

Hardware Platform Vendors

1. Texas Instruments:

- ✧ Texas Instruments(TI) is a global semiconductor company that designs, manufactures tests and sells analog and embedded processing chips.
- ✧ It manufactures 80,000 products which help over 100,000 customers.
- ✧ It is one of the top 10 semiconductor companies worldwide based on sales volume.
- ✧ It produces 876 different microcontrollers.
 - Arm-based microcontrollers-122
 - C200 real-time microcontrollers-182
 - MSP430 microcontrollers-572
- ✧ These microcontrollers are power-efficient, flexible and also affordable.
- ✧ **Arm-based microcontrollers**
 - This type of MCU's offer a scalable portfolio of high-performance and power-efficient devices which helps to meet the system needs.
 - This brings capability such as functional-safety, power efficiency, real-time control, advanced analytics and security to systems.
 - High-performance MCUs are arm-based MCU's which have up to 10 times more processing power.
 - General-purpose MCU's are 32-bit broad arm based MCUs with embedded flash memory.
- ✧ **C200 real-time microcontrollers**
 - Real time MCUs enable digital power and motor control in industrial and automotive applications.
 - Entry performance:
 - ◆ This contains up to 150 MIPS for real-time control performance.
 - ◆ Up to 512 KB flash memory support.
 - ◆ 38 to 181 pins for different design options.
 - Mid performance:
 - ◆ 150 to 600 MIPS for real-time control performance.
 - ◆ From 128 KB to 1.5 MB flash memory support.
 - ◆ 56 to 181 pins for different design options.
 - High performance:
 - ◆ Above 600 MIPS for real-time control performance.
 - ◆ From 512 KB to 1.5MB flash memory.
 - ◆ 100 to 337 pins for different design options.

✧ **MSP430 microcontrollers:**

- These are 16-bit MCU's provide affordable solutions for all applications.
- MSP430|2040:Low-cost 16-KB MCU with 4-sigma-delta ADCs, power monitoring and thermometers.
- MSP430FR2355:Low-cost 32-KB MCU with 4 op amps and DACs for system monitoring and various other applications.
- MSP430FR6007:Low-cost 256 KB MCU with integrated high-accuracy ultrasonic sensing system for flow measurements, level and motion sensing, and other ultrasonic applications.

Software Platform Vendors

FreeRTOS

- ✧ FreeRTOS is a real-time operating system kernel for embedded devices that has been ported to 35 microcontroller platforms.
- ✧ It was originally developed by Richard Barry around 2003, and was later developed and maintained by Barry's company, Real Time Engineers Ltd.
- ✧ It is open source software.
- ✧ It is designed to be small and simple.
- ✧ It is mostly written in the C programming language to make it easy to maintain.
- ✧ It provides methods for multiple threads, semaphores and software timers.
- ✧ It also supports Thread priorities.
- ✧ Books and Reference manuals are available.
- ✧ Small memory size, low overhead and fast execution.
- ✧ It is intended for both hobbyists and professional developers working on commercial products.
- ✧ It supports various architectures like ARM, Atmel, Ceva, Cortus MCU's etc.