Lesson 6
Intel Galileo and Edison Prototype Development Platforms

Intel® Galileo Gen 2 Boards

- Based on the Intel® Pentium architecture
- Includes features of single threaded, single core and 400 MHz constant speed processor
- An example, Intel Quark SoC X1000 Application processor.
- hardware and software pin-to pin compatible with shields the designed for the Arduino Uno R3 and Arduino IDEs.

Galileo Pins

- Additions 6-pin ICSP
- 3.3V USB TTL
- UART header,
- USB host port,
- USB client port, and
- I2C port

Intel® Galileo Development Board Types for the IoT devices

- Additionally provides large 8 MB SPI flash to store firmware (Bootloader) and enables the users to incorporate Linux firmware calls in their Arduino sketch programming.
- Intel Galileo Arduino SW (IDE and drivers) downloadable from Intel communities website.

Intel® Galileo Development Board Types for the IoT devices

- Galileo permits boot off and store drivers in the SD card.
- Galileo5 supports a set of 30 sensors and accessories for Arduino
- The usages can be learnt from the demonstration of usages and Linux images.

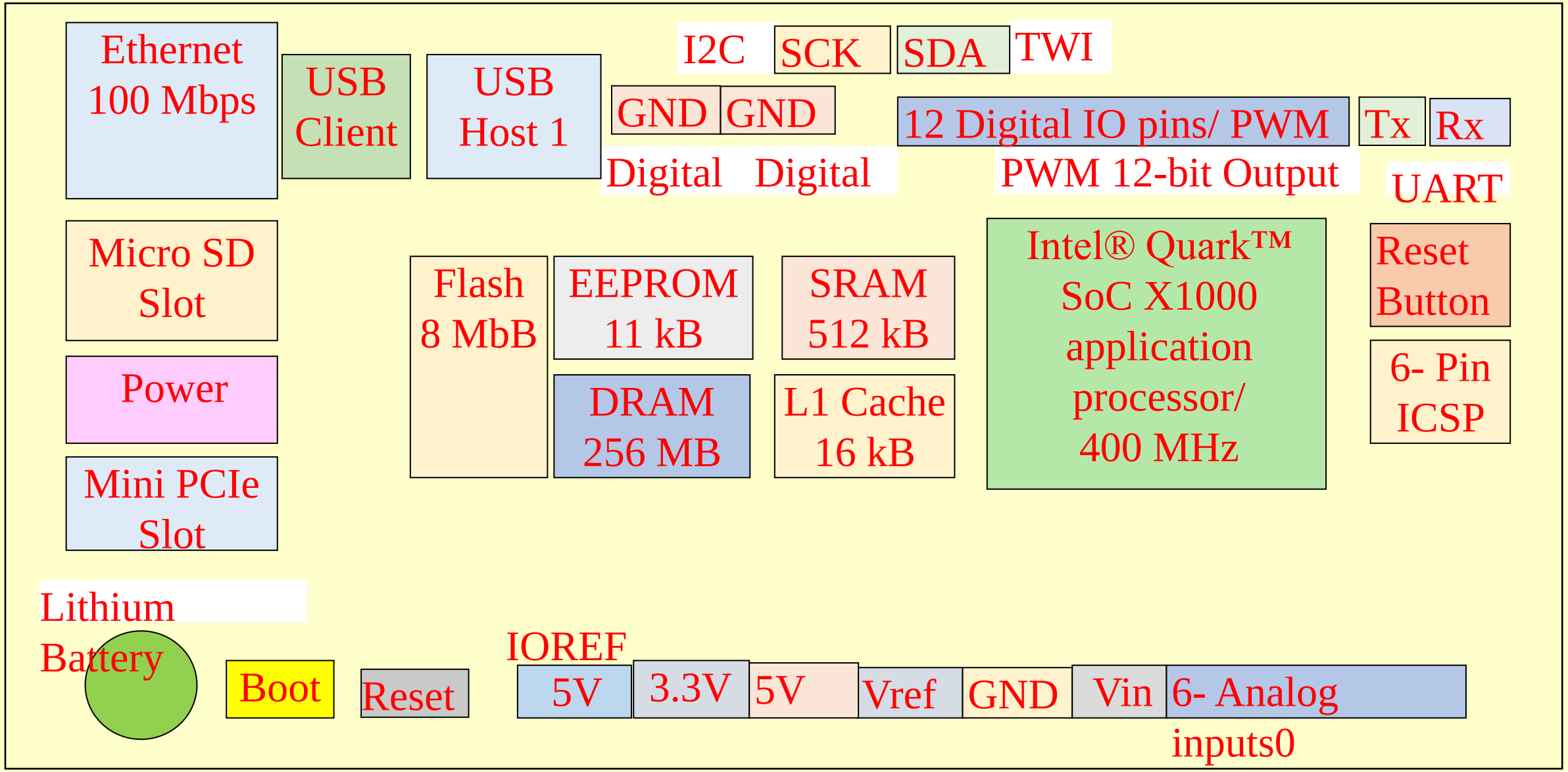

Fig. 8.3 Architecture of Intel Galileo Gen 2 board for advanced computer functionalities with network connectivity for development of IoTs

Board Programming with embedded OS

- The board has with facility of development of the codes on personal computer (PC) with board running Linux.
- The developments tools and IDE are at the connected computer.
- The codes run using Windows, Arduino Linux distribution, Linux, or MAC on the PC or tablet.

Board Applications

- Applications making smart everyday ‘things’ such as health monitoring or fitness devices, watches, sensors and cameras.

Features Of Intel Boards

1. Prototyping ease with single board computations and networking support
2. Node.js and C programming languages, Arduino codes open extensible source code, schematics, software, middleware and IDE
3. Programmability number of times on downloading of codes through USB port, that enabling the number of times download during edit-test and debug cycles

Features Of Galileo Boards

4. On-board 8 MB NOR Flash, IOREF for 5V IOREF to shield in place of 3.3 V IOs, 12-bit pulse-width modulation (PWM), console UART1 redirection to Arduino compatible headers, Integrated real-time clock (RTC)
5. 12V Power-over-Ethernet (PoE) capability, a power regulation system that accepts power supplies from 7V to 15V,
6. Reset button to reset the sketch and any attached shields

Features Of Arduino Boards

7. Flexibility and ease of connecting the extended memory and hardware connectivity board to external a full-sized mini-PCI Peripheral Connect Interconnect Express (PCIe) slot (which also functions as Wi-Fi adapter), Ethernet port socket, Micro-SD slot
8. Extended interfacing capabilities using, SPI, several PC industry standard I/O ports and features to expand native usage and capabilities beyond the Arduino shield

Intel® Edison

- A high performance computation and communication module
- Includes advanced core in the SoC that is dual core, dual threaded Intel ATOM x86 CPU running at 500 MHz
- RAM 1 GB

Intel® Edison

- Includes Wi-Fi and Bluetooth LE communication interfaces
- Interfaces enable seamless device internetworking and device-to-cloud communication.
- Enable rapid prototype development produce IoT and wearable computing devices.

- Edison can be used for compatibility with Arduino board as well as independently with smaller form factor board.
- Enables creation of prototypes and fast development of prototyping projects.

Edison Features

- Includes tools for collect, store, and process data in the cloud, trigger alerts when using advanced analytics OLTP and OLAP of the data-streams
- Has higher performance.

Summary

We learnt

- Intel Galileo hardware and software pin-to pin compatible with shields the designed for the Arduino Uno R3 and Arduino IDEs.
- Node.js and C programming languages, Arduino codes open extensible source code, schematics, software, middleware and IDE, Board AVR C++ and library
- Mini PCIe

Summary

We learnt

- Edison dual core, 1 GB RAM, Includes Wi-Fi and Bluetooth LE communication interfaces giving higher performance
- Includes tools for collect, store, and process data in the cloud, trigger alerts when using advanced analytics, OLTP and OLAP of the data-streams

End of Lesson 6 on
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