

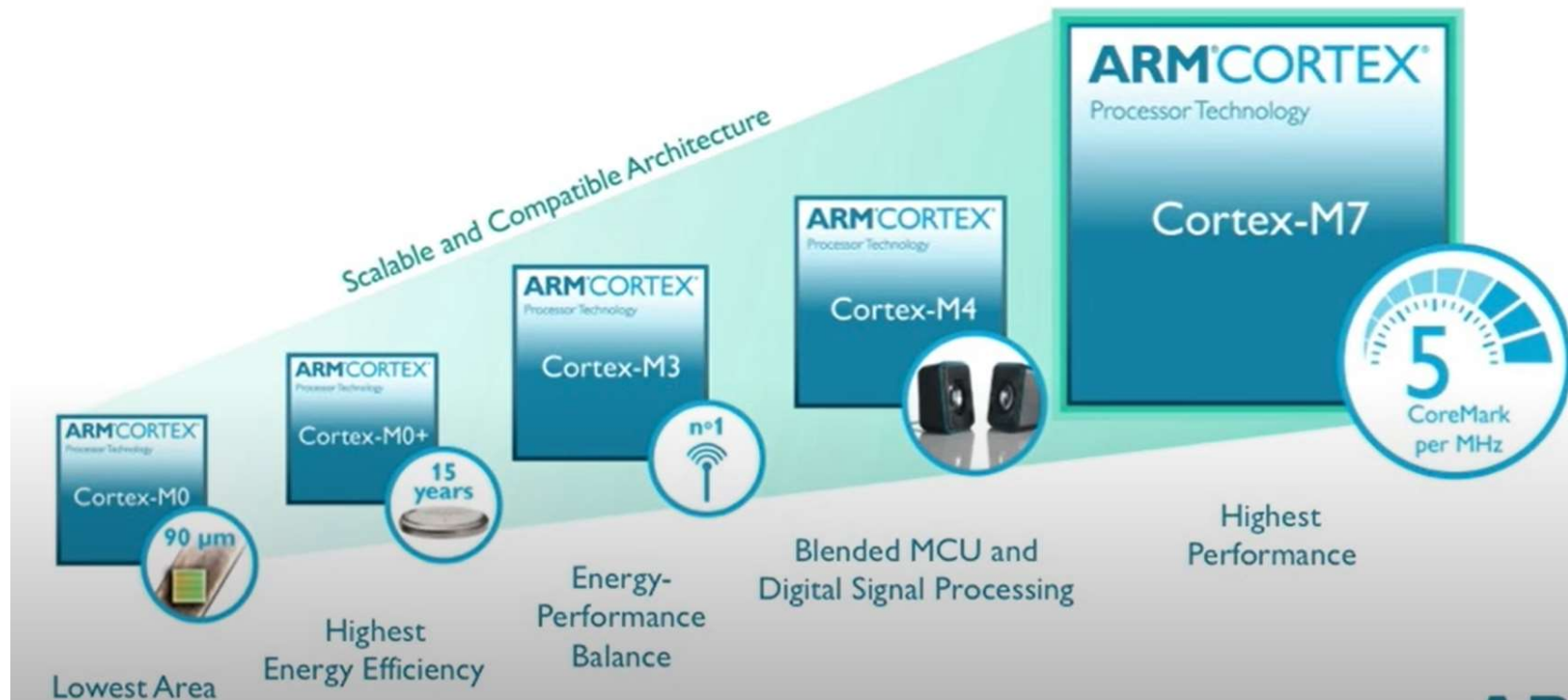


Introduction to FreeRTOS

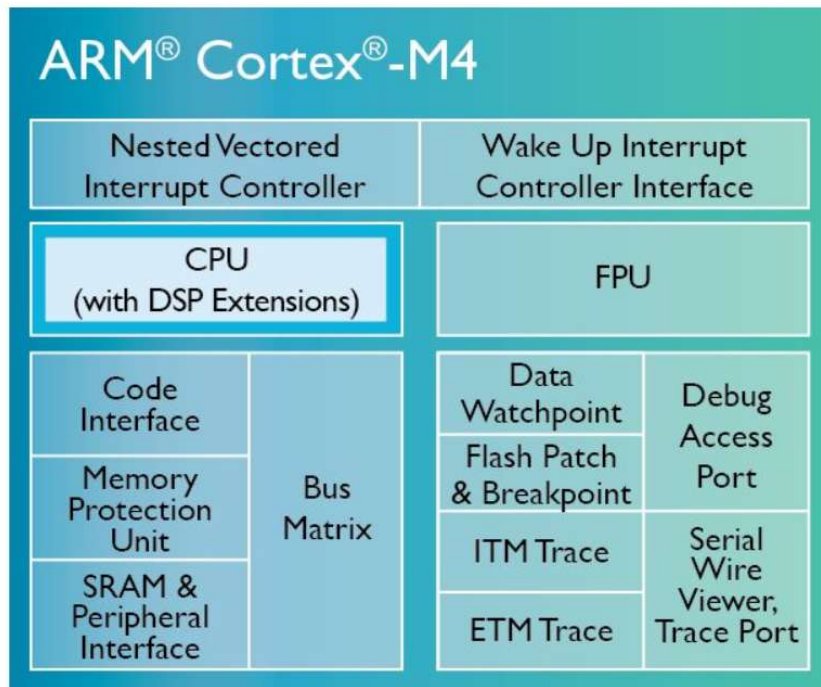
What you will learn Today

- ✓ Processor Core used in this course
- ✓ Development Board
- ✓ Software Download
- ✓ How to create a simple project in RTOS

Processor Core Used in this Course

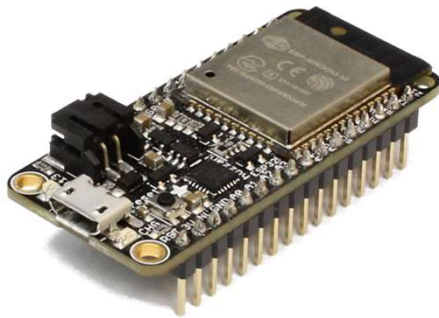


ARM CORTEXM4 –STM32F411



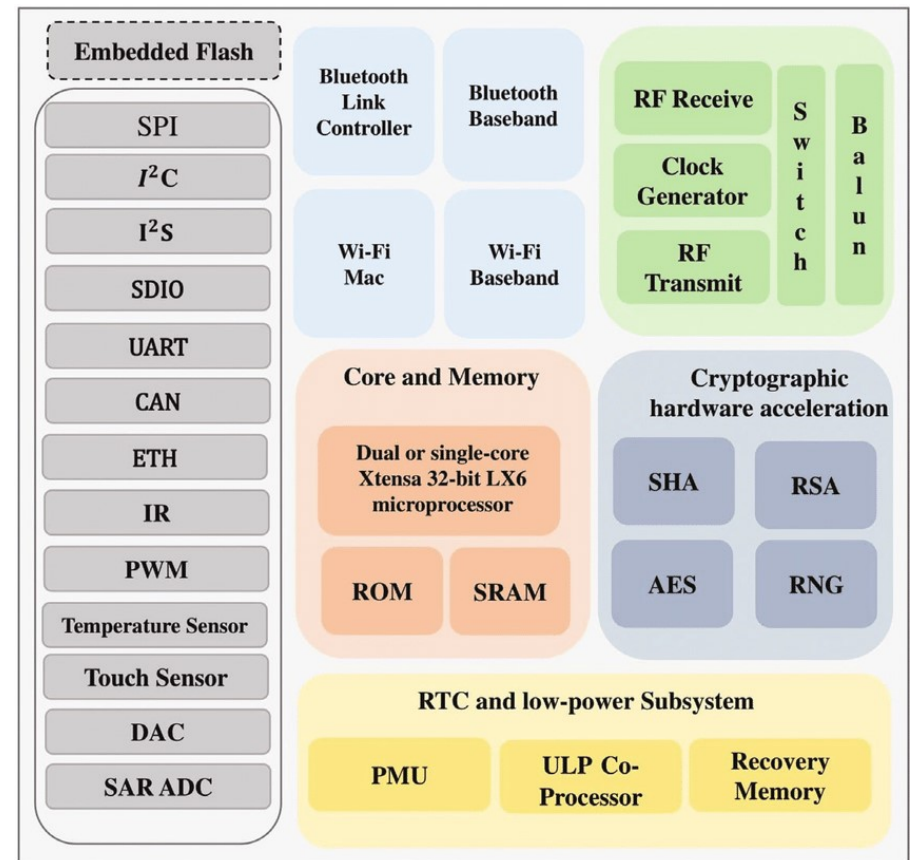
System	ART Accelerator™	Connectivity
Power supply 1.2V internal regulator POR/PDR/PVD/BOR	Arm® Cortex®-M4 CPU 100 MHz	3x I²C
Xtal oscillators 32 kHz + 4 ~26 MHz	Floating point unit (FPU)	3x USART LIN, smartcard, IrDA, Modem control
Internal RC oscillators 32 kHz + 16 MHz	Nested vector interrupt controller (NVIC)	5x SPI or 5x I²S (2x I²S with full duplex)
PLL	JTAG/SW debug	SDIO
Clock control	Embedded trace macrocell (ETM)	USB 2.0 OTG FS
RTC/AWU	Memory protection unit (MPU)	
2x watchdogs (independent + window)	AHB-Lite bus matrix	Analog
36/50/81 I/Os	APB bus	1x 12-bit ADC 2.4 MSPS 16 channels / 0.41 µs
Cyclic redundancy check (CRC)	16-channel DMA with Batch acquisition mode (BAM)	Temperature sensor
96-bit unique ID	512-Kbyte Flash memory	Control
Voltage scaling	128-Kbyte SRAM	5x 16-bit timers
	80-byte backup data	1x 16-bit motor control PWM synchronized AC timer
		2x 32-bit timer

Processor Core Used in this Course

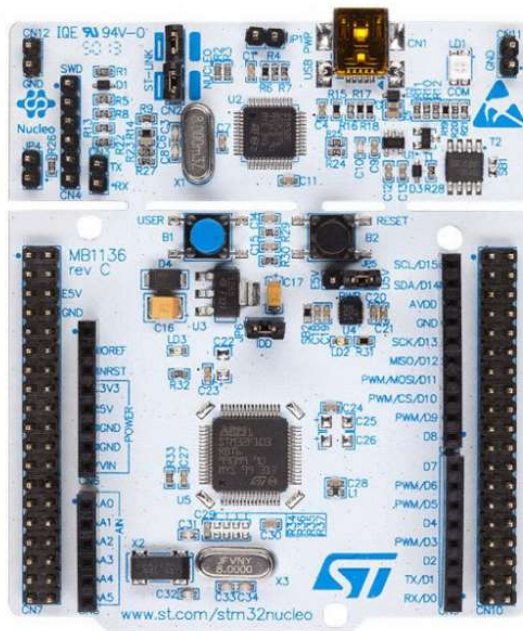


Symmetric Multiprocessing (SMP)

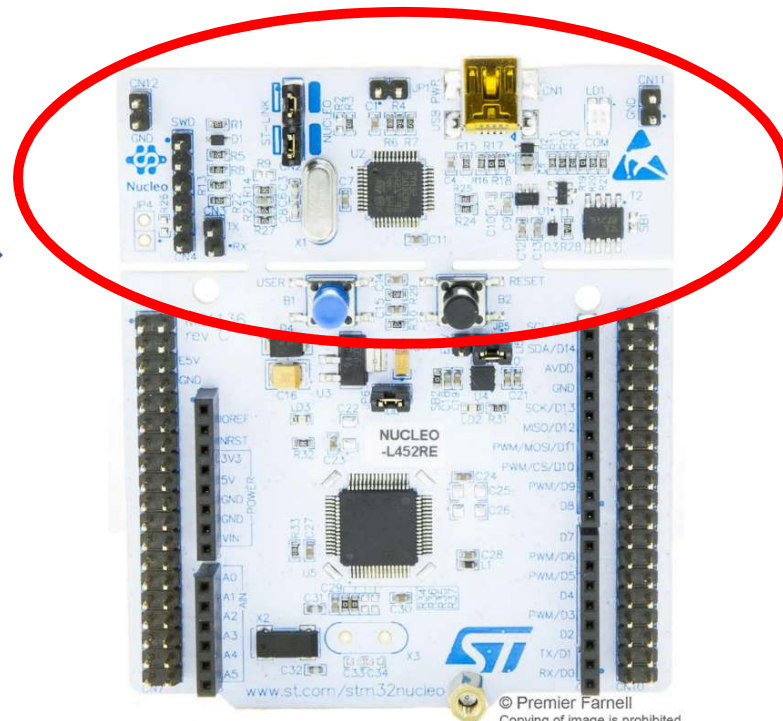
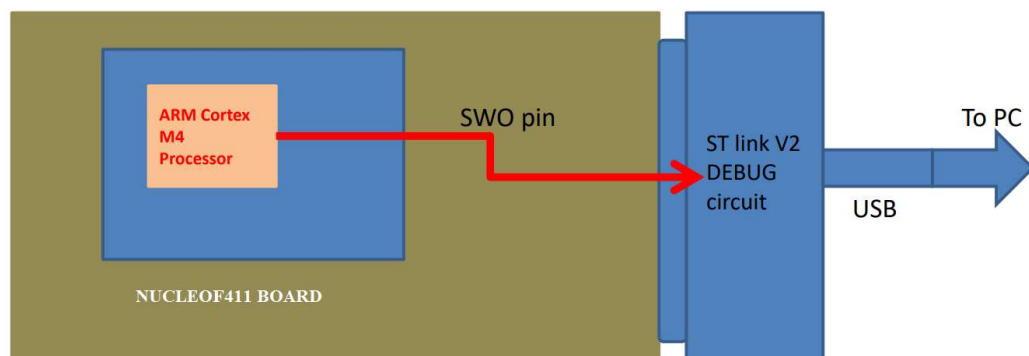
ESP32 Function Block Diagram



Development Board used in This Course

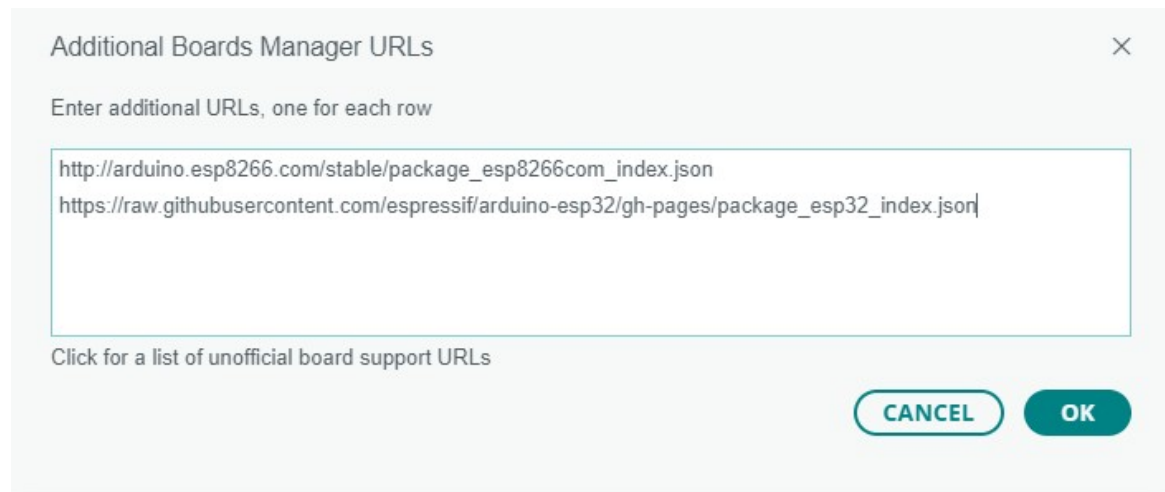


Creating a Project in Target using STM32CUBEIDE



Software Download

- [STM32CubeIDE - Integrated Development Environment for STM32 - STMicroelectronics](#)

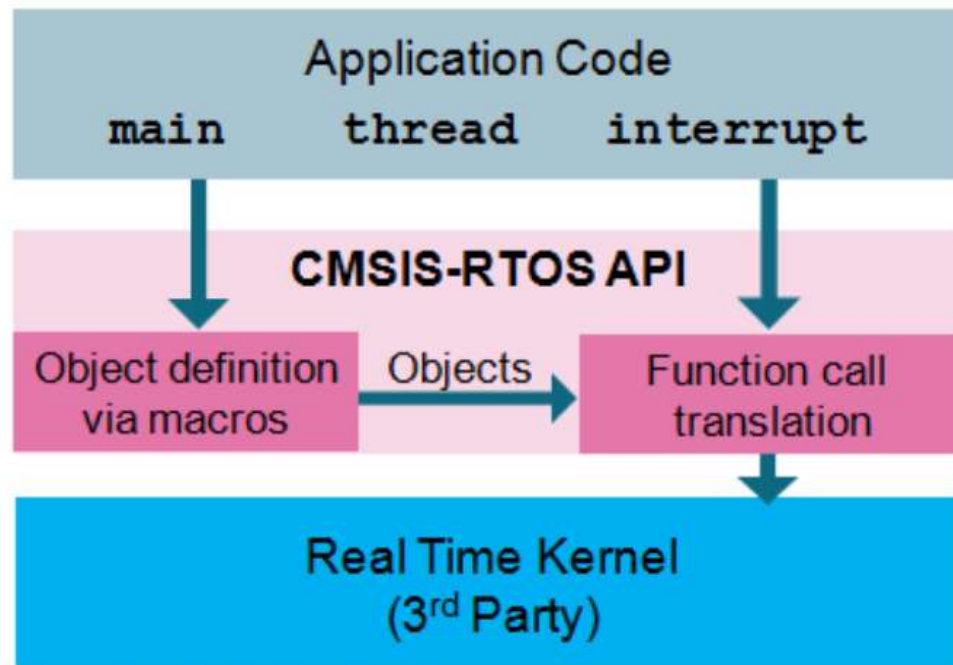


C:\Users\Dell\AppData\Local\Arduino15\packages\esp32\hardware\esp32\2.0.8\tools\sdk\esp32\include\freertos\include\esp_additions\freertos

Software Download

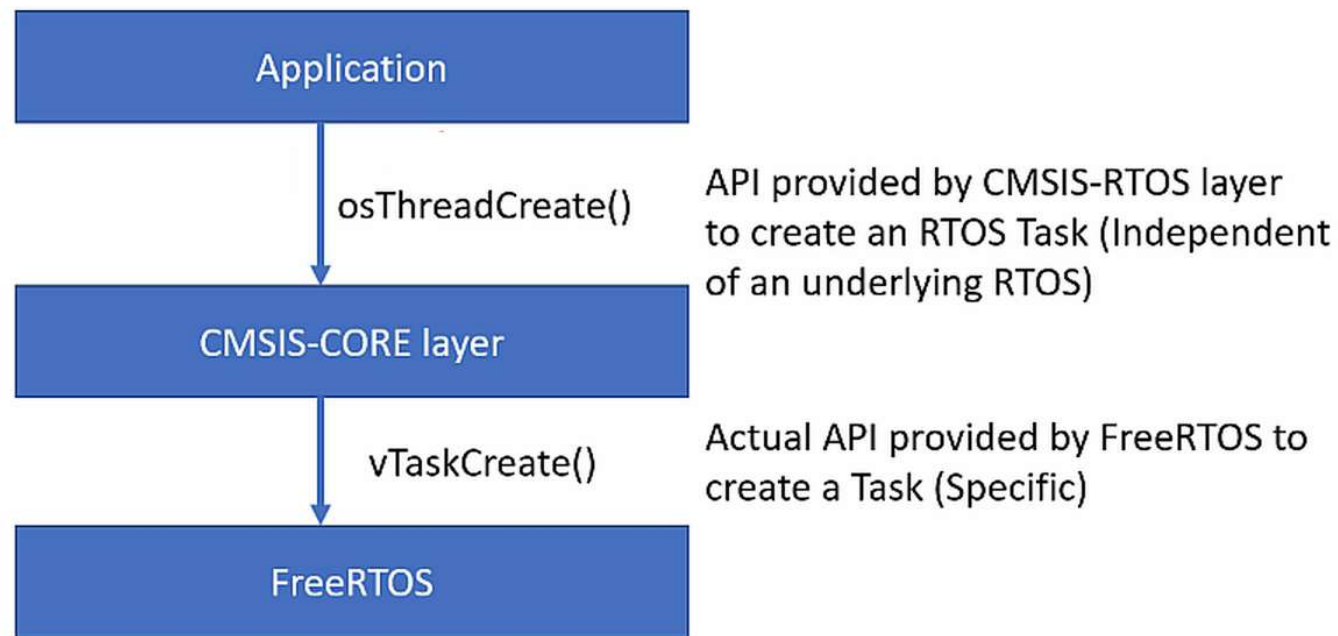
- <https://www.freertos.org/>

CMSIS-RTOS



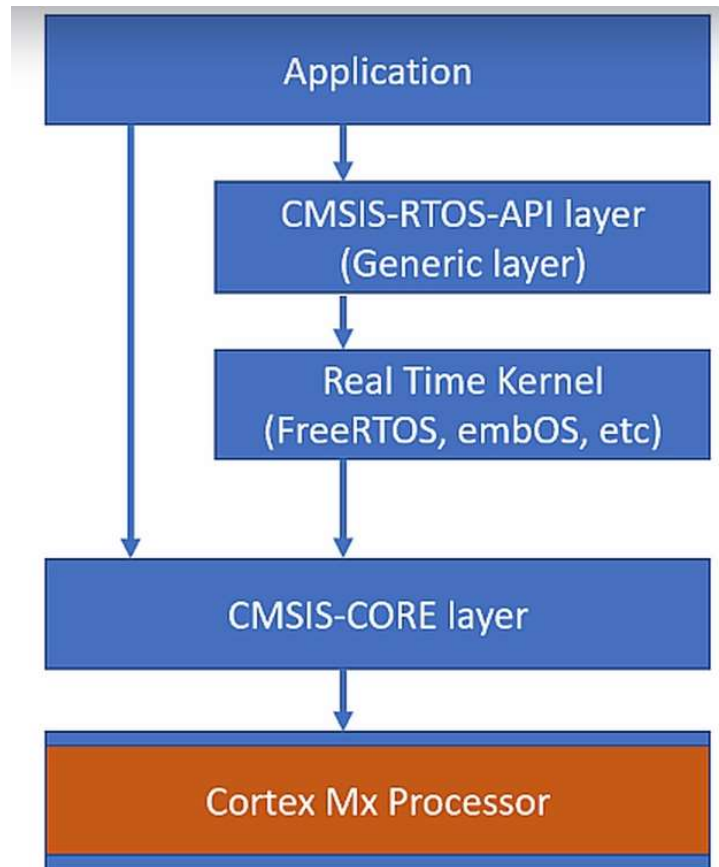
CMSIS-RTOS API Structure

<https://www.keil.com/pack/doc/CMSIS/RTOS/html/genRTOSIF.html>



CMSIS-RTOS API is a generic RTOS interface for Arm® Cortex®-M processor-based devices

PROJECT LAYERS



Thank You