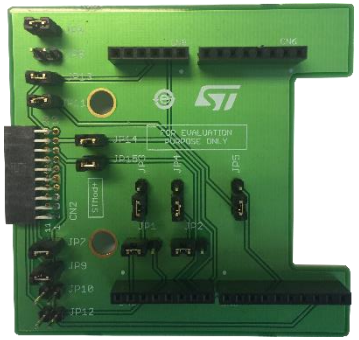
Quick Start Guide

STMod+ connector expansion board for STM32 Nucleo (X-NUCLEO-STMODA1)



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Version 1.0 (Apr 20, 2018)

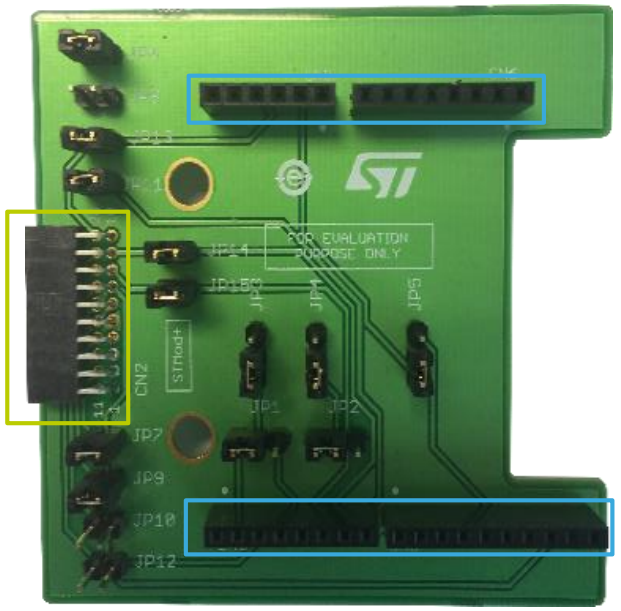
Quick Start Guide Contents

Bipolar stepper motor driver expansion board

Hardware overview

X-NUCLEO-STMODA1 Hardware Description

- The X-NUCLEO-STMODA1 is a passive adaptation board between Arduino Uno and STMod+ connectors.
- It provides an easy-to-use solution for expanding the Arduino UNO based ST ecosystem with devices using STMod+ connector.
- The X-NUCLEO-STMODA1 includes a comprehensive set of jumpers that allows to modify the way the connector mapping is operated, allowing to be compatible with a wider range of STM32 Nucleo board.
- Since fully passive, no software is associated.



Arduino UNO R3 connector STMod+ connector

Key Products on board

STMod+ connector
Connector used by the Cellular modem

Latest info available at www.st.com
X-NUCLEO-STMODA1

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Quick Start Guide Contents

X-NUCLEO-STMODA1: STMod+ connector expansion board for STM32 Nucleo

Hardware and Software overview

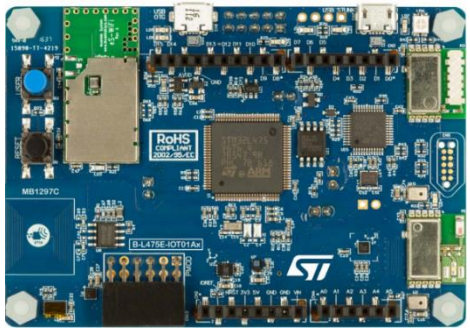
Setup & Demo Examples

Documents & Related Resources

STM32 Open Development Environment: Overview

Setup & demo examples
Hardware prerequisites

- 1x Discovery kit IoT node, low-power wireless, BLE, NFC, SubGHz, Wi-Fi **(B-L475E-IOT01)**
- 1x STMod+ connector expansion board for STM32 Nucleo **(X-NUCLEO-STMODA1)**
- 1x Cellular STMod+ modem with its antenna (modem used in **P-L496G-CELL02**)
- 1x LTE Antenna (Taoglas TG.08.0113)
- 1x Laptop/PC with MS Windows 7 or 8
- 1x external DC power supply with two electric cables (*)
- 1x USB type A to micro-B USB cable



B-L475E-IOT01

Micro USB Cable

Cellular STMod+ modem

LTE Antenna

X-NUCLEO-STMODA1

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Software prerequisites

- **STSW-LINK009:** ST-LINK/V2-1 USB driver
- **STSW-LINK007:** ST-LINK/V2-1 firmware upgrade
- A Windows PC with one of the supported development toolchains:
  - KEIL: MDK-ARM
  - IAR: EWARM
  - GCC-based IDE: System Workbench for STM32
- **Software package for the full cellular kit not yet available**

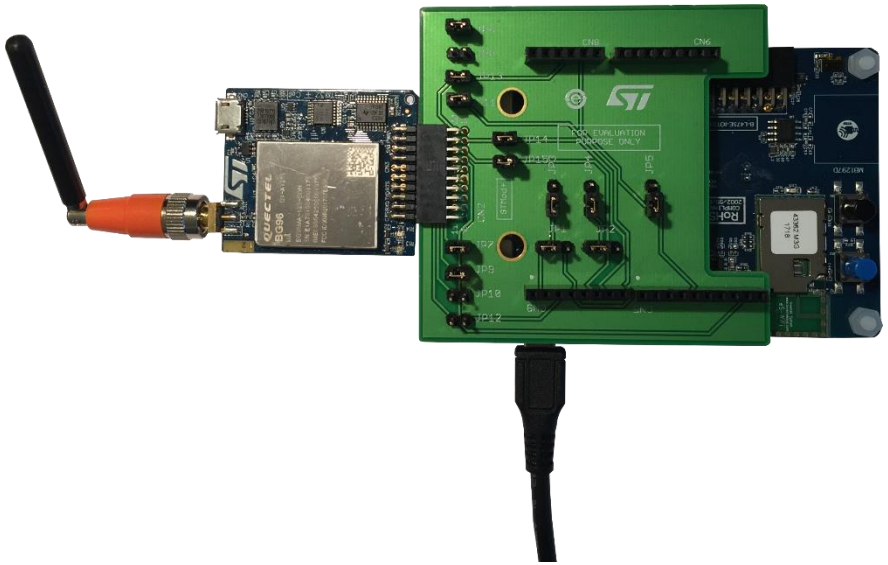
Assembling the cellular dev-kit

Example of use of the X-NUCLEO-STMODA1 adaptation shield

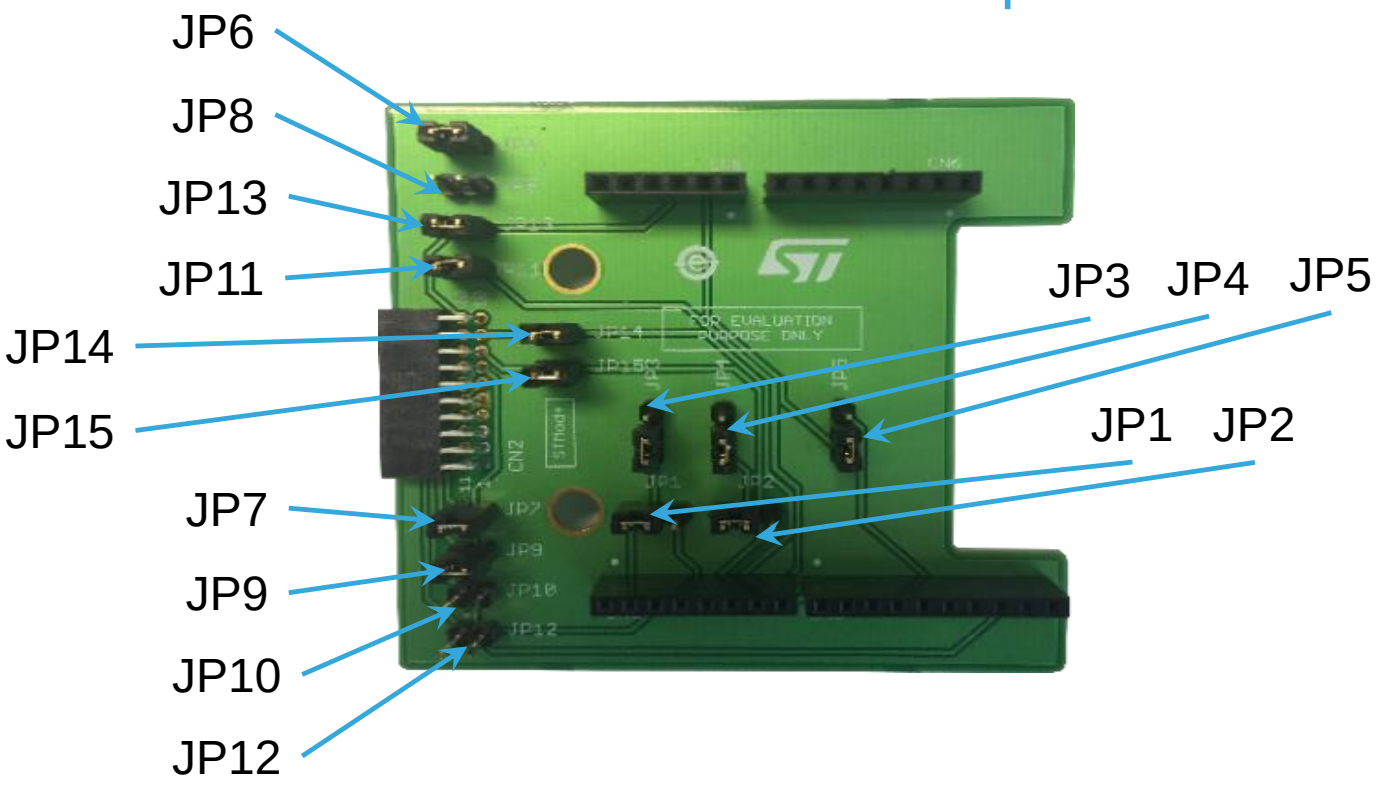
1. Stack the X-NUCLEO-STMODA1 to the B-L475E-IOT01. Verify that jumper setting that match their default value (set for B-L475E-IOT01), looking at the X-NUCLEO-STMODA1 User manual or look at following slide

2. Connect the modem using the STMod+ connector to the X-NUCLEO-STMODA1, and connect the LTE antenna using the SMA connector.

3. Connect Micro-USB cable using the connector on the B-L475E-IOT01 on the left the closest to the modem and the USB-A to the PC



Jumper Default Setting



JP1	1-2 LEFT	
JP2	1-2 LEFT	
JP3	1-2 DOWN	
JP4	1-2 DOWN	
JP5	1-2 DOWN	
JP6	ON	
JP7	ON	
JP8	OFF	

JP9	ON	
JP10	OFF	
JP11	ON	
JP12	OFF	
JP13	ON	
JP14	ON	
JP15	ON	

Documents & related resources

All documents are available in the DESIGN tab of the related products webpage

X-NUCLEO-STMODA1

- Gerber files, BOM, and schematics
- **DB3589 :**STMod+ connector expansion board for STM32 Nucleo - **data brief**
- **UM2400:** Getting started with the X-NUCLEO-STMODA1 expansion board for STM32 Nucleo – User Manual

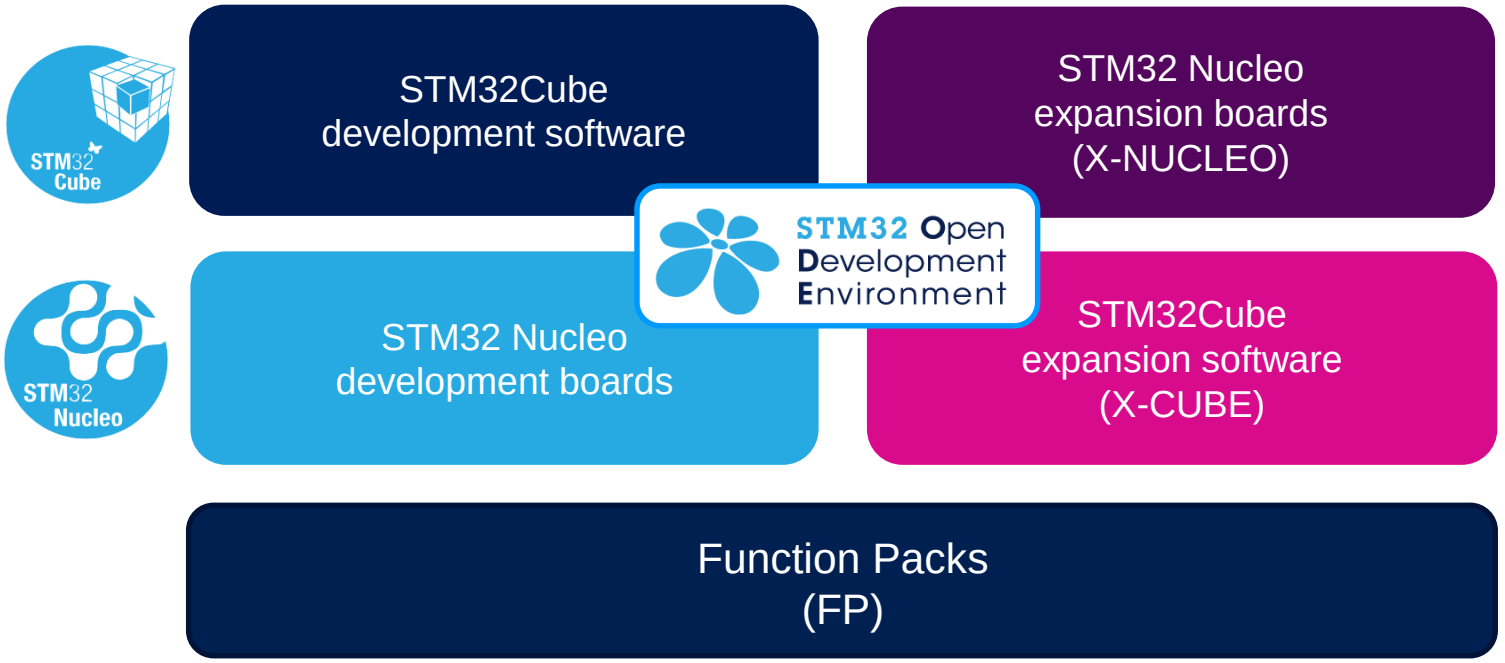
Consult www.st.com for the complete list

Quick Start Guide Contents

- X-NUCLEO-STMODA1: STMod+ connector expansion board for STM32 Nucleo
  - Hardware and Software overview
- Setup & Demo Examples
  - Documents & Related Resources
- STM32 Open Development Environment: Overview

STM32 Open Development Environment
Fast, affordable Prototyping and Development

- The STM32 Open Development Environment (ODE) consists of a set of stackable boards and a modular open SW environment designed around the STM32 microcontroller family.



www.st.com/stm32ode

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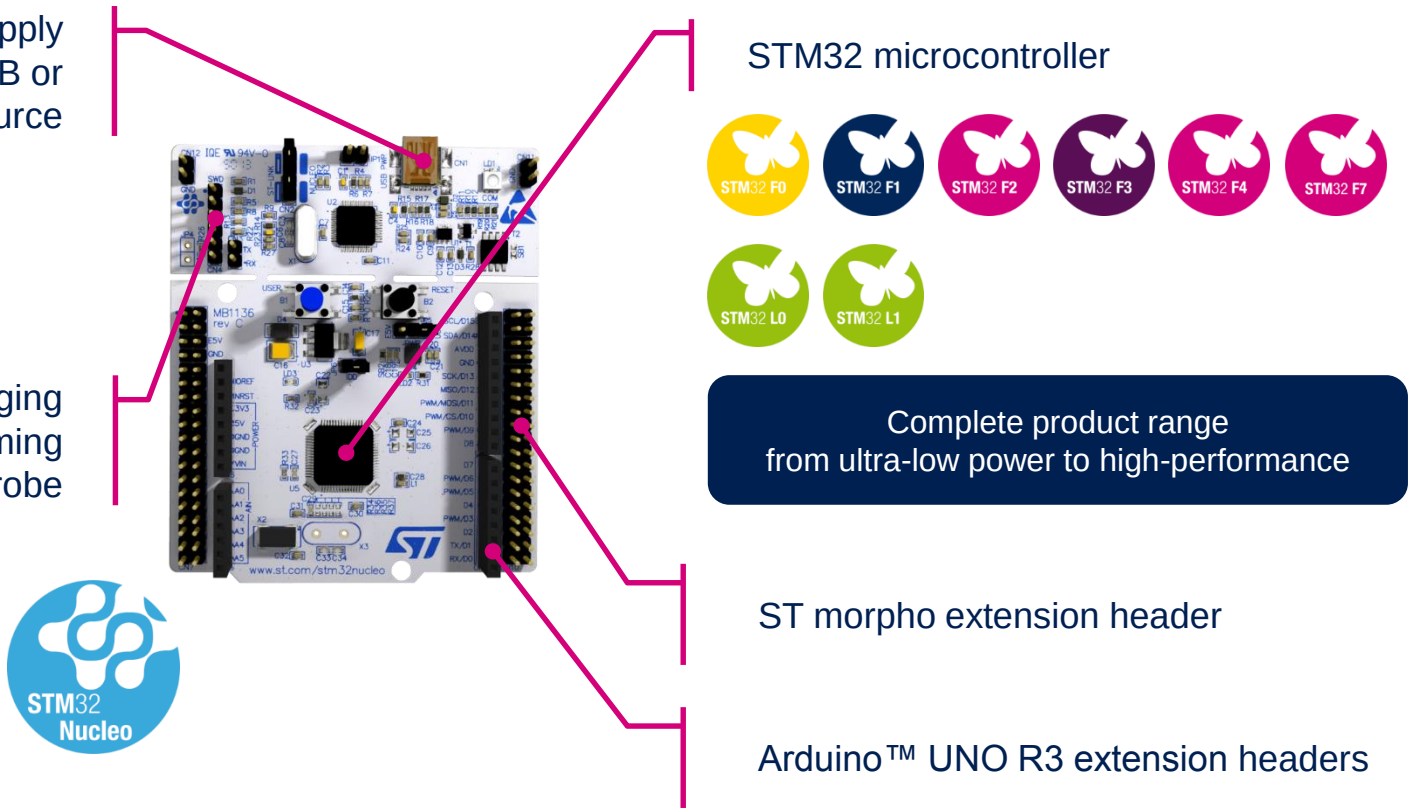
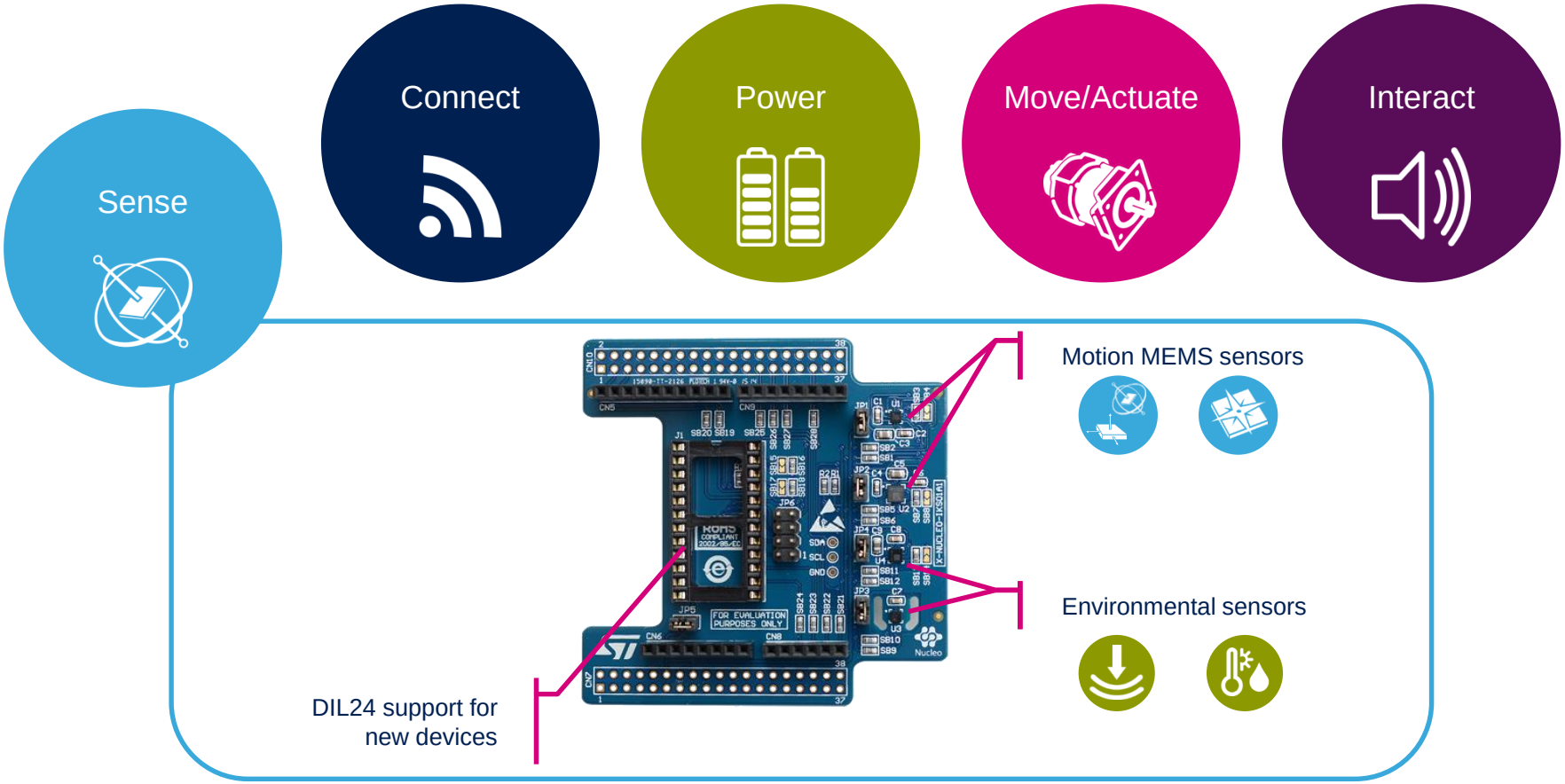
Development Boards (NUCLEO)

- A comprehensive range of affordable development boards for all the STM32 microcontroller series, with unlimited unified expansion capabilities and integrated debugger/programmer functionality.



Expansion Boards (X-NUCLEO)

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



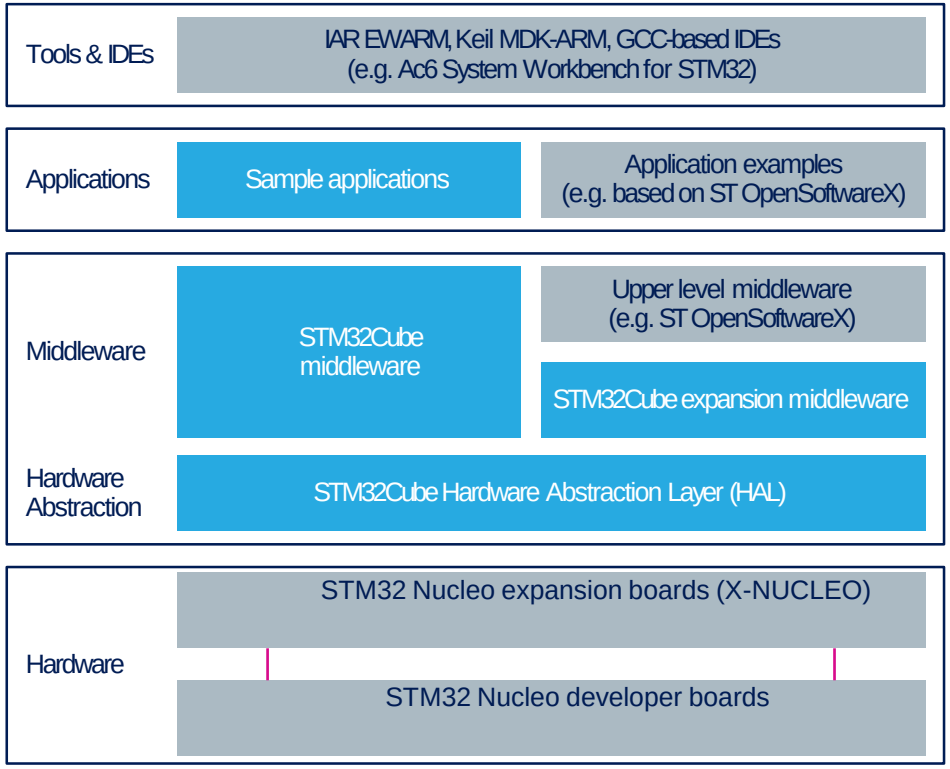
Example of STM32 expansion board (X-NUCLEO-IKS01A1)

STM32 Open Development Environment

Software components

- **STM32Cube software (CUBE)** - A set of free tools and embedded software bricks to enable fast and easy development on the STM32, including a Hardware Abstraction Layer and middleware bricks.

- **STM32Cube expansion software (X-CUBE)** - Expansion software provided free for use with the STM32 Nucleo expansion board and fully compatible with the STM32Cube software framework. It provides abstracted access to expansion board functionality through high-level APIs and sample applications.



- **Compatibility with multiple Development Environments -** The STM32 Open Development Environment is compatible with a number of IDEs including IAR EWARM, Keil MDK, and GCC-based environments. Users can choose from three IDEs from leading vendors, which are free of charge and deployed in close cooperation with ST. These include Eclipse-based IDEs such as Ac6 System Workbench for STM32 and the MDK-ARM environment.

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OPEN LICENSE MODELS: STM32Cube software and sample applications are covered by a mix of fully open source BSD license and ST licenses with very permissive terms.

www.st.com/stm32cube

www.st.com/x-cube

STM32 Open Development Environment

Building block approach

The building blocks	Your need	Our answer

Accelerometer, gyroscope
Inertial modules, magnetometer
Pressure, temperature, humidity
Proximity, microphone

Sense — COLLECT

Bluetooth LE, Sub-GHz radio
NFC, Wi-Fi, GNSS

Connect — TRANSMIT

Audio amplifier
Touch controller
Operation Amplifier

Translate — ACCESS

Stepper motor driver
DC & BLDC motor driver
Industrial input / output

Move / Actuate — CREATE

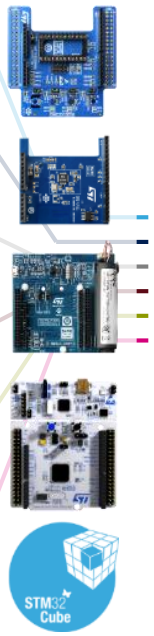
Energy management & battery

Power — POWER

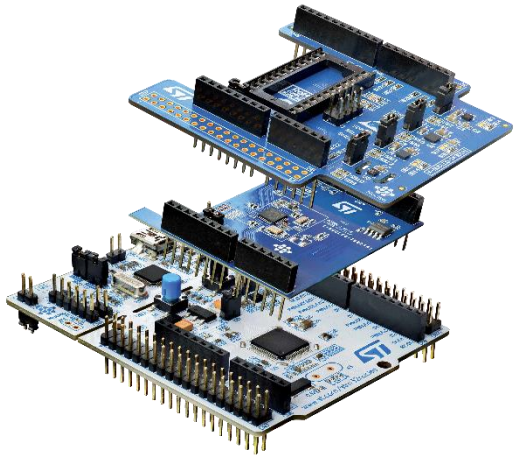
General-purpose microcontrollers
Secure microcontrollers

Process — PROCESS

Software



STM32 Open Development Environment



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