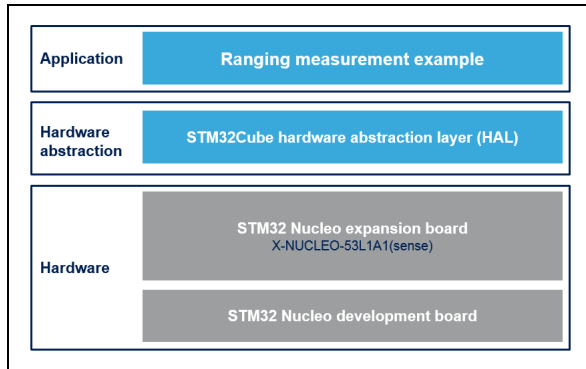


## Long distance ranging Time-of-Flight sensor software expansion of STM32Cube

Data brief



### Features

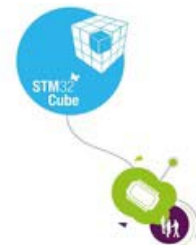
- Driver layer (VL53L1X API) for complete management of the VL53L1X long-distance ranging sensor integrated in the X-NUCLEO-53L1A1 expansion board
- Easy portability across different MCU families, on the strength of STM32Cube
- Free, user-friendly license terms
- Example code for getting started with a simple ranging measurement
- Data logging capabilities through serial com over USB.

### Description

The X-CUBE-53L1A1 software package is an expansion of the STM32Cube, to go with the X-NUCLEO-53L1A1 expansion board for STM32 Nucleo.

The source code of this package is based on STM32Cube and is aligned with the “multi-platform” file and directory structure to ease portability and code sharing across different STM32 MCU families.

The VL53L1X is the latest product based on ST’s patented FlightSense™ technology. This is a ground-breaking technology allowing absolute distance to be measured independent of target reflectance. Instead of estimating the distance by measuring the amount of light reflected back from the object (which is significantly influenced by color and surface), the VL53L1X precisely measures the time the light takes to travel to the nearest object and reflect back to the sensor Time-of-Flight (ToF).



### What is STM32Cube?

STM32Cube represents an original initiative by STMicroelectronics to ease developers' lives by reducing development effort, time and cost. STM32Cube covers the STM32 portfolio.

Version 1.x of STM32Cube includes:

- STM32CubeMX, a graphical software configuration tool that allows the generation of C initialization code using graphical wizards.
- A comprehensive embedded software platform, delivered per series (such as the STM32CubeF4 for STM32F4 series).
- STM32Cube HAL, an STM32 abstraction layer embedded software, ensuring maximized portability across the STM32 portfolio:
  - A consistent set of middleware components, such as RTOS, USB, and TCP/IP graphics.
  - All embedded software utilities, including a full set of examples.

### How does this software complement STM32Cube?

The proposed software is based on the STM32CubeHAL, the hardware abstraction layer for the STM32 microcontroller. The package extends the STM32Cube by providing a board support package (BSP) for the X-NUCLEO-53L1A1 expansion board and a VL53L1X API component (in the Drivers\BSP\Components\VL53L1X directory) to program, control, and range with the VL53L1X device.

One example project for the STM32F401 and STM32L476 is included in the Projects\Multi\Examples\VL53L1X directory. The developer can use this example to start experimenting with the code using a basic ranging measurement.

This example is ready to be compiled using Keil (MDK-ARM), IAR (EWARM) or STM32 workbench (SW4STM32). Pre-compiled binaries are also available (drag and drop onto the STM32 Nucleo to start the demo).

Typical settings are available in the API to address most common use cases.

Ranging data logging through serial virtual com over the USB is also available.

## Revision history

**Table 1. Document revision history**

<b>Date</b>	<b>Revision</b>	<b>Changes</b>
06-Feb-2018	1	Initial release
26-Feb-2018	2	Updated title Updated cover image

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