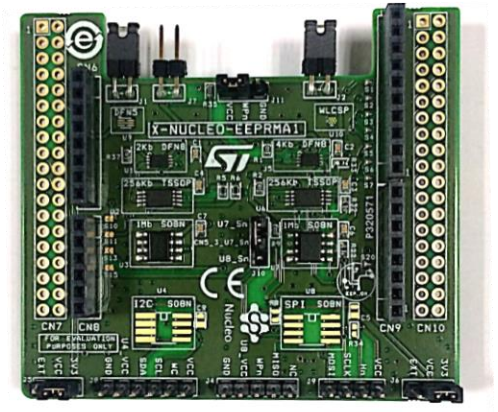
Quick Start Guide

Standard I²C and SPI EEPROM memory expansion board based on M24xx and M95xx series for STM32 Nucleo (X-NUCLEO-EEPRMA1)



Version 1.0.0 (5 Oct,2018)

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Quick Start Guide Contents

X-NUCLEO-EEPRMA1: Standard I²C and SPI EEPROM memory expansion board

Hardware and Software overview

Setup & Demo Examples

Documents & Related Resources

STM32 Open Development Environment: Overview

Standard I²C and SPI EEPROM memory expansion board

Hardware Overview

X-NUCLEO-EEPRMA1 Hardware Description

- The X-NUCLEO-EEPRMA1 expansion board is based on M24xx I²C and M95xx SPI EEPROM for data reading and writing.
- The expansion board acts as an external storage device that can be used to store data such as manufacturing traceability, calibration, user setting, error flags, data log and monitoring data to make applications more flexible and accurate.
- The X-NUCLEO-EEPRMA1 expansion board is compatible with the Arduino UNO R3 connector pin assignment and can be easily plugged to any STM32 Nucleo development board. You can mount the ST morpho connectors if required.

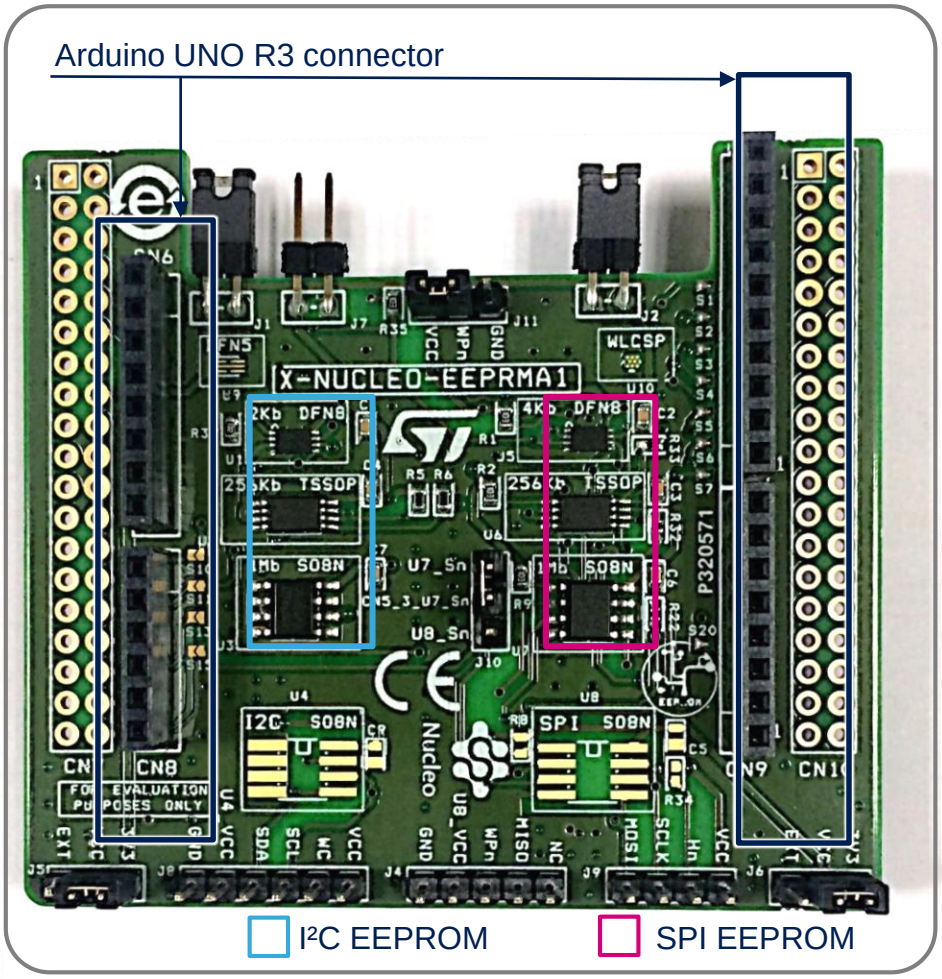
Features

- Easy portability across different MCU families
- Equipped with Arduino™ UNO R3 connector
- Compatible with STM32 Nucleo boards
- Free comprehensive development firmware library and sample implementation available when the X-NUCLEO-EEPRMA1 expansion board is plugged on top of a NUCLEO-F401RE or NUCLEO-L053R8 development board
- Developer can choose and solder an EEPROM to be tested using the evaluation Software provided
- RoHS and WEEE compliant

Key Products on board

M24XX
ST I²C EEPROM

M95XX
ST SPI EEPROM



Latest info available at www.st.com
X-NUCLEO-EEPRMA1

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Standard I²C and SPI EEPROM memory expansion board

Software Overview

X-CUBE-EEPRMA1 Software Description

The X-CUBE-EEPRMA1 software expansion for STM32Cube provides an evaluating M24XX I²C and M95XX SPI EEPROM for data reading and writing.

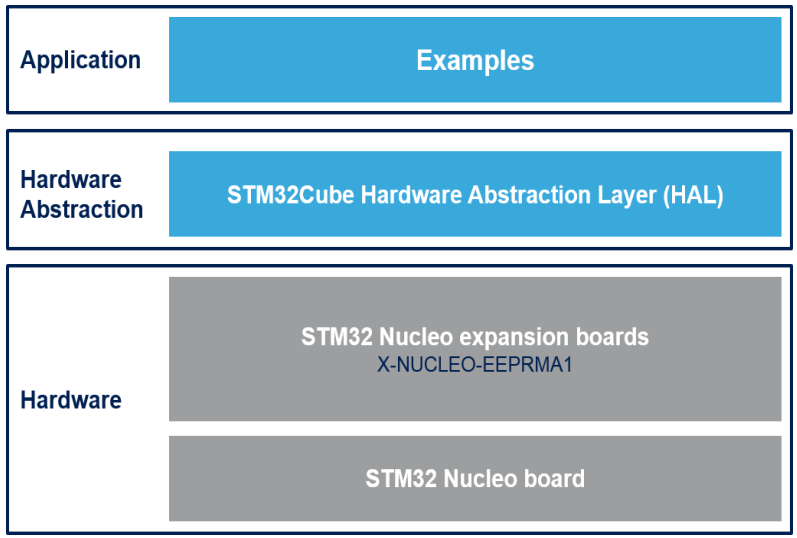
The expansion is built on STM32Cube software technology to ease portability across different STM32 microcontrollers.

The software comes with sample implementations of the drivers running on the X-NUCLEO-EEPRMA1 expansion board connected to the featured development boards.

Key features

- Complete software to build applications using M24XX or M95XX based EEPROM
- Easy portability across different MCU families thanks to STM32Cube
- Free user-friendly license terms
- Examples implementation available on board X-NUCLEO-EEPRMA1 plugged on top of one NUCLEO-F401RE or NUCLEO-L053R8
- Developer can solder the EEPROM of his choice and test it using the Evaluation software provided.

Overall Software Architecture



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Quick Start Guide Contents

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Hardware and Software overview

Setup & Demo Examples

Documents & Related Resources

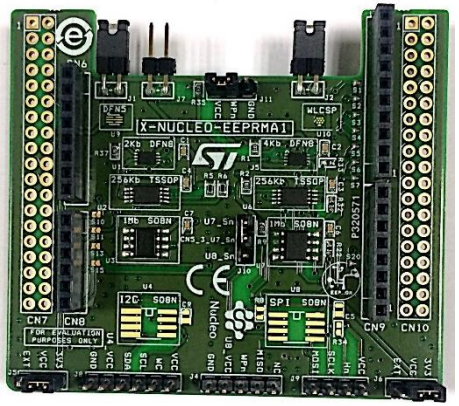
STM32 Open Development Environment: Overview

HW prerequisites

- 1x Standard I²C and SPI EEPROM memory expansion board (**X-NUCLEO-EEPRMA1**)
- 1x STM32 Nucleo development board (**NUCLEO-F401RE or NUCLEO-L053R8)**
- 1x Windows 7 - Laptop/PC
- 1x USB type A to Mini-B USB cable

NUCLEO-F401RE
NUCLEO-L053R8

Mini USB Cable



X-NUCLEO-EEPRMA1

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SW prerequisites

- **STSW-LINK008**: ST-LINK/V2-1 USB driver
- **STSW-LINK007**: ST-LINK/V2-1 firmware upgrade
- **X-NUCLEO-EEPRMA1** Software expansion for STM32Cube
  - Copy the .zip file content into a folder on your PC. The package will contain source code example (Keil, IAR, System Workbench) based only on **NUCLEO-F401RE** or **NUCLEO-L053R8**
- Windows PC based Console Application

Start coding in just a few minutes with X-CUBE-EEPRMA1

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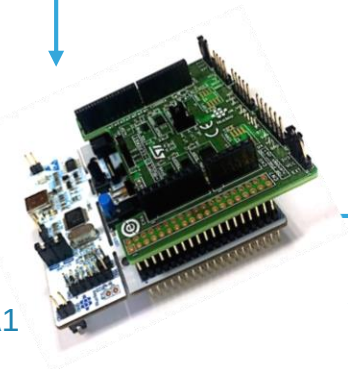
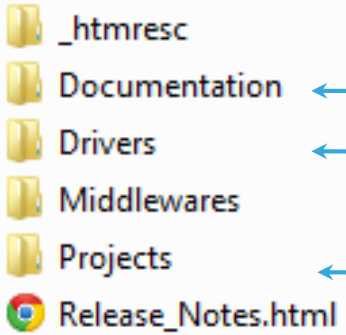
1 www.st.com/x-nucleo

2 Select X-NUCLEO-EEPRMA1



3 Download & unpack X-CUBE-EEPRMA1

Package structure



Docs

BSP, HAL and drivers

Example

4 Download & install STM32 Nucleo ST-LINK/V2-1 USB driver

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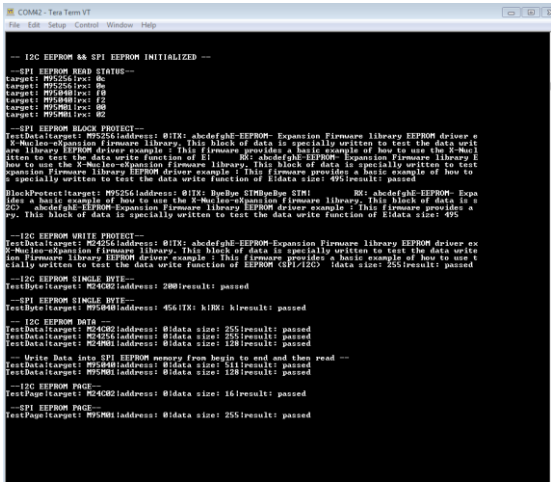


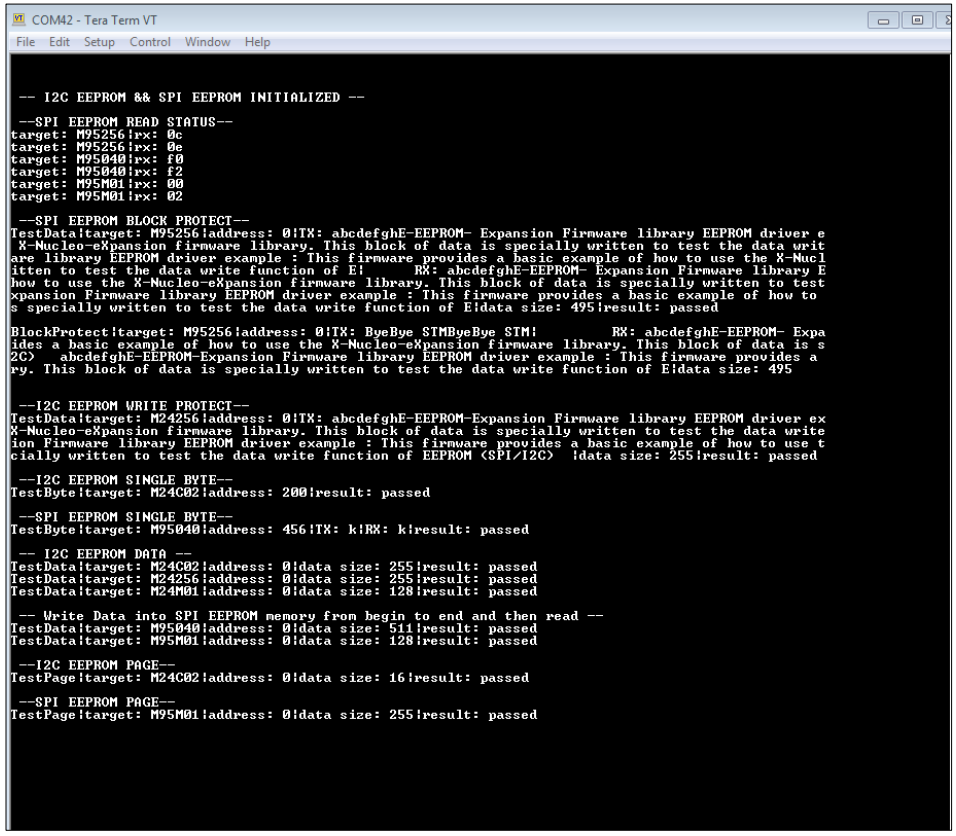
KEIL Tools by ARM

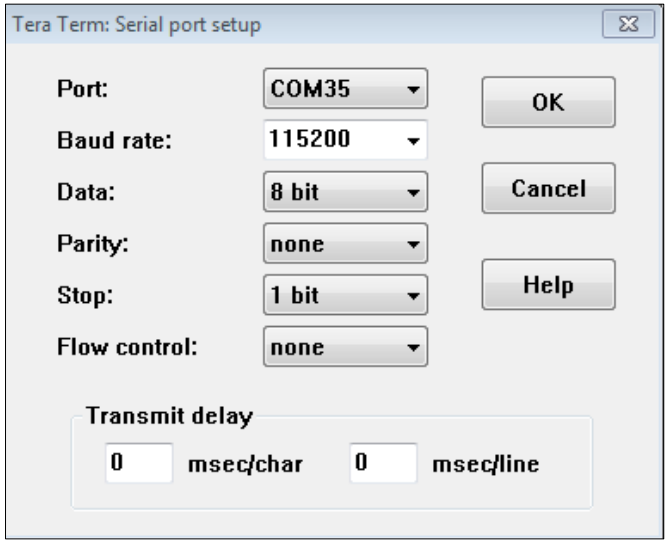
IAR SYSTEMS

5 Compile/Flash and Run the project

Using serial line monitor – e.g. Tera Term

- Pressing the **RESET** button on STM32 Nucleo triggers the initialization phase





Configure the serial line monitor (speed, LF)

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Documents & Related Resources

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

X-NUCLEO-EEPRMA1:

- Gerber files, BOM, Schematic
- **DB3728:** X-NUCLEO-EEPRMA1: Standard I²C and SPI EEPROM memory expansion board - **Data brief**
- **UM2480:** Getting started with the X-NUCLEO-EEPRMA1, standard I²C and SPI EEPROM memory expansion board based on M24xx and M95xx series for STM32 Nucleo – **User manual**

X-CUBE-EEPRMA1:

- **DB3729:** Standard I²C and SPI EEPROM software expansion for STM32Cube - **Data brief**
- **UM2481:** Getting started with the X-CUBE-EEPRMA1 software expansion for STM32Cube– **User manual**

Consult www.st.com for the complete list

Quick Start Guide Contents

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Hardware and Software overview

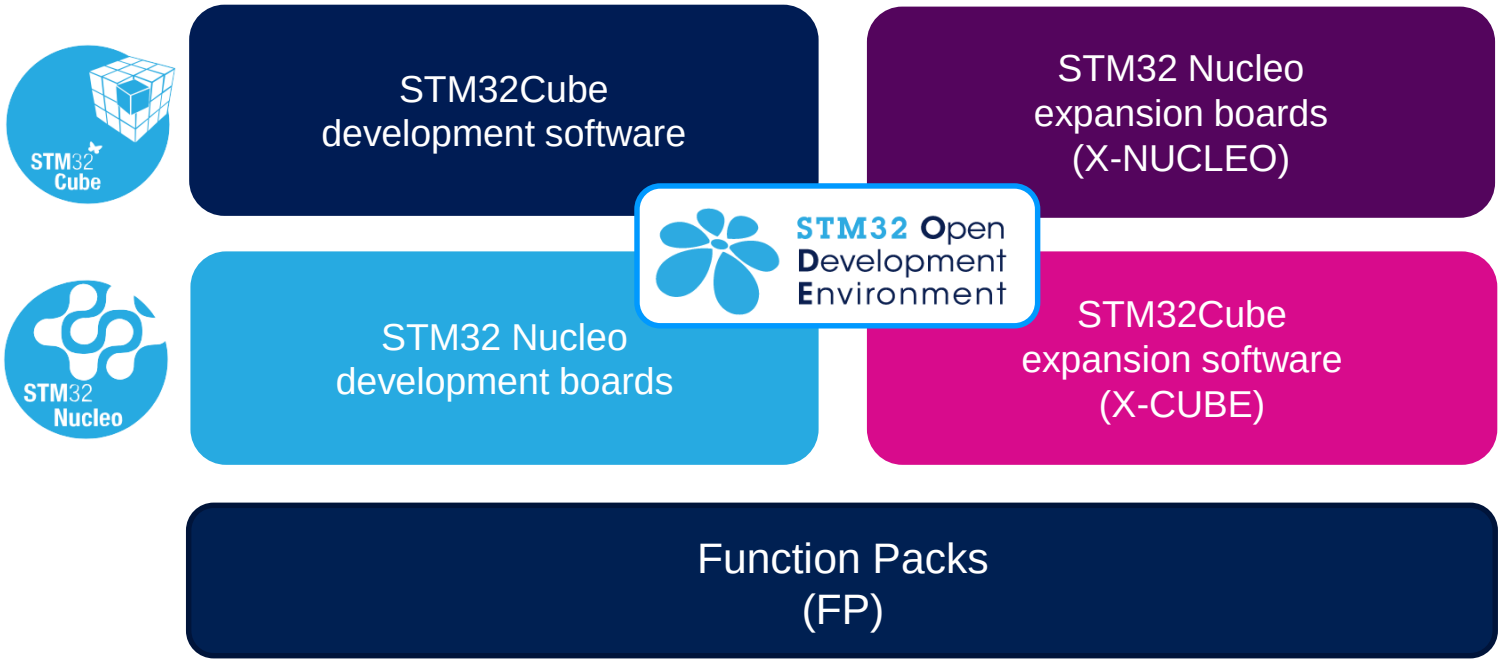
Setup & Demo Examples

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.



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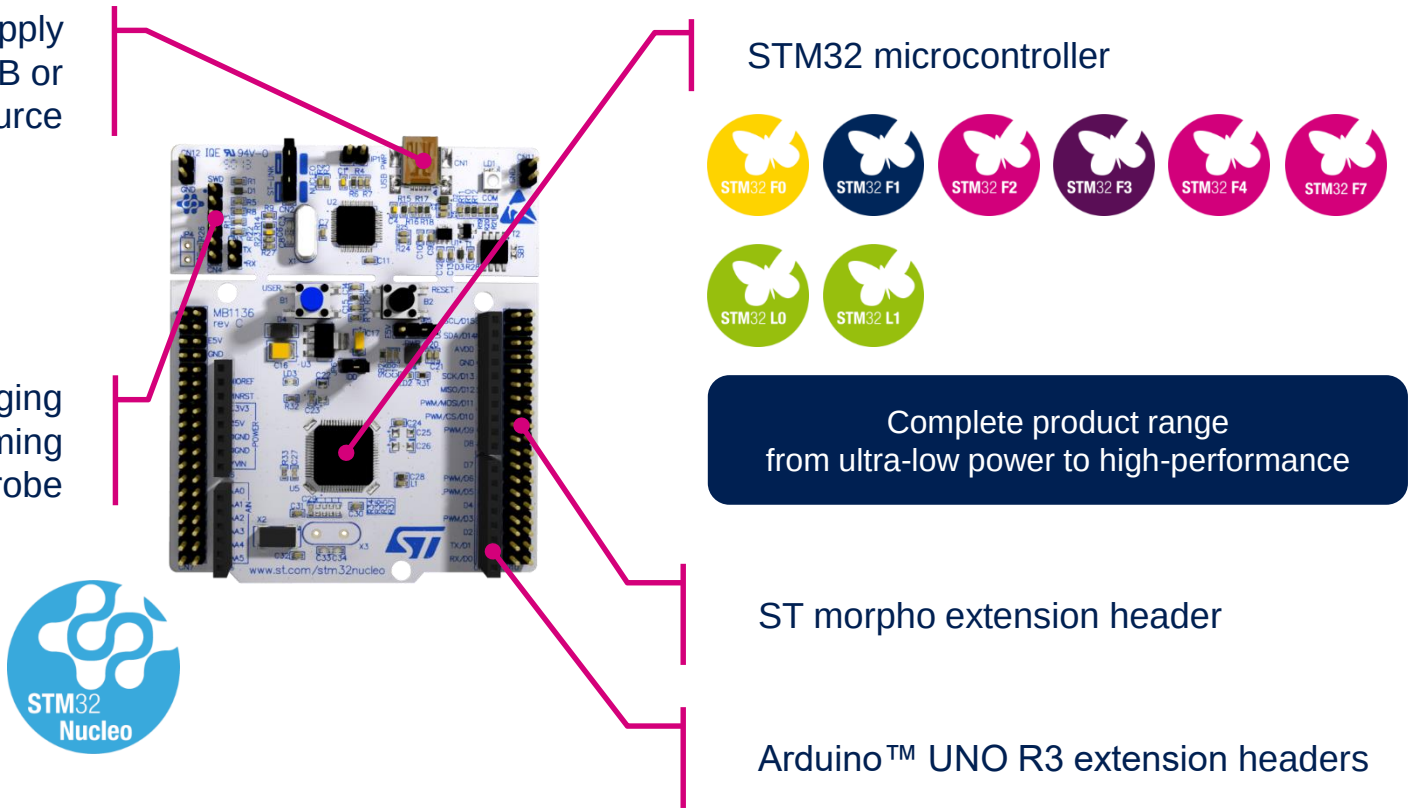
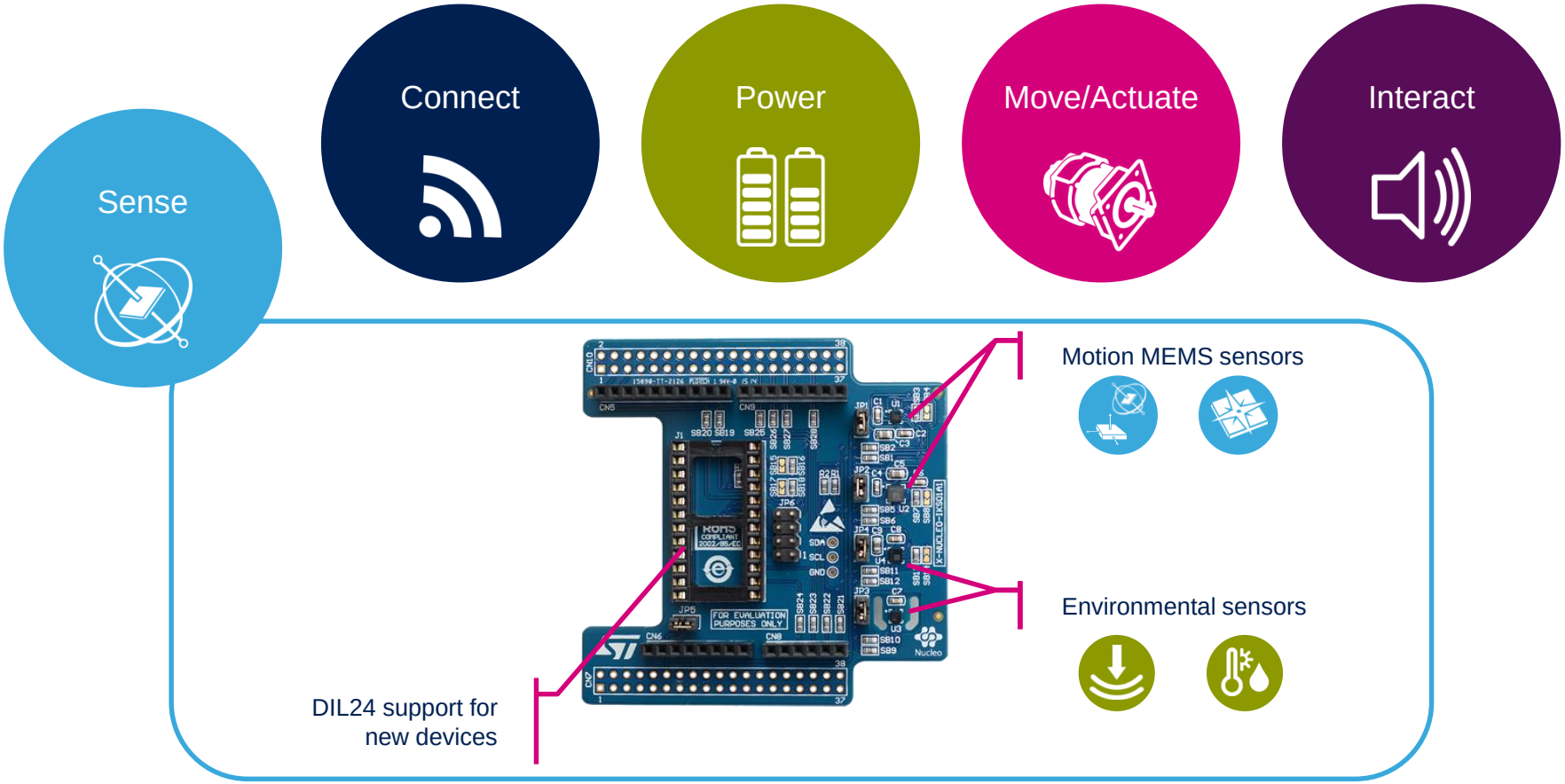
Development Boards (NUCLEO)

- 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.



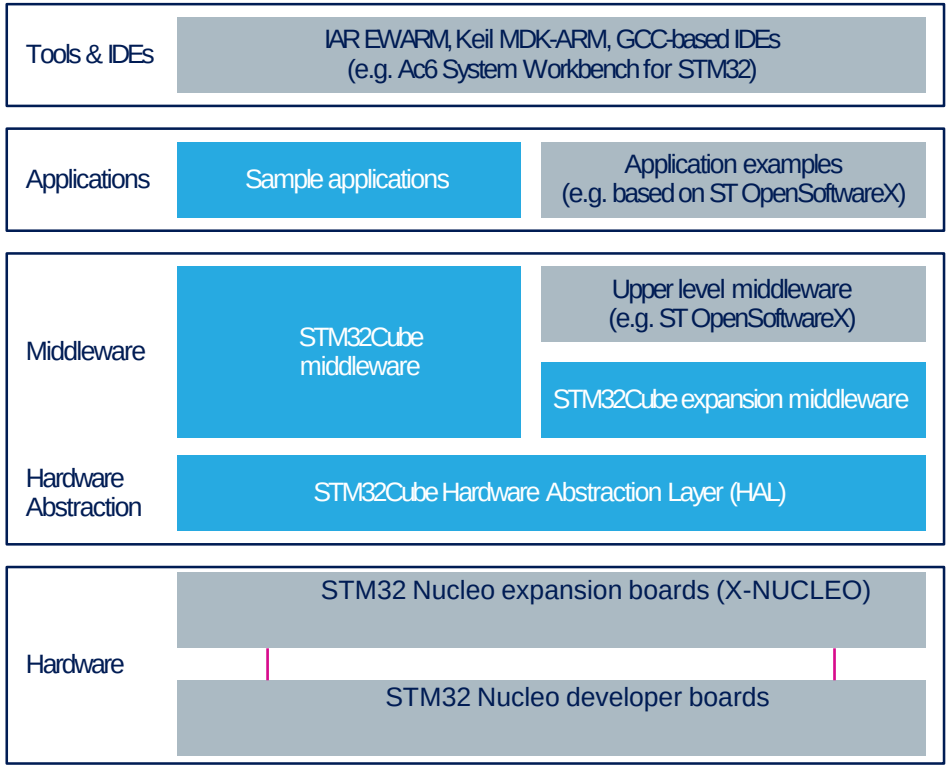
Example of STM32 expansion board (X-NUCLEO-IKS01A1)

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

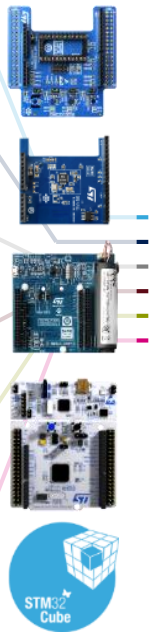
Energy management & battery

Power — POWER

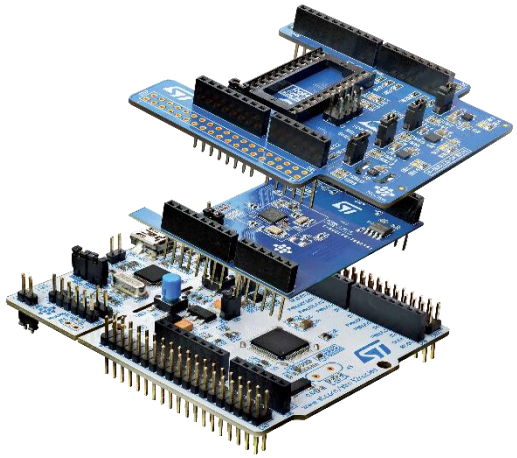
General-purpose microcontrollers
Secure microcontrollers

Process — PROCESS

Software



STM32 Open Development Environment



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