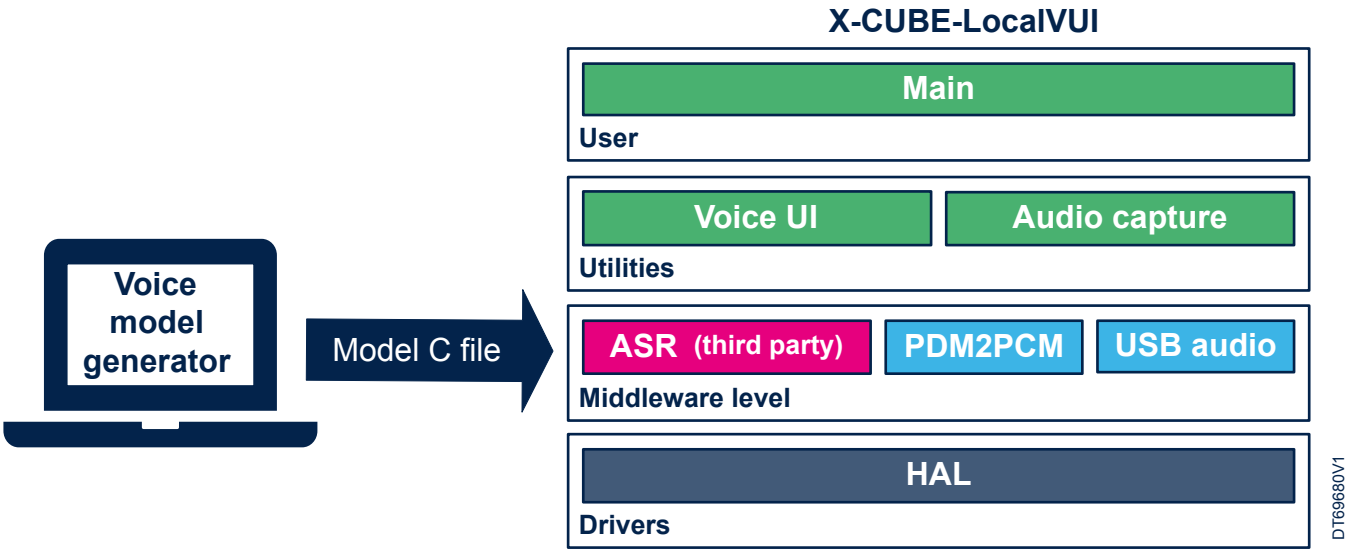
X-CUBE-LocalVUI

Data brief

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
- Capability to build and integrate a customized voice UI vocabulary model
  - Vocabulary model built with Sensory VoiceHub
- 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 Sensory TrulyHandsfree™ (THF), and Sensory TrulyNatural™ (TNL) software.

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 examples, the specific model can be defined with the Sensory VoiceHub web tool.

X-CUBE-LocalVUI provides an implementation on an STM32H747I-DISCO and an STM32H573I-DK Discovery kits. It can be ported to some other STM32 microcontrollers and boards.

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

1 General information

The X-CUBE-LocalVUI Expansion Package runs on the STM32H7 microcontrollers based on the Arm® Cortex®-M7 processor and on the STM32H5 microcontrollers based on the Arm® Cortex®-M33 processor.

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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
  - STM32CubeCLT, an all-in-one command-line development toolset with code compilation, board programming, 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 STM32CubeH5 for the STM32H5 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 ThreadX, FileX / LevelX, NetX Duo, USBX, USB-PD, mbed-crypto, secure manager API, MCUboot, and OpenBL
  - 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*.
9-Nov-2022	3	Removed Picovoice™ support: updated *Features* and *Description*.
13-Dec-2023	4	Added the support for the STM32H573I-DK Discovery kit: updated Description and General information.