Intel Galileo Development Board

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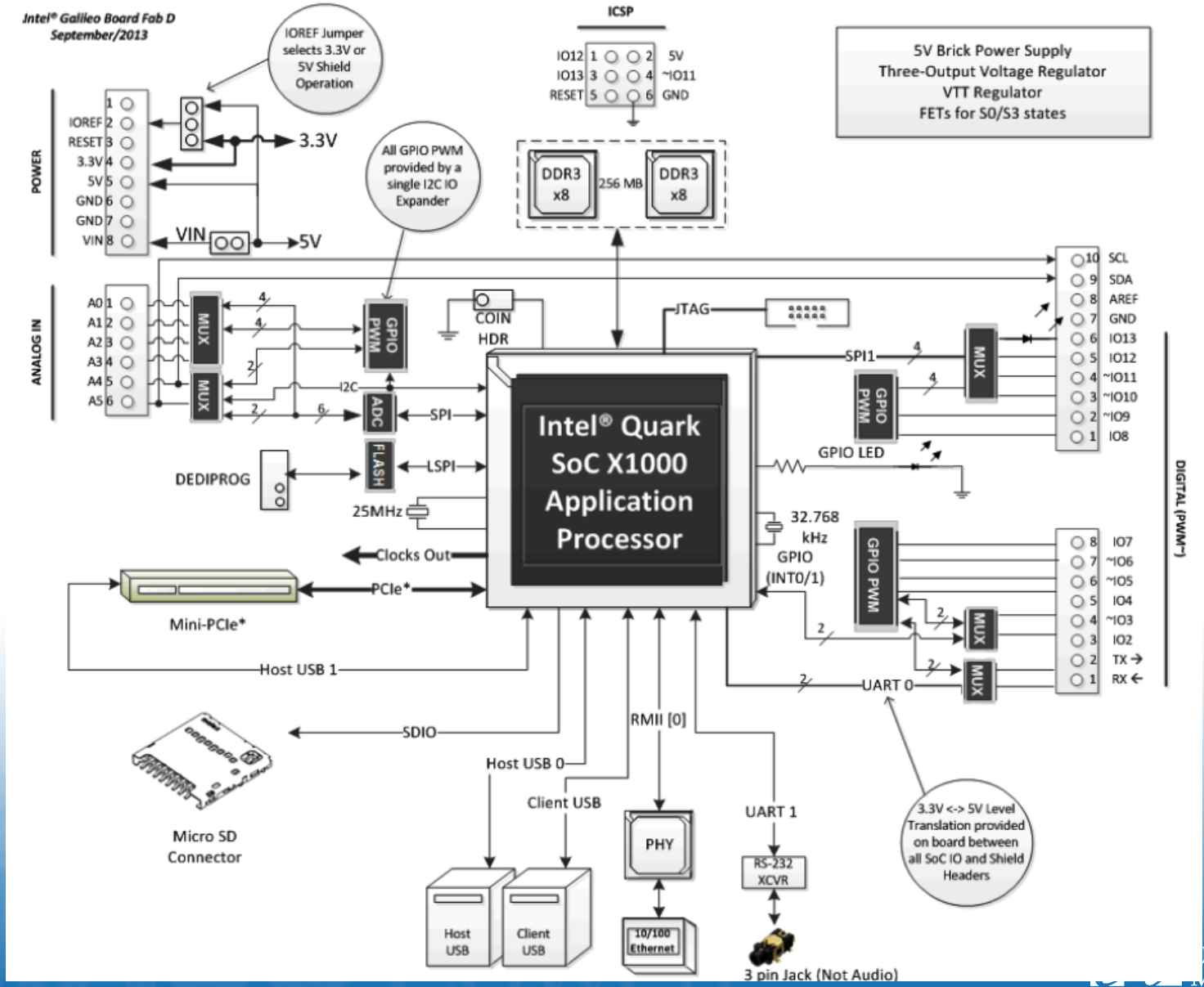
Introduction of Intel Galileo

- Intel's Embedded Development Board based on Quark processor
- Open Source Hardware and Software
- Arduino Compatible
- With a variety of ports
  - USB, GPIO, Ethernet, mini PCIe, serial, etc.

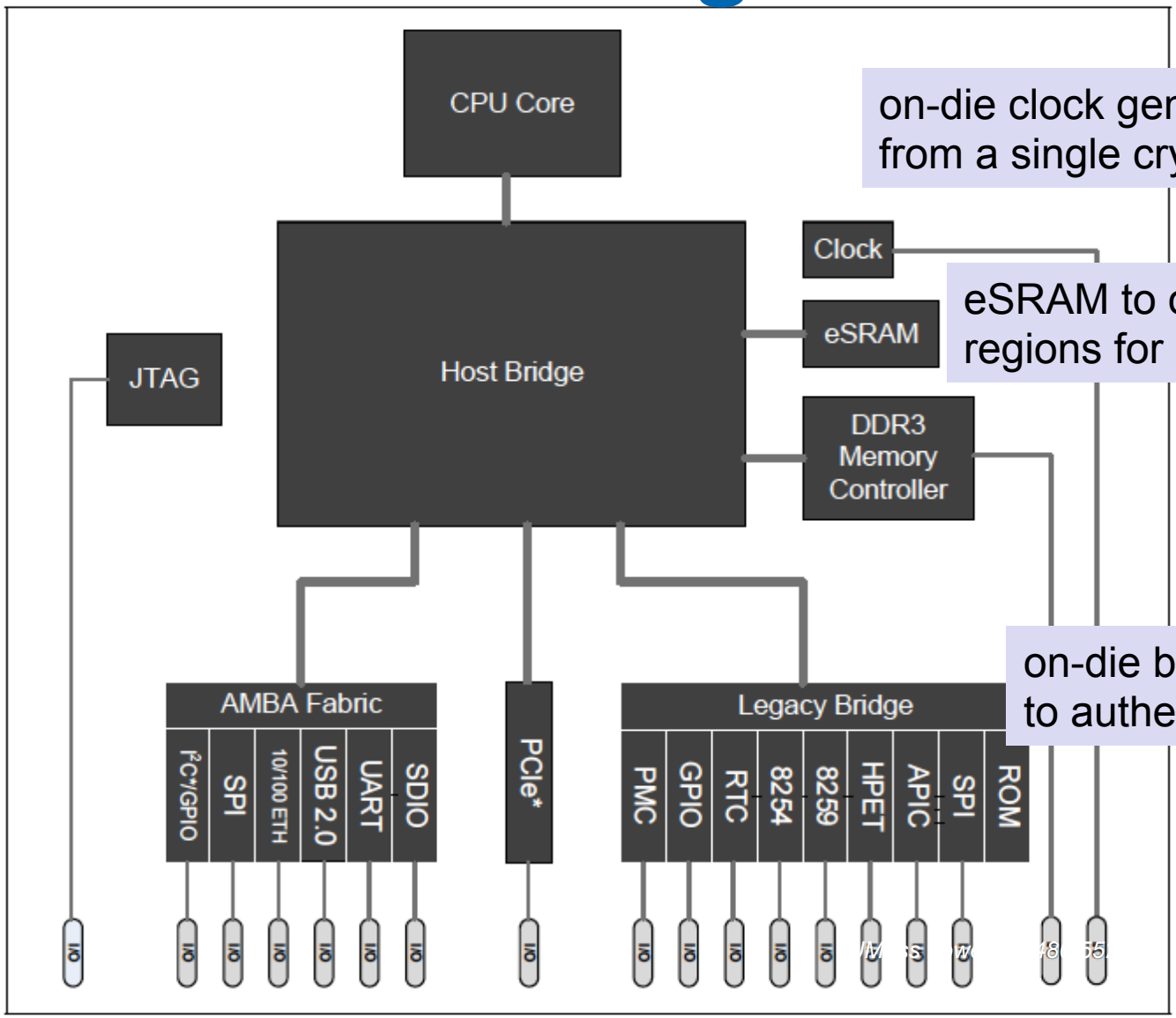
Overview of Galileo Hardware



Intel Quark SoC

- low power secure System-on-Chip (SoC) designed for bring intelligence to network edge for securely managed Internet of Things (IOT)
- Single 32-bit core, single thread
- Integration of I/O interfaces:
  - on-chip Ethernet* interfaces, PCI Express*, USB 2.0, SD/SDIO/eMMC, SPI, UART, and I2C/GPIO.
- Supports Intel Pentium instruction set

Block Diagram



on-die clock generation from a single crystal

eSRAM to overlay DRAM regions for reduced laten

on-die boot rom to authenticate firmwa

Quark Features

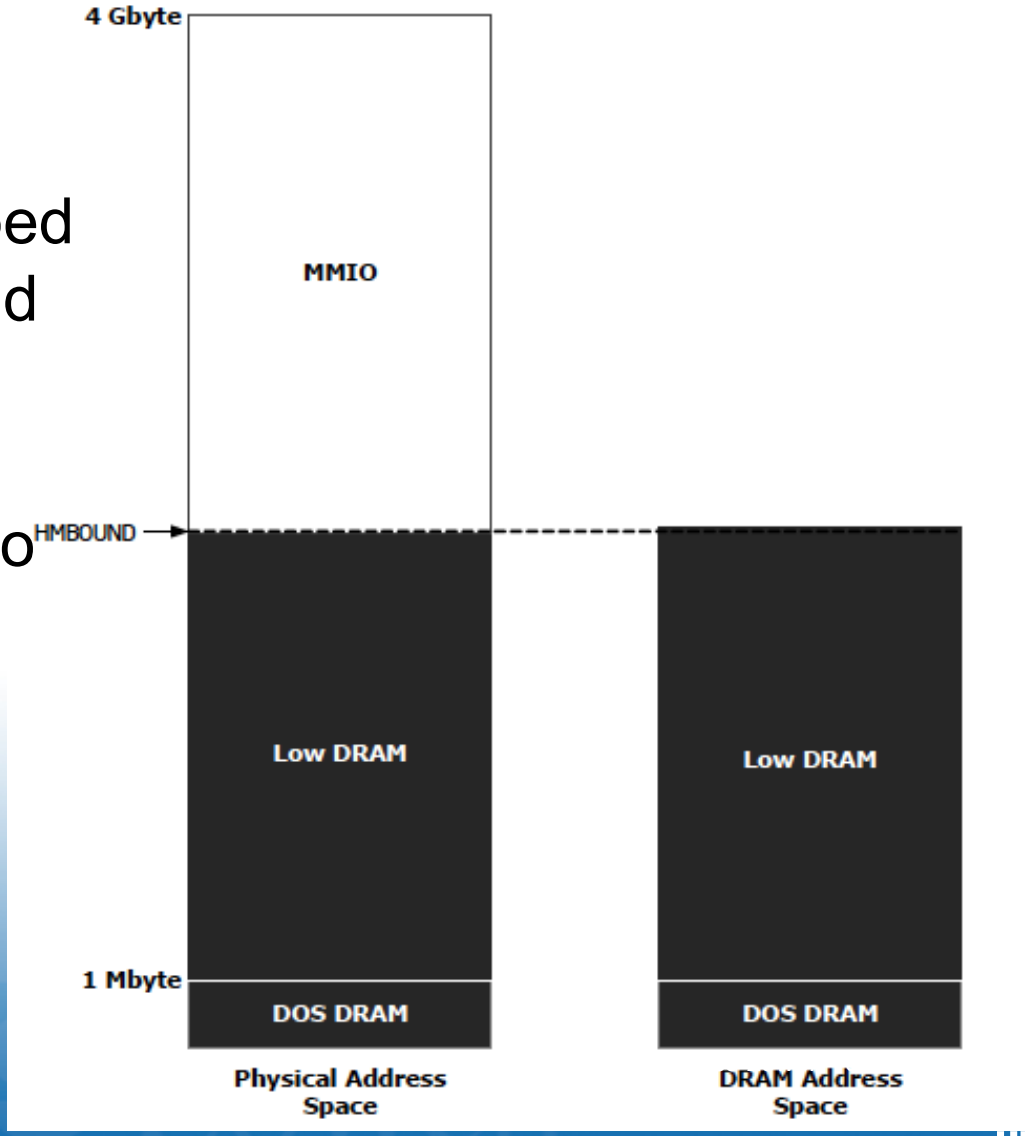
- CPU core:
  - @ 400MHz, or ½, or ¼ for low power
  - 32-bit address bus and 32-bit data bus, 16K shared L1 and L2 cache
- System Memory:
  - single DDR3 mem controller
  - 16-bit data bus, two banks, up to 2GB
  - supports different mapping of bank addresses
- embedded SRAM
  - 512KB on-die
  - overlay DRAM (512K block, or 4K pages)
- PCIe 2.0, 100Mbps Ethernet, USB, SD/eMMC, I2C, UART

Mapping Address Space

- Quark supports four address spaces
  - Physical address space (memory space)
    - read/write memroy
  - I/O space
    - IN, OUT instructions
  - PCI configuration space
    - access through memory or I/O space
  - Message Bus space
    - for accessing units in host bridge
    - useful in configuring the memory map, power management, and more

Memory Address Space Mapping

- 4G space for Memory Mapped I/O (MMIO) and DRAM
- HMBOUND register used to create regions



MMIO

- Boot Vector (reads sent to legacy bridge)
- local APIC
- PCI ECAM