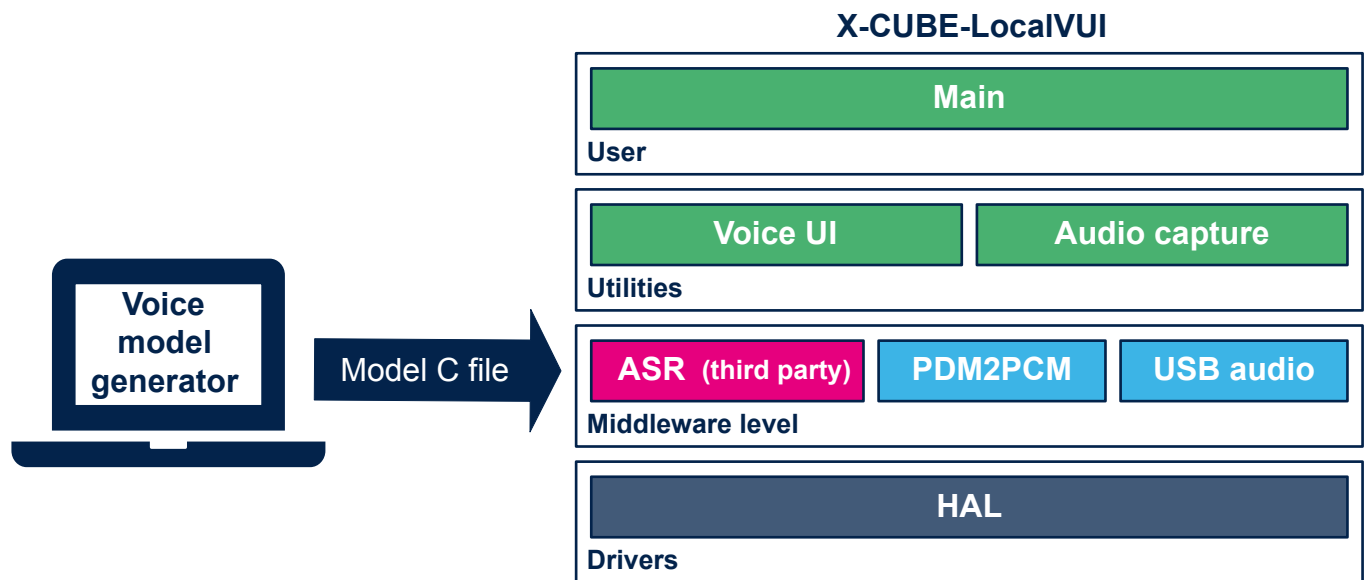


Local voice user interface software expansion for STM32Cube



Product status link

[X-CUBE-LocalVUI](#)


Features

- Cloudless voice user interface (UI)
- Audio capture from board microphone
- Integration of automatic speech recognition (ASR) software
 - Sensory TrulyHandsfree™ (THF) software component
 - Sensory TrulyNatural™ (TNL) software component
 - Picovoice Porcupine and Rhino software components
- Capability to build and integrate a customized voice UI vocabulary model
 - Vocabulary model built with Sensory VoiceHub
 - Vocabulary model built with Picovoice console
- Support for wake word detection only, or wake word and command mode
- Detected command logged on Virtual COM port
- Possibility to connect the board as a USB device to record the microphone audio capture

Description

X-CUBE-LocalVUI implements local voice recognition user interfaces based on audio capture, and speech recognition. It integrates the Sensory TrulyHandsfree™ (THF) and TrulyNatural™ (TNL) software, and VoiceHub generated vocabulary examples. It also integrates the Picovoice Porcupine and Rhino software, and the Picovoice console generated vocabulary example.

The audio capture is based on STM32 peripherals and middleware. It shows how to capture audio from the board microphone through SAI.

The example applications come with default speech recognition models. However, they can be easily updated with a user-specific model. For the Sensory-based examples, the specific model can be defined with the Sensory VoiceHub web tool. For the Picovoice-based example, the specific model can be defined with the Picovoice console web tool.

X-CUBE-LocalVUI provides an implementation on an [STM32H747I-DISCO](#) Discovery kit. It can be ported to some other STM32 microcontrollers and boards.

THF, TNL, and VoiceHub are products from Sensory, an authorized STMicroelectronics partner.

Porcupine, Rhino, and Picovoice console are products from Picovoice.

1 General information

The X-CUBE-LocalVUI Expansion Package runs on the STM32H7 microcontrollers based on the Arm[®] Cortex[®]-M7 processor.

Note: Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.



1.1 Ordering information

X-CUBE-LocalVUI is available for free download from the www.st.com website.

1.2 What is STM32Cube?

STM32Cube is an STMicroelectronics original initiative to improve designer productivity significantly by reducing development effort, time, and cost. STM32Cube covers the whole STM32 portfolio.

STM32Cube includes:

- A set of user-friendly software development tools to cover project development from conception to realization, among which are:
 - STM32CubeMX, a graphical software configuration tool that allows the automatic generation of C initialization code using graphical wizards
 - STM32CubeIDE, an all-in-one development tool with peripheral configuration, code generation, code compilation, and debug features
 - STM32CubeProgrammer (STM32CubeProg), a programming tool available in graphical and command-line versions
 - STM32CubeMonitor (STM32CubeMonitor, STM32CubeMonPwr, STM32CubeMonRF, STM32CubeMonUCPD) powerful monitoring tools to fine-tune the behavior and performance of STM32 applications in real time
- STM32Cube MCU and MPU Packages, comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as STM32CubeH7 for the STM32H7 Series), which include:
 - STM32Cube hardware abstraction layer (HAL), ensuring maximized portability across the STM32 portfolio
 - STM32Cube low-layer APIs, ensuring the best performance and footprints with a high degree of user control over hardware
 - A consistent set of middleware components such as RTOS, USB Host and Device, TCP/IP, mbedTLS, FAT file system, audio, and graphics
 - All embedded software utilities with full sets of peripheral and applicative examples
- STM32Cube Expansion Packages, which contain embedded software components that complement the functionalities of the STM32Cube MCU and MPU Packages with:
 - Middleware extensions and applicative layers
 - Examples running on some specific STMicroelectronics development boards



2 License

X-CUBE-LocalVUI is delivered under the software license agreement [SLA0078](#) and its Additional License Terms.

Revision history

Table 1. Document revision history

Date	Revision	Changes
27-Apr-2022	1	Initial release.
17-Jun-2022	2	Added the integration of Picovoice products in Features and Description .

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