

**HOST (Serial CLI)**  
Commands: `gpu_reset`, `load_imem`, `dma_h2d`, `kernel_launch`

UART (115200/Turbo)

### Core 0: Front-End (Warp Scheduler)

[Serial Handler] → [CLI Parser]

#### Instruction Memory (IMEM)

Size: 1024 Insts

PC:0 MOV R1,5

FreeRTOS Queue  
(Instruction Batch)

**Fetch & Decode Unit**  
PC Control (BRA/BR.Z)  
Decode Opcode/Operands

### Core 1: Back-End (SIMD Engine)

#### 8-Lane SIMD Execution Engine

Lane 0 .. Lane 7 (R/F/P Registers)

#### Shared Global Memory (VRAM)

Size: 40KB - 1MB

Shared Address Space

**Execution Trace Logger**  
Cycle-Accurate JSON Stream