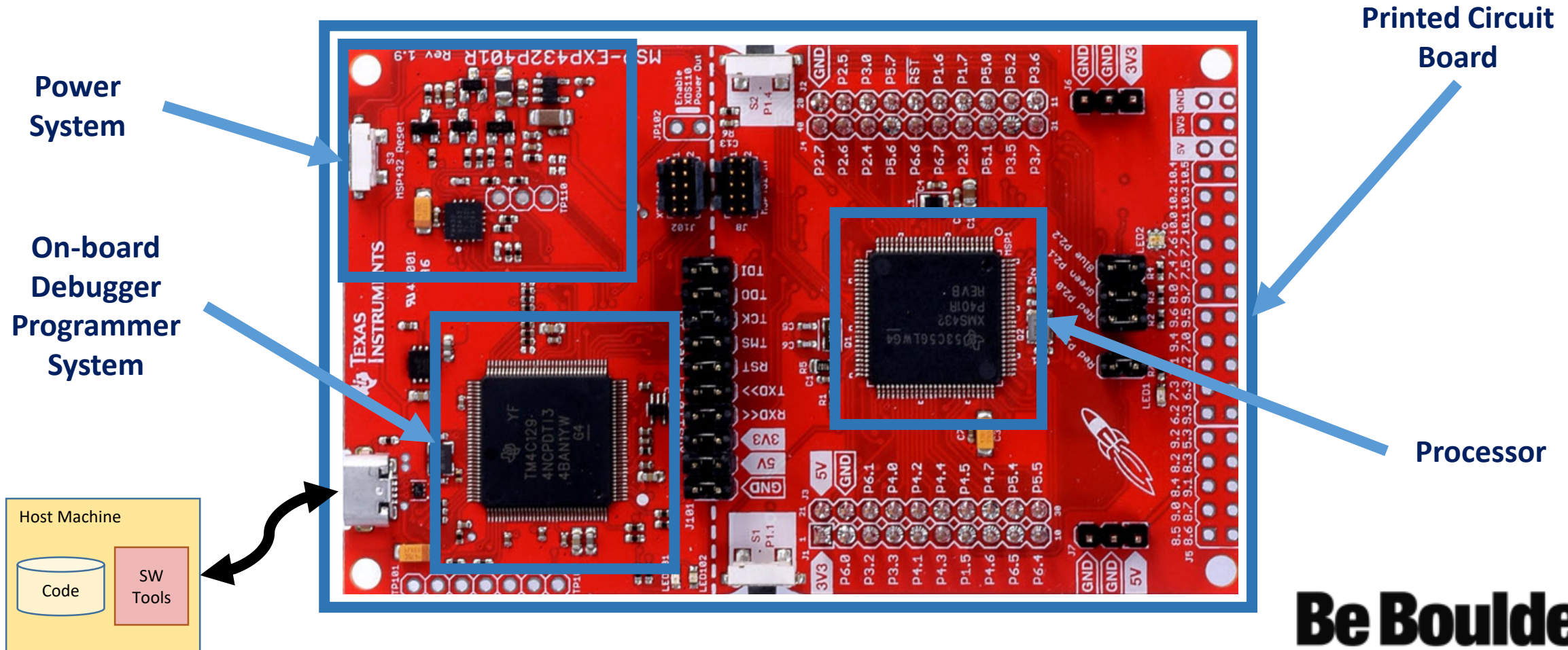


# Embedded System Development Platform



**Software Engineer's Tools**

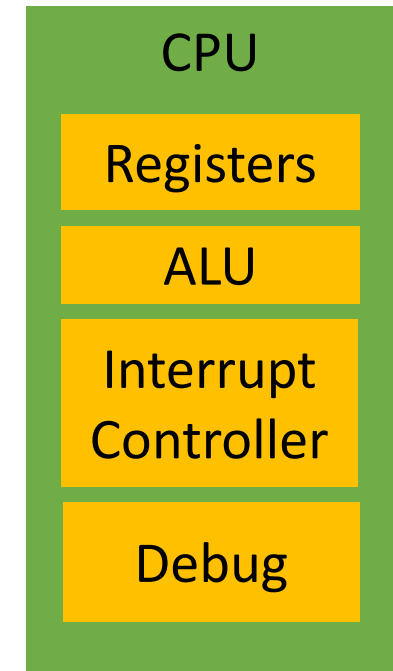
# Printed Circuit Board Example



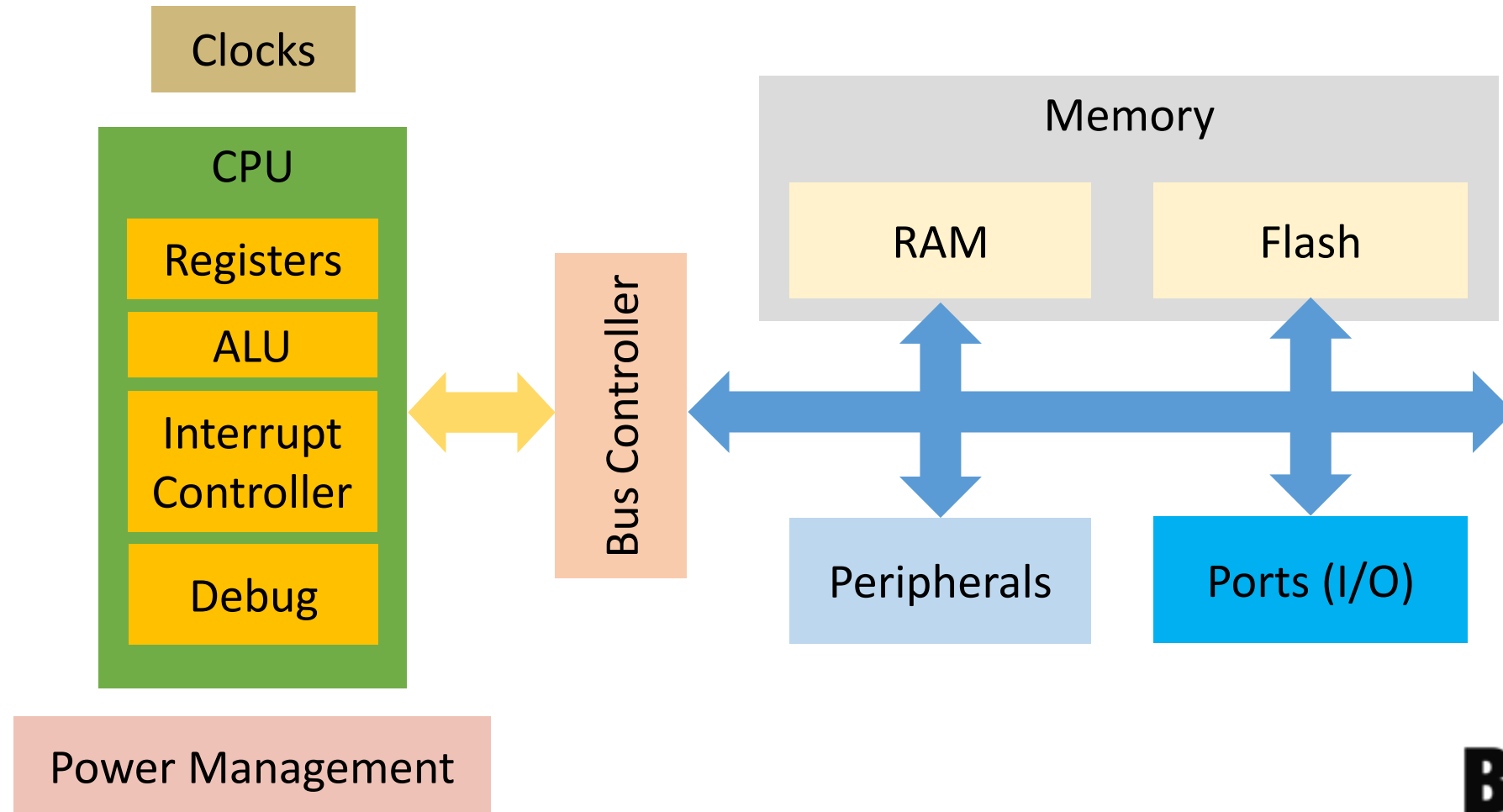


# Central Processing Unit (CPU)

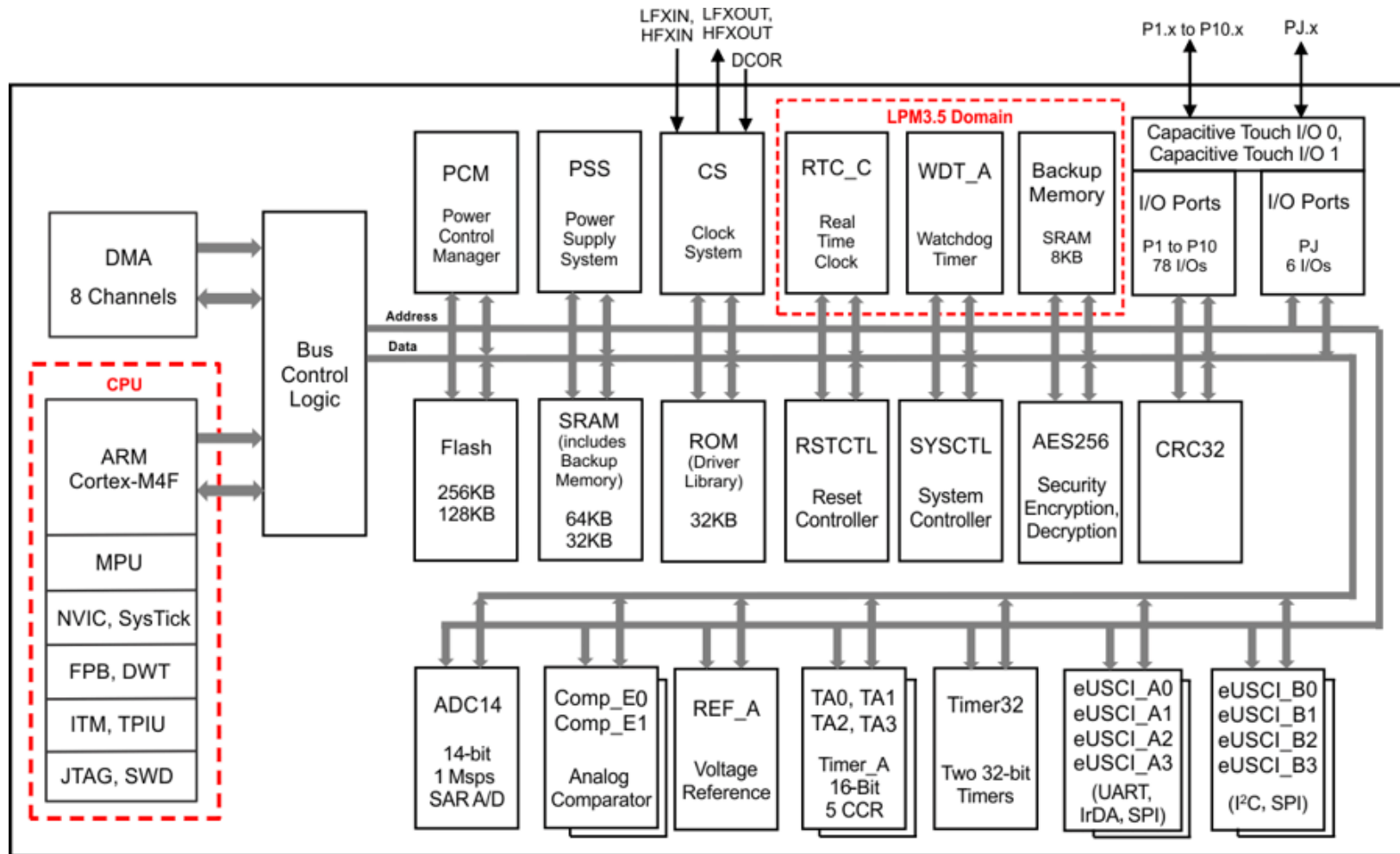
- CPU performs computation work
- Central Processing Unit contains:
  - Registers
    - Special Purpose
    - General Purpose
  - Arithmetic Logic Unit (ALU)
  - Interrupt Controller
  - Debug



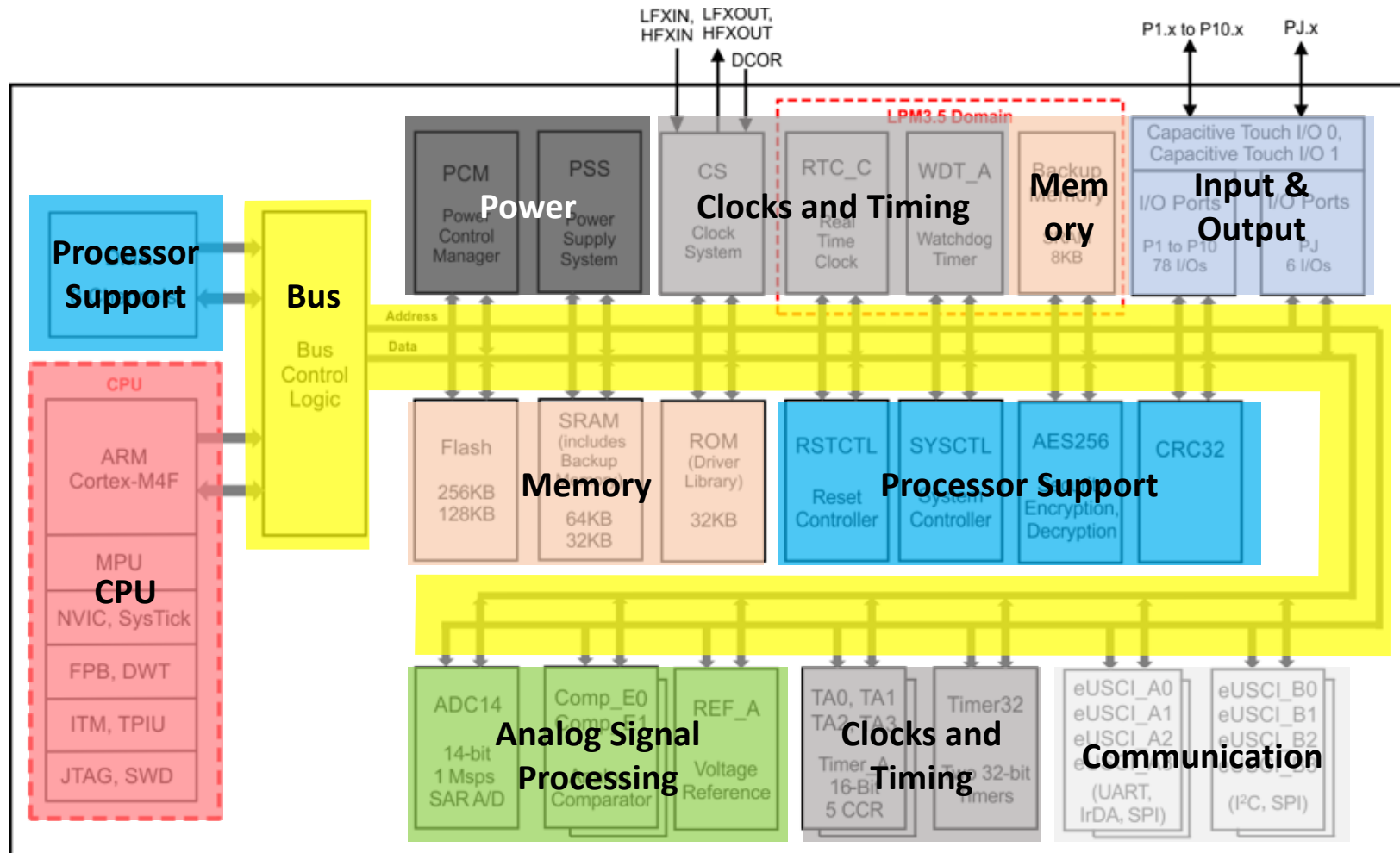
# Microcontroller Components



# MSP432 Cortex-M4 Microcontroller



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