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STM32Trust

STM32H5 Security Secure Manager - Part 3

Hands On: Secure Manager Getting Started

Presenter: Massimo Panzica

Agenda

I Secure Manager features overview

II Hands-On: Install and get started with Secure Manager

III Resources

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Secure Manager features overview

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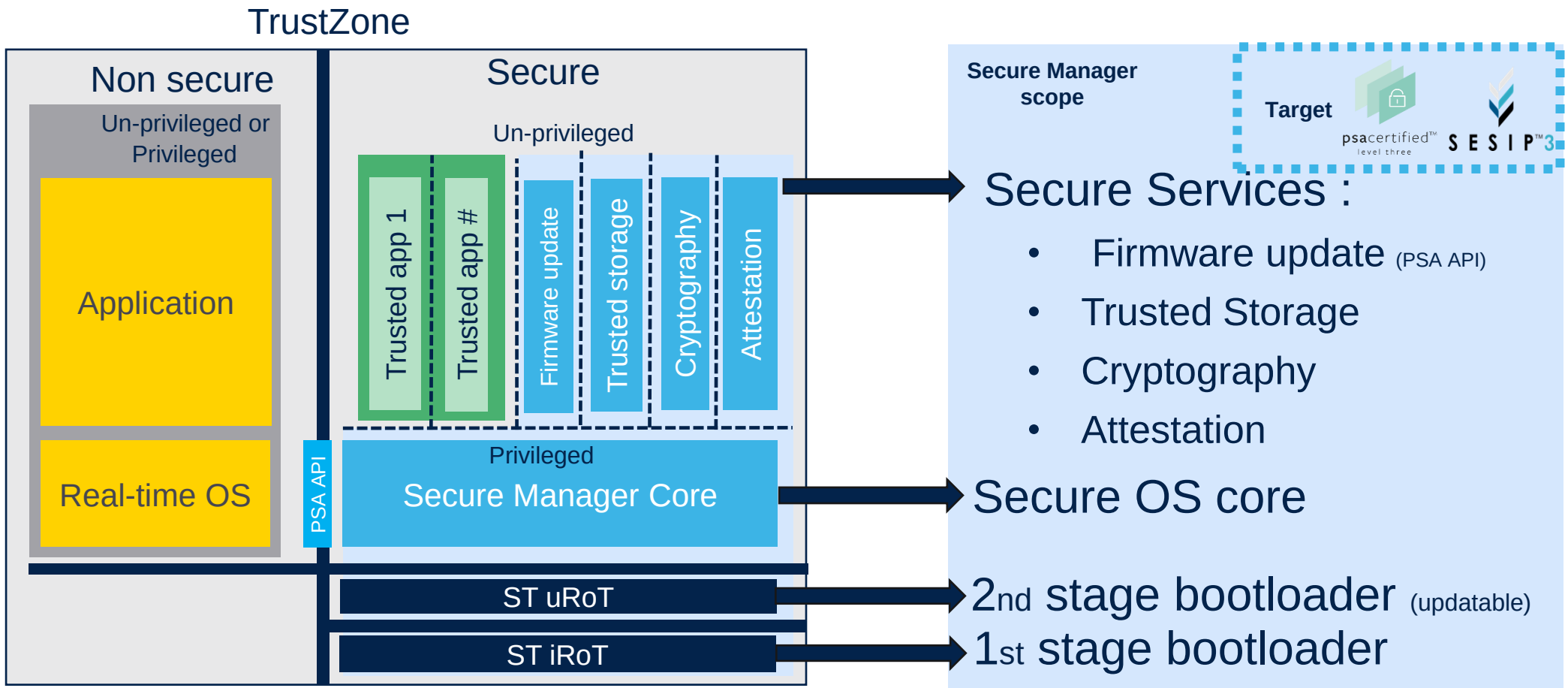
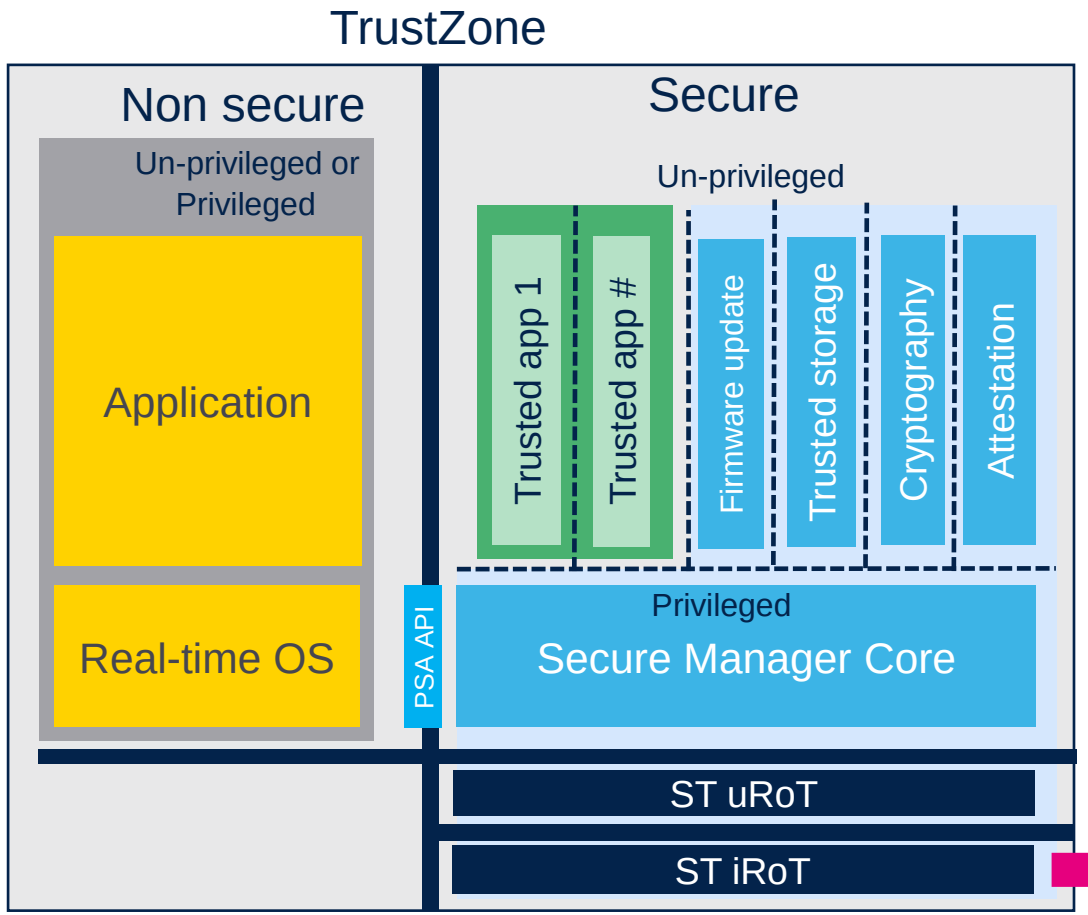
Secure Manager on STM32H5 platform

Protect IP and simplify security customer journey



Secure Manager on STM32H5 platform

Protect IP and simplify security customer journey



Secure Manager scope

Target psacertified™ level three SESIP™3

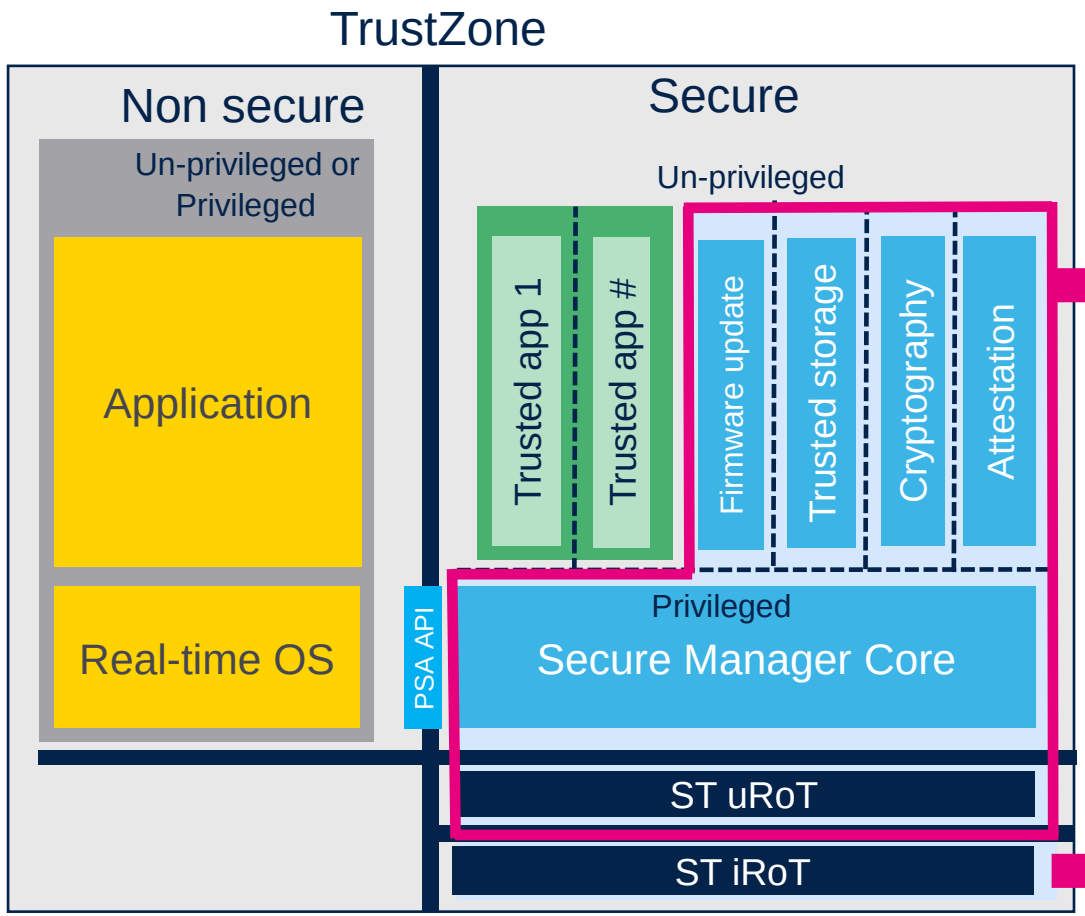
Secure Manager delivered as binary

- encrypted and signed by ST
- securely updatable
- provisioned with application

ROMed Secure bootloader

Secure Manager on STM32H5 platform

Protect IP and simplify security customer journey



Secure Manager scope

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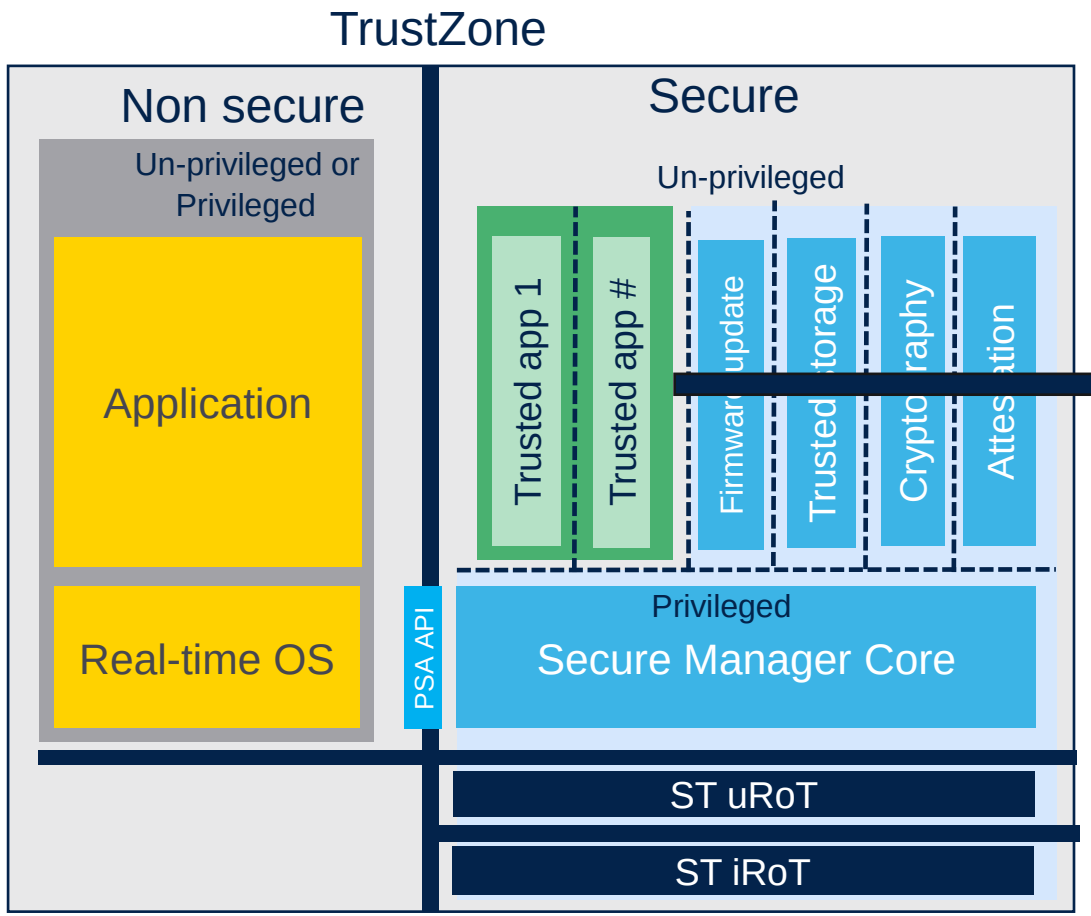
STM32 Trust TEE

Secure Manager on STM32H5 platform

Protect IP and simplify security customer journey



Third Party / OEM scope

Secure Modules: delivered as binary

- encrypted and signed by OEM/3rd party
- securely & independently updatable

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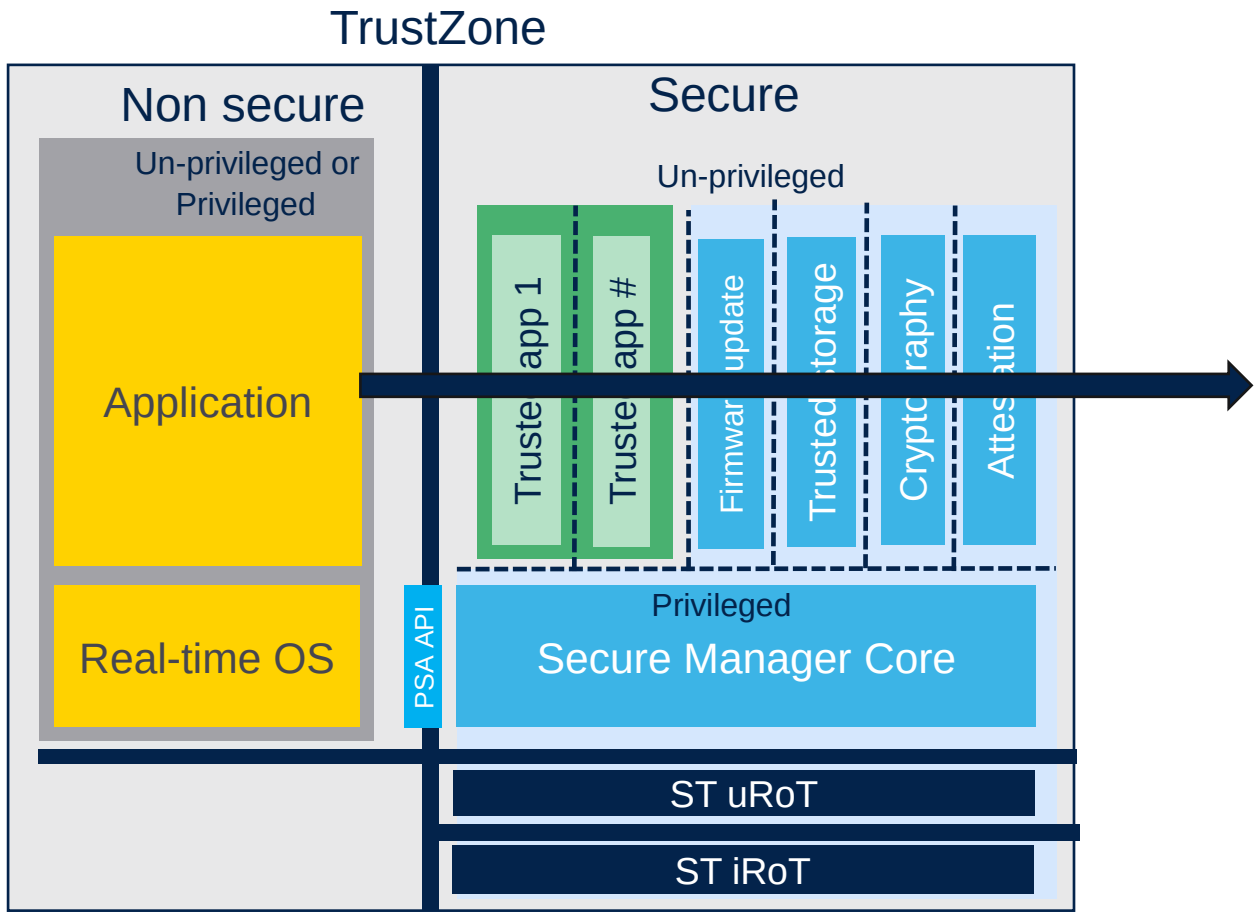
STM32 Trust TEE

Secure Manager on STM32H5 platform

Protect IP and simplify security customer journey



OEM scope

Non-Secure Application

- securely & independently updatable
- optionally encrypted

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STM32 Trust TEE

Secure Manager on STM32H5 platform

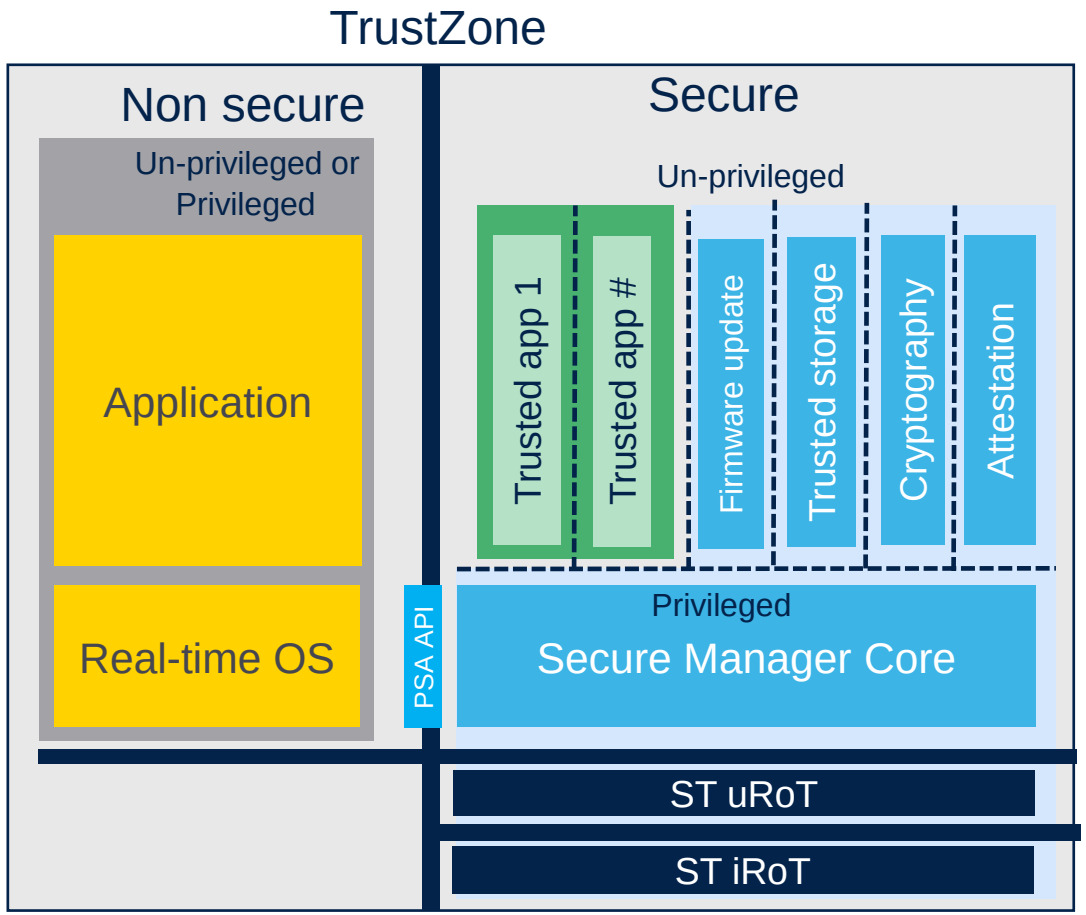
Protect IP and simplify security customer journey

psacertified™ level three

SESIP™3

Target

Scope of Secure Manager



- ST platform ownership
- Turnkey set of security services
- Secure Manager Core to handle isolation
- Multi-tenant software IP protection
- Arm® PSA API compatible
- Designed for Long-Term-Support
- Modular secure update capable
- Optimized certification properties
- Certified and maintained by ST

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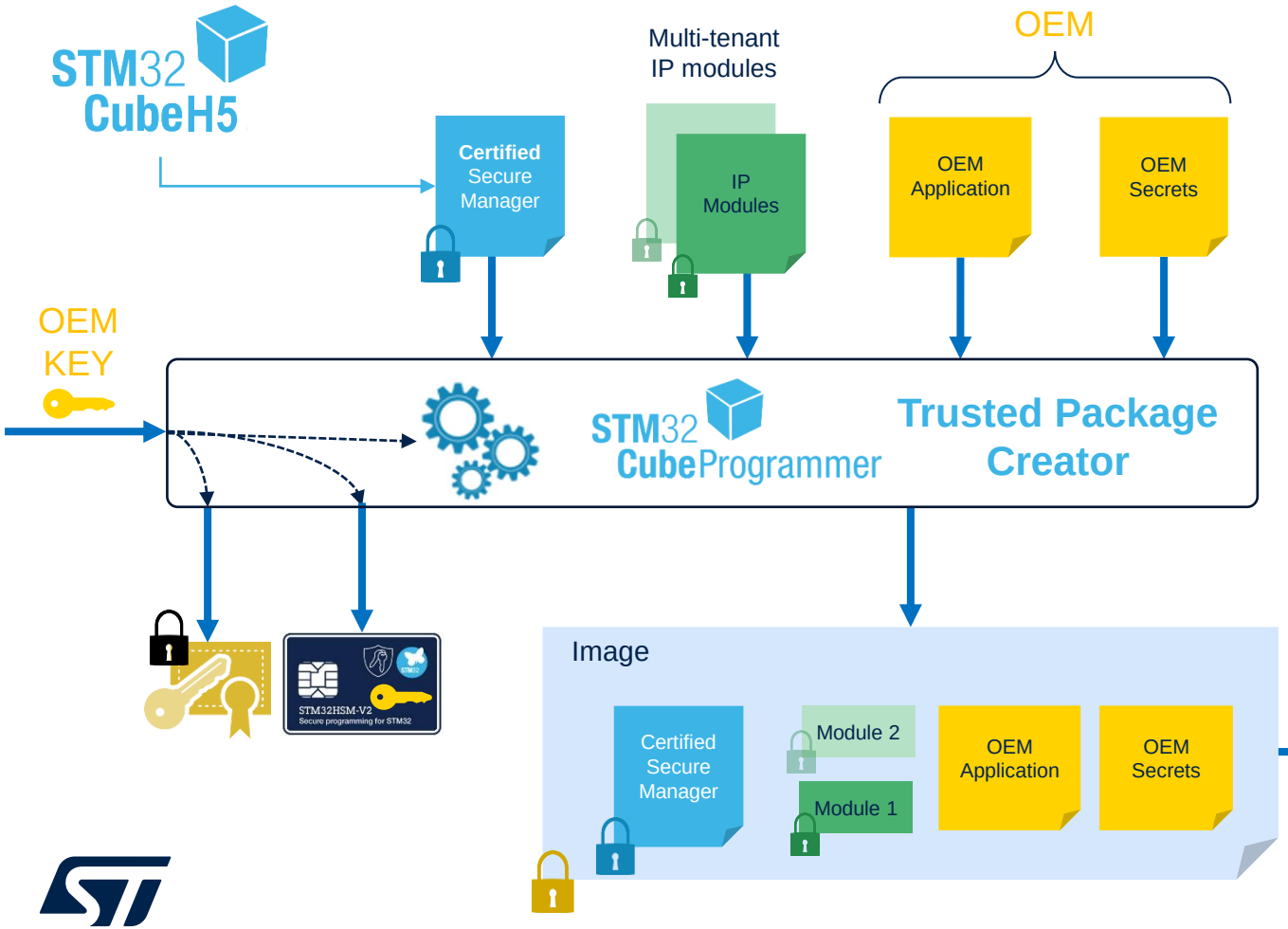
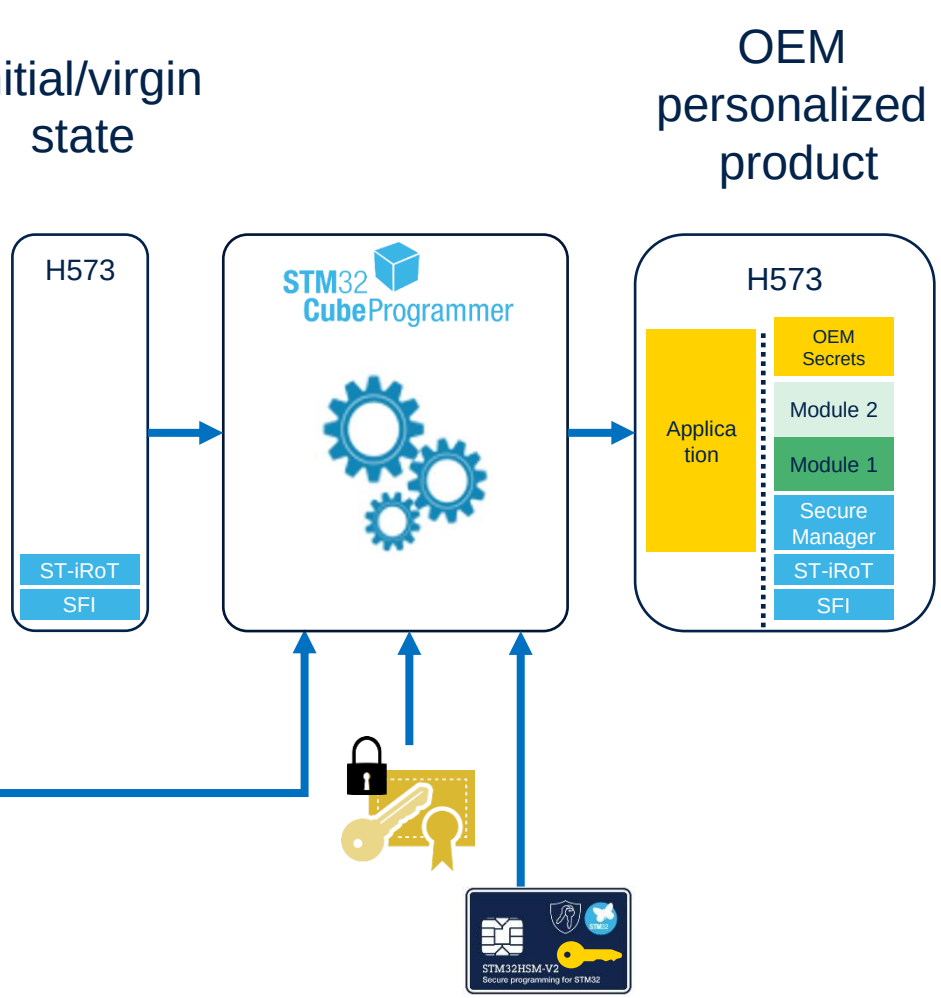
Protected by ST specific Key
Protected by Module Key
Protected by OEM Key
Protected by ST public Key for OEM

Secure Manager
Configuration & Installation flow

Creation Flow



Installation Flow



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Hands-on: Install and get started with Secure Manager

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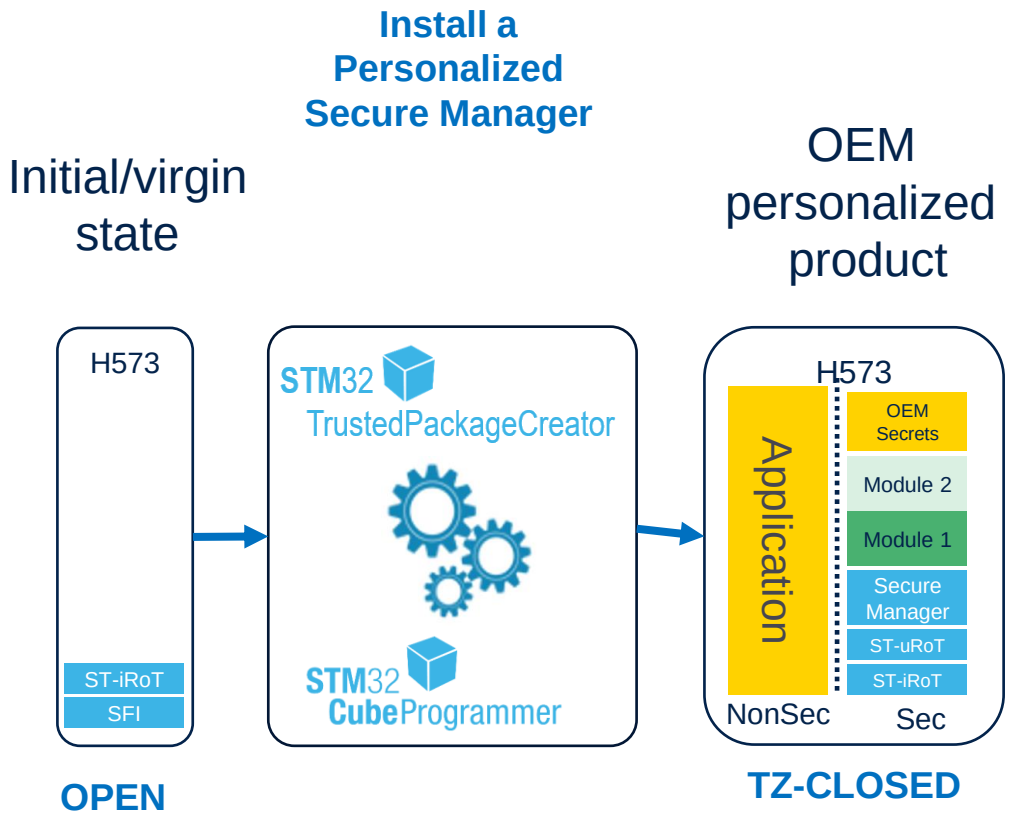
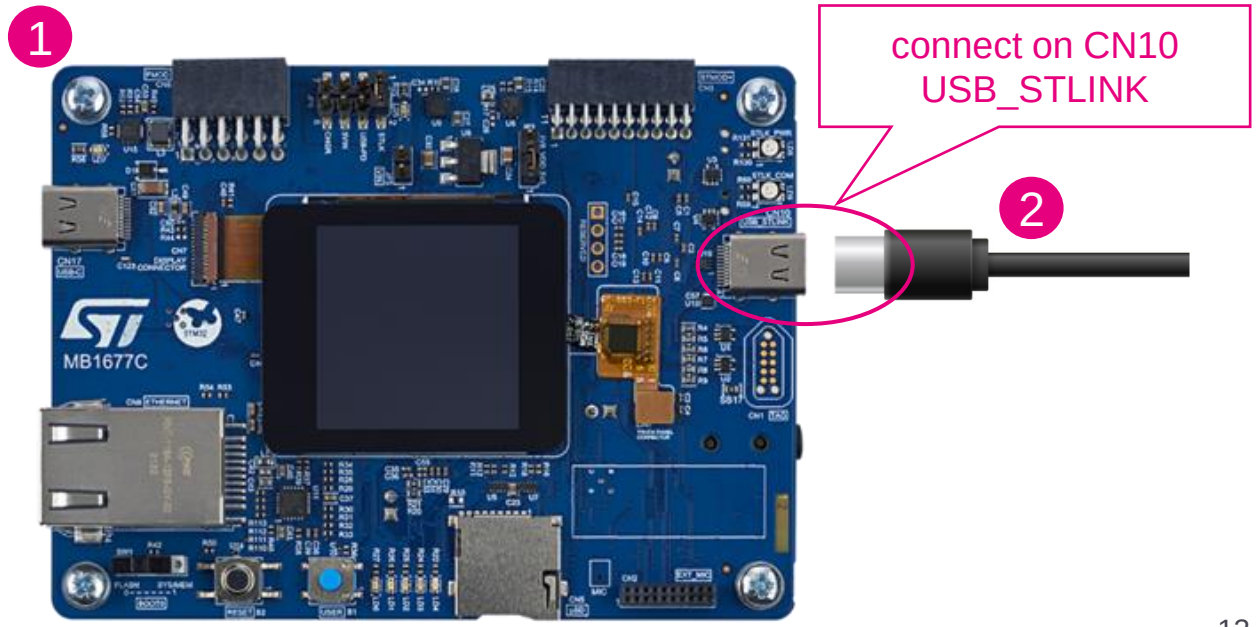
Hands-on

Configuration and Installation Flow



Hands-on: Requirements

- SW Requirement :
  - STM32CubeH5 version 1.2.0 or upper
  - STM32TRUSTEE-SM version 1.1.2 or upper
  - STM32CubeIDE version 1.15.0 or upper
  - STM32CubeProgrammer version 2.15.0 (which includes STM32TrustePackageCreator)
  - Terminal application (TERATERM)
- HW Requirement :
  1. STM32H573-DK
  2. USB cable (Type C, or Type C-to-Type A)



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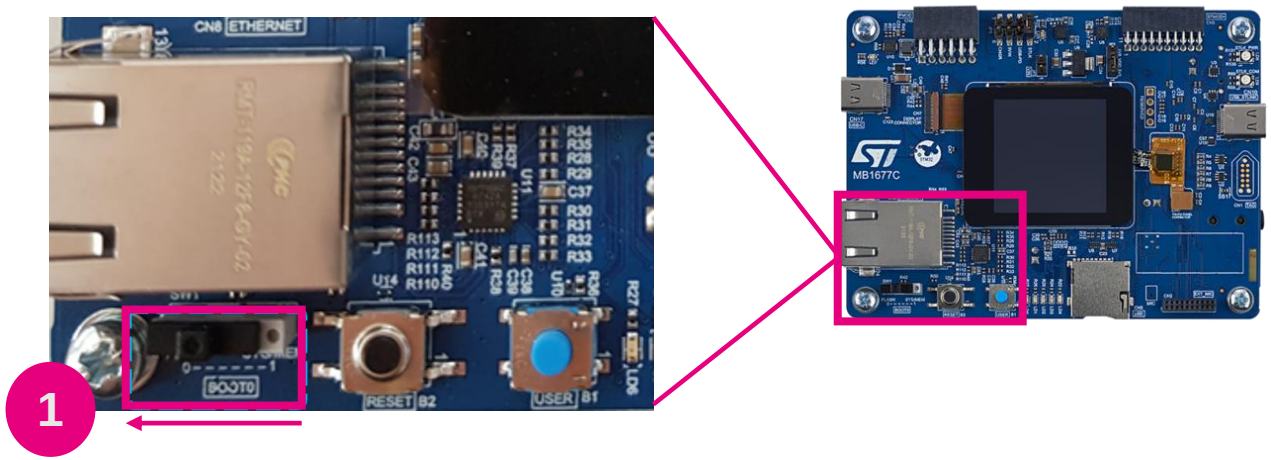
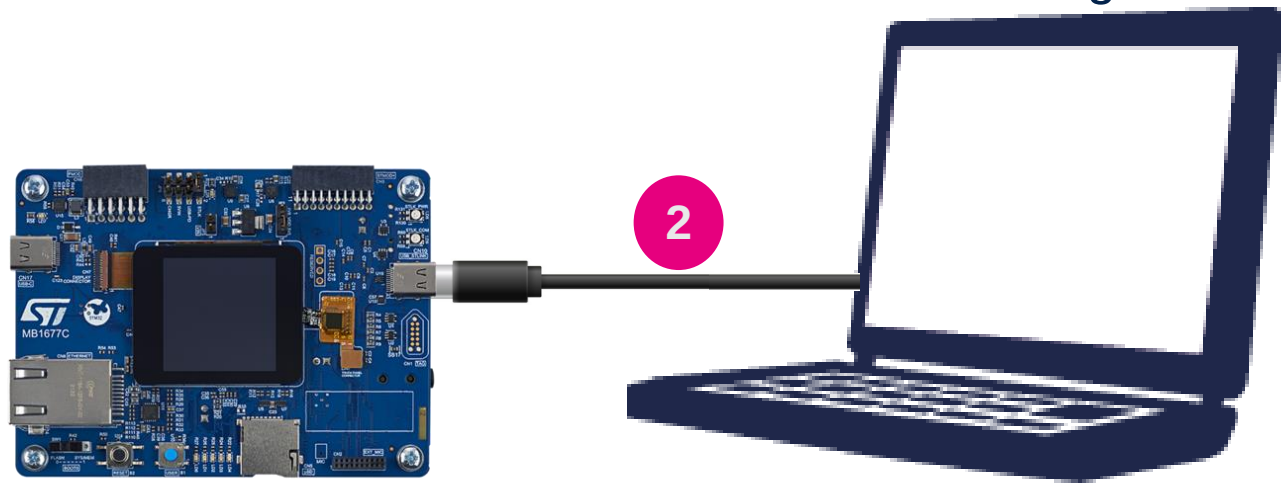
Hands-on: Hw configuration

- On the STM32H573-DK, check that the SW1 BOOT0 switch is set to 0 to boot from user flash

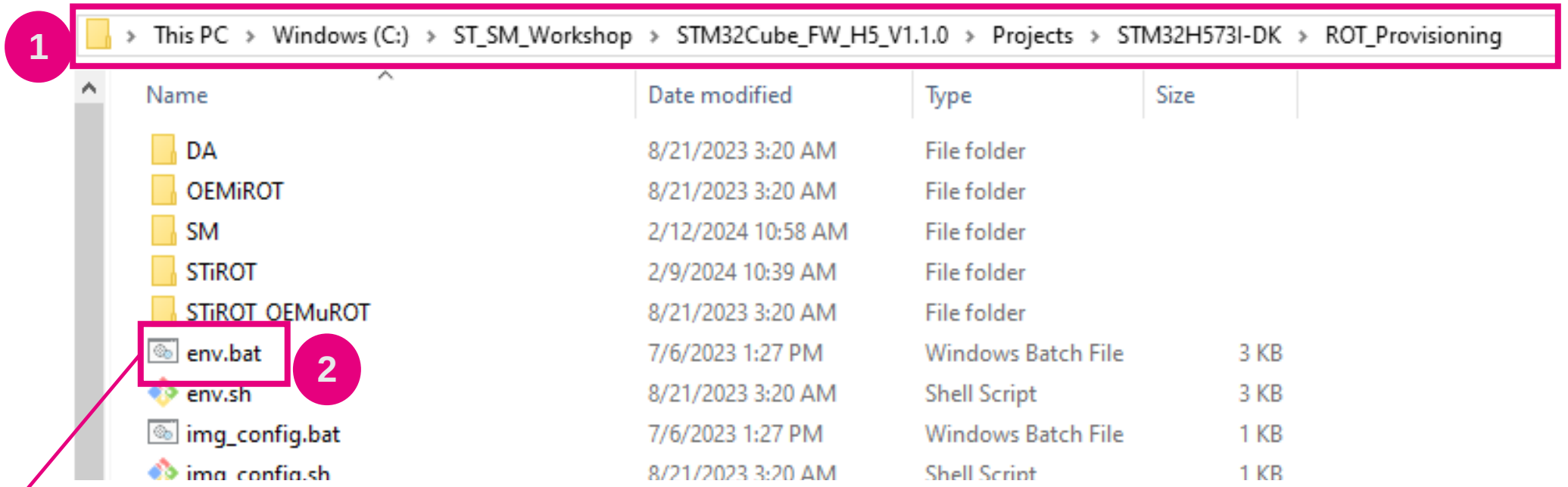


- Connect the STM32H573-DK to the Windows PC using the USB-C cable



Hands-on: Tools/Scripts configuration

Warning: If STM32CubeProgrammer is not installed in the default folder, the customized installation path must be updated in the environment variables script files: **“env.bat”** for our hands-on.




```
:: ============================================================================
::                              General
:: ============================================================================
:: Configure tools installation path
set stm32programmercli="C:\Program Files\STMicroelectronics\STM32Cube\STM32CubeProgrammer\bin\STM32_Programmer_CLI.exe"
set stm32tpccli="C:\Program Files\STMicroelectronics\STM32Cube\STM32CubeProgrammer\bin\STM32TrustedPackageCreator_CLI.exe"
```

IMPORTANT: This workshop was initially created using the STM32CubeH5 V1.1.x. Every time you see the path STM32Cube_FW_H5_V1.1.x, it is in fact “STM32Cube_FW_H5_V1.2.0” or any newer version/path you are using.

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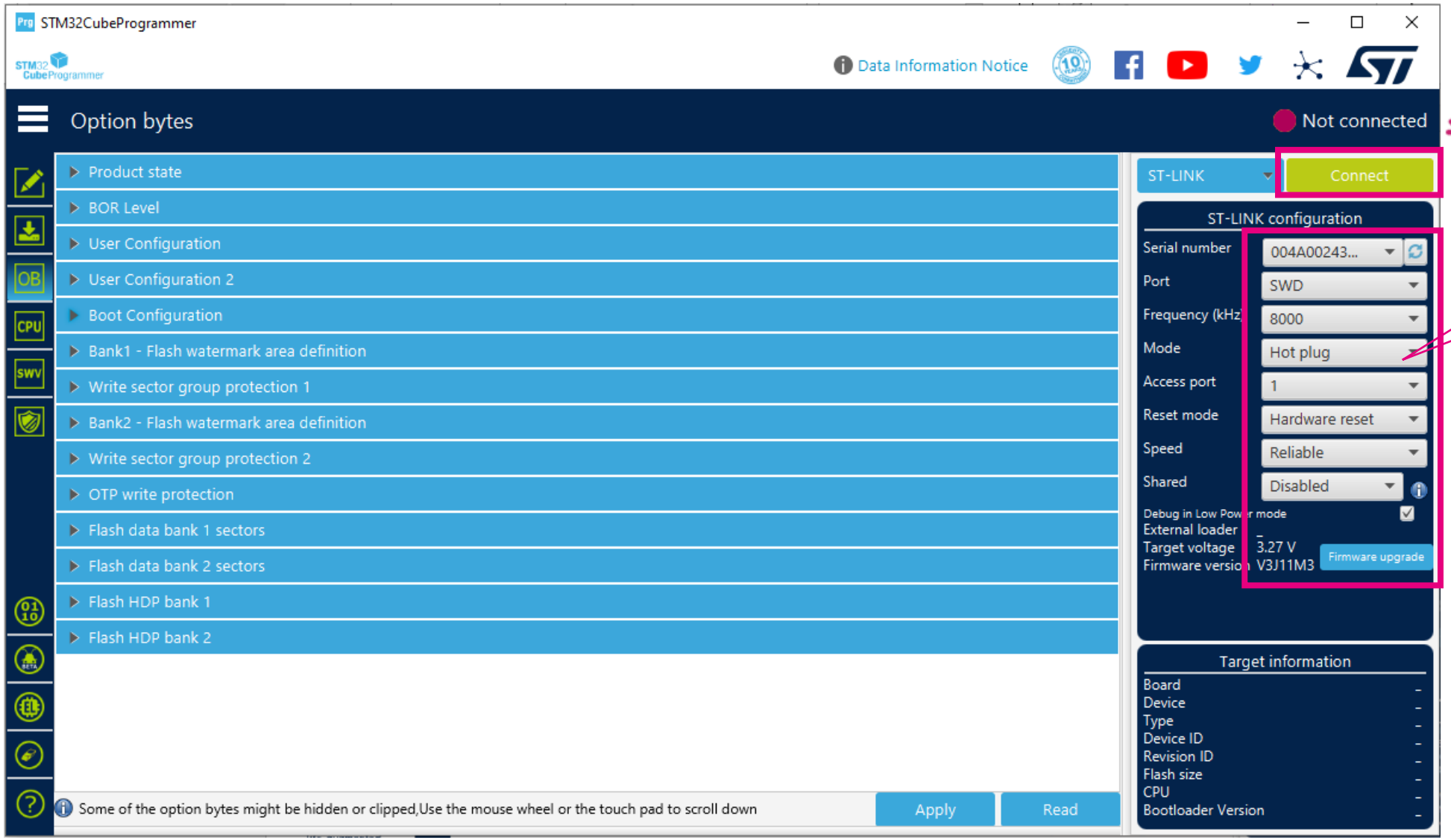
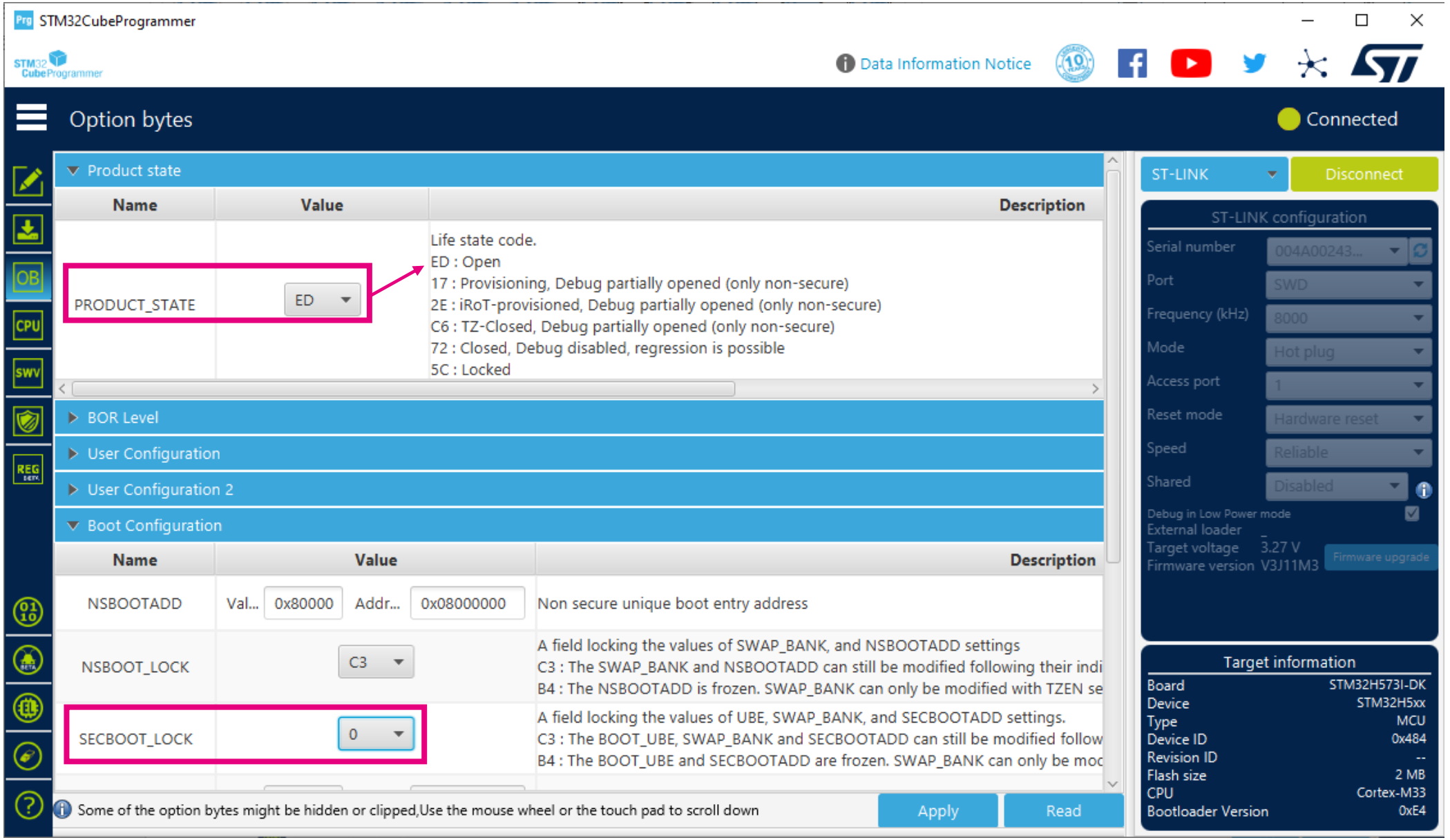
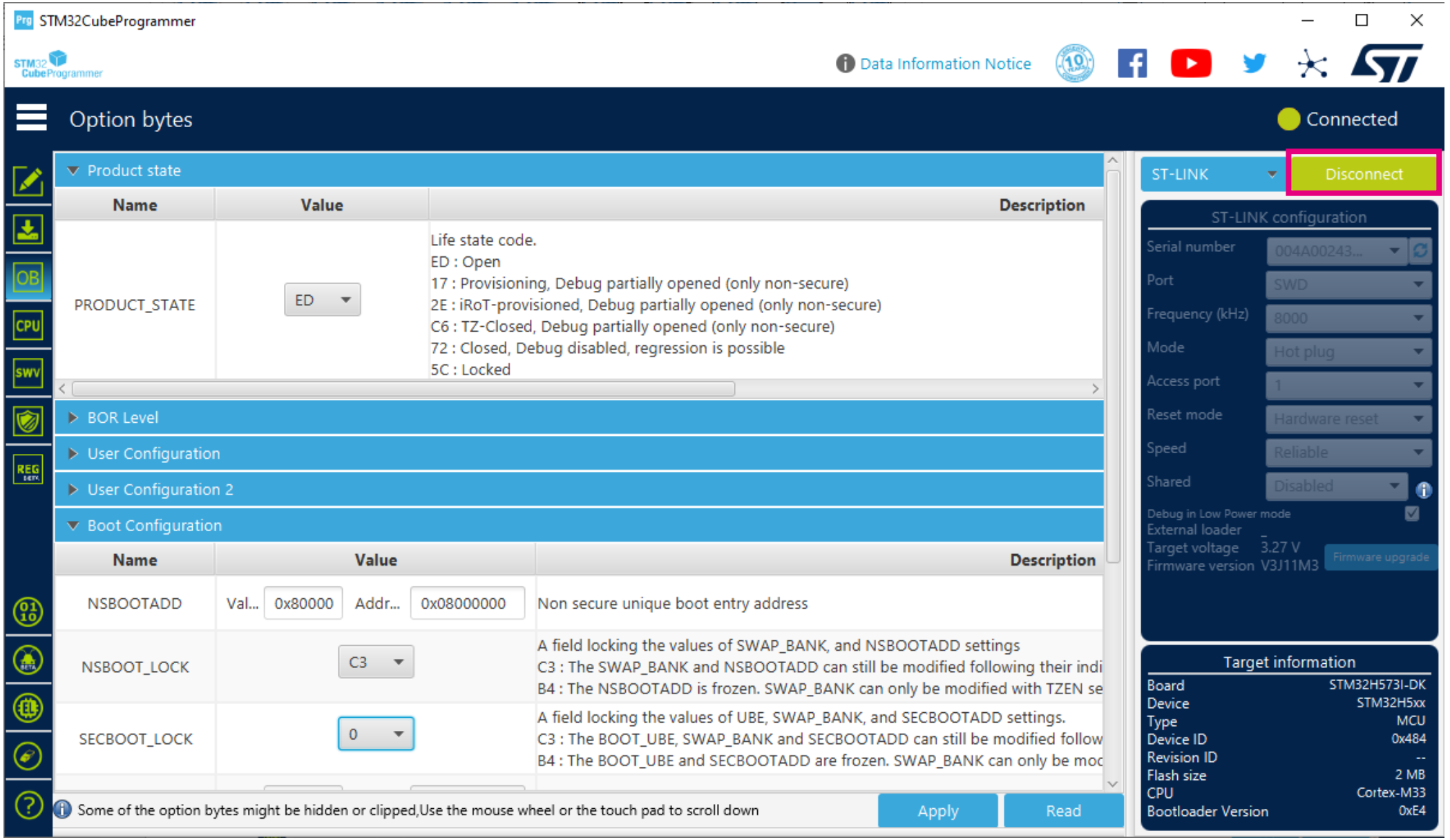
Hands-on: OB status check 1/3



Hands-on: OB status check 2/3

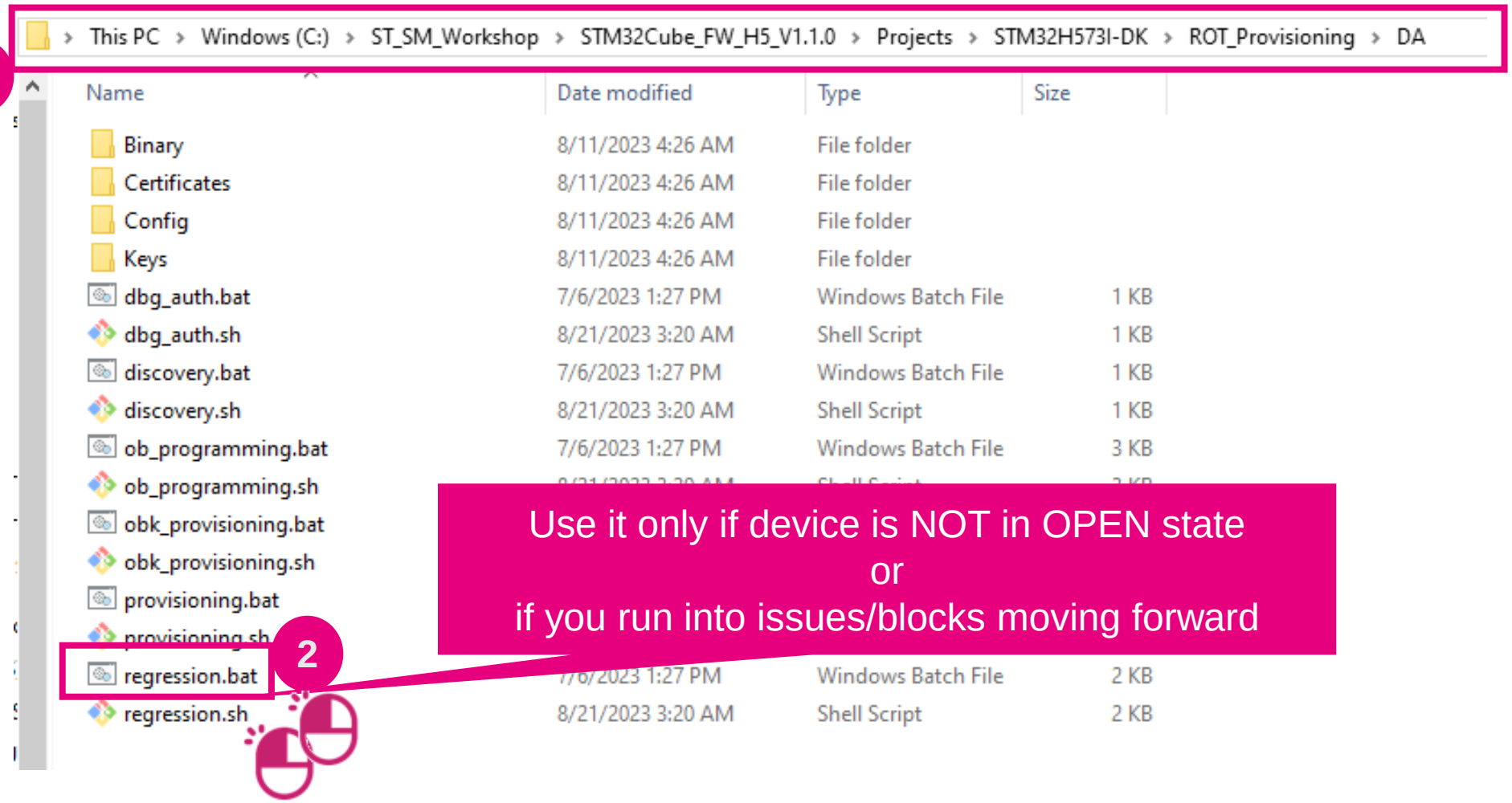


Hands-on: OB status check 3/3



Hands-on: OB status check ONLY IF NEEDED

WARNING: Use the regression script only if you find out that your device is not in OPEN state.
Or if you run into issues/block moving forward because board already used/configured etc.



Hands-on: Secure Manager Configuration and Installation

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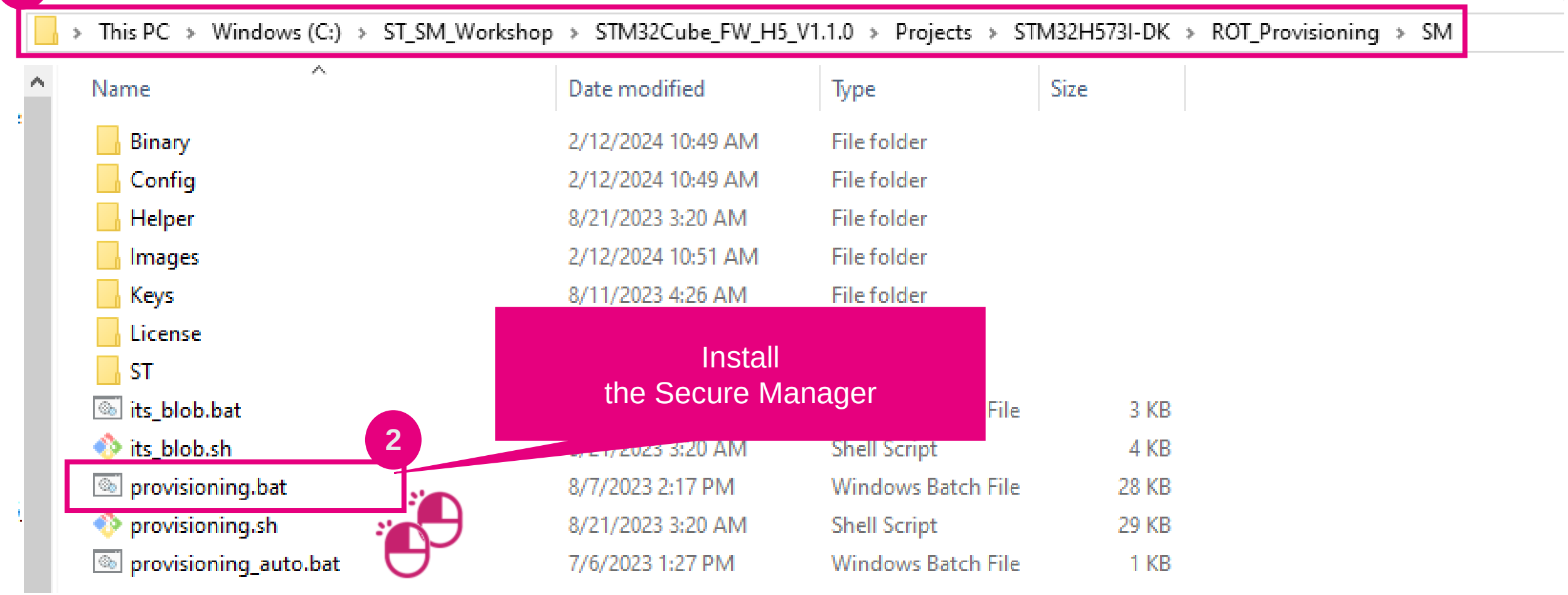
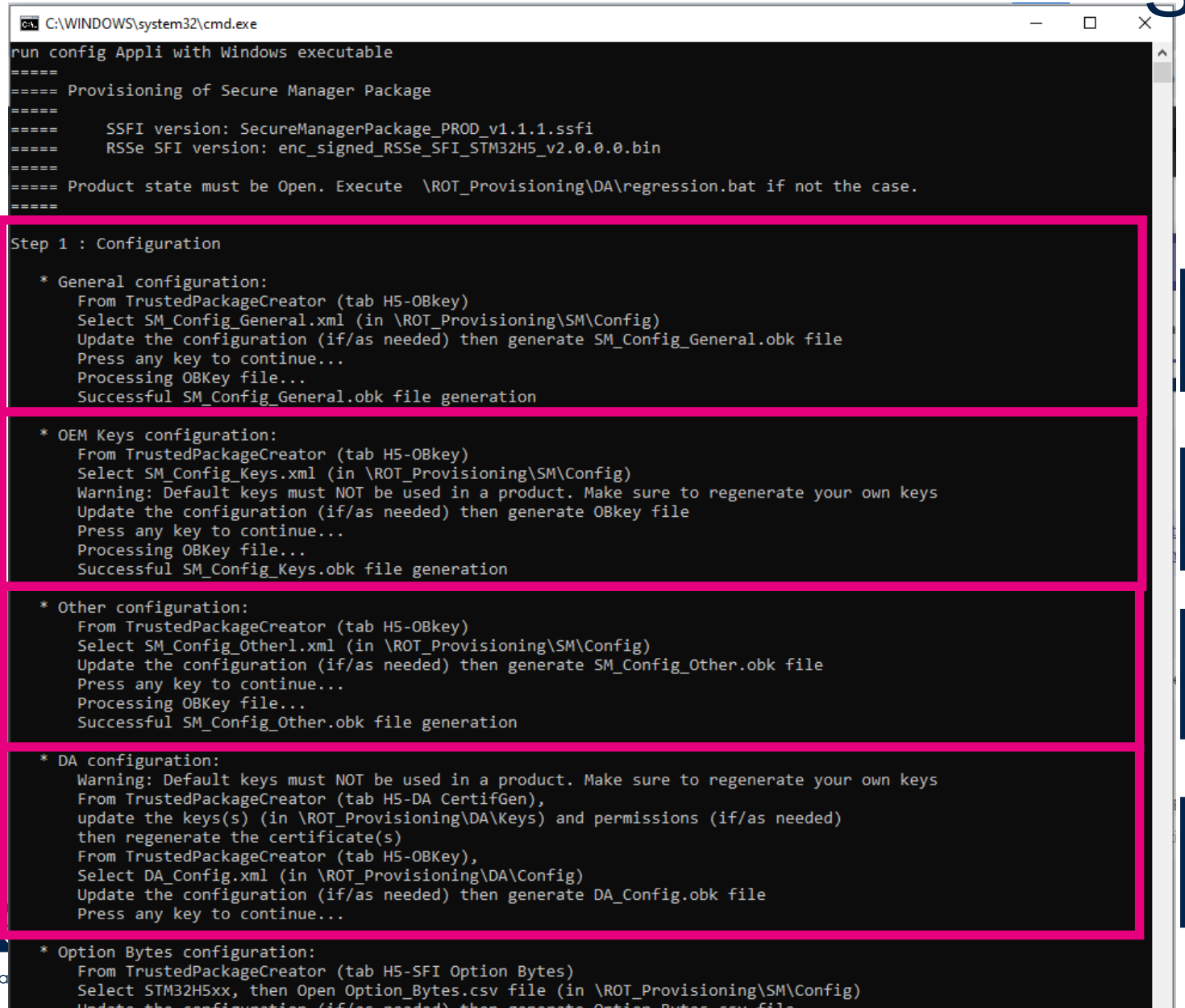
Hands-on: provisioning scripts

1

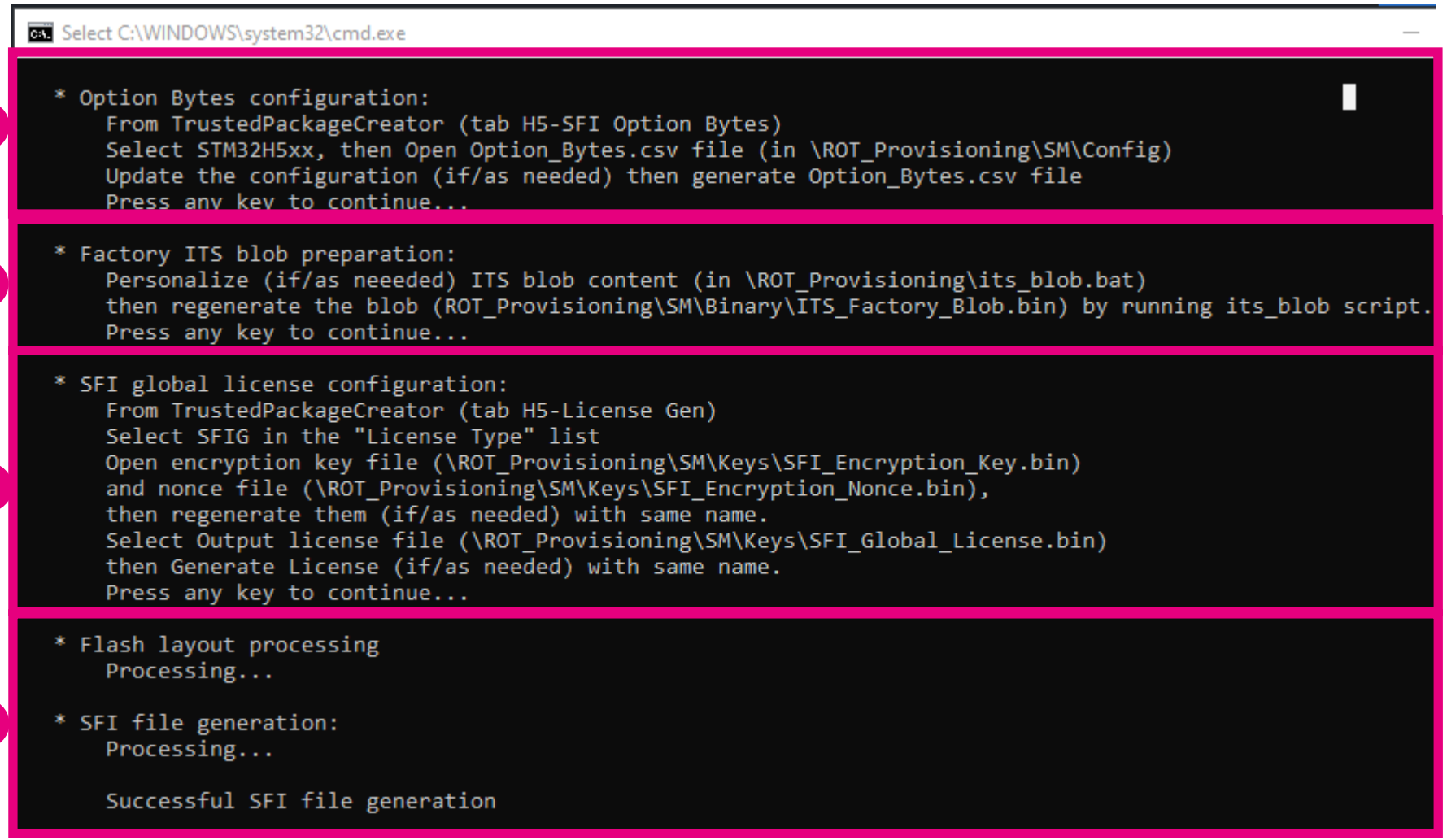


Hands-on: Secure Manager STEP1 - Configuration



1. Information to configure secure manager capabilities
2. Information to configure OEM keys
3. Information to configure secure manager behaviour
4. Information to configure debug authentication keys

Hands-on: Secure Manager STEP1 - Configuration



Option bytes configuration

Internal trusted storage configuration

SFI license setup

Build big SFI binary

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Hands-on: Secure Manager STEP2 - Installation

1

```
Step 2 : Installation

   * BOOT0 pin should be disconnected from VDD
     (STM32H573I-DK: set SW1 to position 0)
     Press any key to continue...
```

Ensure switch SW1 (close to ETH connector) is set on FLASH (0)

2

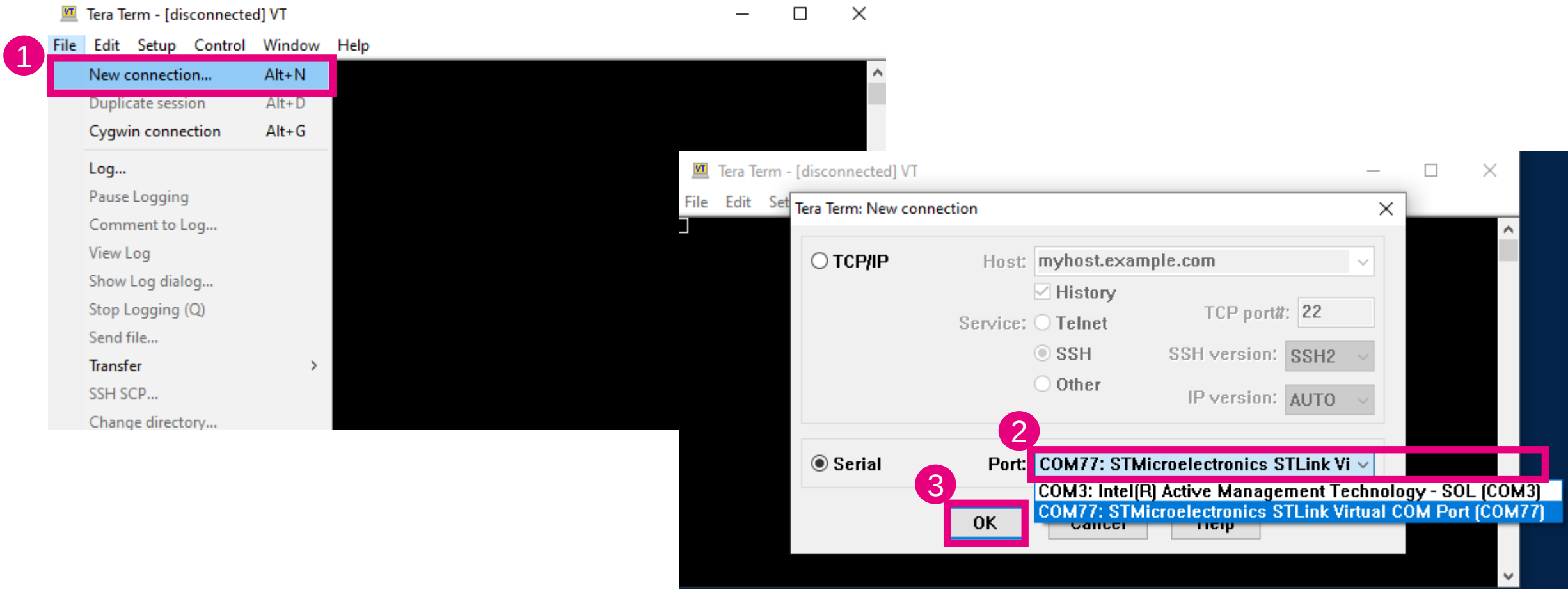
```
   * Secure installation
     Installation starting (might take up to 15 seconds)...
     Installation completion...
     Successful installation

=====
===== The board is correctly configured with ST Secure Manager Package
=====
```

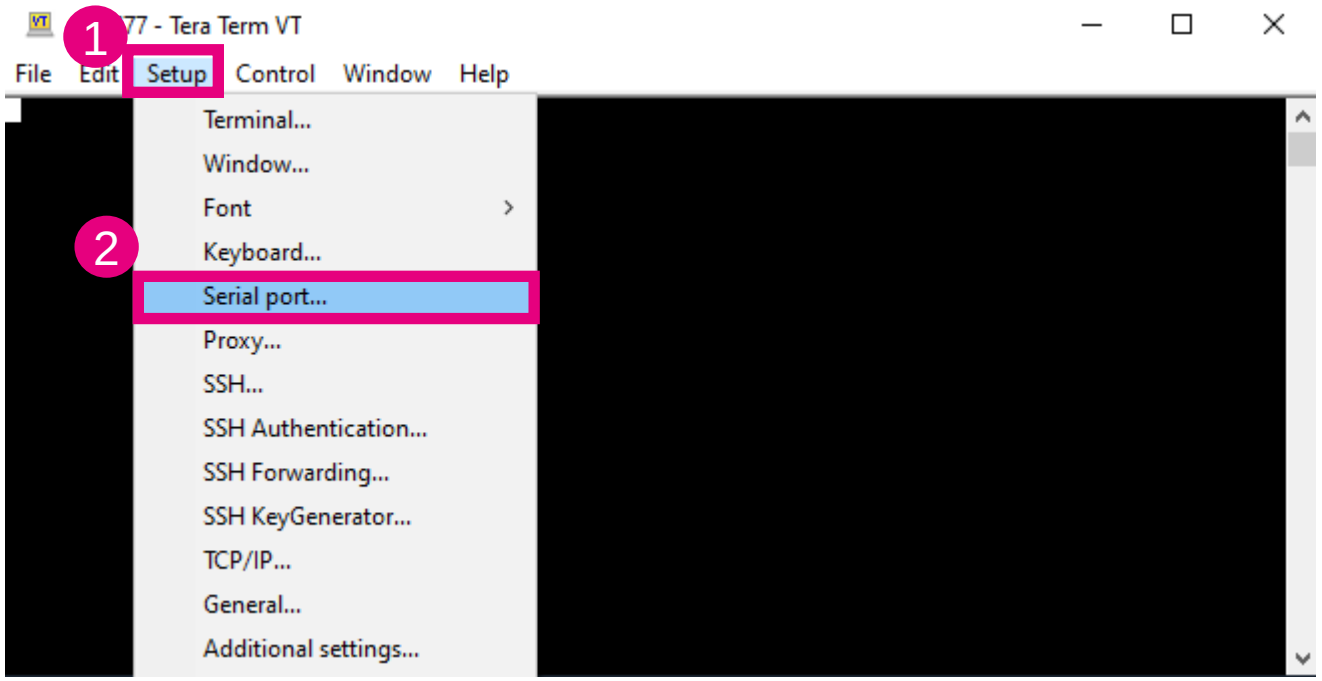
Secure manager installation securely !

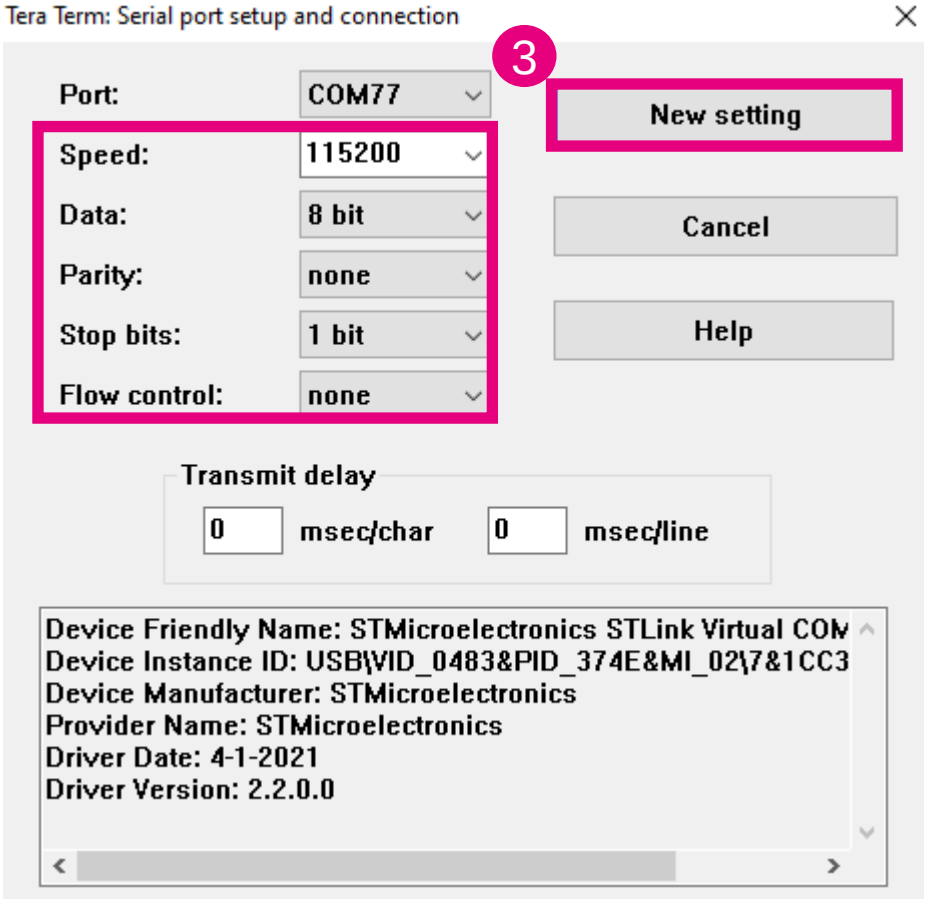
Board LEDs are blinking !

Open UART terminal serial port



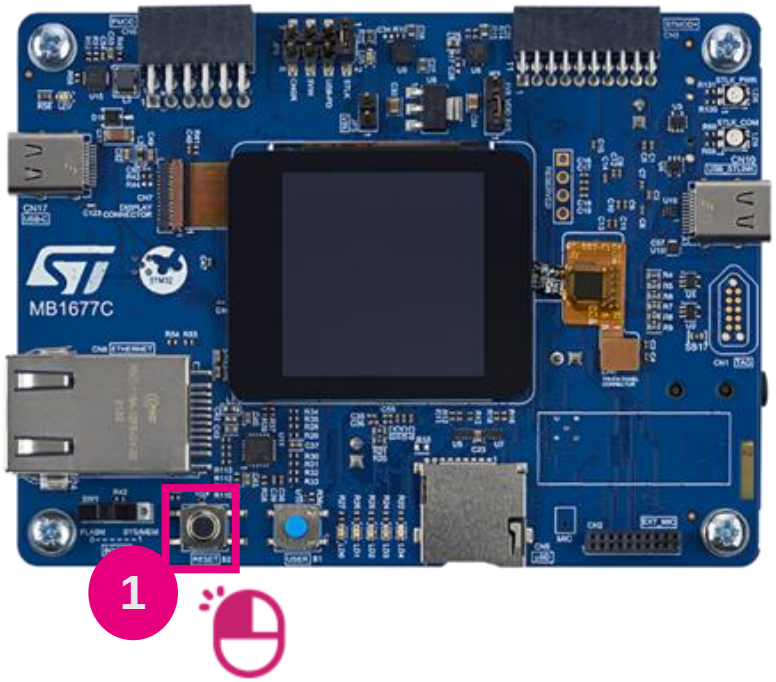
Serial port configuration

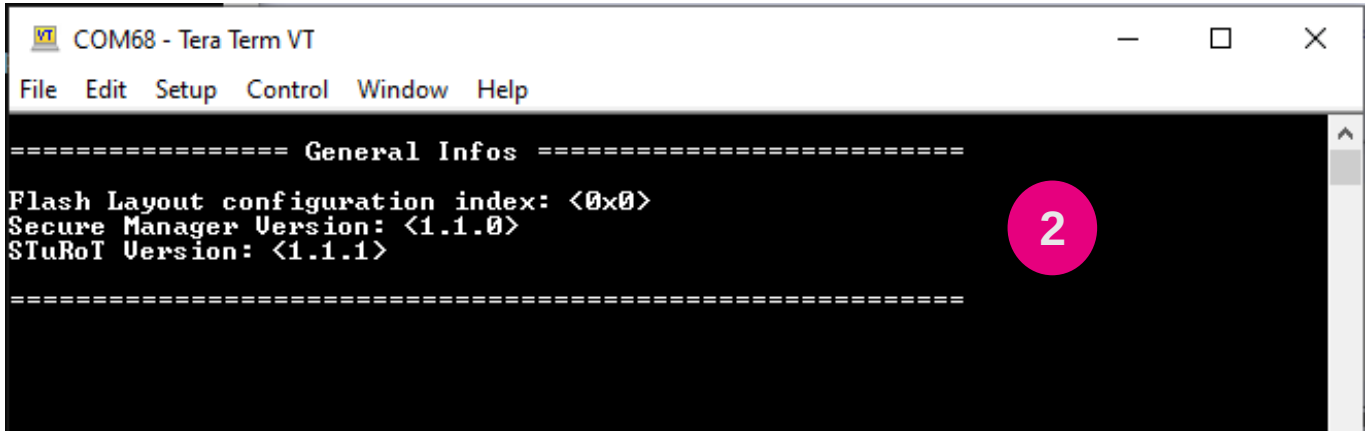




Check terminal connection

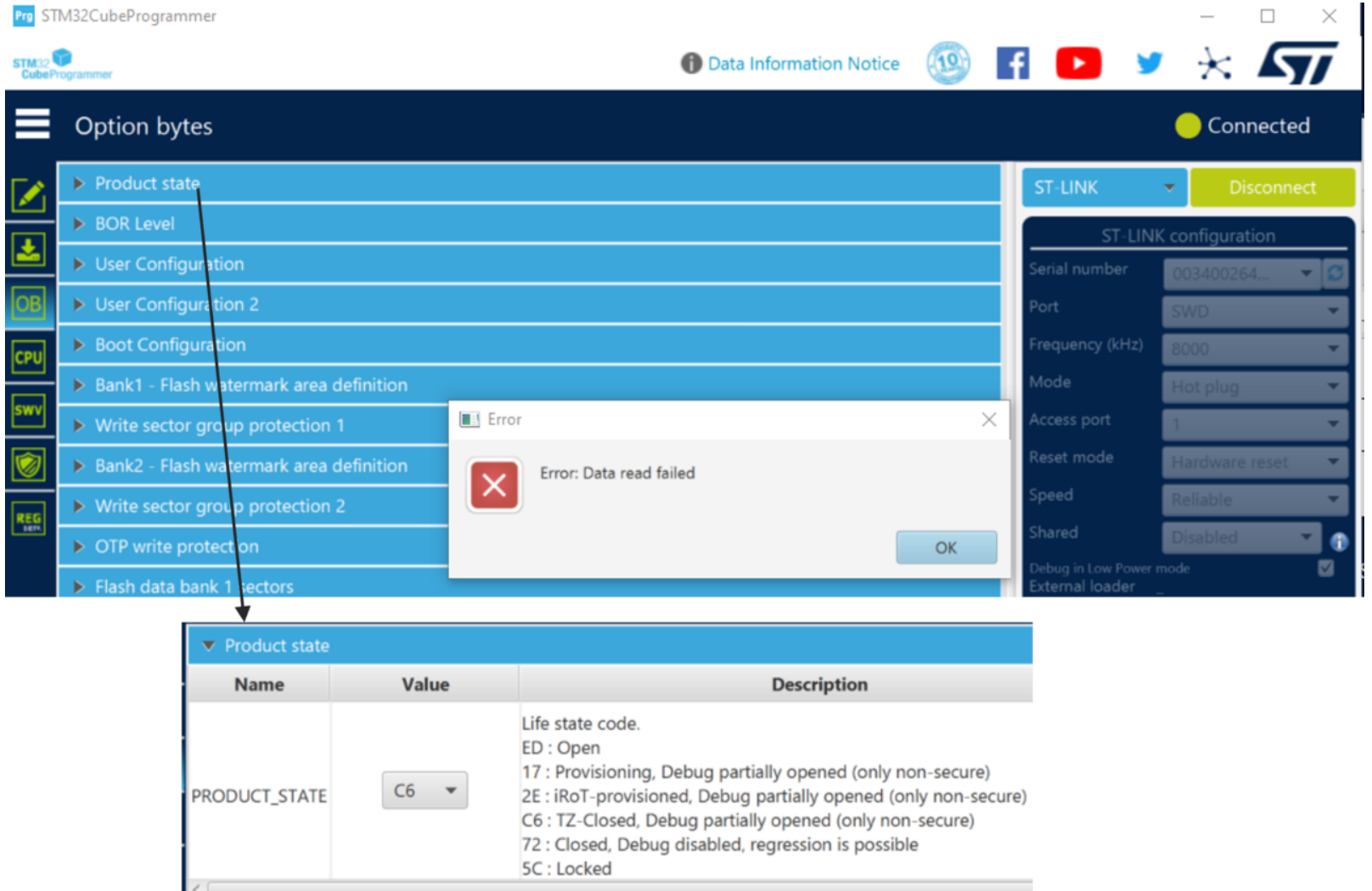
- Press the reset button on the board





Check product state

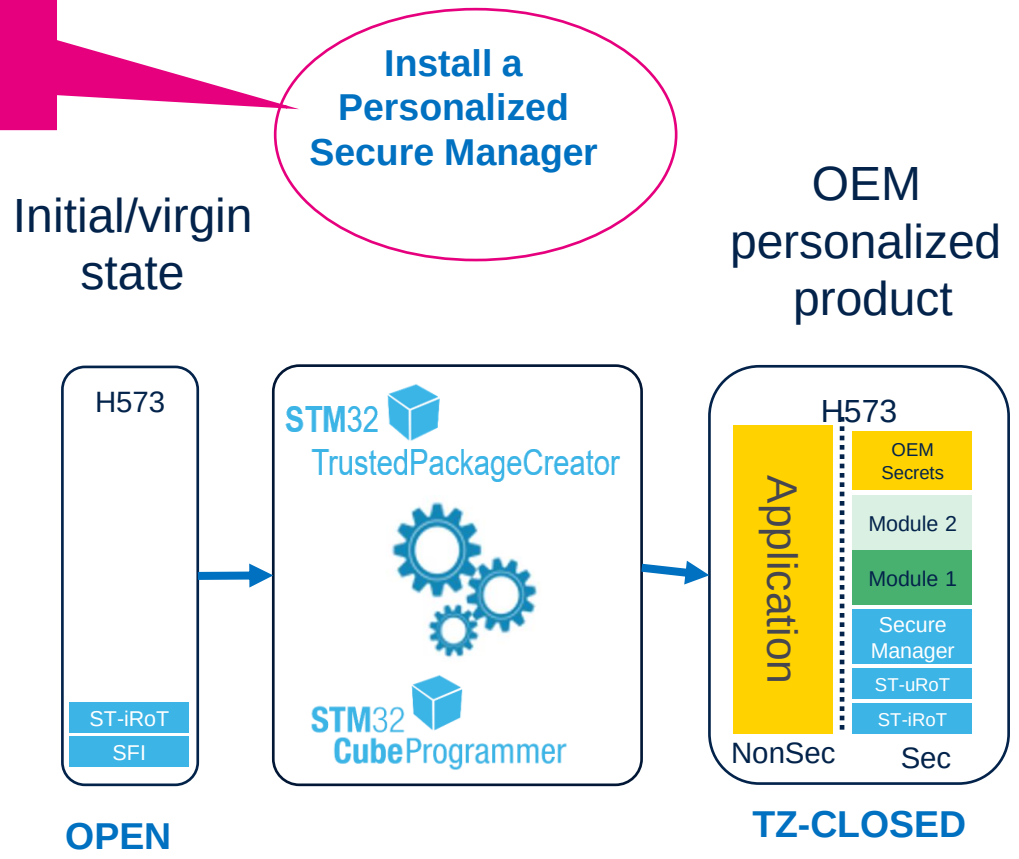
- Connect to the board through STM32CubeProg to check the new TZ-Closed product state (you can check accessibility of S and NS flash). Then Disconnect



Hands-on Completed

Configuration and Installation Flow

COMPLETED



Resources

Resources

Links

- STM32Trust: Web page
- Security with STM32H5: Wiki pages
- Getting Started with STM32H5 security: Wiki pages
- STM32 Embedded Security Learning Journey: Web page

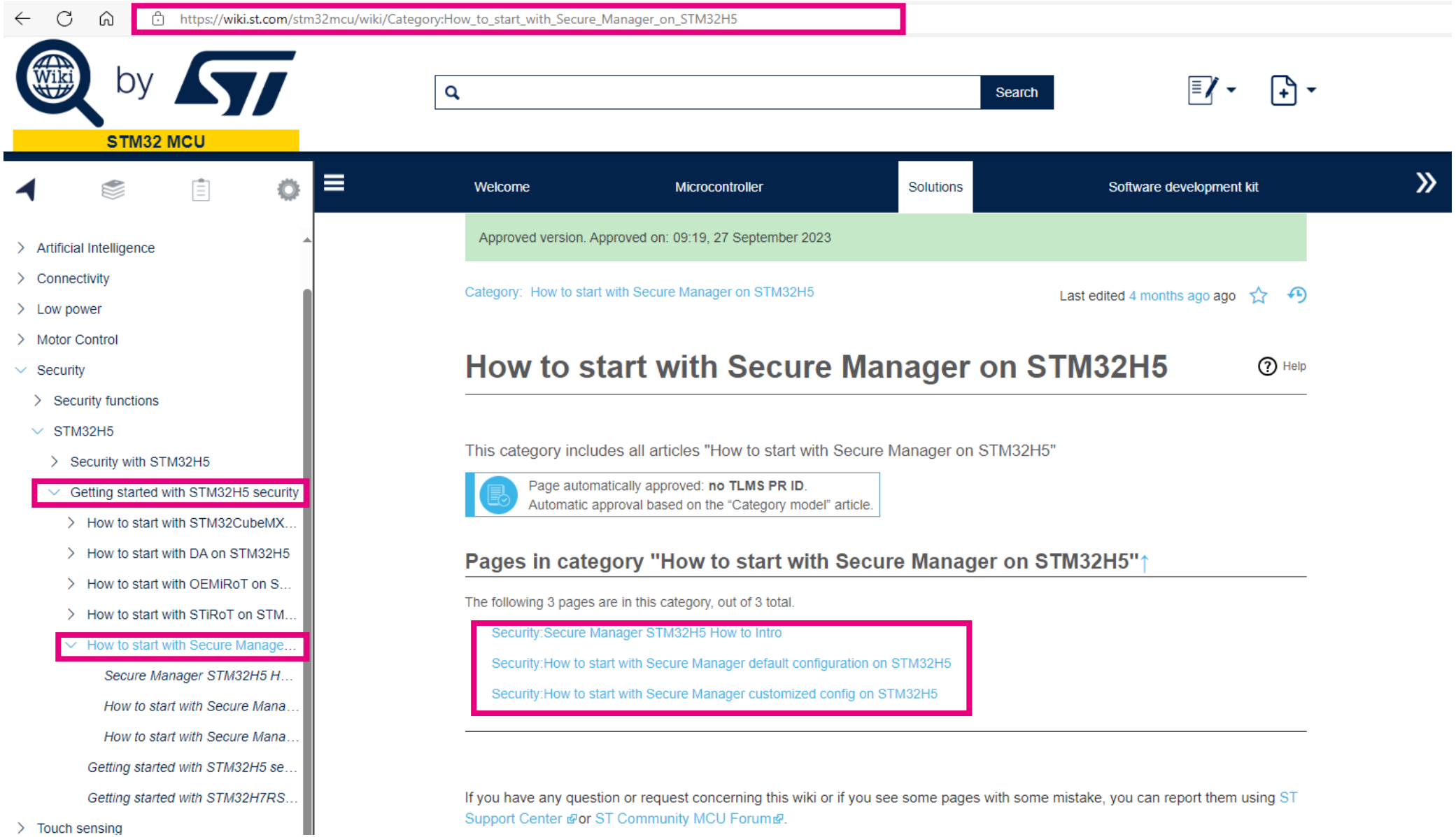
Videos

- STM32H5 Training: Online Training
- STM32 Security MOOC: Online Course
- Secure Manager MOOC: Online Course

Docs

- AN5156 : Introduction to STM32 microcontrollers security
- AN6007 : Getting Started with STiRoT for STM32H5 MCUs
- AN6008 : Getting Started with Debug Authentication for STM32H5 MCUs
- UM3254 : Secure manager for STM32H573xx microcontrollers
- RM0481 : STM32H563/H573 Reference Manual

Wiki: How to start with Secure Manager



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Agenda

1 Introduction

2 STM32H5 security features overview

3 Hands-On: Getting started with Secure Manager

4 Hands-On: SMAK Develop and Debug

5 Hands-On: Debug Authentication

6 Conclusion & takeaways

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