EMBEDDED SYSTEMS TRAINING

Khóa học : “Basic Embedded Linux”

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Installing Linux

- Install Ubuntu Desktop 14.04 or 16.04 LTS on your PC
- Vmware
- Make space for Linux
-See how easy it is to install Ubuntu
- Apply the latest updates

What is embedded system?

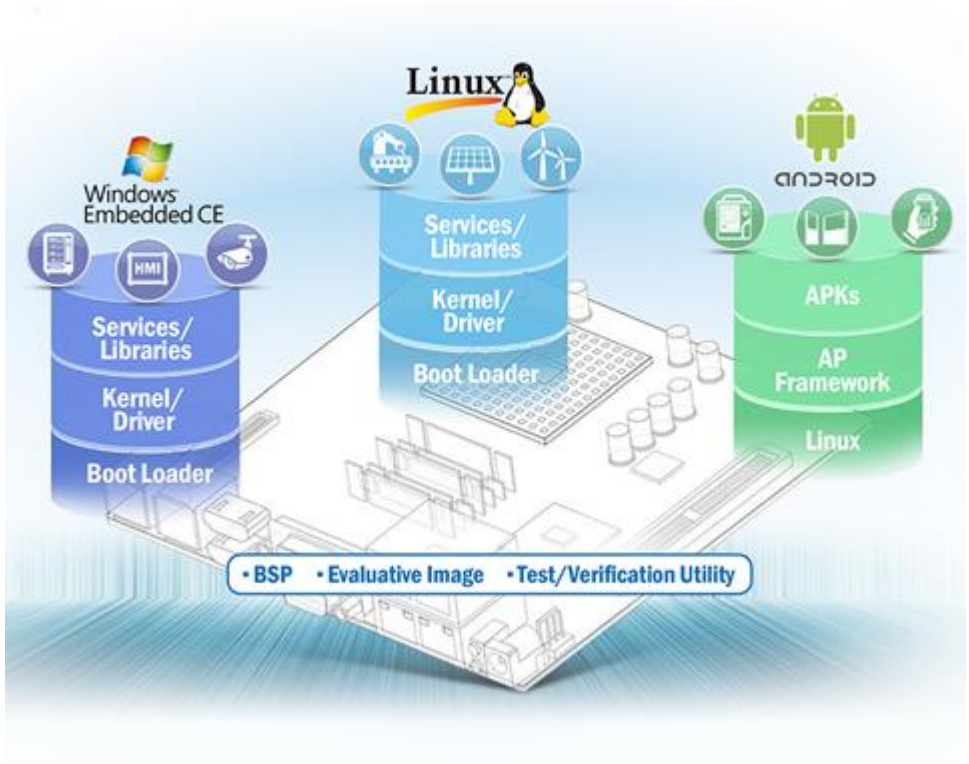
Introduction

An embedded system is a special purpose computer system designed to perform one or a few dedicated functions, often with realtime computing constraints. It is usually embedded as part of a complete device including hardware and mechanical parts. In contrast, a general purpose computer, such as a personal computer, can do many different tasks depending on programming. Embedded systems control many of the common devices in use today.

Wikipedia, http://en.wikipedia.org/wiki/Embedded_system

Introduction

Embedded System OS



Introduction

Embedded Linux OS

Embedded Linux is the usage of the Linux kernel and various open-source components in embedded systems

What is Linux and Why we should use it

Introduction

Example :

Introduction

Embedded Hardware

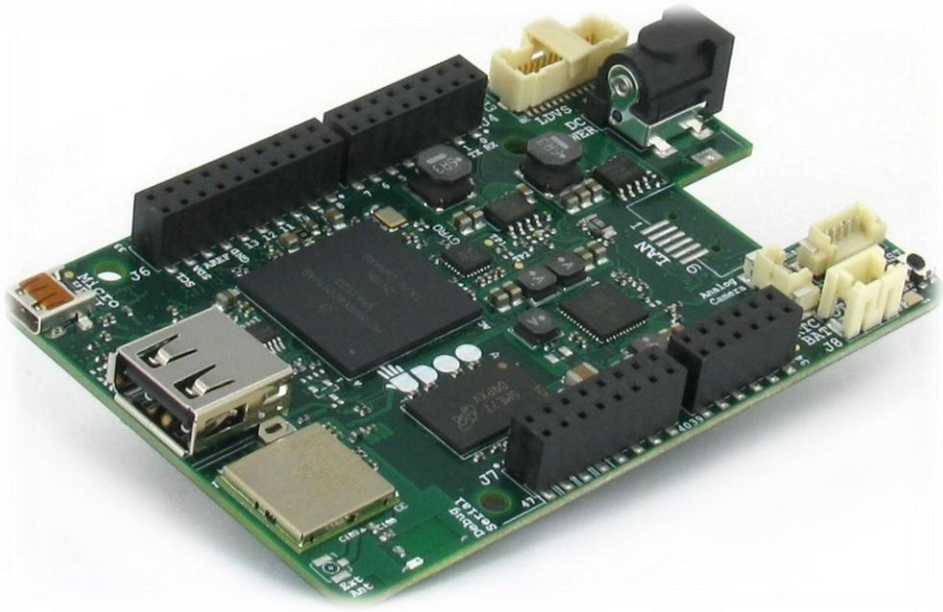
- Hardware for embedded systems is often different from hardware for classical systems.
  - Often a different CPU architecture:
    often ARM, MIPS or PowerPC. x86 is also used.
  - Storage on flash storage, NOR or NAND type, often with limited capacity (from a few MB to hundreds of MB)
  - Limited RAM capacity (from a few MB to several tens of MB)
  - Many interconnect bus not often found on the desktop: I2C, SPI, SSP, CA N, etc.
- Development boards starting from a few hundreds of EUR / USD
- Often used as a basis for the final board design.

Minimum requirements

- A CPU supported by gcc and the Linux kernel
  - 32 bit CPU
  - MMUless CPUs are also supported, through the uClinux project.
- A few MB of RAM, from 4 MB.8 MB are needed to do really do something.
- A few MB of storage, from 2 MB. 4 MB to really do something.
- Linux isn't designed for small microcontrollers that just have a few tens or hundreds of KB of flash and RAM.
  - Base metal, no OS
  - Reduced systems, such as FreeRTOS

Introduce UDOO NEO

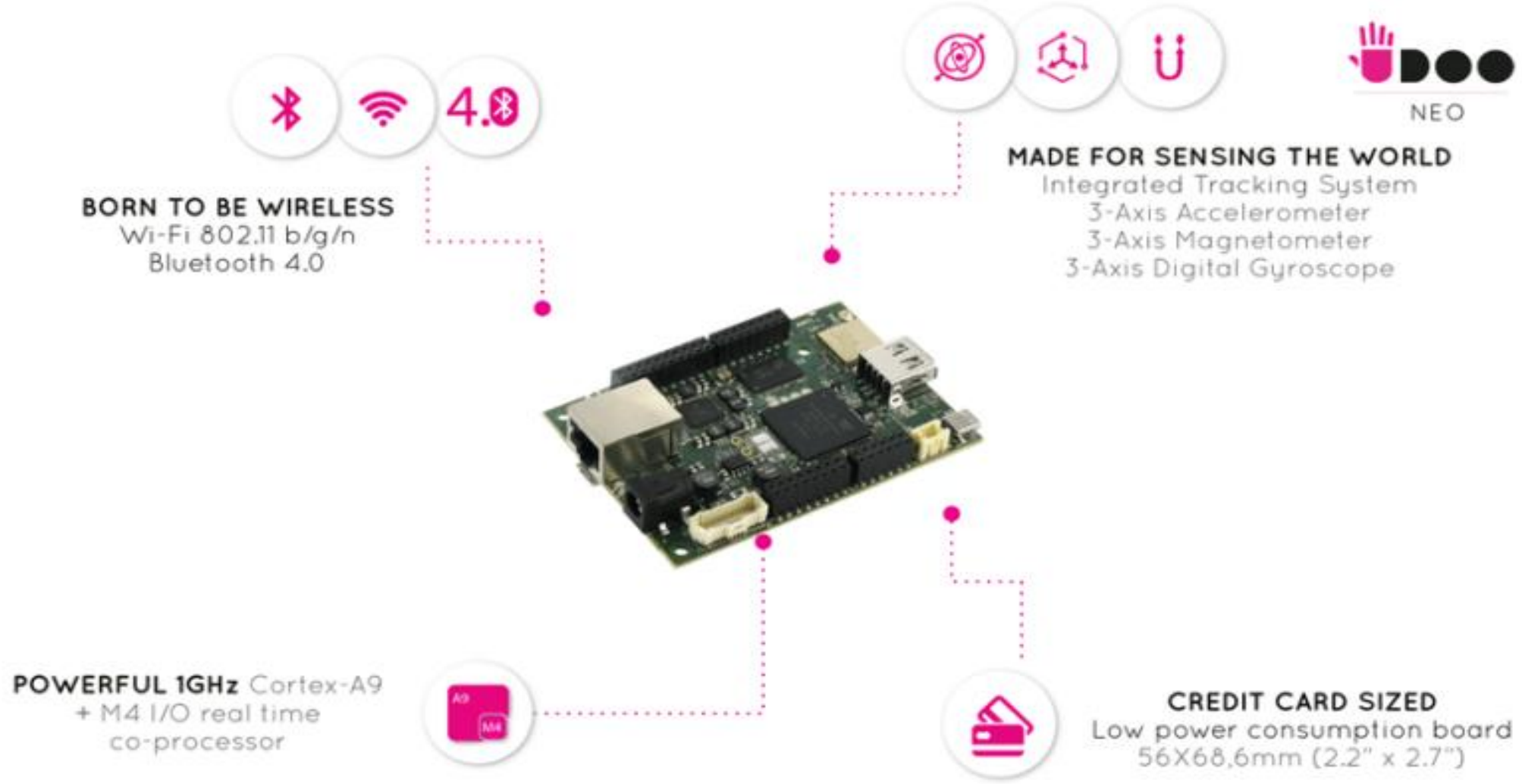
- Platform: UDOO Neo
  - Based on NXP i.MX6 SoloX
  - 1 x Cortex-A9 (1 GHz)
  - 1 x Cortex-M4 (200 MHz, Arduino-UNO compatible)
  - 1 GB RAM
  - 2D & 3D Graphics (Vivante GC355 & GC400T)
  - Sensors (accelerometer, magnetometer, gyroscope)
  - Pinout (up to 32 x GPIO, 6 x analog input)



- OS: Linux (UDOObuntu 2.1.x), Android (6.0.x)

- **Documentation** and **Tutorials** available at udoo.org

Introduce UDOO NEO



Questions?