life.augmented

STM32
Open Development Environment

As easy as 1, 2, 3!

The STM32 Open Development Environment is an open, flexible, easy and affordable way to develop innovative devices and applications based on the STM32 32-bit microcontroller family combined with other state-of-the-art components connected via expansion boards. It enables fast prototyping with leading-edge components that can quickly be transformed into final designs. ST offers reference designs for many applications to make the transition from prototype to final product even smoother.

1 To start your design choose an **STM32 Nucleo development board** powered by a 32-bit ARM® Cortex®-M-based STM32 microcontroller. Depending on your needs you can select from a range of microcontrollers optimized for ultra low power or high performance with a variety of peripheral and memory options.

Select the **STM32 Nucleo expansion boards** that can be stacked on the STM32 Nucleo for all the functions you need to make your device work.

An ever-expanding range of sensing, connectivity, power, audio, motor control and other functions are available or in development.

STM32 Nucleo

2 Now select your **development environment** (IAR EWARM, Keil MDK-ARM, ARM mbed online, GCC-based IDEs, ...) and use the free **STM32Cube tools and software**.
Use the **STM32CubeMX** to configure your STM32 Nucleo board and download the building blocks for your STM32.
Download all the necessary software to run the functionality on the **selected STM32 Nucleo expansion boards**.

STM32 Cube

ARM mbed Ecosystem · IAR SYSTEMS · KEIL Tools by ARM · GCC

3 Compile your design and upload it to the STM32 Nucleo development board.

All that you need

The STM32 Open Development Environment consists of a set of modular developer boards and a comprehensive open software environment designed around the STM32 microcontroller family.

STM32 Nucleo development boards

A comprehensive range of affordable development boards for all STM32 microcontroller series, with unlimited unified expansion capability, and with integrated debugger/programmer

STM32 Nucleo expansion boards

Boards with additional functionality that can be plugged on top of the STM32 Nucleo development board directly or stacked on other expansion board

STM32Cube software

A set of free of charge tools and embedded software bricks to enable fast and easy development on the STM32, including a Hardware Abstraction Layer, middleware bricks and the STM32CubeMX PC-based configurator and code generator

STM32Cube expansion software

Expansion software provided free of charge for use with STM32 Nucleo expansion board, and compatible with STM32Cube software framework

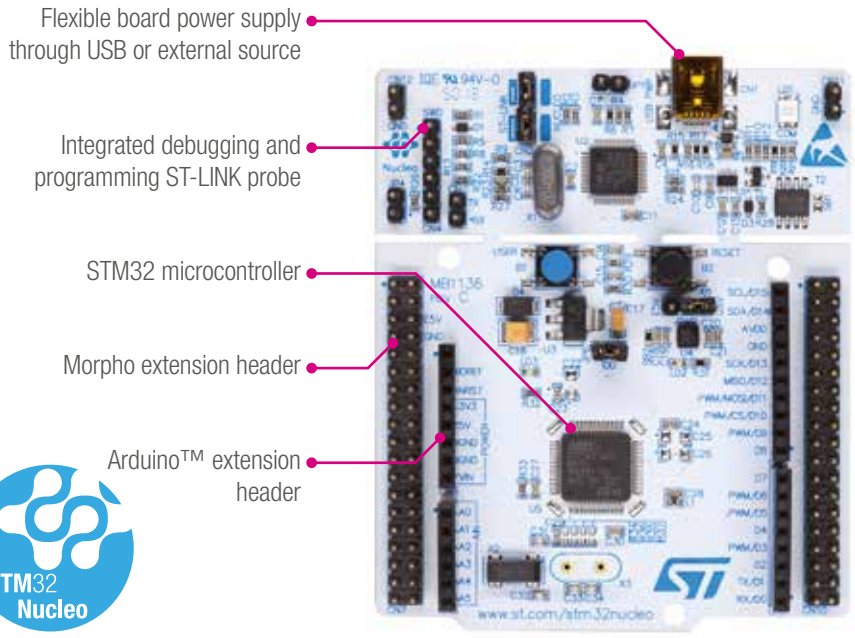
Developer community and support
Online communities, development tools, documentation and user guides

MULTIPLE DEVELOPMENT ENVIRONMENTS

The STM32 Open Development Environment is compatible with a number of IDEs including IAR EWARM, Keil MDK-ARM, ARM mbed online and GCC-based environments

STM32 Nucleo boards

The highly affordable STM32 Nucleo development boards allow anybody to try out new ideas and to quickly create prototypes with any STM32 MCU. The family brings a complete product range that combines high-performance, real-time and ultra-low power operation.



High-performance

STM32 F2 STM32 F4 STM32 F7

Mainstream

STM32 F0 STM32 F1 STM32 F3

Ultra-low-power

STM32 L0 STM32 L1

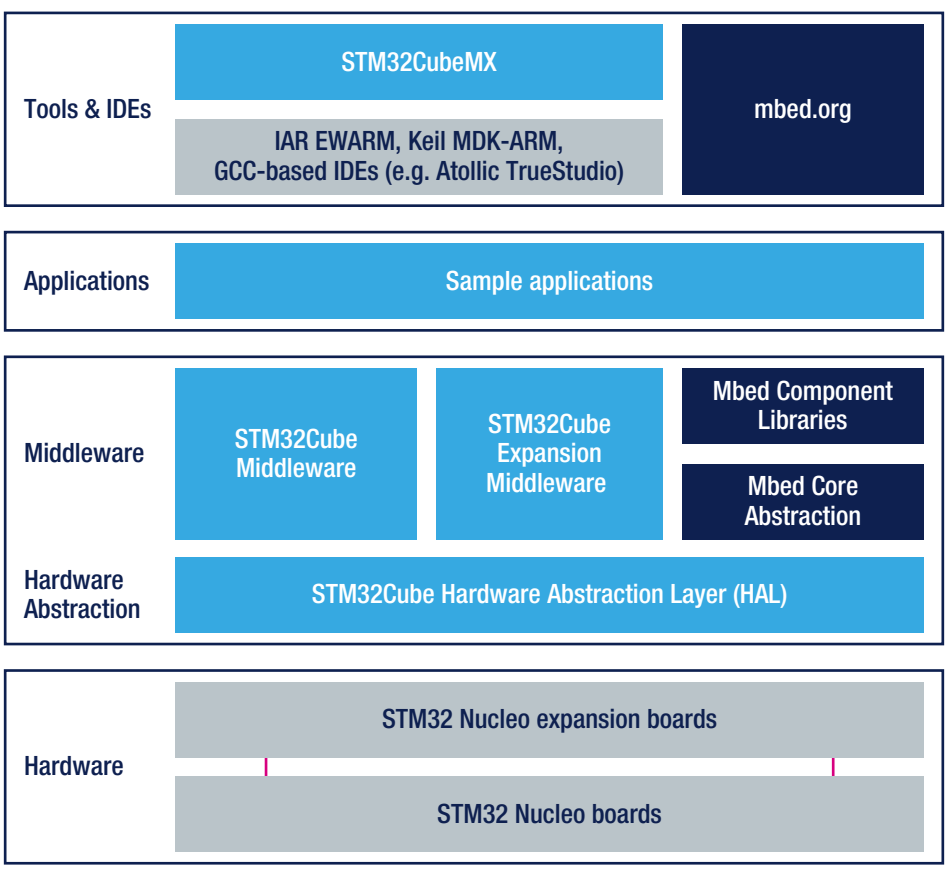
THE SKY IS THE LIMIT

Sharing Arduino connectors and ST Morpho headers, STM32 Nucleo boards can easily be extended with a large number of expansion boards available from ST and third parties.
Stack as many board as you want to create the functionality you need.

What do you want to do?	What you need	Your choices
Sense motion, pressure, humidity, temperature, light, sound	Motion sensors	ST (available now)
	Environmental sensors	ST (available now)
	Proximity sensors	ST (Q4 2014)
	Microphone	ST (Q1 2015)
Connect wireless or wired	Bluetooth Low Energy	ST (available now)
	Wi-Fi	ST (Q1 2015)
	Sub-GHz radio	ST (Q4 2014)
	NFC	ST (available now)
	GNSS	ST (H1 2015)
	Cellular	Third party
	Ethernet	Third party
Move/actuate	Stepper motor driver	ST (available now)
	DC & BLDC motor driver	ST (Q1 2015)
	Programmable Logic Controller	ST (Q1 2015)
	Relay	Third party
Power	Energy management & battery	ST (Q1 2015)
Translate	Audio amplifier	ST (Q1 2015)
	OpAmp	ST (Q1 2015)

STM32Cube
Development Software

STM32Cube is a set of free of charge tools and embedded software bricks to enable fast and easy development on the STM32 that simplifies and speeds up developers' work. It consists of a comprehensive software platform.
The PC-based STM32CubeMX graphical configurator allows rapid configuration of the STM32 for the target application.
The embedded software bricks include a Hardware Abstraction Layer (HAL) for easy porting from one STM32 device to another and middleware bricks for the most common functions.
Hundreds of code use examples are also included.



STM32CUBE EXPANSION SOFTWARE

All STM32 Nucleo expansion boards comes with free of charge software fully compatible with STM32Cube software framework.

OPEN LICENSE MODELS

Our software is covered by a mix of fully open source BSD license and ST licenses with very permissive terms.
As an mbed-enabled board, developers can make use of the mbed open source software platform, online tools and collaboration infrastructure at mbed.org.

Releasing your creativity
Develop your application

THREE STEP WEATHER STATION

Choose the STM32 Nucleo boards

Select the STM32 Nucleo development board - in this case an NUCLEO-L053R8 based on the STM32L053R8 with low power consumption would be well suited.
www.st.com/stm32nucleo

Add the three required STM32 Nucleo expansion boards: Environmental (and motion) sensors, Bluetooth Low Energy and energy management.
www.st.com/x-nucleo

Use the STM32Cube software framework together with an IDE

ARM® mbed™ Ecosystem

IAR SYSTEMS

KEIL™ Tools by ARM

GCC

Download the STM32Cube software bricks for the STM32 Nucleo development and expansion boards.
www.st.com/stm32cube

Configure your application with the free STM32CubeMX configurator and code generator. Use your favorite development environment to compile the application and upload it to the boards.

Enjoy your newly created weather station

Download the BlueNRG application from Apple Store or Google Play store. It allows you to access all the sensor data directly from your mobile device via the Bluetooth® Low Energy protocol.

STM32 OPEN DEVELOPMENT ENVIRONMENT

With the STM32 open development environment, you can quickly build your prototype.
Thanks to state-of-the-art commercial components, your prototype can easily be turned into a commercial product. **www.st.com/stm32ode**