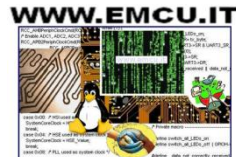


STM32 Tools

www.emcu.it



ST-LINK-v2

- **Compatible with STM8 and STM32**
- **STM8 – SWIM**
- **STM32 – JTAG, SWD**
- **Basic cables for SWIM and JTAG**



ST-LINK/V2



ST-LINK/V2-ISOL

<http://www.emcu.it/ST-LINKv2/ST-LINKv2.html>

CUBE

- **MCU configuration tool**

- **Peripherals pinout setup wizard**

- Quickly define your pin configuration
- Efficient constraint solver to match your application request

- **Clock configuration**

- **TCP/IP, RTOS (FreeRTOS), USB (device & host), FAT, Graphics and more**

- **Code generation (KEIL, IAR, ATOLLIC)**

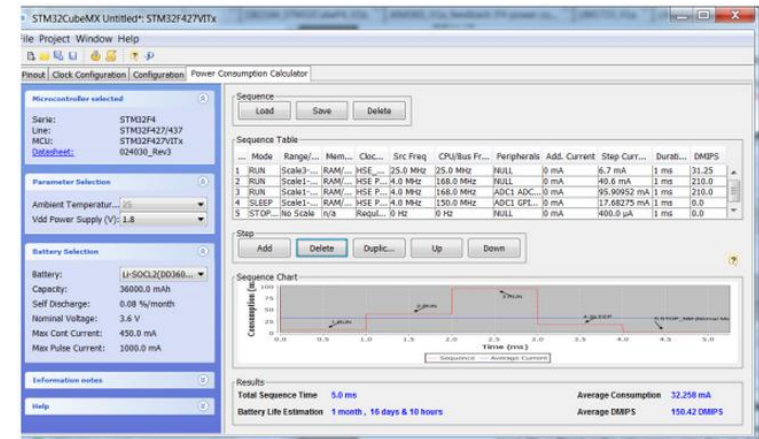
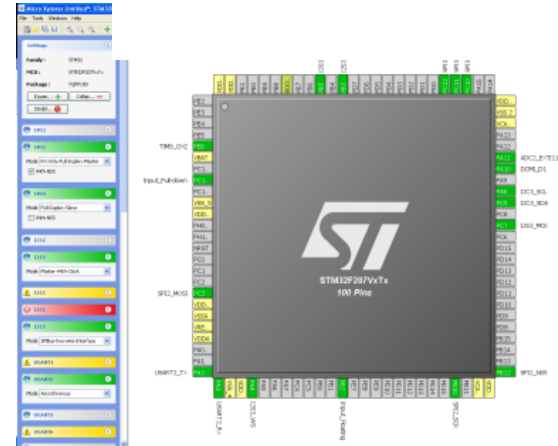
- **Power Consumption Calculation**

- **MCU product selector**

- Quickly identify the best fitting MCU for your application
- STM32 portfolio

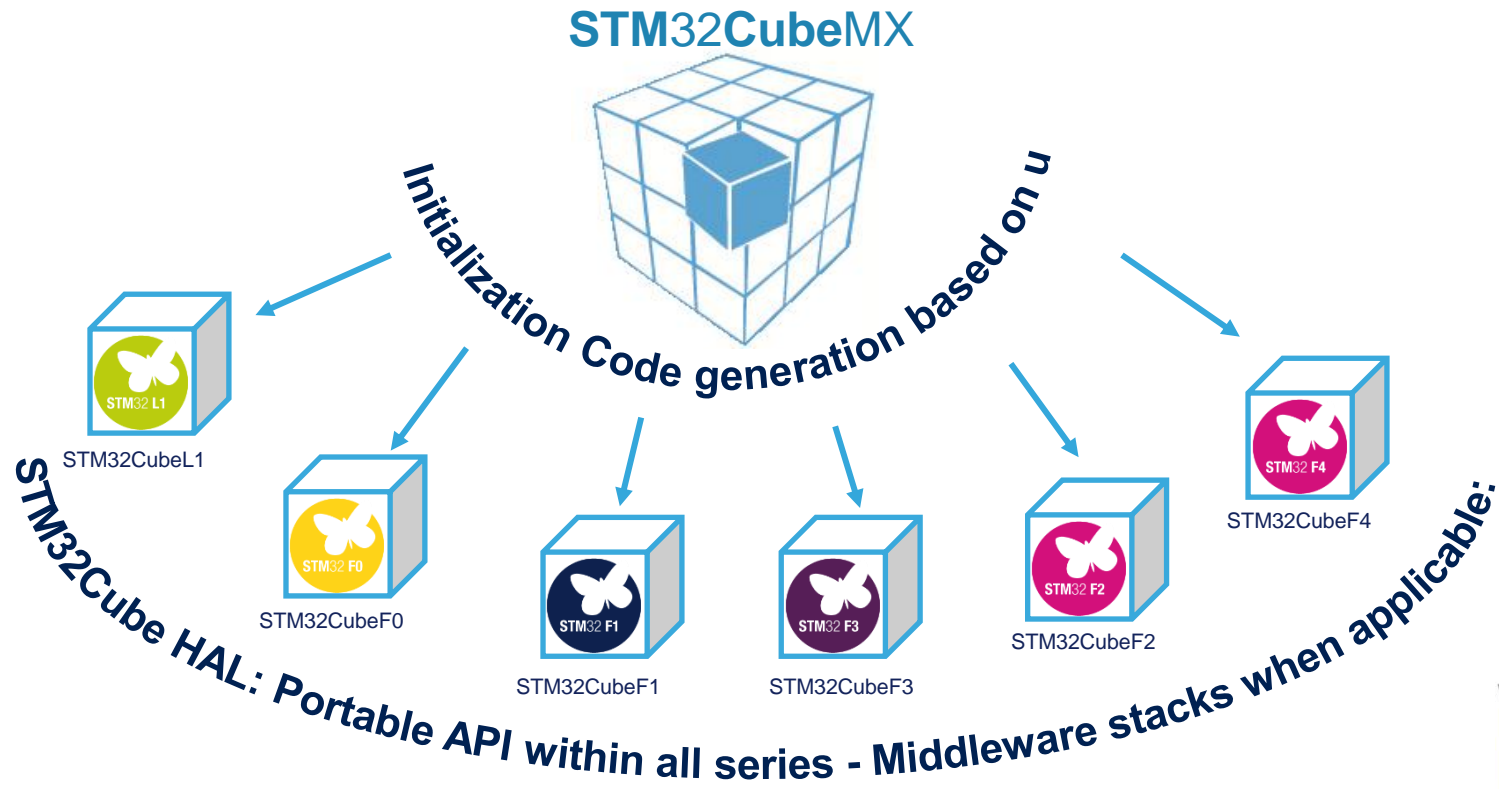
CUBE →

Cube-MX
+
Cube

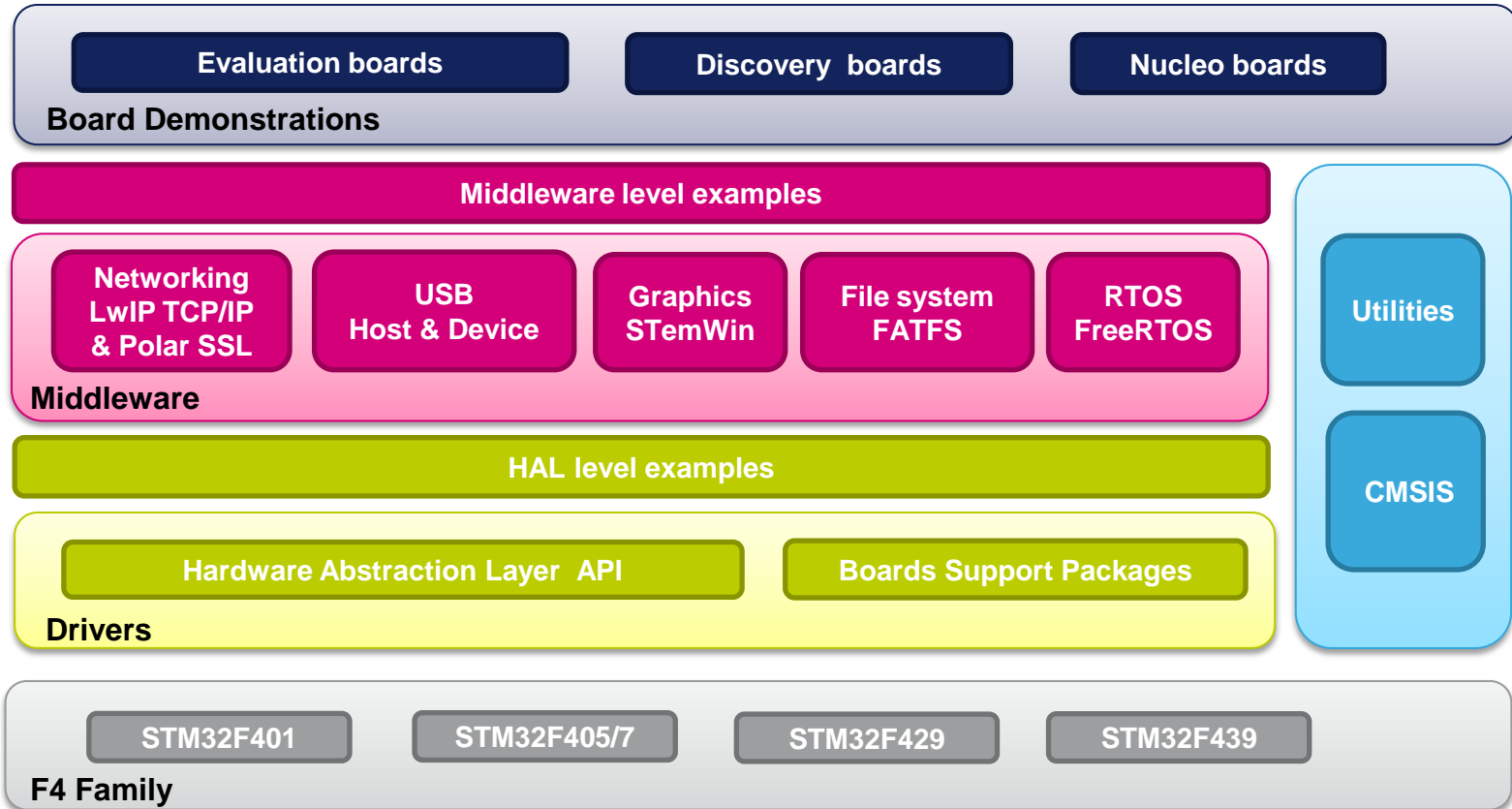


STM32Cube™ V1.x Introduction

- STM32Cube™ Version 1.x includes:
 - A configuration tool, STM32CubeMX generating initialization code from user choices
 - A full embedded software offer, delivered per serie (like STM32CubeFx) with:
 - An STM32 Abstraction Layer embedded software: STM32Cube HAL
 - A consistent set of Middlewares: RTOS, USB, TCP/IP, Graphics, and more

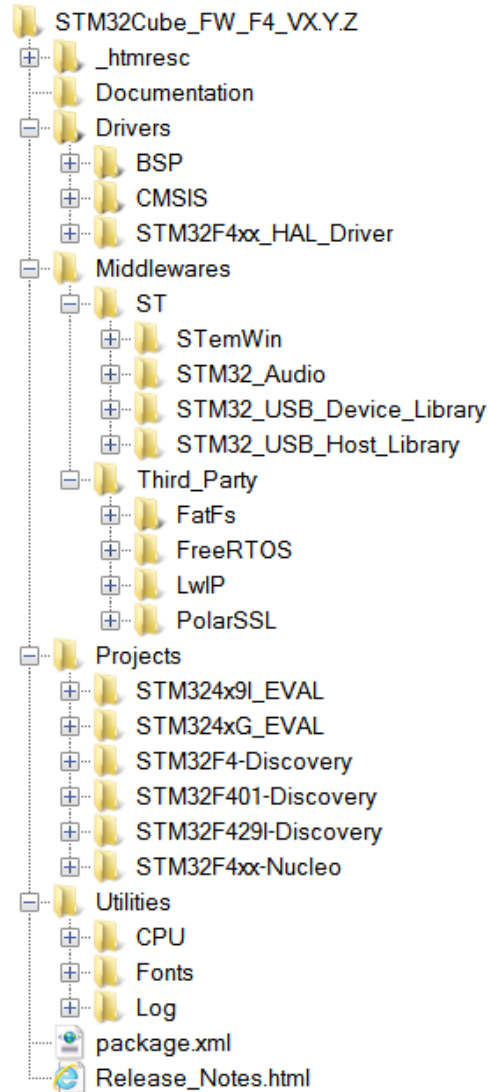


STM32Cube FW pkg block view for F4 family

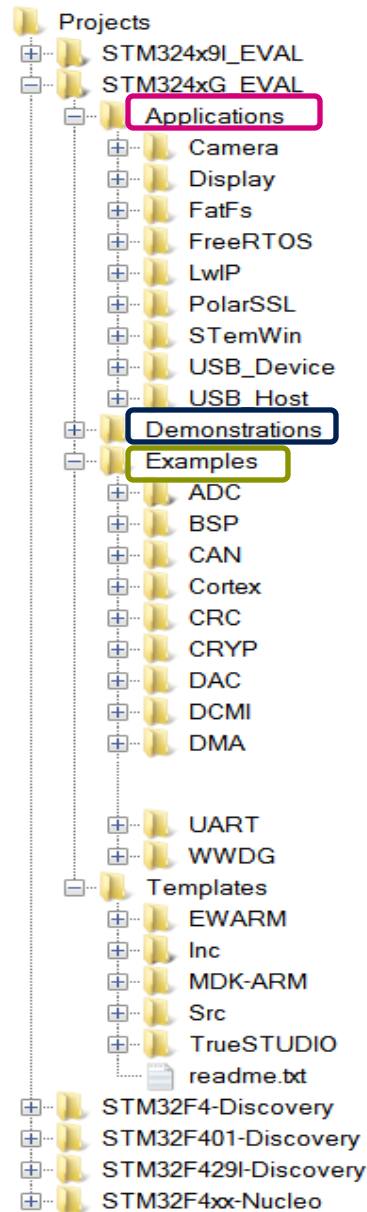


The **updater tool** available with STM32CubeMX PC tool allows automatic notification and download of new STM32Cube release or patch

STM32Cube folders organization



STM32Cube projects folder organization





NUCLEO Tools

- Keep Evaluation Boards and Discovery Kits

- Introduce new board serie: **Nucleo**

- Low price point (similar to Discoveries)
 - Debug (enhanced STLink)
 - Target MCU
 - Standard connectors
- Benefit from Open Hardware initiatives.
 - Arduino™-compatible at hardware level
 - Instant access to a large ecosystem of extension boards.

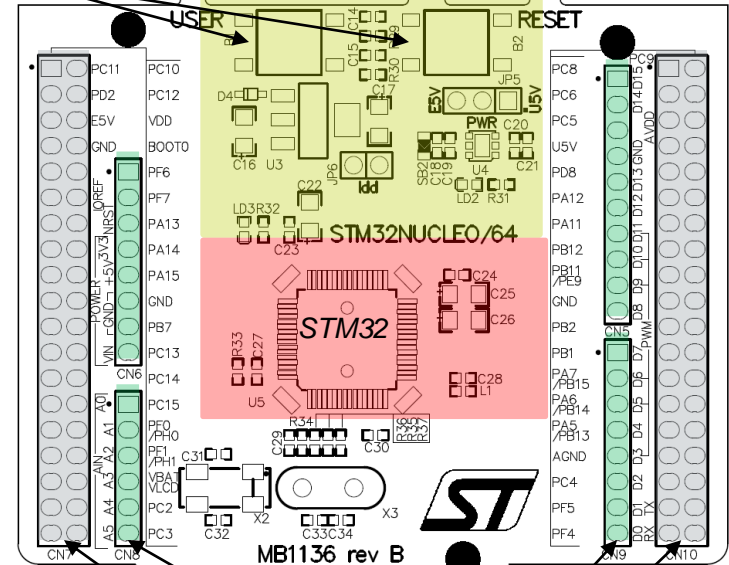
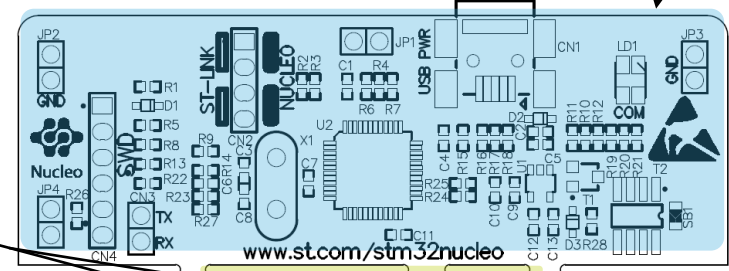
- Goal:

- Help User as much as possible on STM32 portfolio: to “pre-wired samples”
- Let communities handle Arduino extensions
- Propose extensions on ST connector to cover STM32 unique features



Debug (STLink)

2 buttons
1 Led



Arduino™ connectors
ST additional connectors

WWW.EMCU.IT



Mbed - Beyond STM32 portability



- ST is joining ARM **mbed.org** (<http://mbed.org/>)
- A mass market initiative from ARM
 - An MCU abstraction, keeping only common behaviors between MCUs
 - A web site: mbed.org, hosting online code editor and compiler
 - A community of developers (4000 libs/programs submissions)
- Benefits for ST
 - **Nucleo boards will be mbed-enabled: Allows to evaluate with Nucleo in less than 10 minutes !**
 - Extension boards versus Arduino done by other mbed licensees will run immediately!

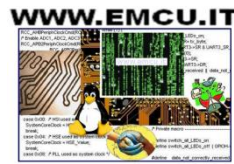
The image is a screenshot of the mbed compiler IDE. The main window shows a C++ program in 'main.cpp' with the following code:

```
1 #include "mbed.h"
2
3 DigitalOut myled(LED1);
4
5 int main() {
6     while(1) {
7         myled = 1;
8         wait(0.2);
9         myled = 0;
10        wait(0.2);
11    }
}
```

The IDE interface includes a 'Program Workspace' on the left, a 'Compile' button, and a status bar at the bottom showing 'Ready.' and 'In 1 col 1 13 INS'. On the right side, there is a 'Classes' list with various hardware modules such as AnalogIn, AnalogOut, BusInOut, BusIn, BusOut, CANMessage, CAN, DigitalInOut, DigitalIn, DigitalOut, DirHandle, Ethernet, FileHandle, FileSystemLike, FunctionPointer, I2CSlave, I2C, InterruptIn, InterruptManager, LocalFileSystem, PortInOut, PortIn, PortOut, PwmOut, SPISlave, SPI, Serial, Ticker, Timeout, TimerEvent, and Timer. At the bottom right, there is a 'Files' section.

STM32 Motor control offers

<http://www.emcu.it/STM32/STM32-MotorControl/STM32-MotorControl.html>



Features set, MCU support

STM32F103x HD/XL, STM32F2xx, STM32F4xx, STM32F3xx

STM32F103x LD/MD

STM32F100x, STM32F0xx

1shunt	Flux Weakening	IPMSM MTPA
Feed Forward	Sensor-less (STO + PLL)	Sensor-less (STO + Cordic)
Encoder	Hall sensors	Debug & Tuning
ST MC Workbench support	USART based com protocol add-on	Max FOC F100 ~11kHz F0xx T.B.D.

3shunt
FreeRTOS <i>F103, F2xx</i>
ICS
Max FOC ~25kHz

Dual FOC
Max FOC F103 ~25kHz F2xx ~40kHz F2xx ~50kHz F3xx T.B.D.
Max FOC dual F103 ~20kHz F2xx ~36kHz F4xx~45kHz F3xx T.B.D.

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