STM32 AZURE RTOS workshop

Tools installation – Check environment

Purpose

- Purpose :
  Guideline to **install tools and material** for the STM32 AZURE RTOS Workshop
  Check of the **prerequisite** (knowledge and homework)
- Materials provided :

  STM32-AZURE-RTOS-WS-material.exe

  -> STM32SecuWS material (Projects, source files)

  -> STM32CubeH7 and X-CUBE-AZRTOS

  -> TraceX Installation tool

  -> Slides
- Environment supported : PC laptop with Windows 10

Agenda

- Step 1 : Install tools and check configuration
- Step 2 : Install workshop material
- Step 3 : Install packs
- Step 4 : Check installation through an example

If you face any issue during the setup please describe it here:
https://community.st.com/stm32-azure-rtos-workshop

We will try to help you !

Step 1 : Tools installation

Install tools

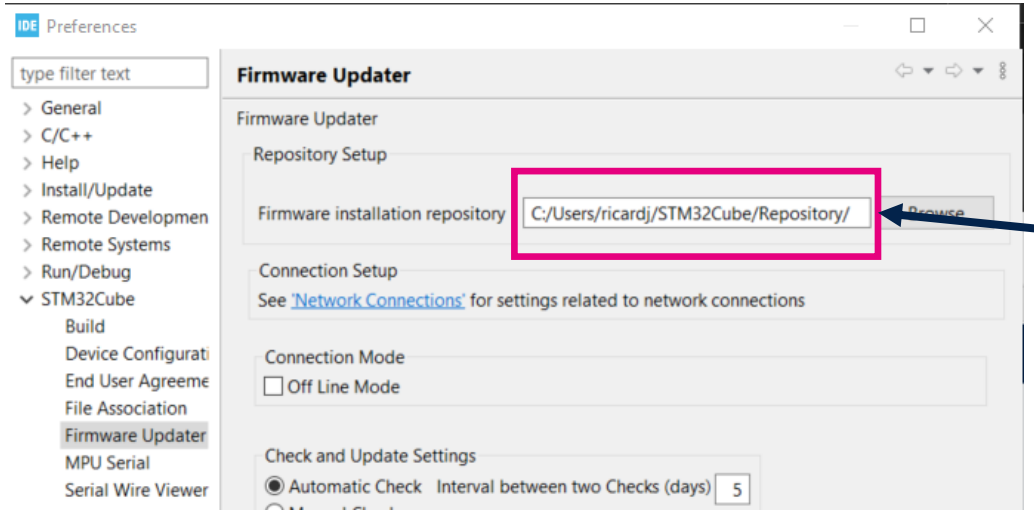
- Get and install STM32CubeIDE 1.7.0 from st.com
  - https://www.st.com/en/development-tools/stm32cubeide.html
- Installation guide for STM32CubeIDE
  - https://www.st.com/resource/en/user_manual/dm00603964-stm32cubeide-installation-guide-stmicroelectronics.pdf

- Get STM32CubeMX 6.3 from st.com
  - https://www.st.com/en/development-tools/stm32cubemx.html
- Installation details for STM32CubeMX provided in
  - https://www.st.com/resource/en/user_manual/dm00104712-stm32cubemx-for-stm32-configuration-and-initialization-c-code-generation-stmicroelectronics.pdf

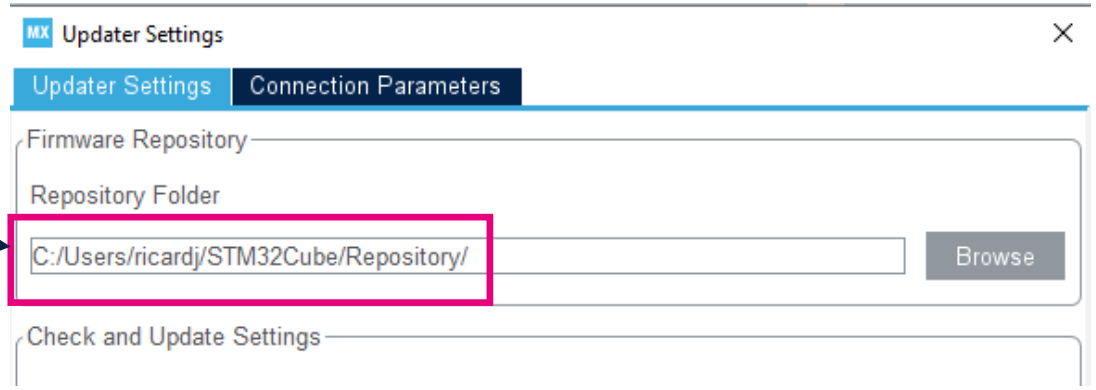
Check tools configuration

- In case, you have already installed these tools, please ensure package repository is stored at **the same location** for both STM32CubeIDE and STM32CubeMX.

- STM32CubeIDE
  - Select Menu Window/Preferences
  - And then STM32Cube/FirmwareUpdate



- STM32CubeMX
  - Select Menu Help/Updater Settings



Step 2 : Workshop material installation

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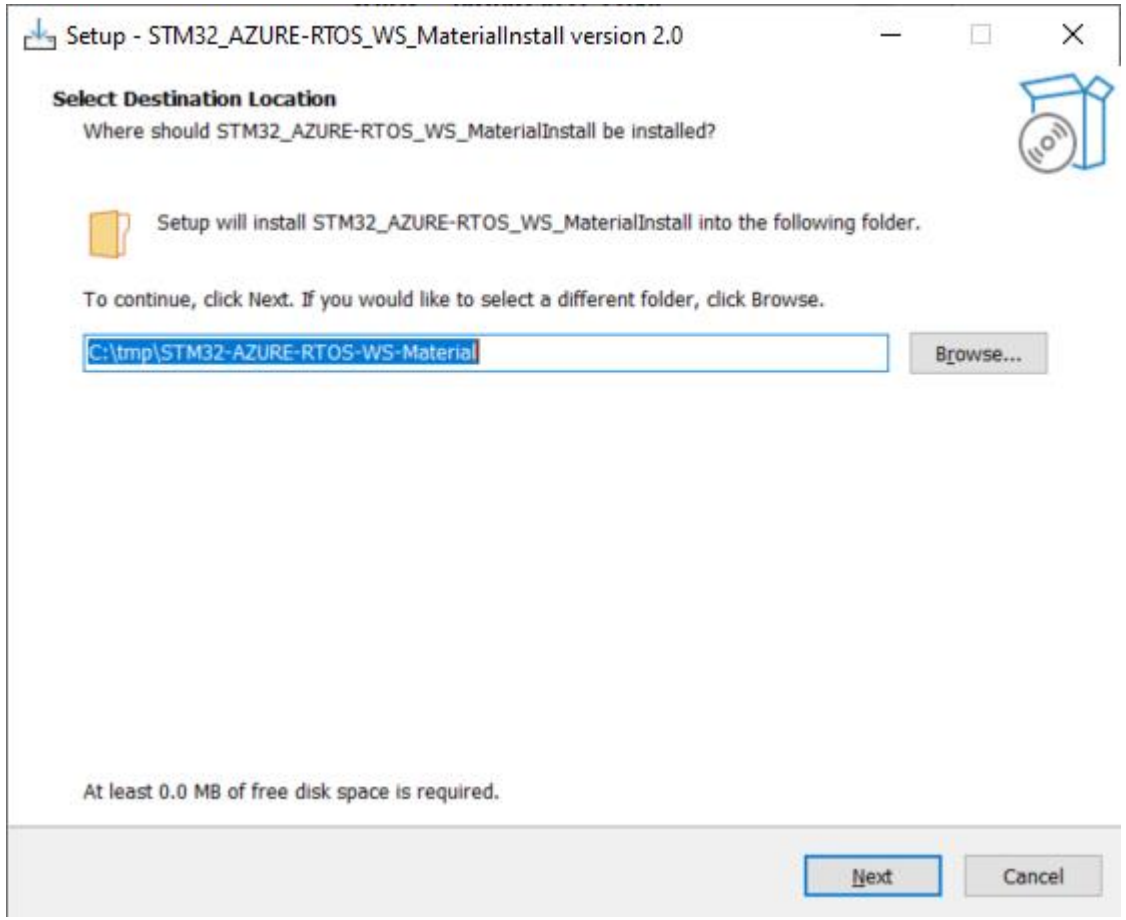
Get workshop material

- Workshop materiel is provided as a windows executable allowing selection of components to be installed.
- Executable name is STM32-AZURE-RTOS-WS-material.exe
- It is available in google drive at following address
  - **https://drive.google.com/drive/folders/16_M2C8ZxRTmknrtYsOwdDvK7vM9NrRys**

Launch workshop material installer

- Please launch: STM32-AZURE-RTOS-WS-material.exe



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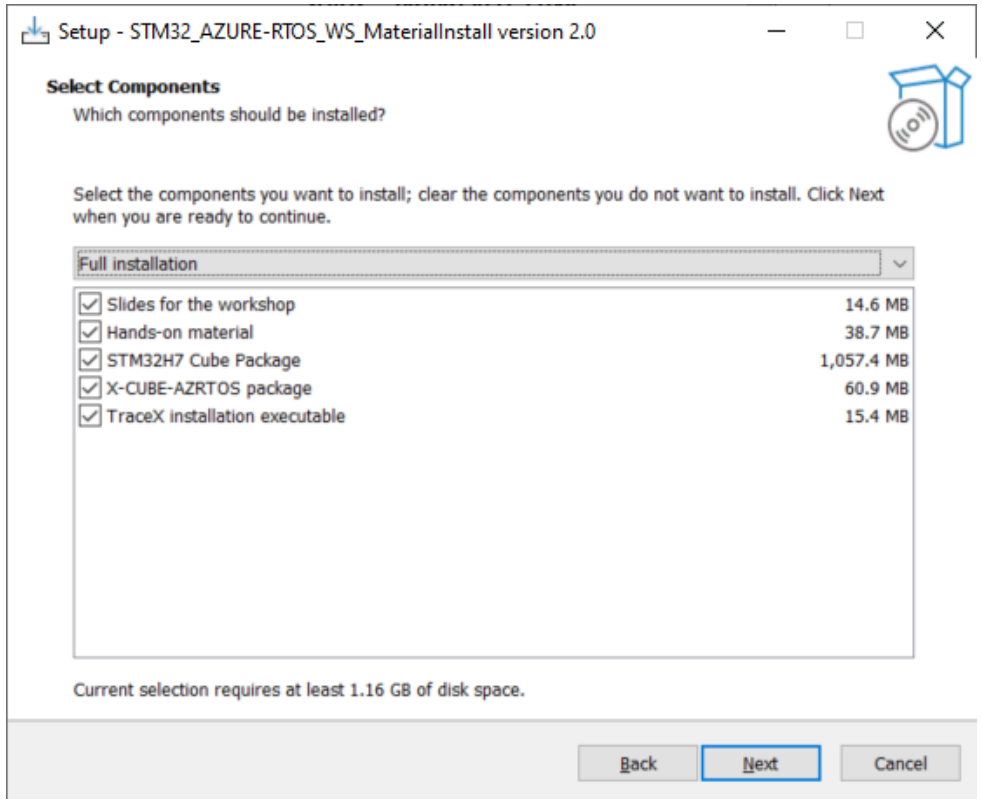
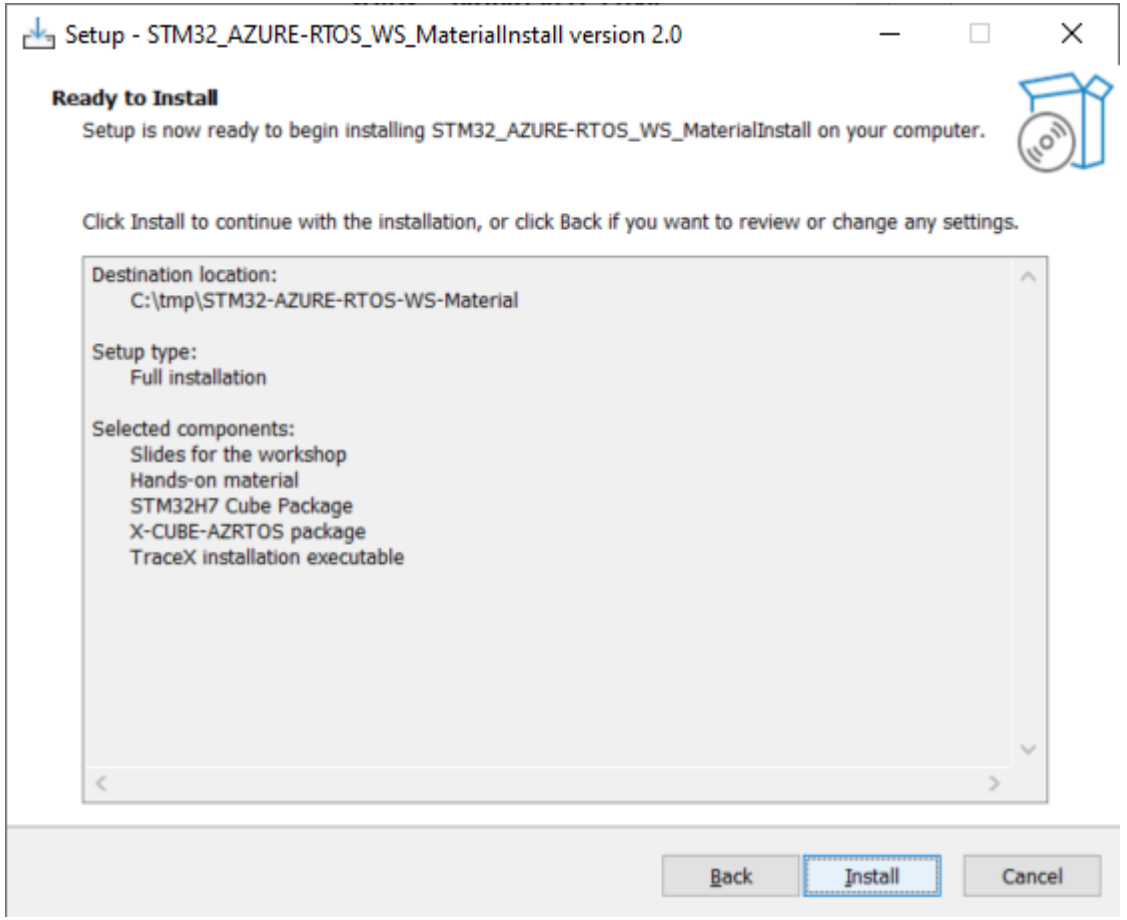
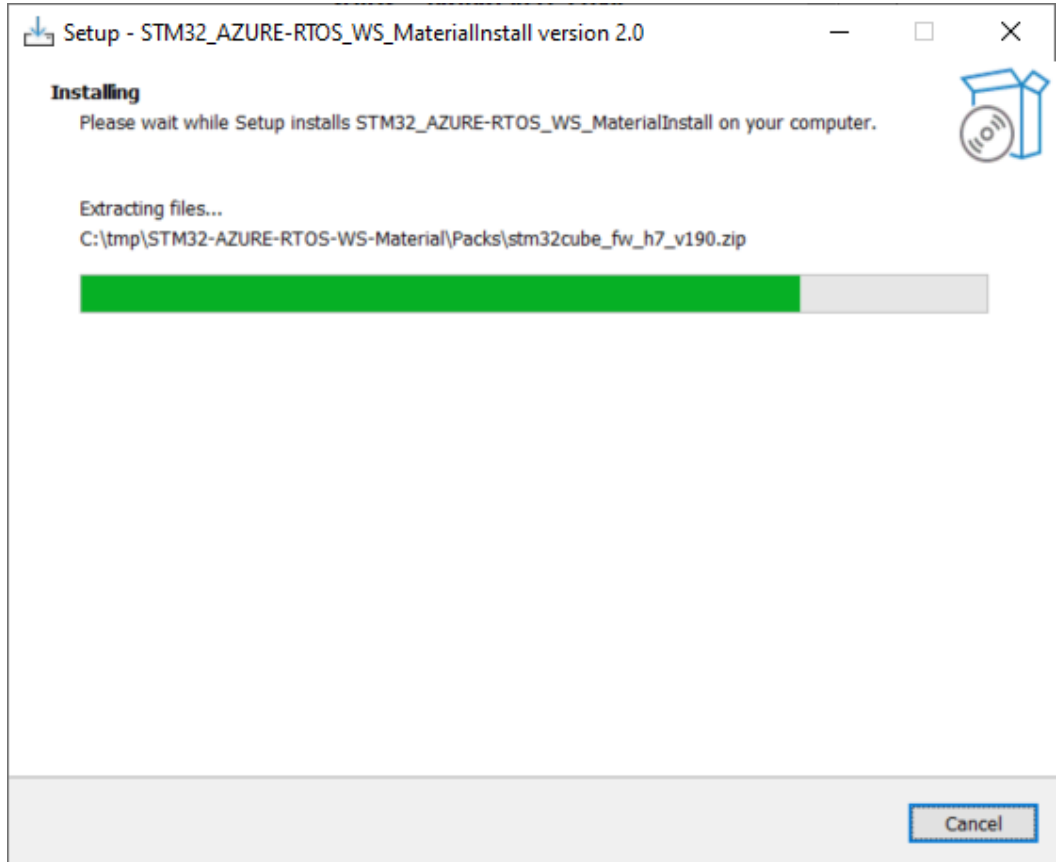
Workshop material component selection

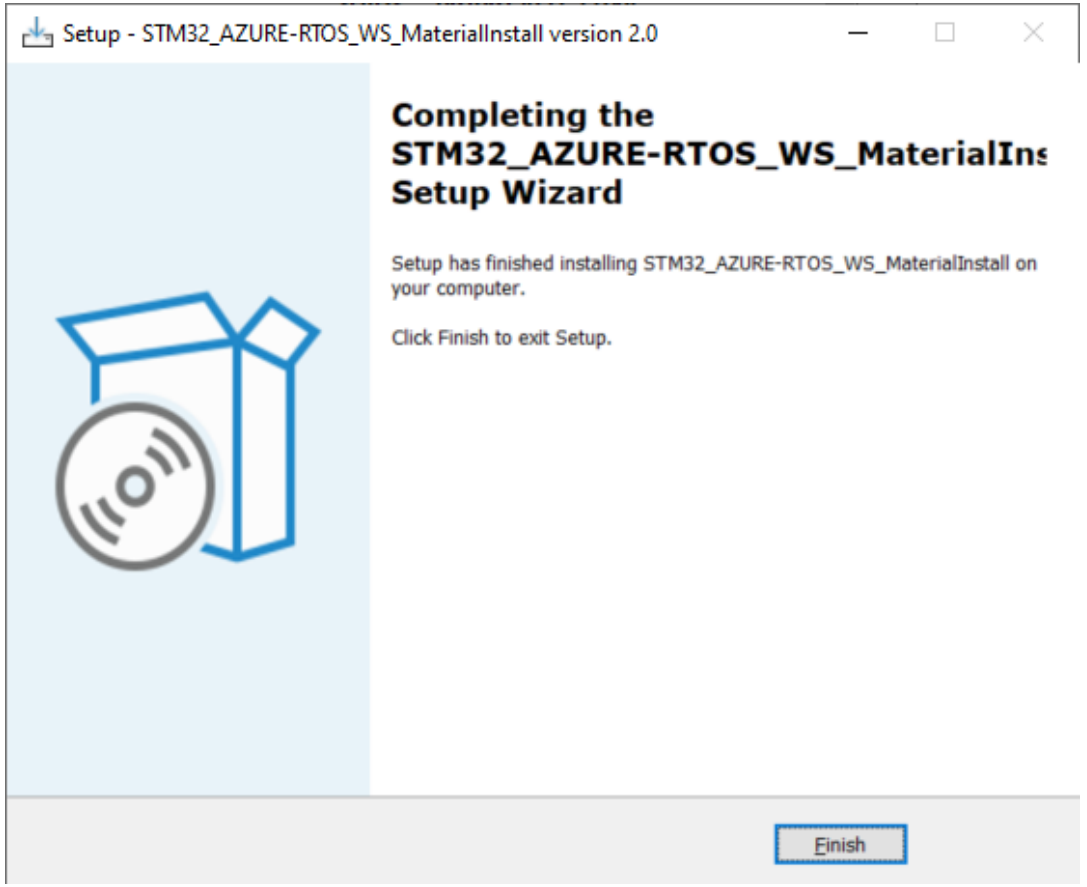
- Select the components you want to install





Workshop material extraction





TraceX Installation

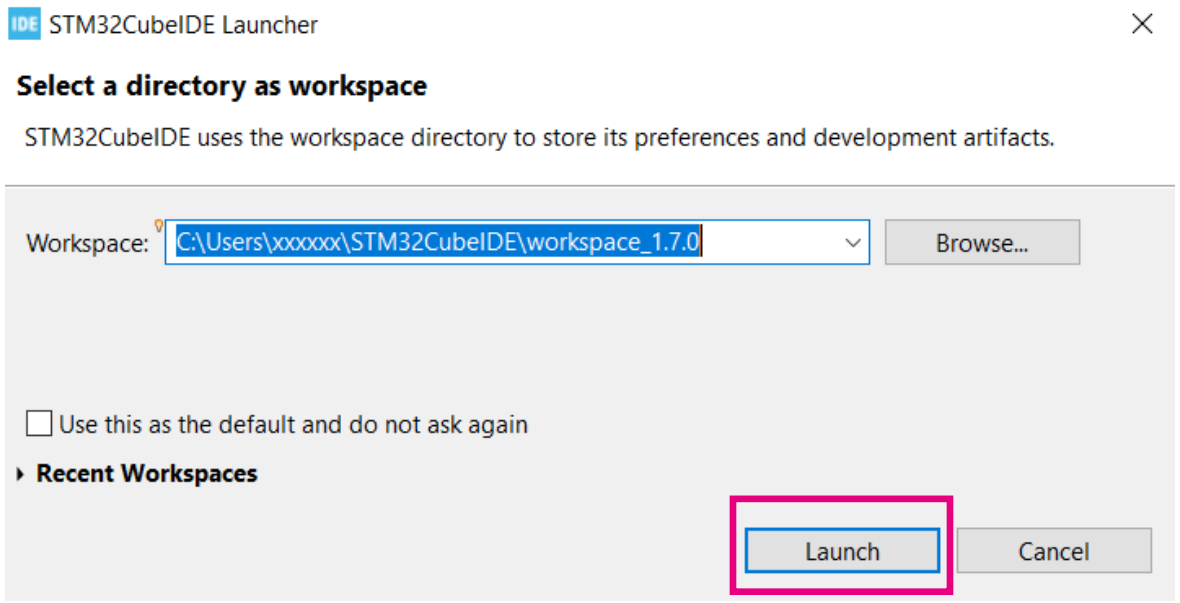
- Please go to directory c:\tmp\STM32-AZURE-RTOS-WS-Material\TraceX\
- Execute traceX installer azure_rtos_tracex_setup_version_6.1.6.1_May_20_2021.exe
- Follow the instructions

Step 3 : Software packs installation

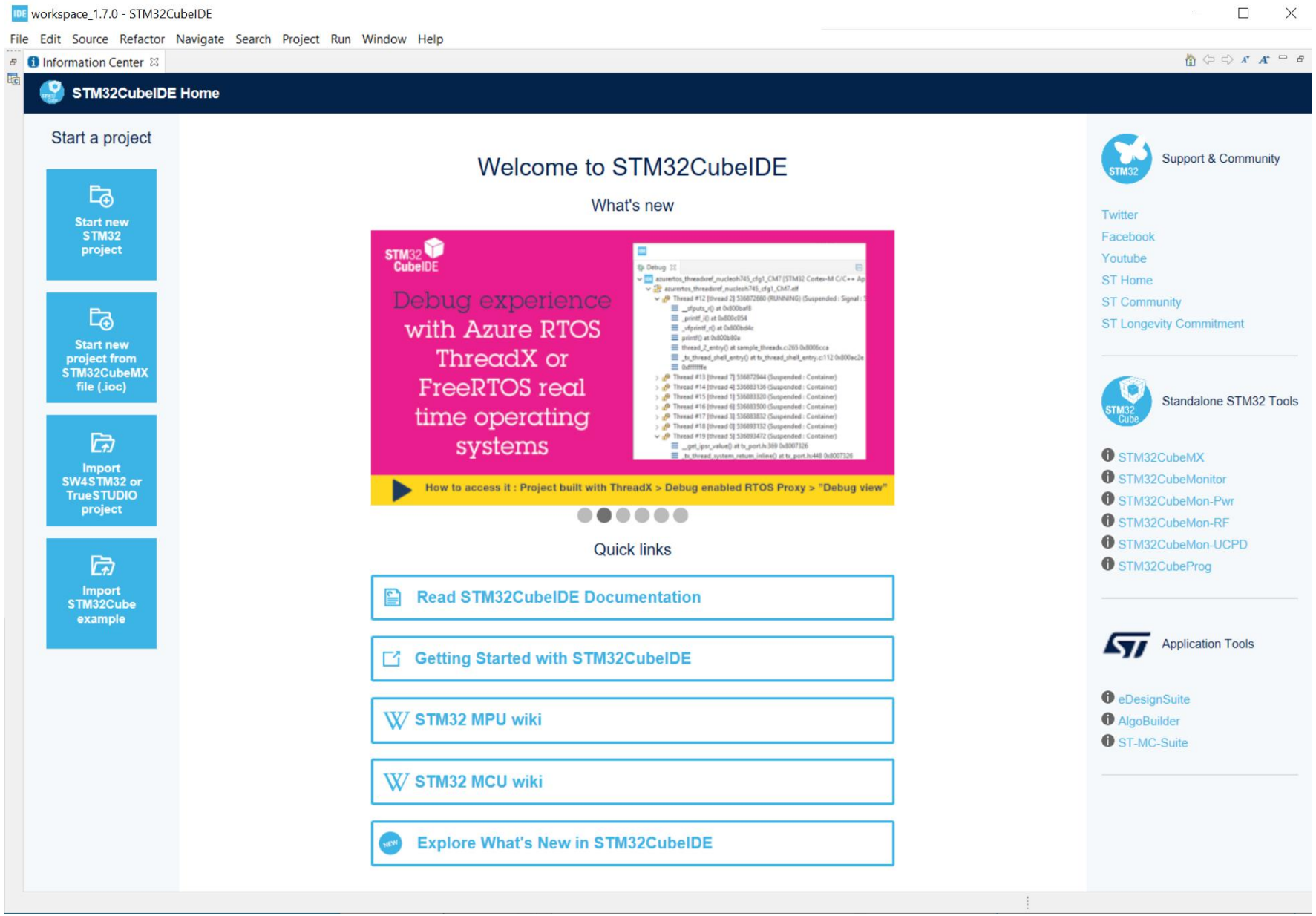
Use STM32CubeIDE to install software packs

- Launch STM32CubeIDE 

- Select a workspace
- Launch



STM32CubeIDE start page



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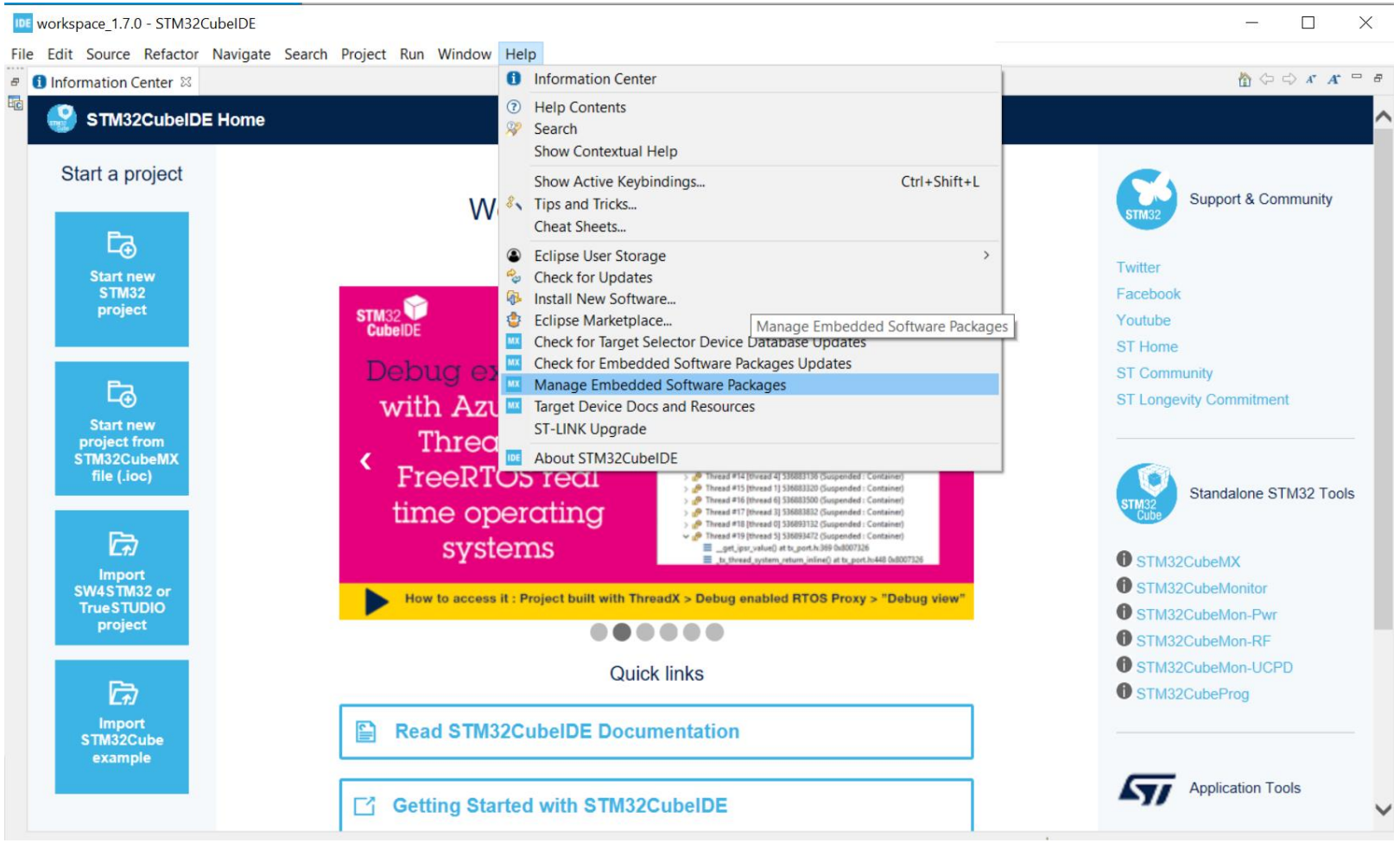
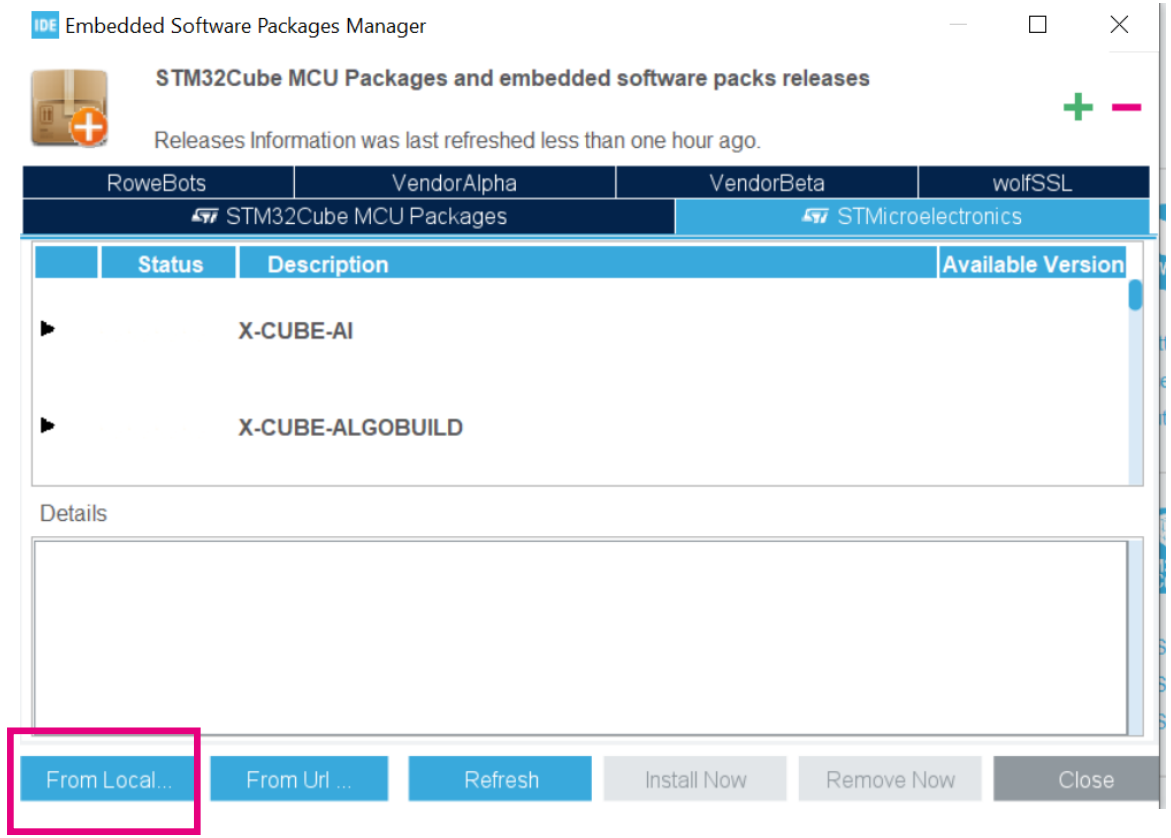
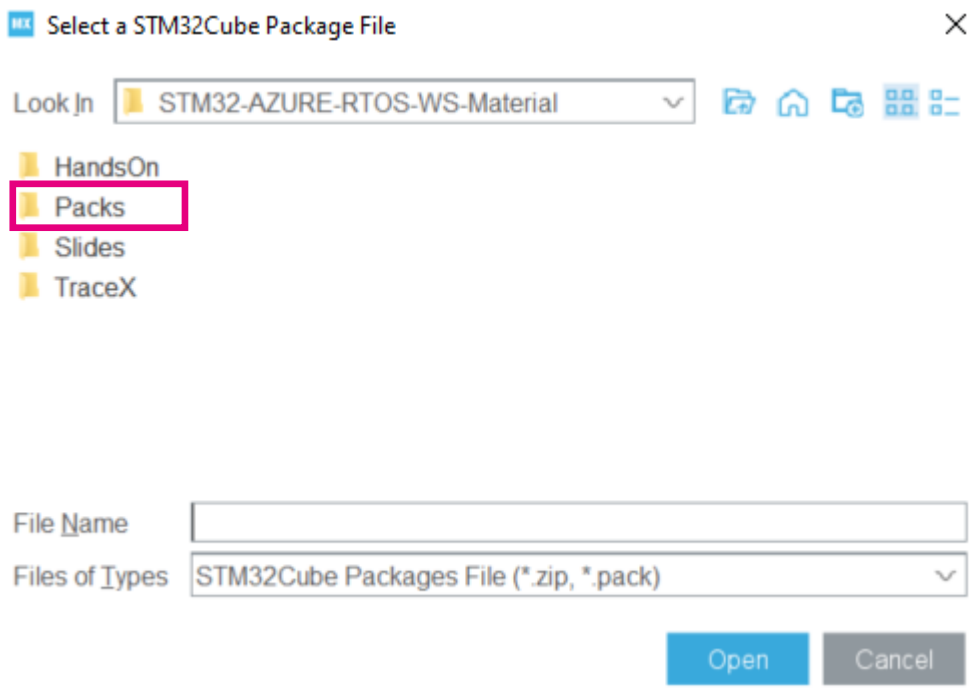
Select Manage Embedded Software Packages

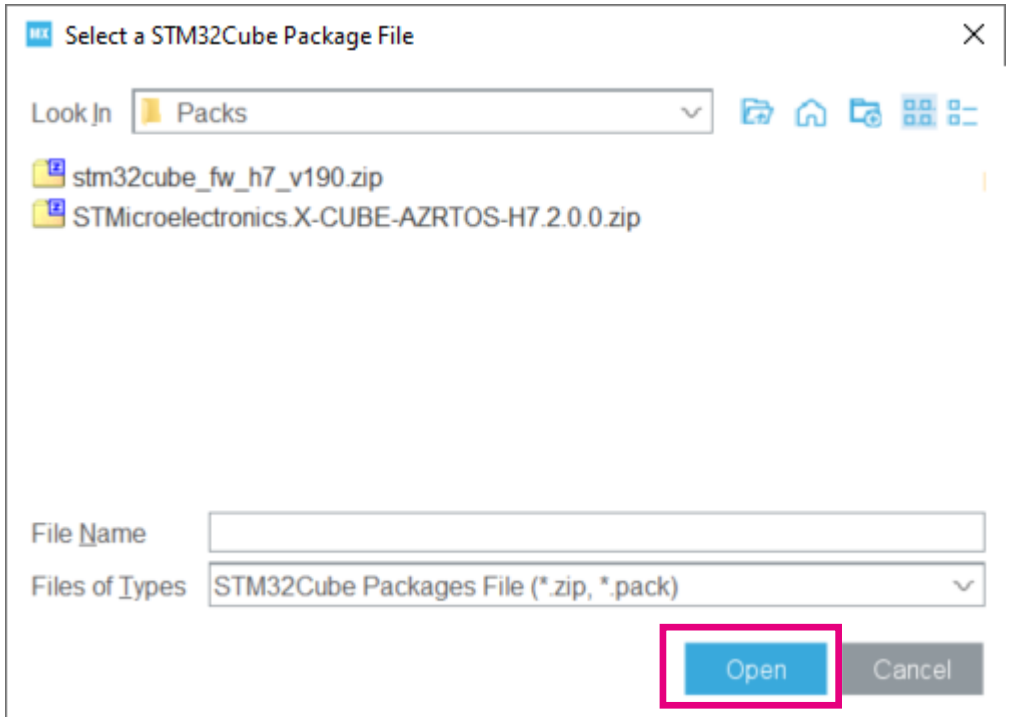


Install packages from local



Install packages from local





- Please repeat the installation for the 2 packs provided if not already installed

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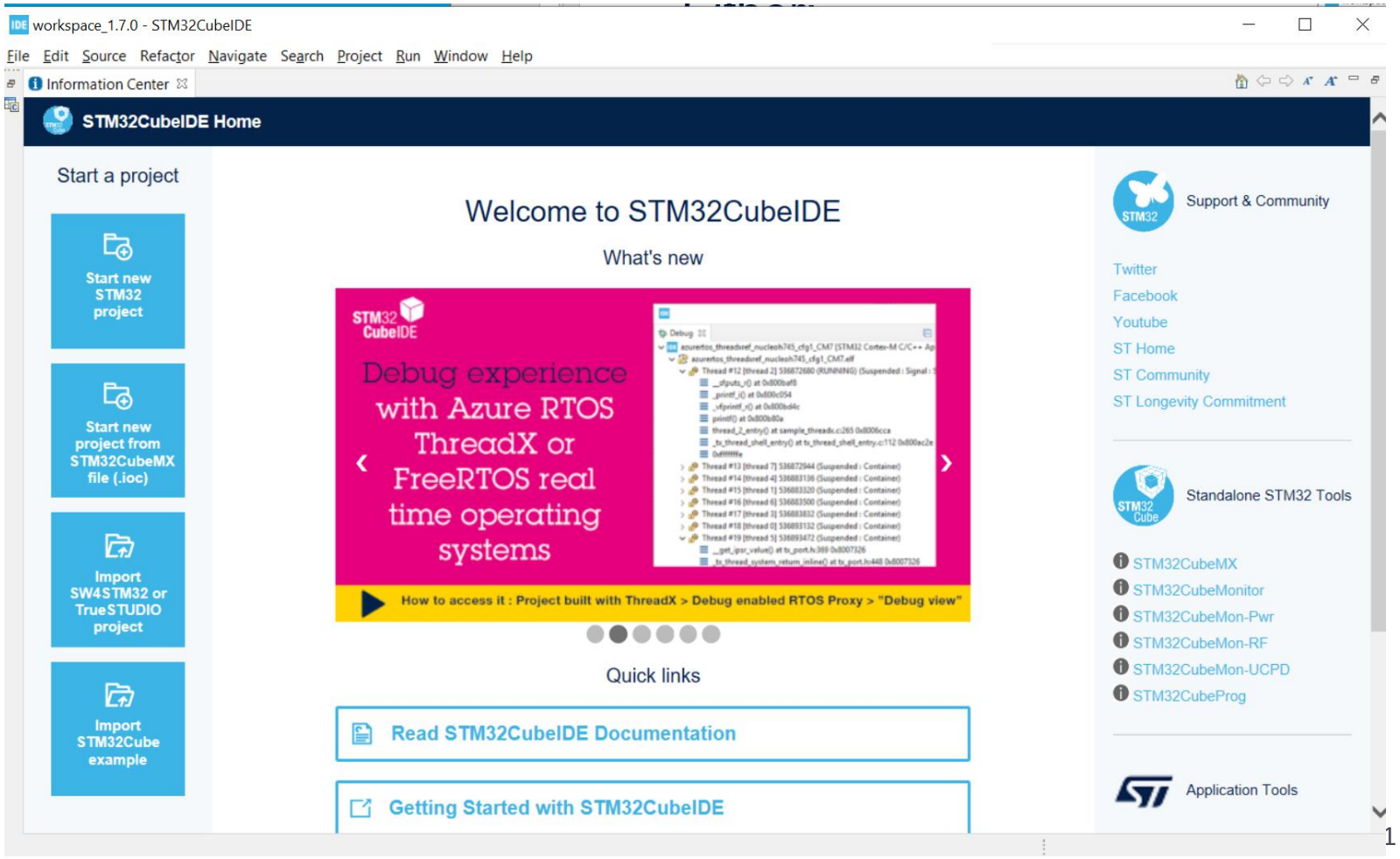
Step 4 : Check installation

Check your working environment

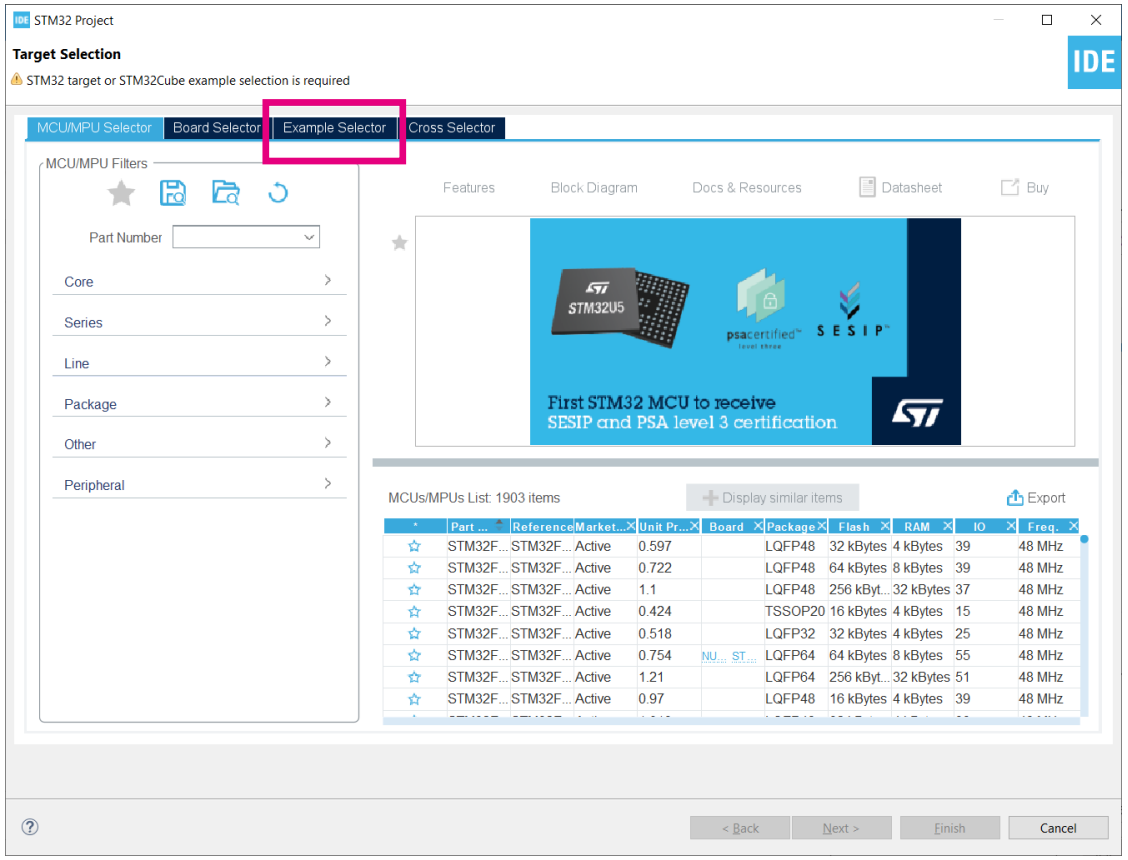
- The purpose is here to make sure everything is well installed and properly working
- We will go through the compilation and execution of an example based on AZURE RTOS
- Let’s start from the opened STM32CubeIDE window …
- You can also close the “Information Center” window

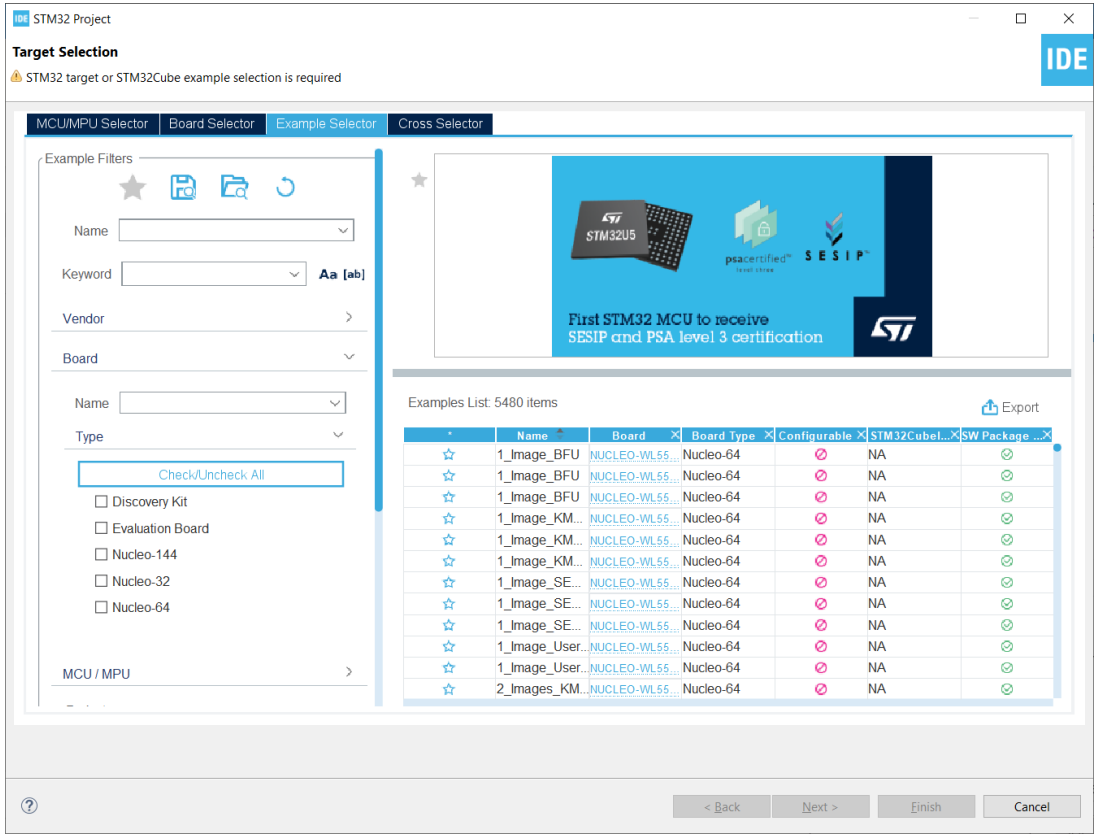
Create new STM32 project

- Either:
  - Click on Start new STM32 project
  - Or menu File/New/STM32 Project
- A target selection window should pop-up



Access to Example selector





- Select TAB “Example Selector”

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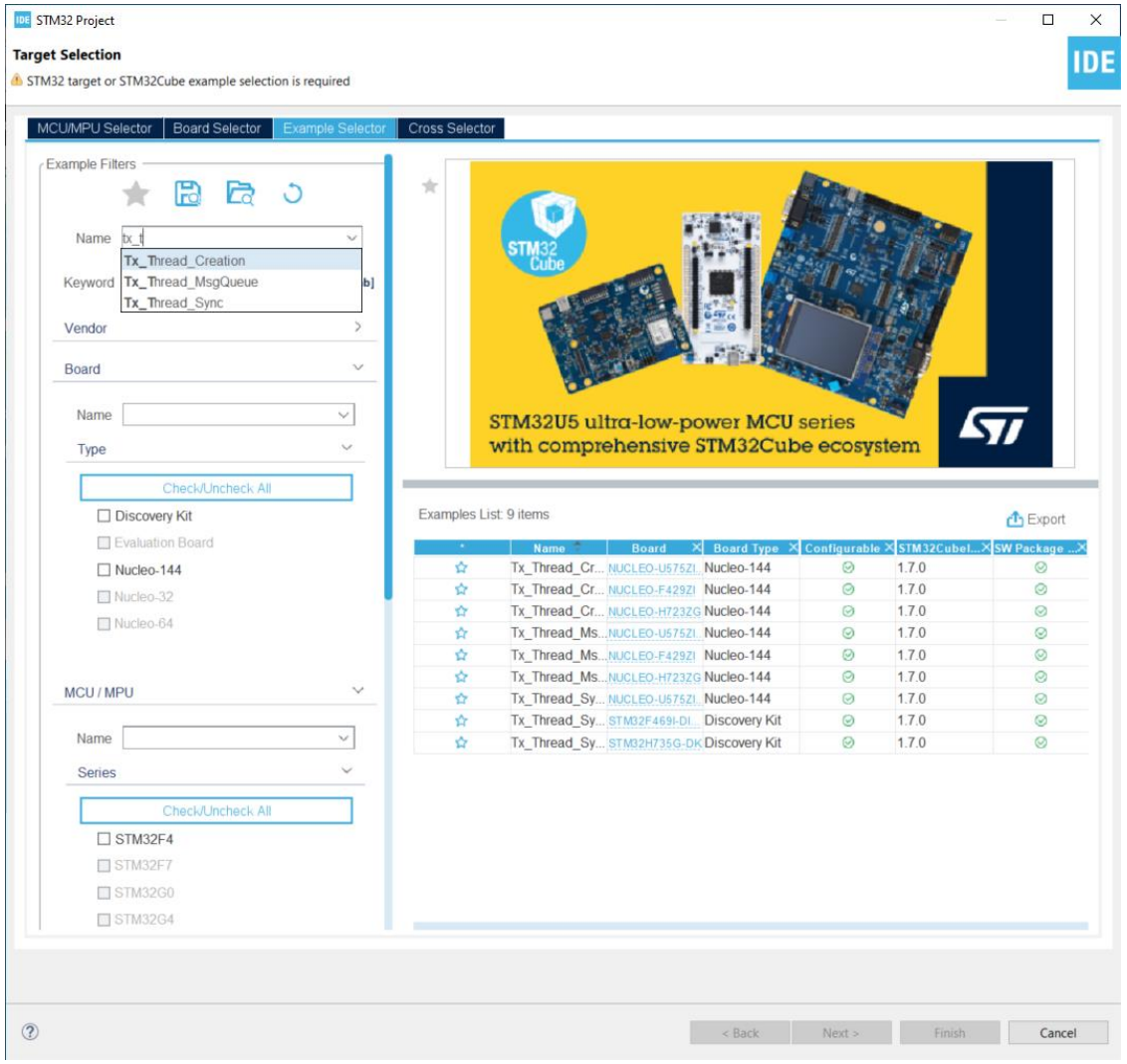
Find the example

- In Name field, start typing tx_th
- This will pop Tx_Thread_Creation
- Click this Tx_Thread_Creation proposal



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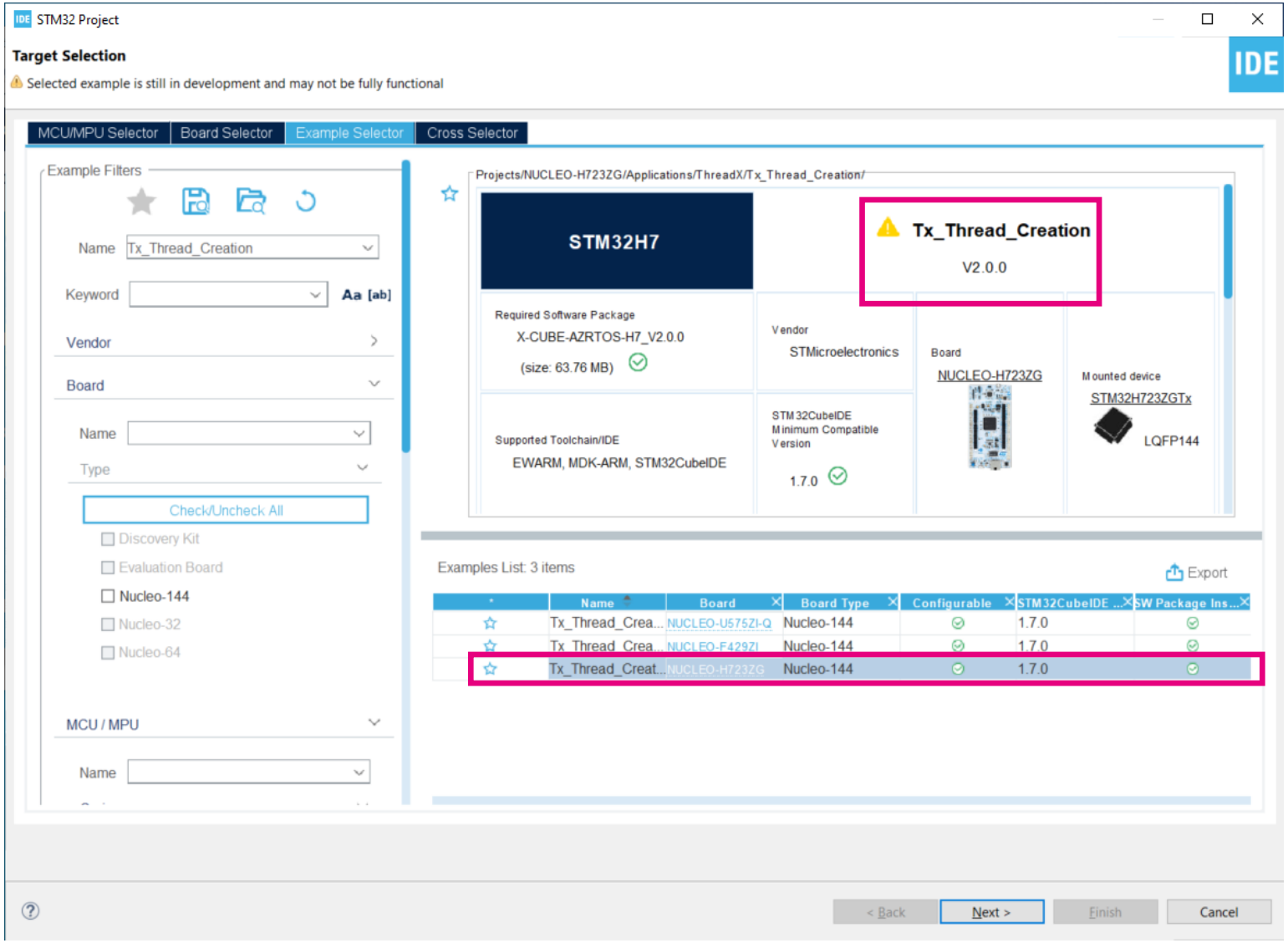
Select example

- Please select on the right part the Tx_Thread_Creation example made for STM32H723 on Nucleo 144.
- Then click Next



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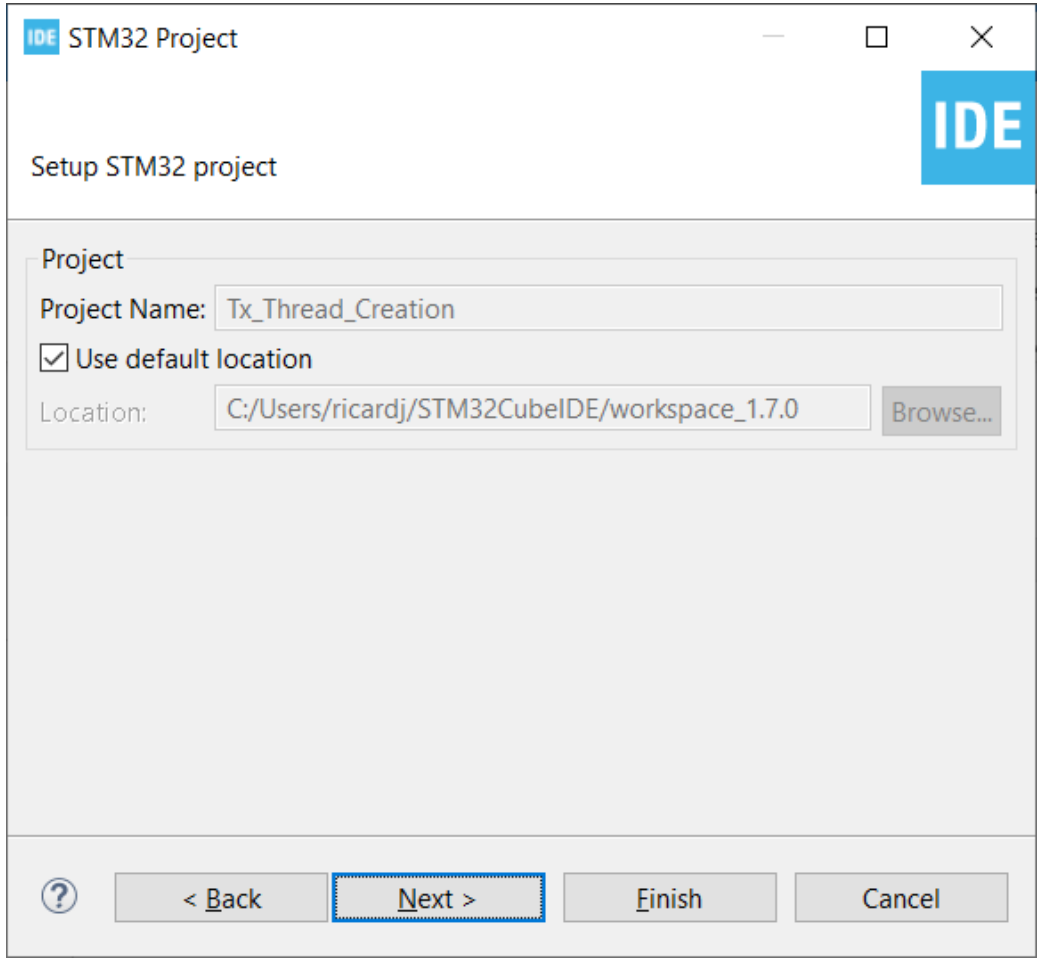
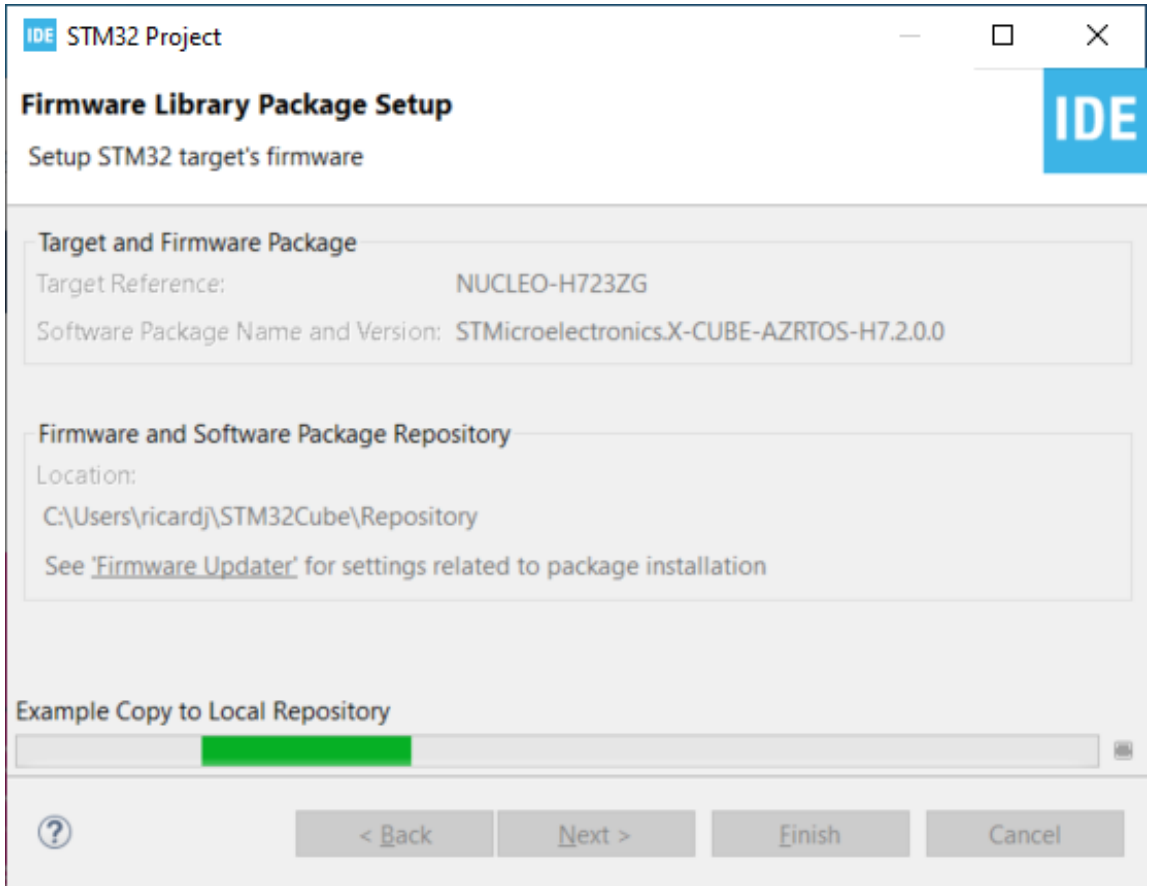
Select example import location

- Next pop-up proposes to set project location inside workspace.
- You can use this default location
- Click Next and then Finish.
- The example will be imported in the workspace



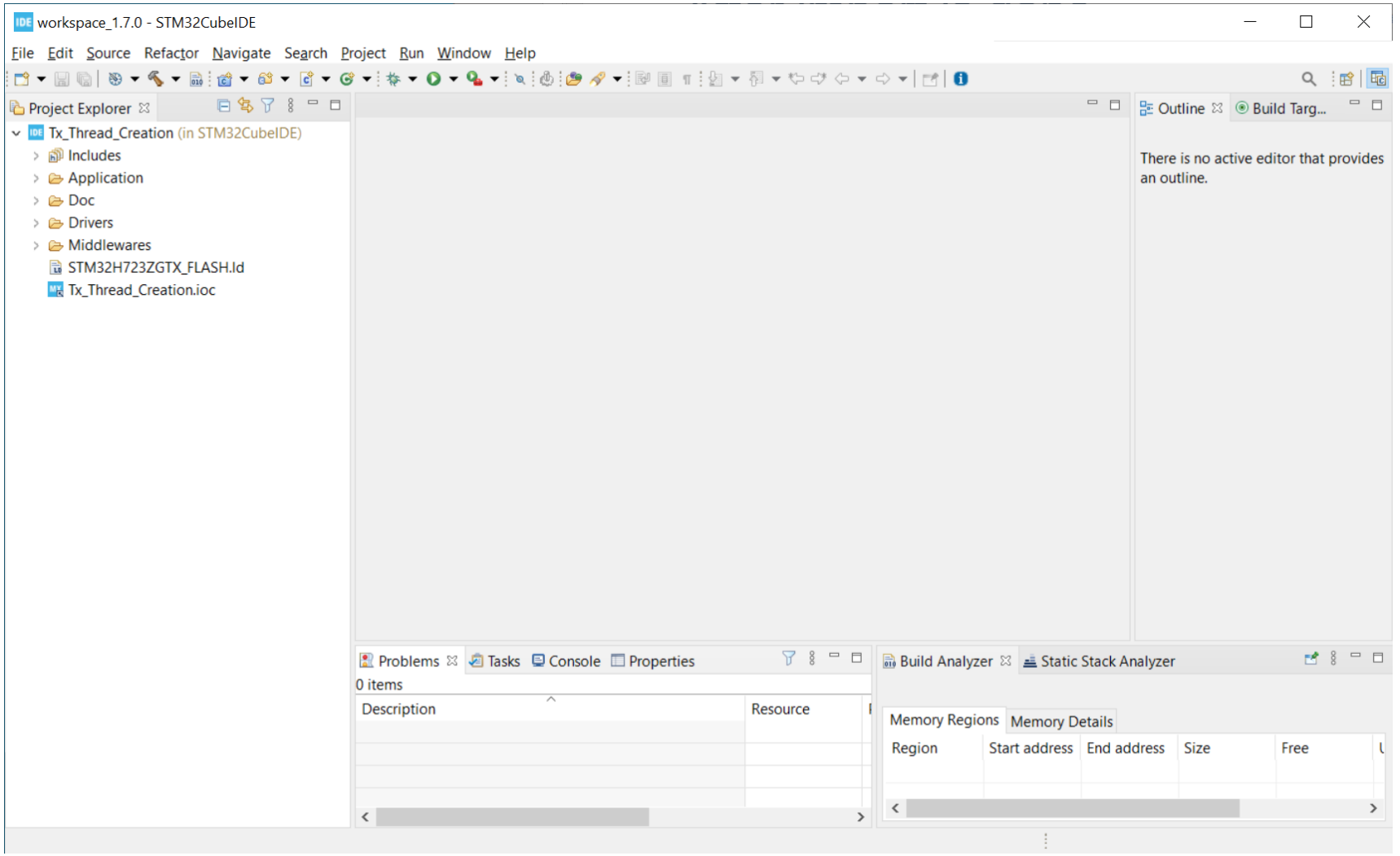
Example importing

- Just wait until the full example is imported.
- No need for any further click



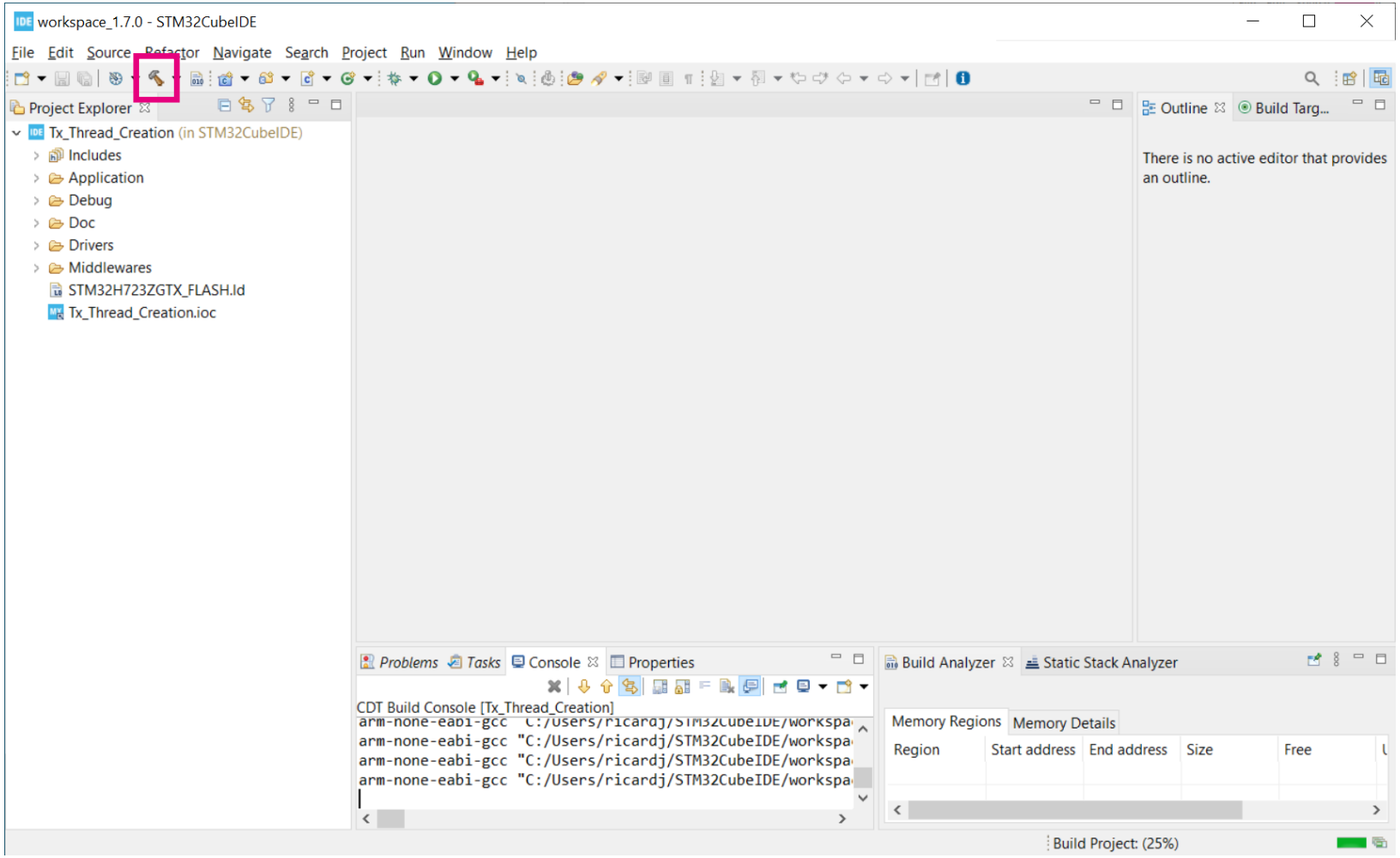
Check state after example import

- After import is done, the project is ready to be compiled
- You can open the items in the project explorer to see the sources files



Launch build

- Click on the hammer to launch the project build
- Compilation lines will appear in the Console window in the bottom



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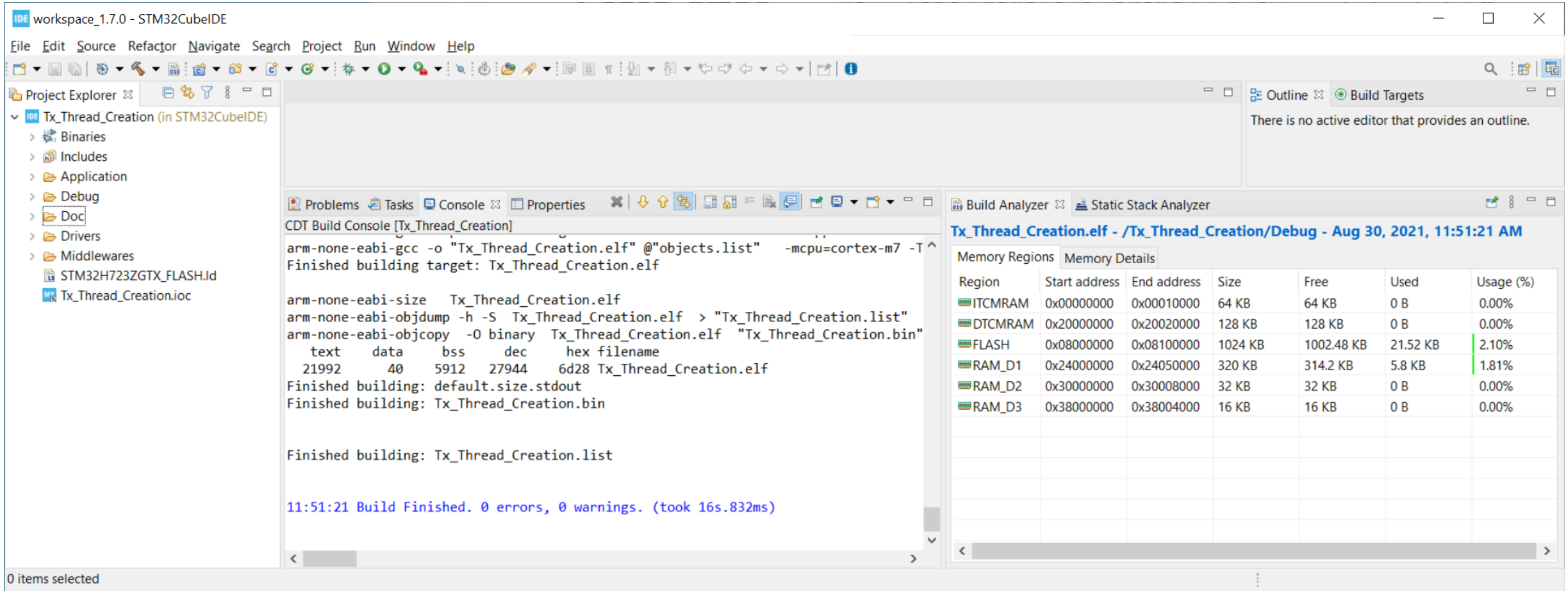
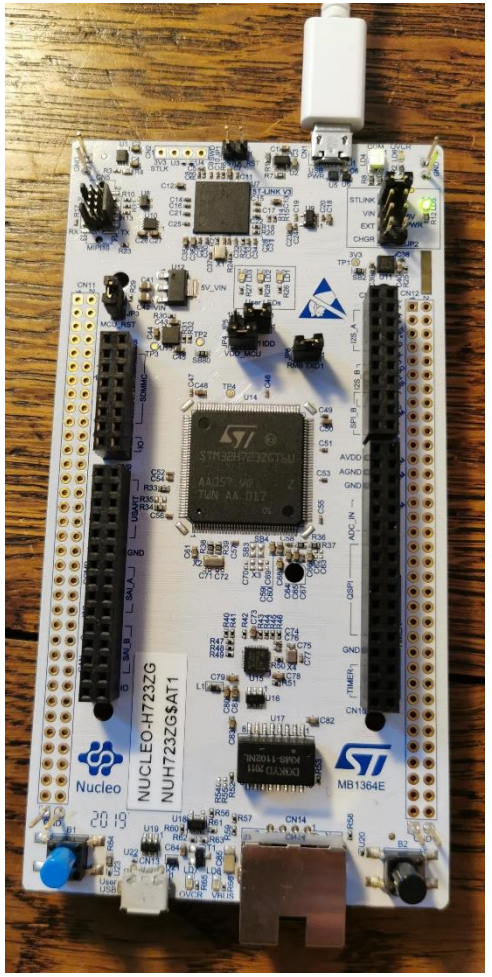
Check application build result

- State after build complete build



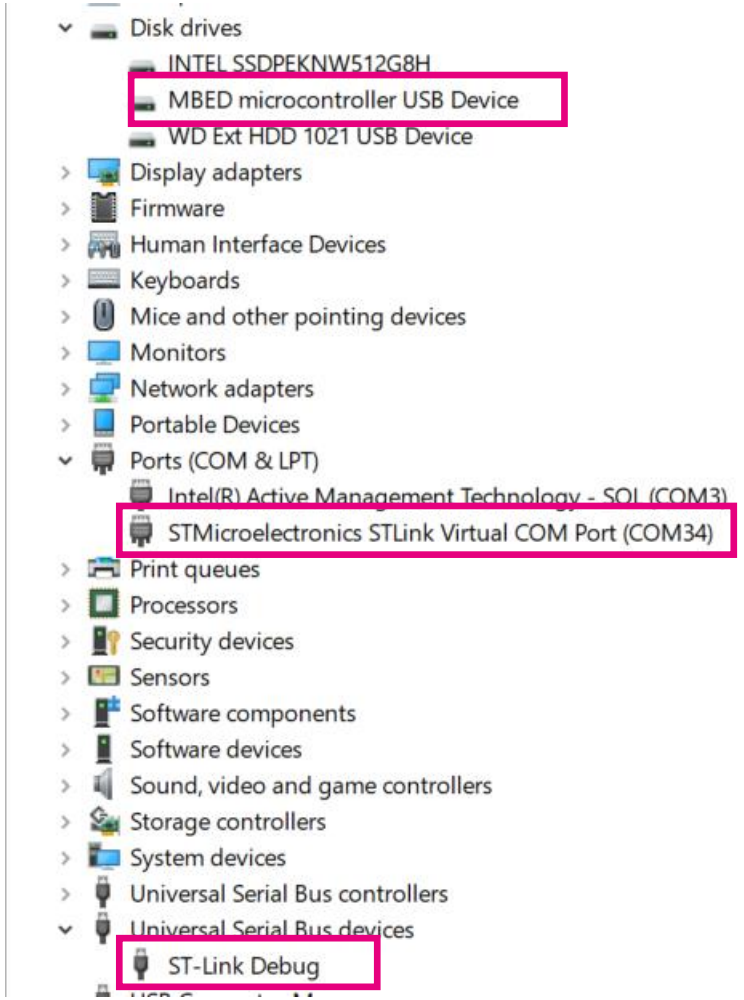
Download on target

- Connect your Nucleo STM32H723 to your PC with USB cable
- Warning: The board has 2 USB micro connectors and also a RJ45 for ethernet
- Use USB connector that is NOT besides the RJ45 connector



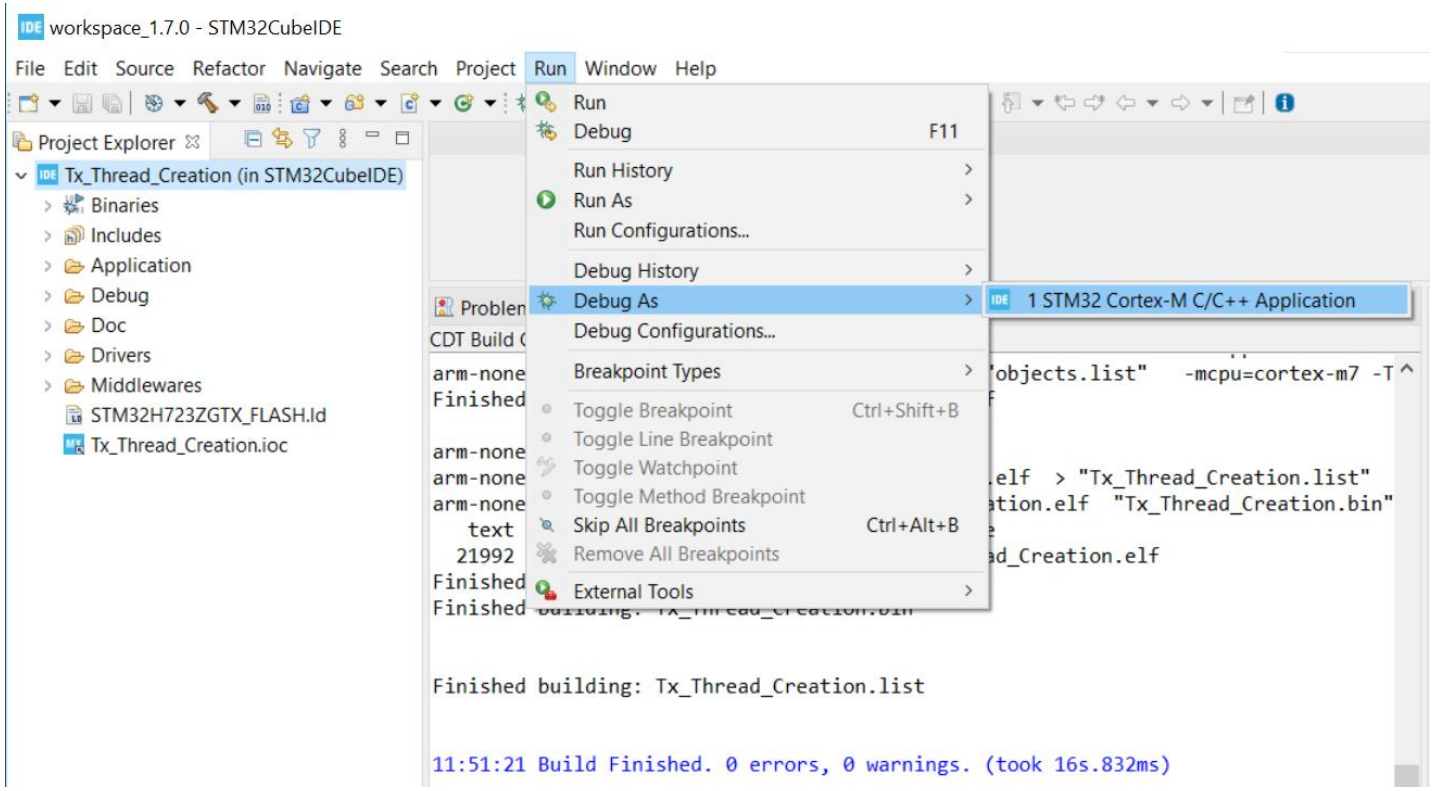
Check connection

- Once Nucleo is connected on your PC you should see:
  - In device manager:
    - MBED microcontroller USB device
    - STMicroelectronics STLink Virtual COM Port (COMxx)
    - ST-Link Debug



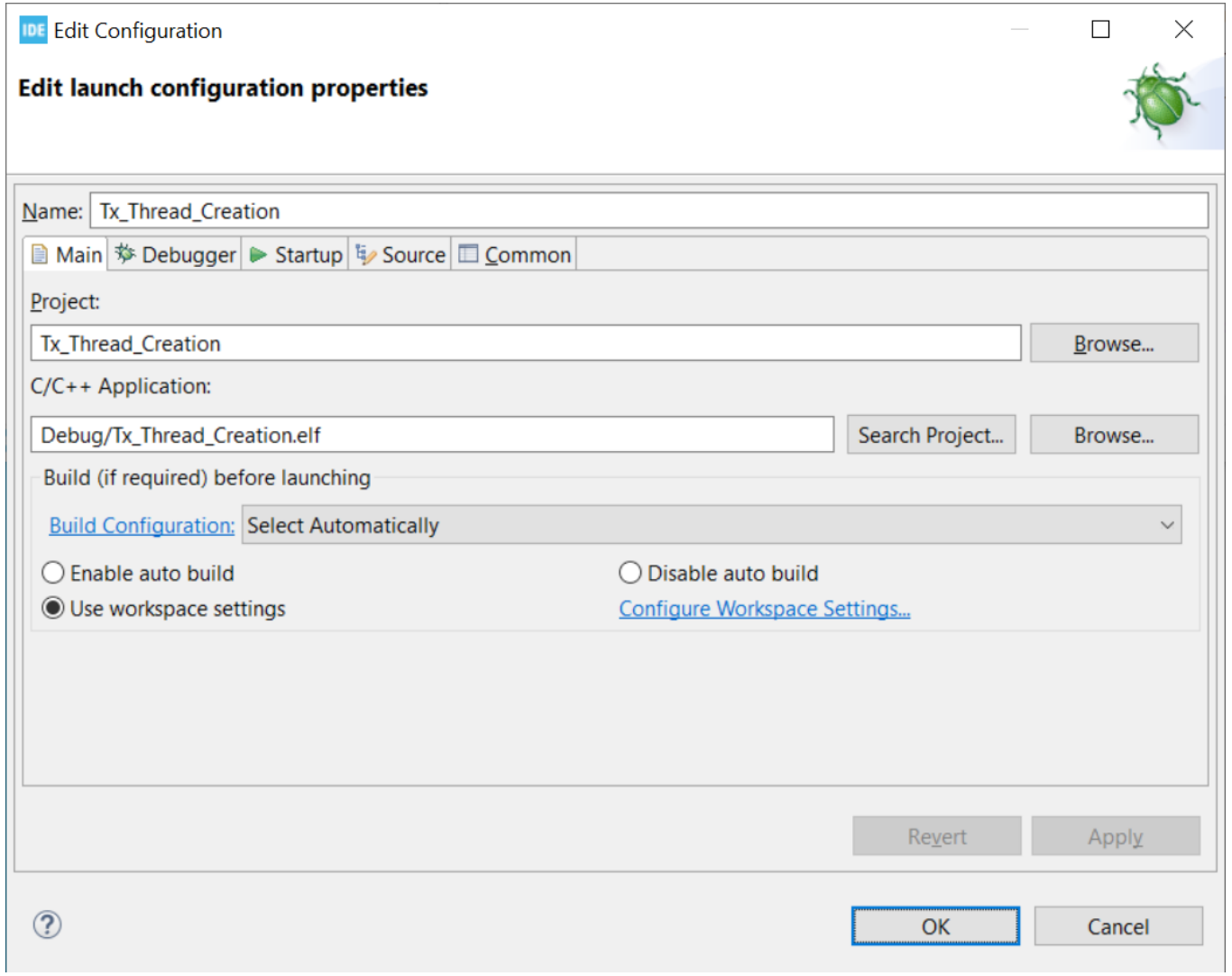
Launch debug

- Click on Tx_Thread_Creation project in Project explorer
- Then on the down arrow near the bug you will find : Debug As
- Only option is STM32 Cortex-M C/C++ Application
- Select it



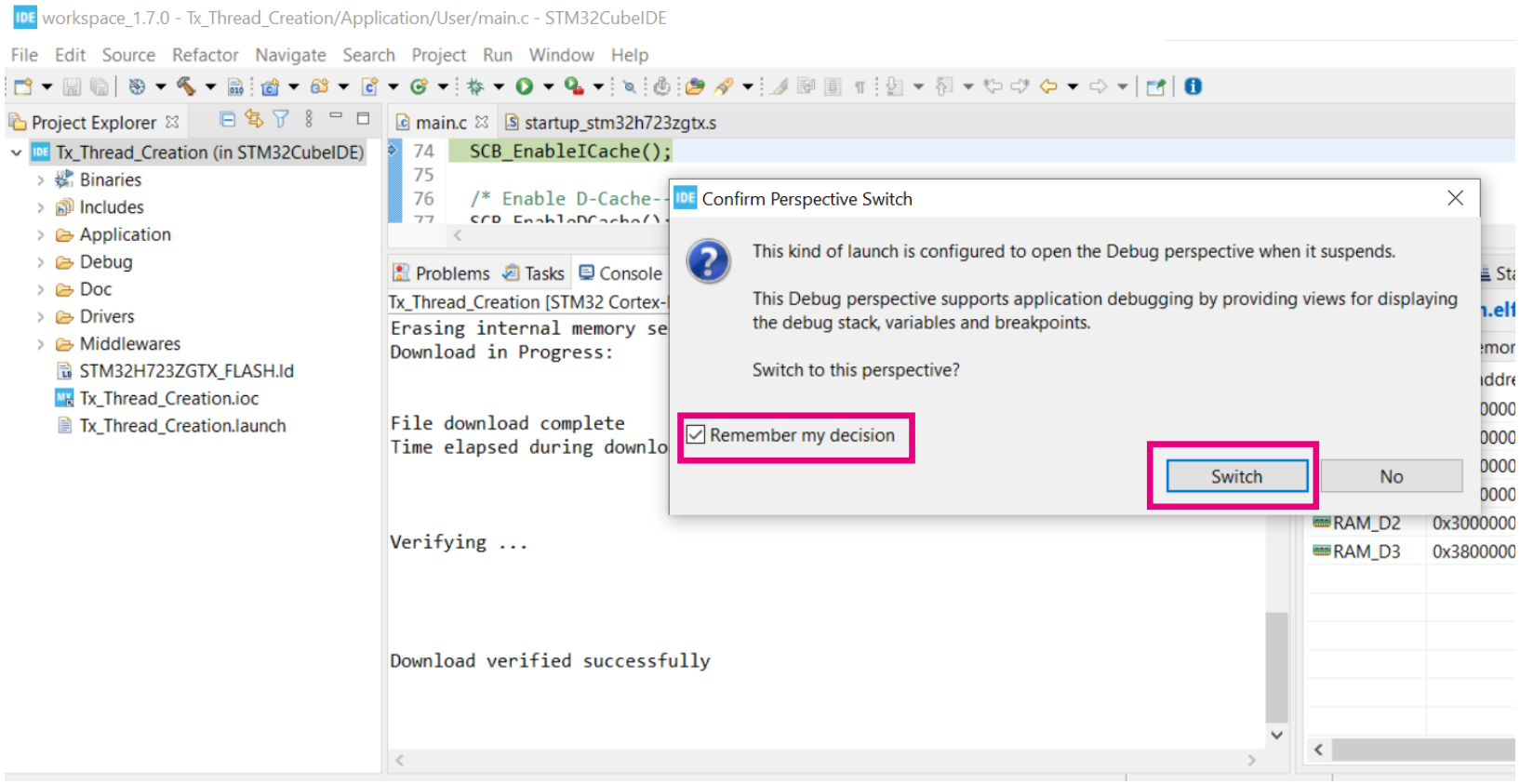
Debug configuration windows

- Window for debug configuration pop-up
- No need to change anything
- Press OK



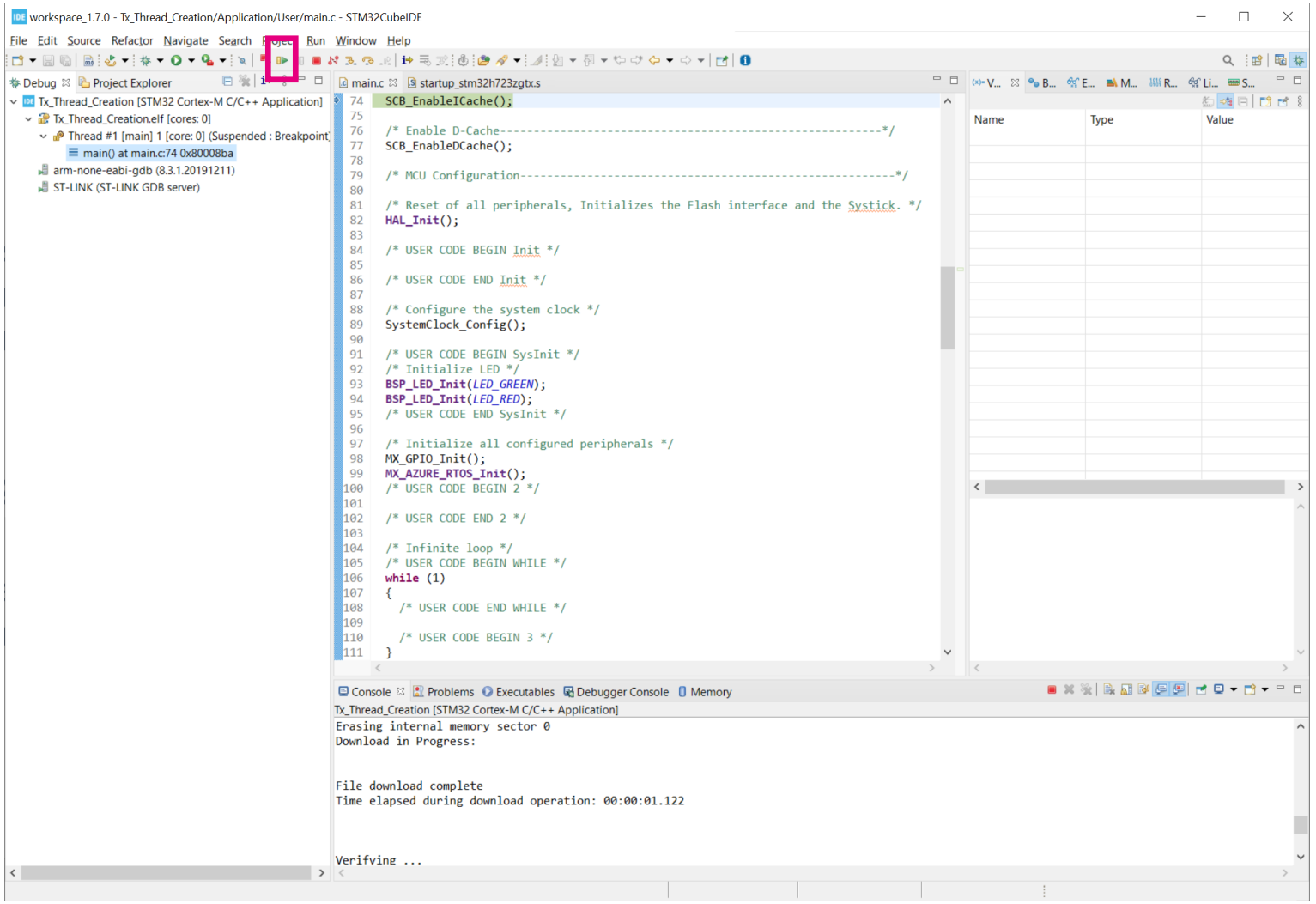
Select debugging perspective

- Debugger will connect to target, download the binary
- First time you will have a pop-up asking to switch to the debugging perspective
- Click remember decision
- Click switch



Launch application

- Now the debugger is launched and pointing to the first instruction after main.
- You can launch the example by pressing go button or F8
- **Before debugger is launched, STM32CubeIDE may ask for STLink update (see next slide)**



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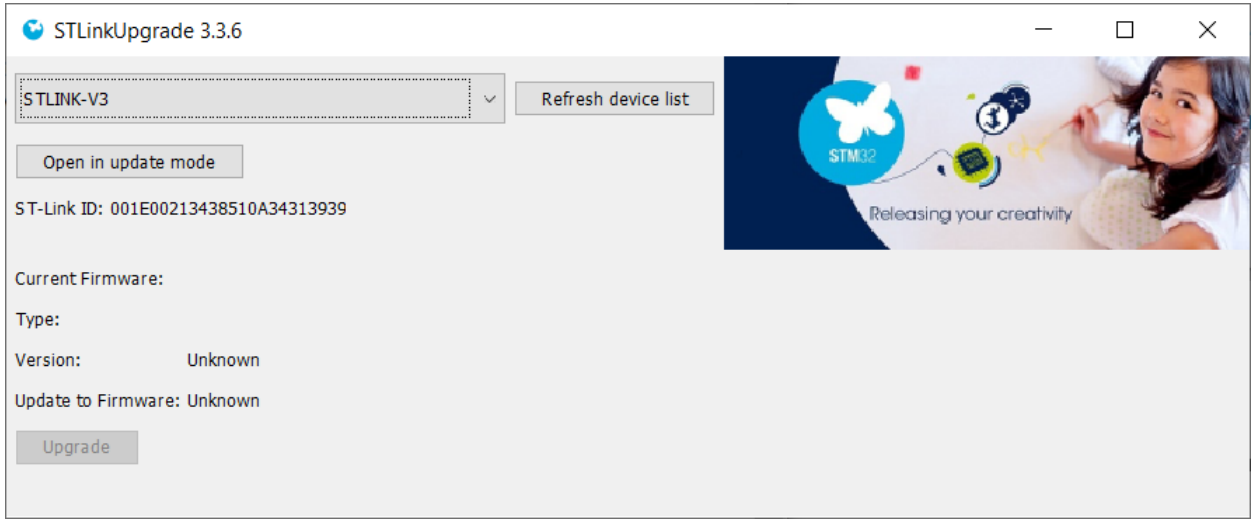
STLink Upgrade

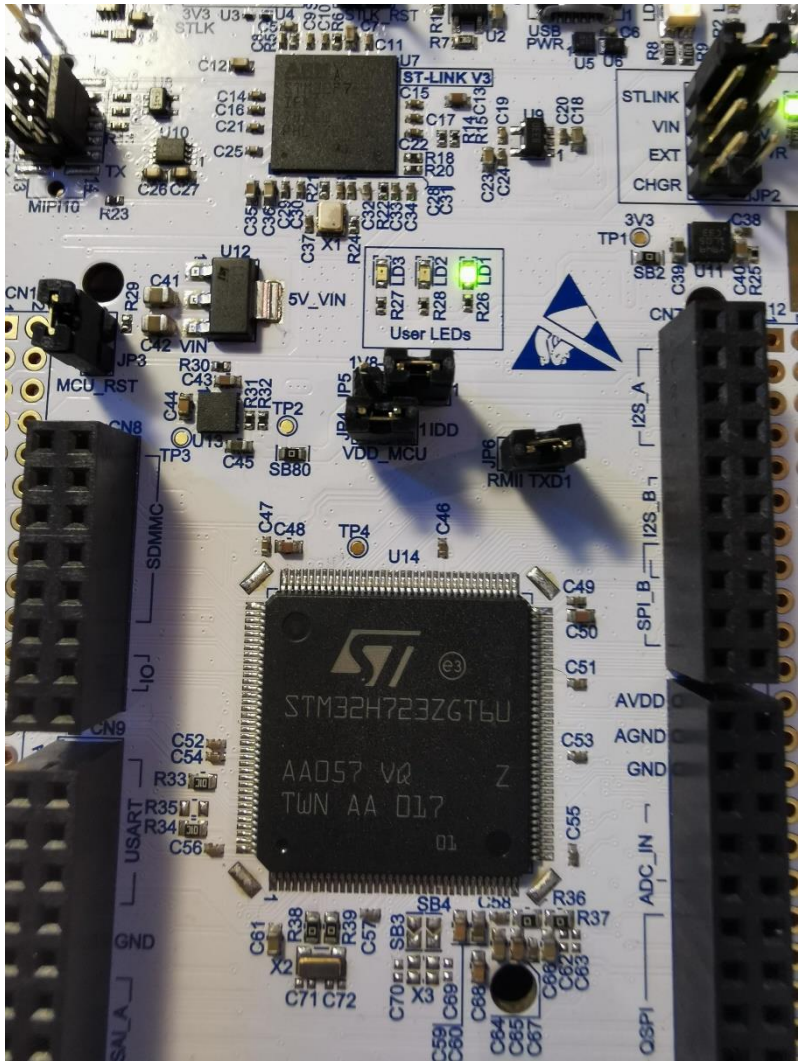
- It is possible that STM32CubeIDE asks for STLinkUpgrade. In that case answer yes and you should get a window like this



- Click open un update mode button and then Upgrade.
- Once finished you can launch again the debugger same way as before

Check LED Blinking on target

- Check on Nucleo target
- LD1 should blink !



Homework is complete

- You could go through all the steps: you are ready for the workshop
- Something went wrong
  - Please describe what happened on community forum
  - We will try to help you!

Thank you

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