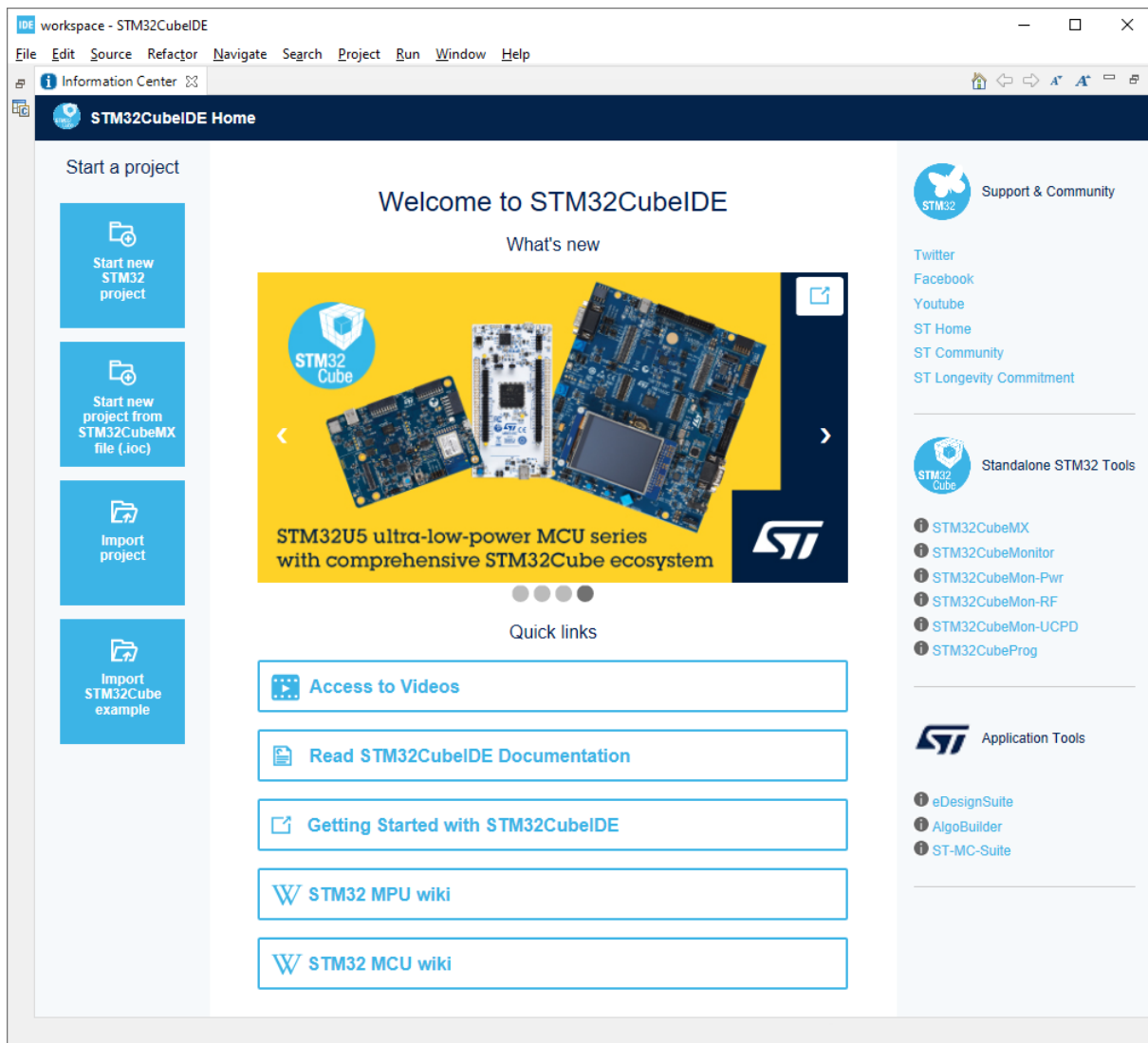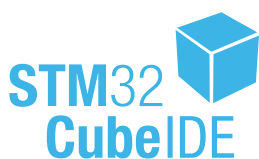# Integrated development environment for STM32 products

Product status link
STM32CubeIDE

Features

- Integration of services from STM32CubeMX:
  - STM32 microcontroller, microprocessor, development platform and example project selection
  - Pinout, clock, peripheral, and middleware configuration
  - Project creation and generation of the initialization code
  - Software and middleware completed with enhanced STM32Cube Expansion Packages
- Based on Eclipse®/CDT™, with support for Eclipse® add-ons, GNU C/C++ for Arm® toolchain and GDB debugger
- STM32MP1 Series:
  - Support for OpenSTLinux projects: Linux®, U-Boot, TF-A and OP-TEE, including the *Device Tree* from STM32CubeMX
  - Support for Linux® User Space application, shared or static library
- Additional advanced debug features including:
  - CPU core, peripheral register, and memory views
  - Live variable watch view
  - System analysis and real-time tracing (SWV)
  - CPU fault analysis tool
  - RTOS-aware debug suport including Azure® RTOS ThreadX and FreeRTOS™ kernel
- Support for ST-LINK (STMicroelectronics) and J-Link (SEGGER) debug probes
- Import project from Atollic® TrueSTUDIO® and AC6 System Workbench for STM32 (SW4STM32)
- Multi-OS support: Windows®, Linux®, and macOS®, 64-bit versions only

Description

STM32CubeIDE is an all-in-one multi-OS development tool, which is part of the STM32Cube software ecosystem.

STM32CubeIDE is an advanced C/C++ development platform with peripheral configuration, code generation, code compilation, and debug features for STM32 microcontrollers and microprocessors. It is based on the Eclipse®/CDT™ framework and GCC toolchain for the development, and GDB for the debugging. It allows the integration of the hundreds of existing plugins that complete the features of the Eclipse® IDE.

STM32CubeIDE integrates STM32 configuration and project creation functionalities from STM32CubeMX to offer all-in-one tool experience and save installation and development time. After the selection of an empty STM32 MCU or MPU, or preconfigured microcontroller or microprocessor from the selection of a board or the selection of an example, the project is created and initialization code generated. At any time during the development, the user can return to the initialization and configuration of the peripherals or middleware and regenerate the initialization code with no impact on the user code.

STM32CubeIDE includes build and stack analyzers that provide the user with useful information about project status and memory requirements.

STM32CubeIDE also includes standard and advanced debugging features including views of CPU core registers, memories, and peripheral registers, as well as live variable watch, Serial Wire Viewer interface, or fault analyzer.

1   General information

STM32CubeIDE supports STM32 products based on the Arm® Cortex® processor.

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

1.1   Ordering information

STM32CubeIDE is available for free download from the *www.st.com* website.

1.2   What is STM32Cube?

STM32Cube is an STMicroelectronics original initiative to significantly improve designer productivity 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 STM32CubeF4 for the STM32F4 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, TCP/IP, graphics, and FAT file system
    - 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

1.3   License

STM32CubeIDE is delivered under the *Mix Ultimate Liberty+OSS+3rd-party V1* software license agreement (SLA0048).

For more details about the license agreement of each component, refer to the release note (RN0114).

Revision history

Table 1. Document revision history

Date	Revision	Changes
15-Apr-2019	1	Initial release.
11-Oct-2019	2	Updated *Multi-OS support* in *Features*. Reflected the support of STM32 microprocessors in *Features* and *Description*.
24-Jul-2020	3	Updated *Features*, *Description* and *What is STM32Cube?*
3-Nov-2020	4	Updated *Features* with FreeRTOS™-aware debug support.
1-Mar-2021	5	Updated *Features* with RTOS-aware support for Azure® RTOS ThreadX and the support for STM32MP1 Series microprocessors OpenSTLinux projects and Linux® User Space application. Updated the cover picture.
26-Nov-2021	6	Updated the cover picture.

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