

Open**ST**Linux



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## Quick Start Guide X-LINUX-NFC5

Linux® driver for the ST25R3911B high performance  
NFC frontends

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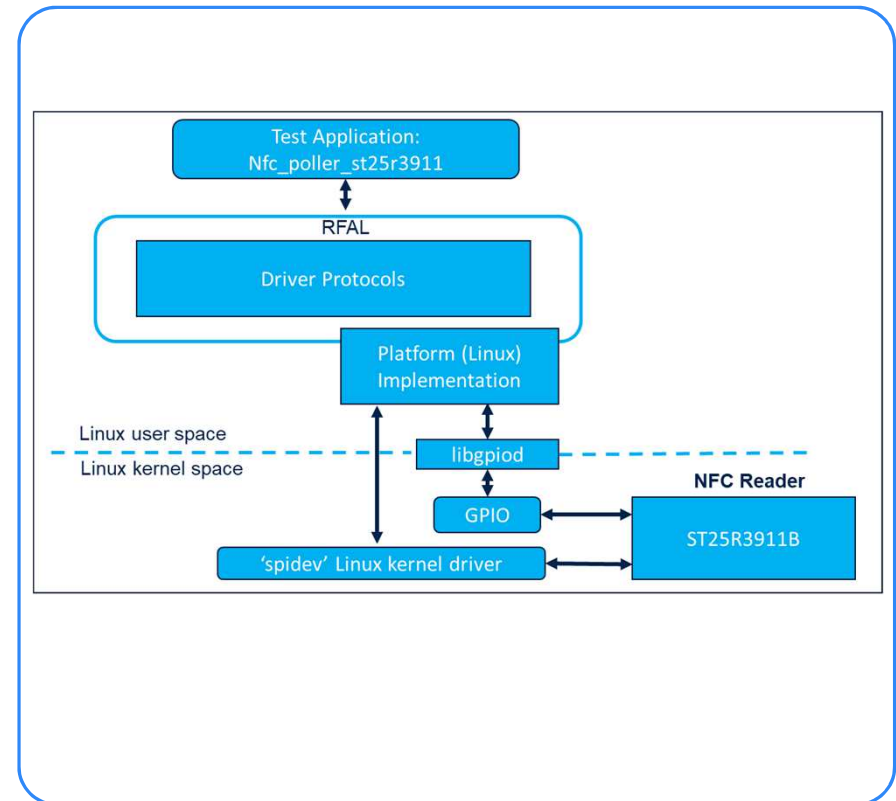
STM32 MPU OpenSTLinux Software Expansion Package : Overview

# X-LINUX-NFC5

## Software Overview

### Software Description

- X-LINUX-NFC5 is a software expansion package developed to demonstrate RFAL (Radio Frequency Abstraction Layer) library for NFC based applications on STM32MP157C-DK2 using ST25R3911B NFC device
- UID and NFC tag type is displayed on screen when the tag is paced in range NFC antenna of X-NUCLEO-NFC05A1 board.
- Demo application detect NFC Tag types such as NFC-A, NFC-B, NFC-V and other types supported by RFAL library
- The package is easy to port across different Linux based platforms with compatible hardware interface.



# X-LINUX-NFC5

## Hardware Overview

### Hardware Description

- X-NUCLEO-NFC05A1 is an NFC card reader expansion board based on ST25R3911B for STM32MP1, STM32 and STM8 based platforms
- STM32MP157C-DK2 Discovery kit leverages the capabilities of STM32MP1 series microprocessors to allow users easily develop applications using STM32 MPU OpenSTLinux distribution software

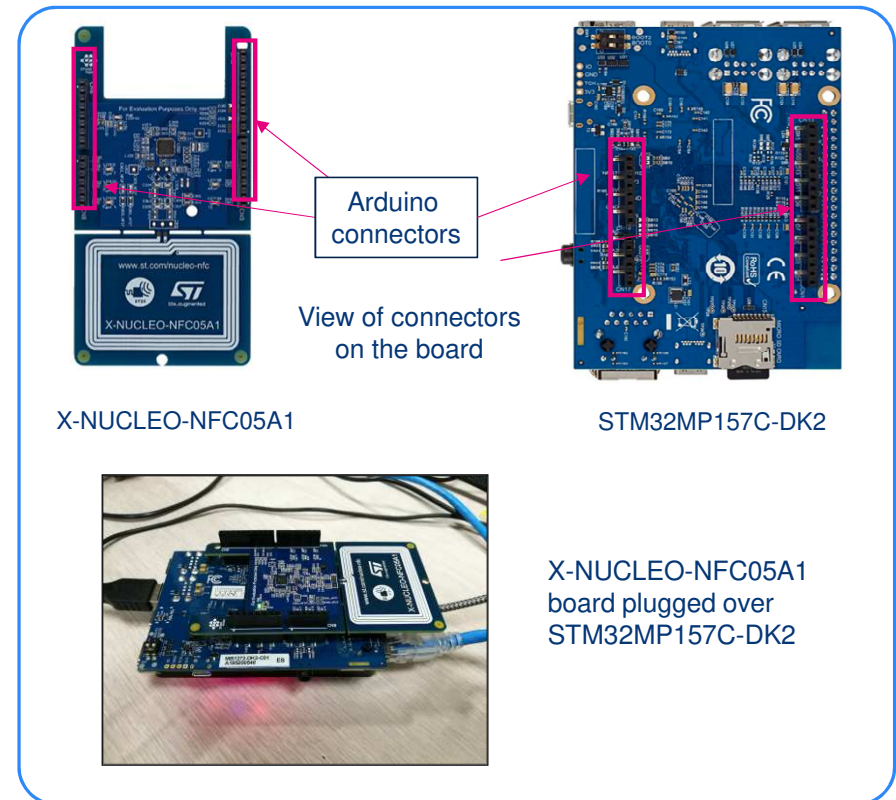
#### Key Products on board

##### **STM32MP157C**

Microprocessor Unit

##### **ST25R3911B**

High performance HF reader / NFC initiator



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# Setup & Demo Example

## Hardware Pre-requisites

### Hardware requirements

- 1x STM32MP157C-DK2 board (Discovery Kit)
- 1x X-NUCLEO-NFC05A1 (expansion board for ST25R3911B)
- 1x Linux - Laptop/PC (Ubuntu 16.04 LTS or higher)
- 1x USB Type A to micro USB cable
- 1x USB PD compliant 5V 3A power supply
- 1x cable with USB-Type C to connect STM32MP1 with PC
- micro SD card ( minimum 4GB ). At least Class 10 is recommended.

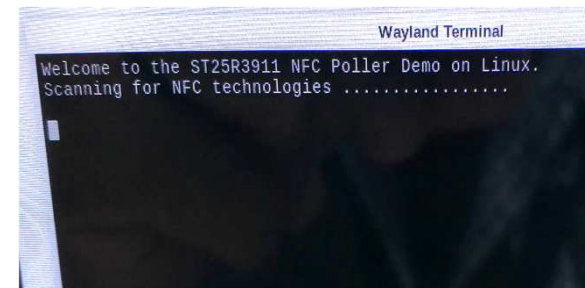
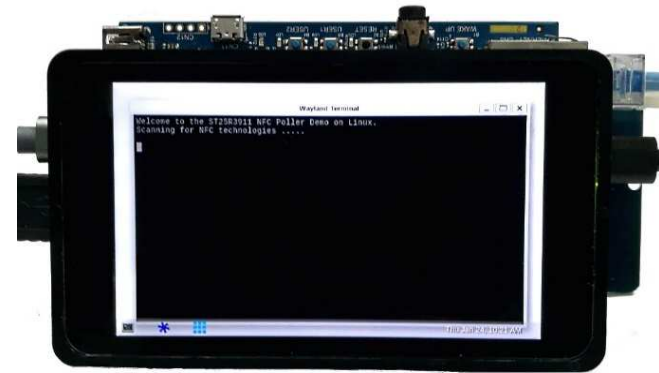


# Setup & Demo Example

## Software Pre-requisites

### Software requirements

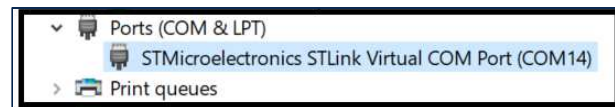
- Boot the Discovery Kit with Starter Package. Please refer to instructions at wiki page [Getting Started with STM32MP157C-DK2 board](#)
- Download pre-built images – [Link for download : TBD] after release of software on [www.st.com](http://www.st.com)
- Follow instructions on wiki page to copy the pre-built files and device tree blob at correct locations (or build using Developer Package and source code of application), restart the Discovery Kit and run the Demo application.  
Wiki page link : [X-NUCLEO NFC05A1 expansion board](#)
- Snapshot of running application on Discovery Kit. Remote terminal applications such as Tera-Term or Minicom can also be used



# Setup (1/3)

## Installation Steps

- Boot the STM32MP1-DK2 board (Discovery Kit) with Starter Package. Please refer to instructions at this [wiki page link](#).
- Download pre-built images – [Link for download : TBD] after release of software on [www.st.com](http://www.st.com)
- Connect to Discovery Kit via USB-virtual serial port using any appropriate tool [Baud 115200]. To find the COM port number, check device manager for enumeration similar to below snapshot. Refer slide #10 to know steps for transferring file from development machine to Discovery Kit using Tera-Term.



- Transfer the below files to respective locations on board using Tera-Term (or any alternate method) –

Downloaded File	Location in DK2 Board
STM32MP157C-DK2_DeviceTree/Binaries/stm32mp157c-dk2.dtb	/boot/
NFCPollerApplication/Binaries	/usr/local/



## Setup (2/3)

# Run The Application

- Open terminal on Discovery Kit and run below commands, so that platform configuration is updated as per new device tree blob –

```
Board $> /sbin/depmod -a  
Board $> sync  
Board $> reboot
```

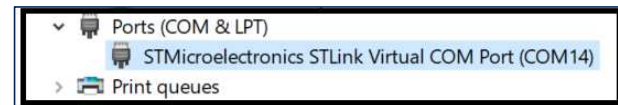
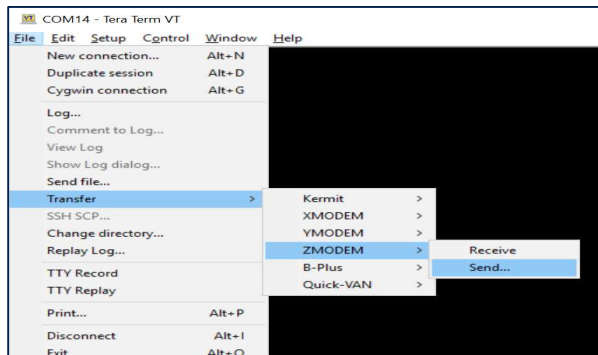
- After reboot, connect to the Discovery Kit again and open terminal. Execute below commands to RUN the application –

```
Board $> cd /usr/local/  
Board $> export LD_LIBRARY_PATH=/usr/local:$LD_LIBRARY_PATH  
Board $> chmod +x nfc_poller_st25r3911  
Board $> ./nfc_poller_st25r3911
```

# Setup (3/3)

## Transfer files from PC to Discovery Kit

- Connect the Discovery Kit to the Internet / Intranet via LAN or Wi-Fi and use ssh commands for accessing the board or scp command for transferring files. Any alternate method can be used for file transfer / access. For example, below **steps need to be executed on TERA-TERM** :
  - Connect the Discovery Kit to your PC via USB type-A to type-micro B cable.
  - Check the Virtual COM port number visible in the device manager. For example, in below snapshot, the COM port number is 14.
  - Open Tera-Term on your PC and select the COM port (as found in step 3 above). The baud rate should be 115200 baud. The virtual terminal (remote access) will appear.
  - To transfer a file from host PC to Discovery Kit, click on File menu on top left corner of the Tera-Term window and go to File>>Transfer>>ZMODEM>>Send. Select the desired file for sending it to the /usr location of Discovery Kit. Below snapshots -



# Documents & Related Resources

- All documents are available on the [www.st.com](http://www.st.com)
  - User Manual
  - Data Brief
  - Quick Start Guide
  - Source code
  - Wiki page on <https://wiki.st.com/stm32mpu>

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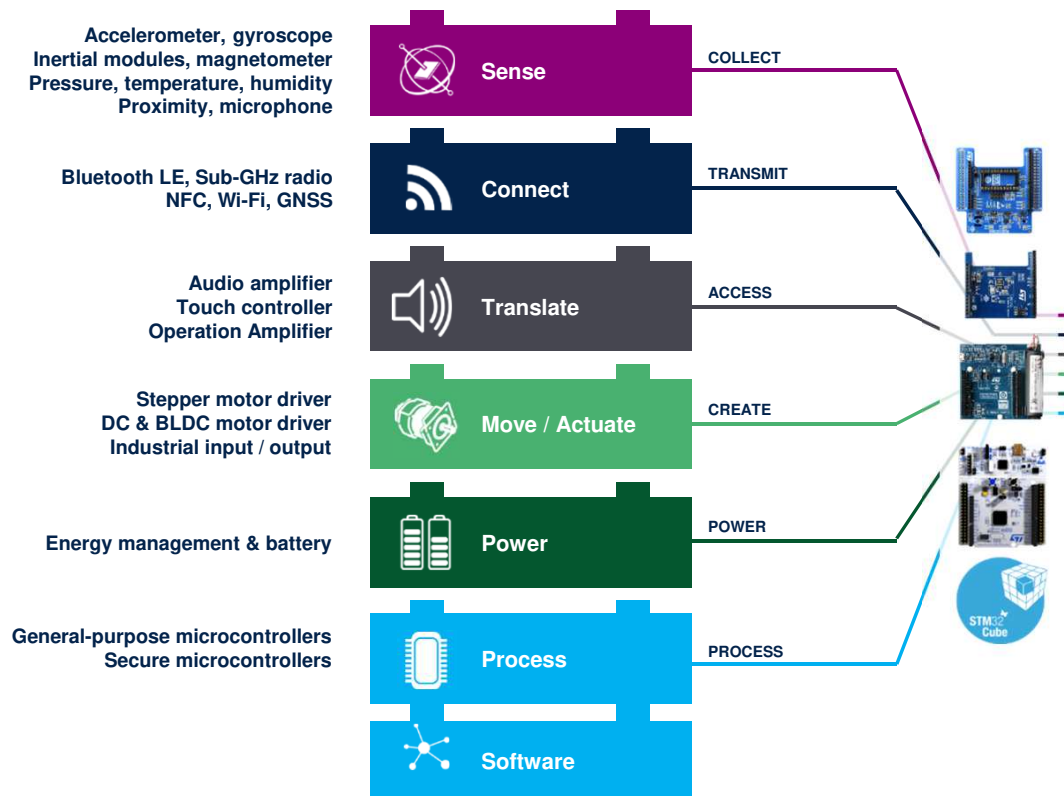
STM32 MPU OpenSTLinux Software Expansion Package : Overview

# STM32 MPU OpenSTLinux Software Expansion Package: all that you need

The building blocks

Your need

Our answer

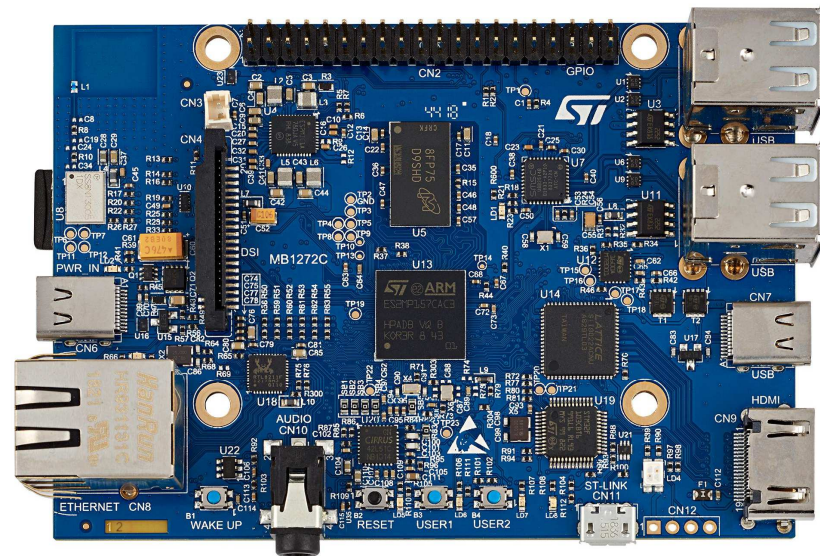
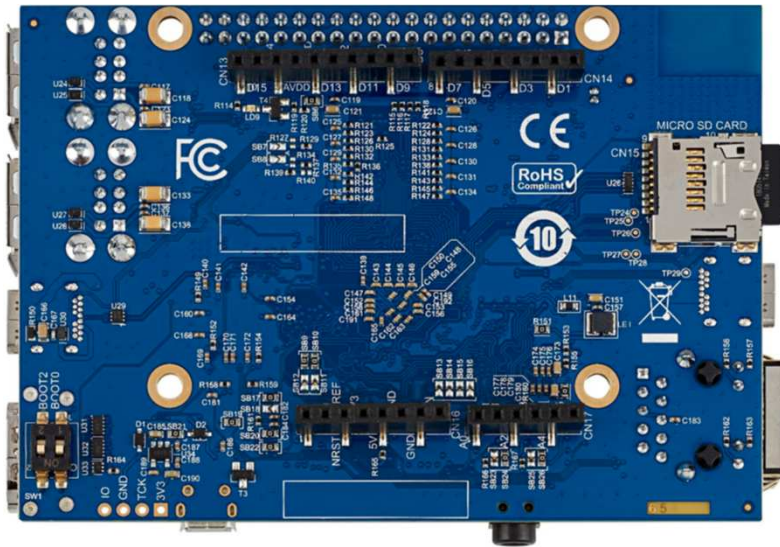


 **STM32 Open  
Development  
Environment**



# X-LINUX Software Expansion Package

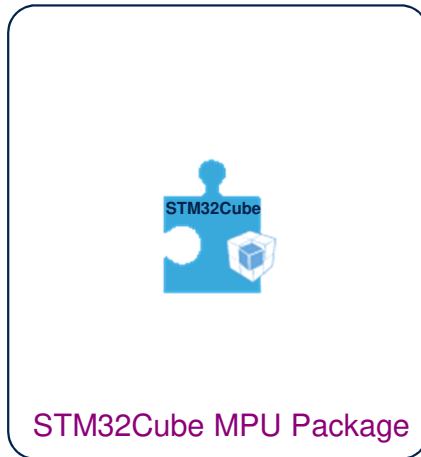
- X-LINUX Software Expansion package is developed on A7 core of STM32MP1 for stand alone applications and applications using X-NUCLEO boards or Raspberry Pi HAT boards
- X-NUCLEO expansion board can be plugged on Arduino connector or Raspberry Pi HAT board can be plugged on the 40-pin connector available on the STM32MP1-DK2 board



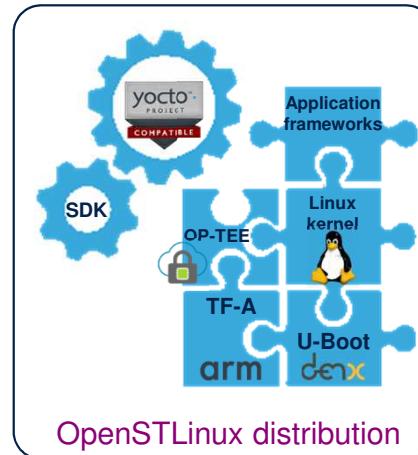
# Dual Core STM32MP1



Cortex-M4 core

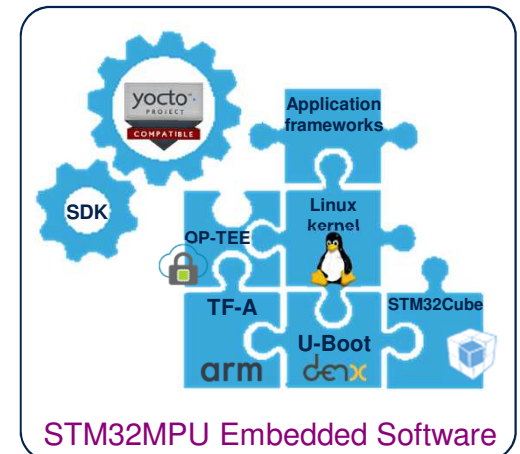


Dual Cortex-A7 cores

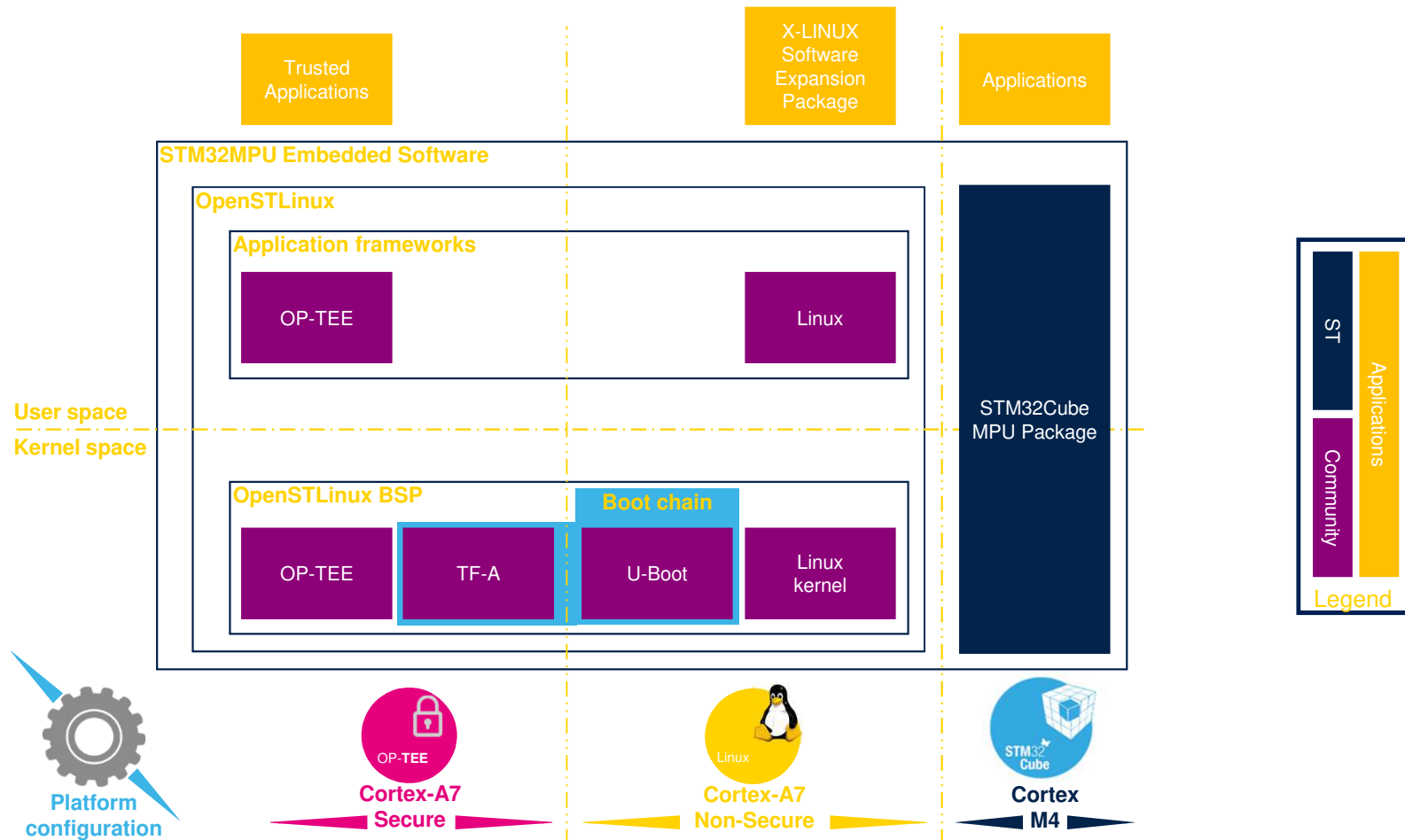


OpenSTLinux

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# STM32MPU Embedded Software





# Software packages presentation

- **Starter Package**

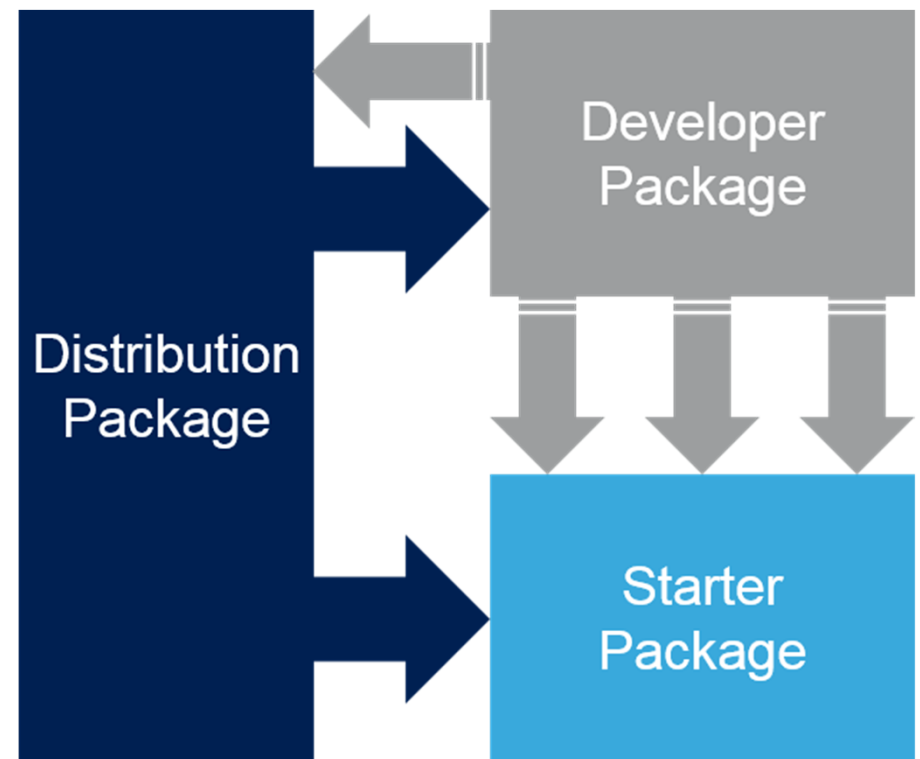
- Used to quickly and easily start with any STM32MP microprocessor device. The Starter package is generated from the Distribution Package.

- **Developer Package**

- Used to add your own developments on top of the STM32MPU Embedded Software distribution, or to replace the Starter package pre-built binaries. The Developer Package is generated from the Distribution Package.

- **Distribution Package**

- Used to create your own Linux® distribution, your own Starter package and your own Developer Package.



**More info:**

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