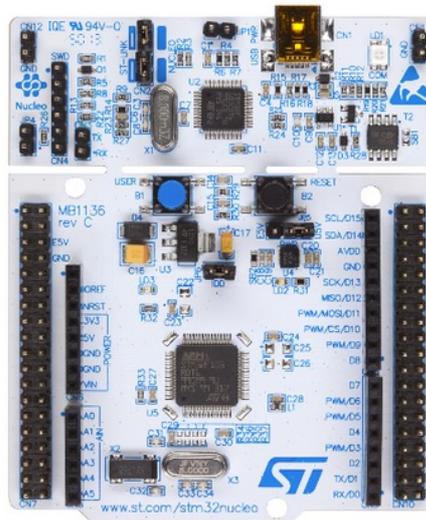


## How to use NUCLEO-L152RE and Mbed



- [What is Mbed](#)
- [Update the FW on NUCLEO-L152RE](#)
- [SW examples](#)
- [Export your programs to KEIL, IAR, etc](#)
- [A minimum debug using pc.printf](#)
- [How to use ST Link Utility](#)
- [How to update KEIL v.5.10.0.2 for supporting STM32L152RE using the Device Family Pack](#)
- [Update the USB driver for ST-LINK-v2](#)
- [LINKs](#)

## What is Mbed

The **mbed** development platform is the fastest way to create products based on ARM microcontrollers.

The project is being developed by **ARM**, its Partners and the contributions of the global mbed Developer Community.

In practice Mbed is online compiler tool.

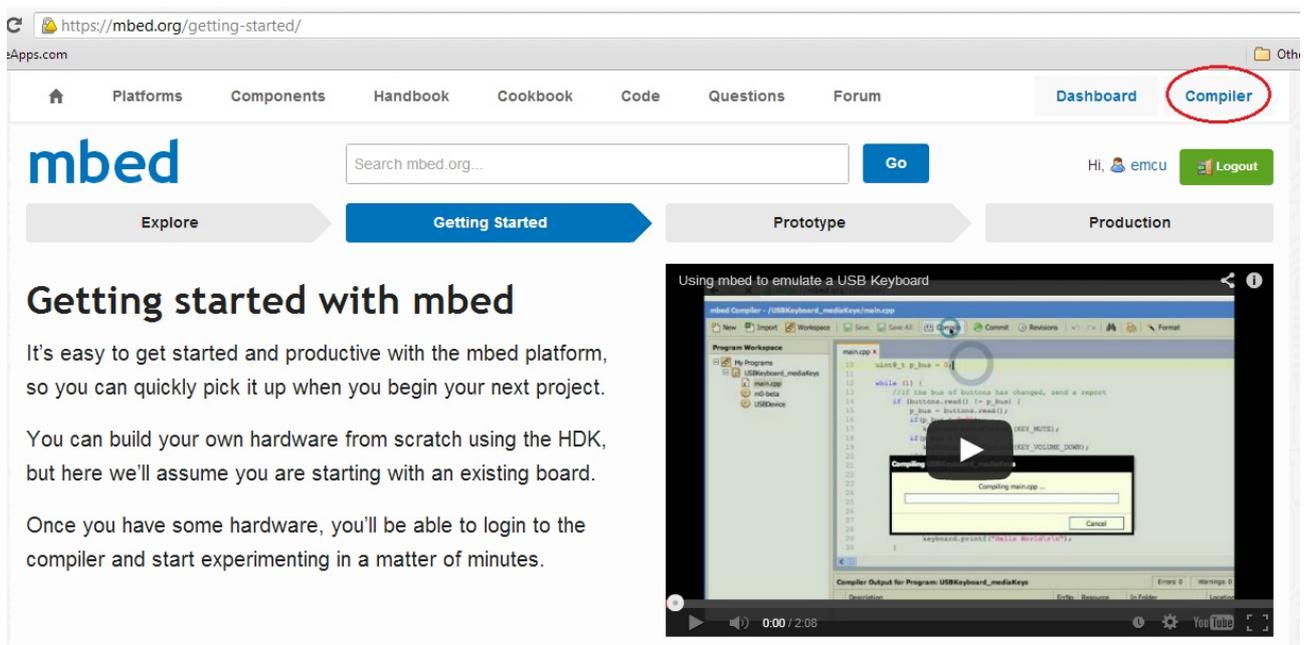
This means that to use it, it is necessary to have a Internet connection.

More info are [here](#).

First you must [register on Mbed](#).

Next follow the [getting started example](#).

The **online compiler** is in the first page after you are login on Mbed, see below.



The screenshot shows the Mbed website interface. At the top, there is a navigation bar with links for Platforms, Components, Handbook, Cookbook, Code, Questions, Forum, Dashboard, and Compiler (circled in red). Below the navigation bar is the Mbed logo and a search bar. The main content area features a 'Getting started with mbed' section with the text: 'It's easy to get started and productive with the mbed platform, so you can quickly pick it up when you begin your next project. You can build your own hardware from scratch using the HDK, but here we'll assume you are starting with an existing board. Once you have some hardware, you'll be able to login to the compiler and start experimenting in a matter of minutes.' To the right of this text is a video player titled 'Using mbed to emulate a USB Keyboard' showing a code editor with C++ code and a 'Compiling' dialog box.

## Update the FW on NUCLEO-L152RE

- First install the **ST-Link driver** ([stlinknucleodiversigned.zip](#))
- Next go [here](#) and download the **FW update** ([stlinkv2m4upgrade.zip](#)).

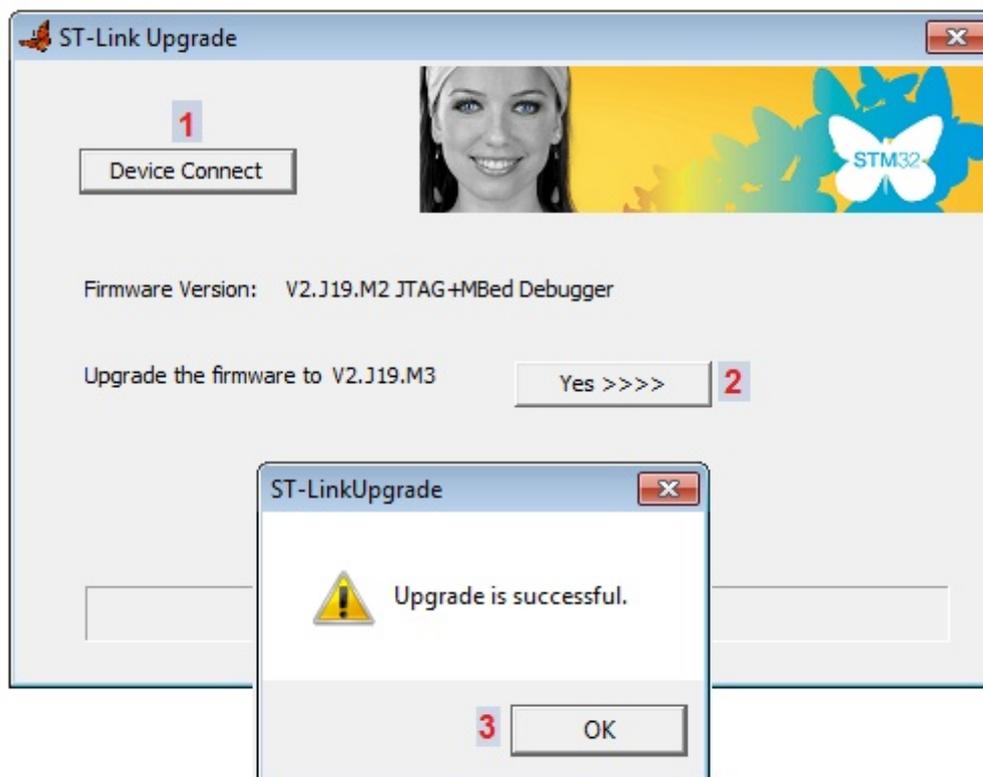
### ST-Link driver Installation

1. Extract ([stlinknucleodiversigned.zip](#)) and run either dpinst\_amd64.exe (for 64bit PC) or dpinst\_x86.exe (for standard 32bit PC) depending on whether you are on a 64bit machine.
2. Follow the prompts

### FW update

Connect the NUCLEO-L152 to the PC and extract and run (also with ADMINISTRATOR privilege) **ST-LinkUpgrade.exe** ([stlinkv2m4upgrade.zip](#)) and follow the prompts, see below.

| Name  | Date modified    | Type                  | Size   |
|---|------------------|-----------------------|--------|
|  ST-LinkUpgrade.exe    | 13/02/2014 15:44 | Application           | 659 KB |
|  STLinkUSBDriver.dll | 13/02/2014 15:44 | Application extens... | 84 KB  |



By: [www.emcu.it](http://www.emcu.it) see [here](#)



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In case of problems do this:

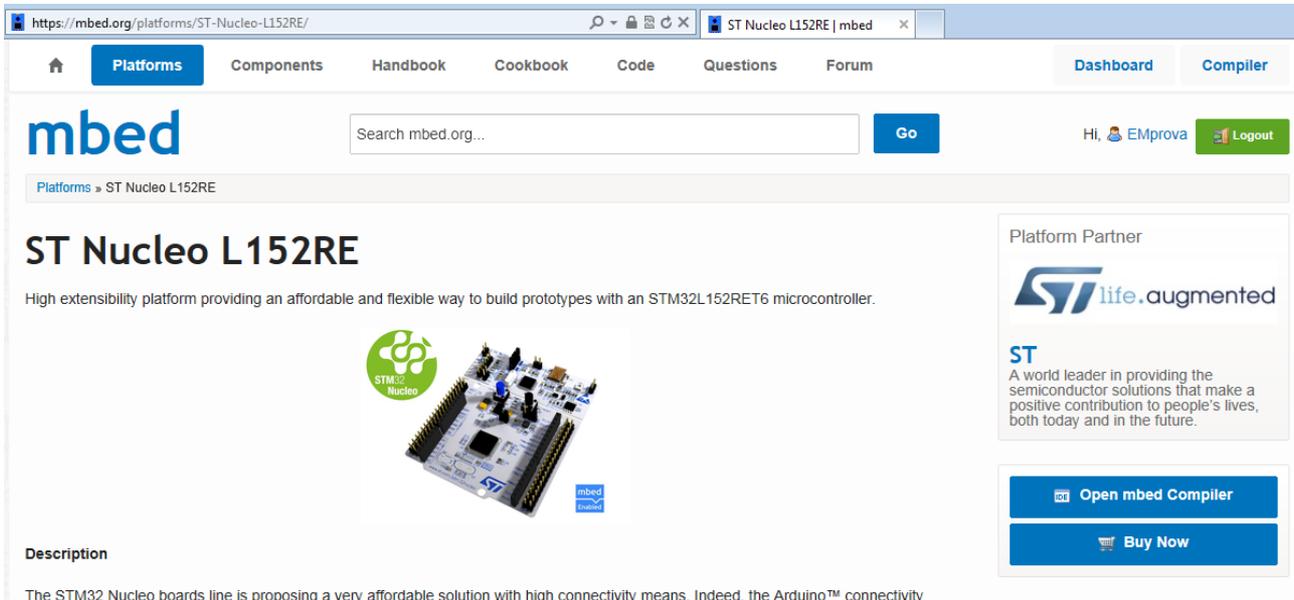
Execute the: [Update the USB driver for ST-LINK-v2](#)

---

Clik [HERE](#) to go on top

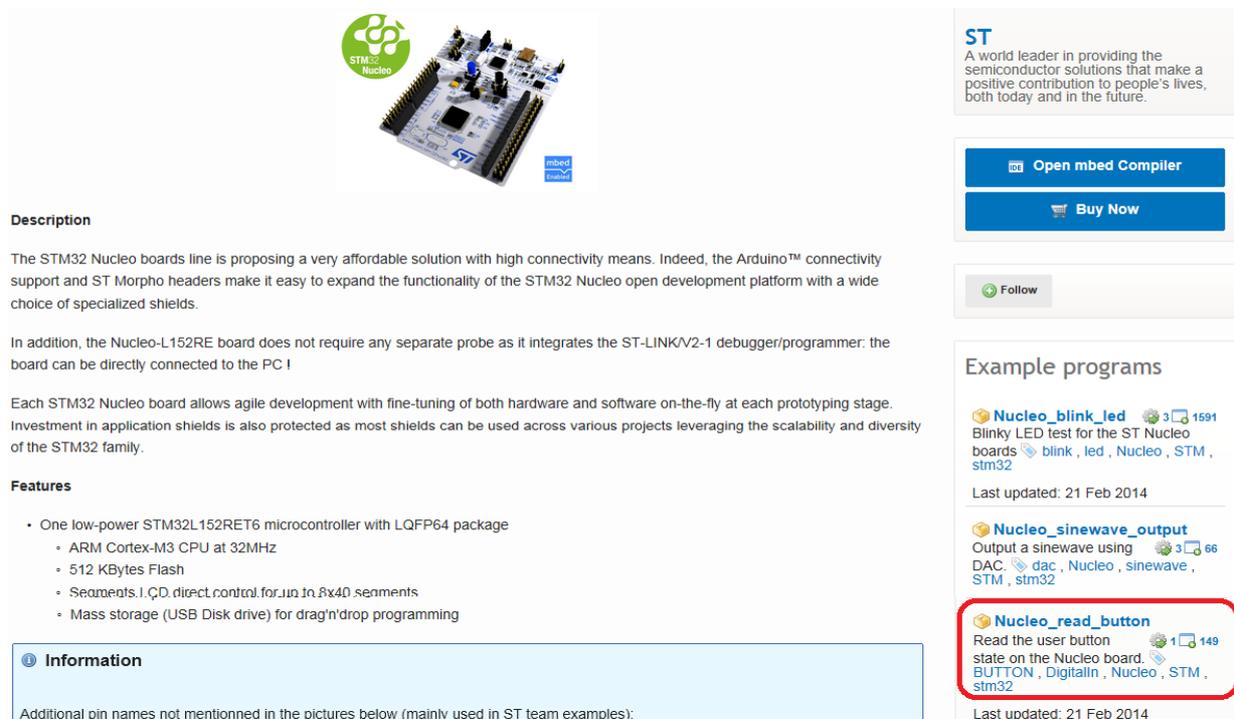
## SW examples

To use the **NUCLEO-L152RE Mbed examples** you must before [register on mbed](#) and: [add the platform to your compiler](#), chose **ST NUCLEO L152RE**, see below.



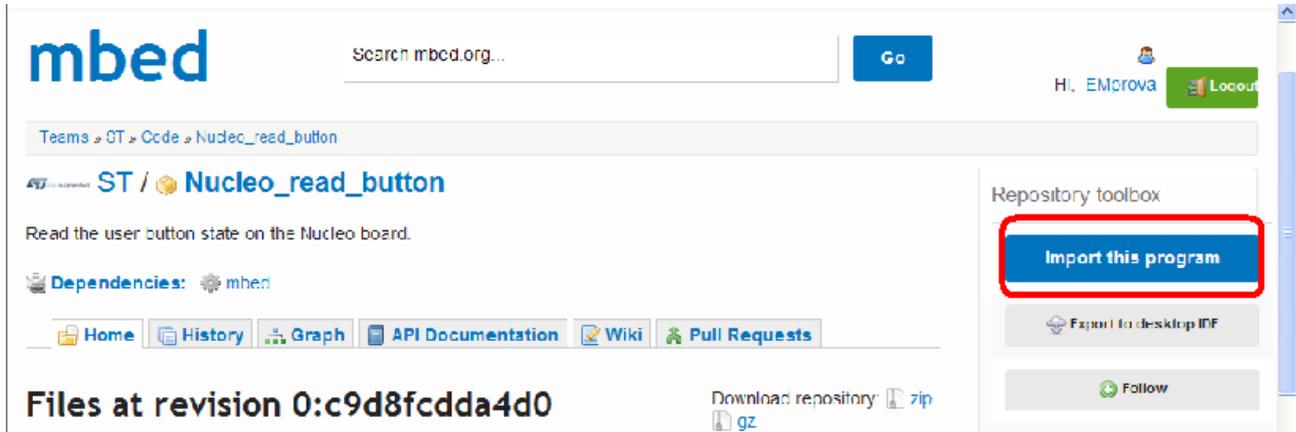
The screenshot shows the mbed.org website interface. The browser address bar displays "https://mbed.org/platforms/ST-Nucleo-L152RE/". The navigation menu includes "Platforms", "Components", "Handbook", "Cookbook", "Code", "Questions", and "Forum". The main content area features the "mbed" logo, a search bar, and a user profile for "EMprova". The page title is "ST Nucleo L152RE". Below the title, there is a description: "High extensibility platform providing an affordable and flexible way to build prototypes with an STM32L152RET6 microcontroller." An image of the STM32 Nucleo board is shown with a green "STM32 Nucleo" badge and an "mbed Enabled" badge. To the right, there is a "Platform Partner" section for "ST life.augmented" with a description of ST as a world leader in semiconductor solutions. At the bottom of this section are two buttons: "Open mbed Compiler" and "Buy Now".

Now we need to use the example: [Nucleo\\_read\\_button](#) for do this, select it, see below.

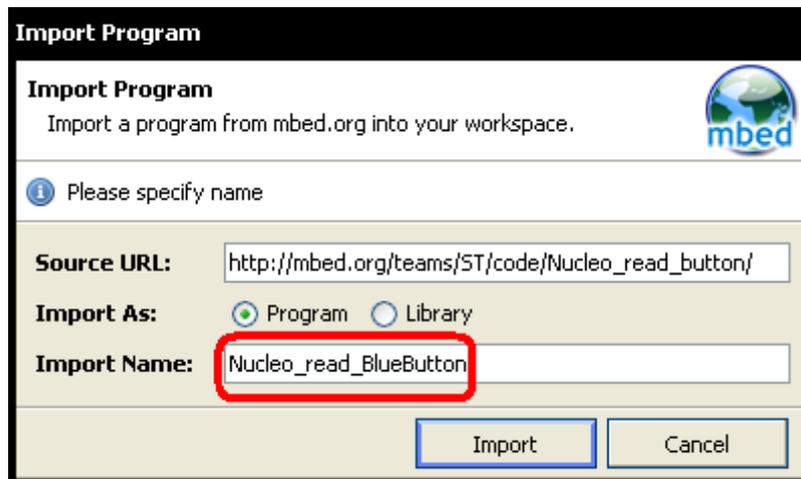


This screenshot shows a detailed view of the ST Nucleo L152RE platform page. It includes the same navigation and search elements as the previous screenshot. The "Description" section states: "The STM32 Nucleo boards line is proposing a very affordable solution with high connectivity means. Indeed, the Arduino™ connectivity support and ST Morpho headers make it easy to expand the functionality of the STM32 Nucleo open development platform with a wide choice of specialized shields." It also mentions that the board does not require a separate probe as it integrates the ST-LINK/V2-1 debugger/programmer. The "Features" section lists: "One low-power STM32L152RET6 microcontroller with LQFP64 package", "ARM Cortex-M3 CPU at 32MHz", "512 KBytes Flash", "Segments I/O direct control for up to 8x40 segments", and "Mass storage (USB Disk drive) for drag'n'drop programming". On the right, there is a "Follow" button and a section titled "Example programs". The "Nucleo\_read\_button" example is highlighted with a red box. Its description is: "Read the user button state on the Nucleo board. BUTTON, DigitalIn, Nucleo, STM, stm32". It has 149 views and was last updated on 21 Feb 2014.

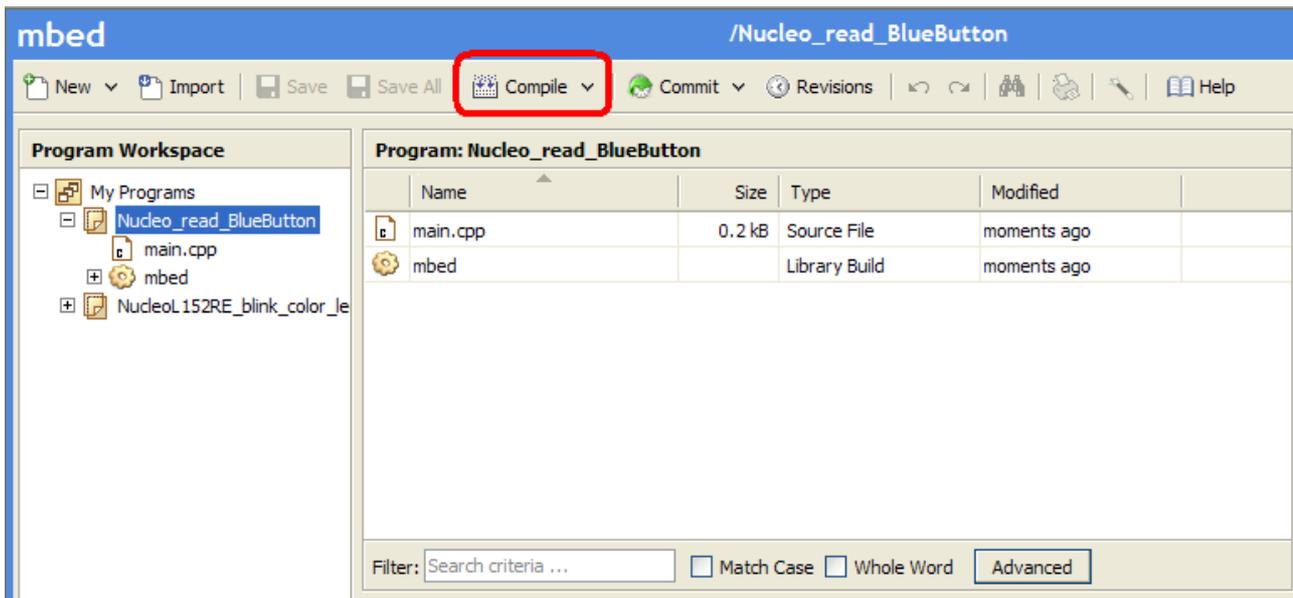
From the new window that appears, select:  
**Import this program**  
see below.



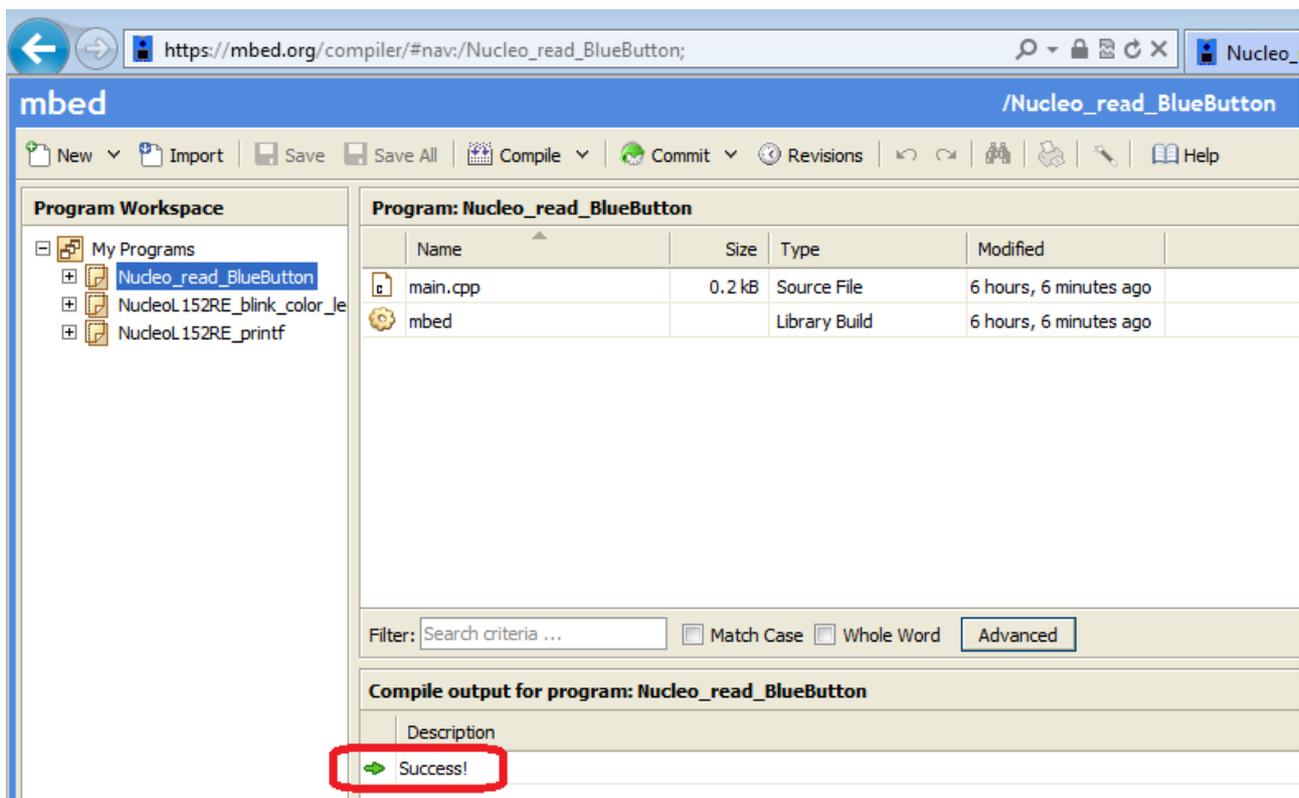
From the new window that appears, set a name for the project and select IMPORT, see below.



After importing the project, **click on the Compile** icon, see below.



You must see: **Success!**  
See below.



Save the **bin** file in a directory.

By: [www.emcu.it](http://www.emcu.it) see [here](#)

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Now for programming NUCLEO-L152RE use [ST-LINK-Utility](#).  
At the end of the programming you must see the green LED blinking.

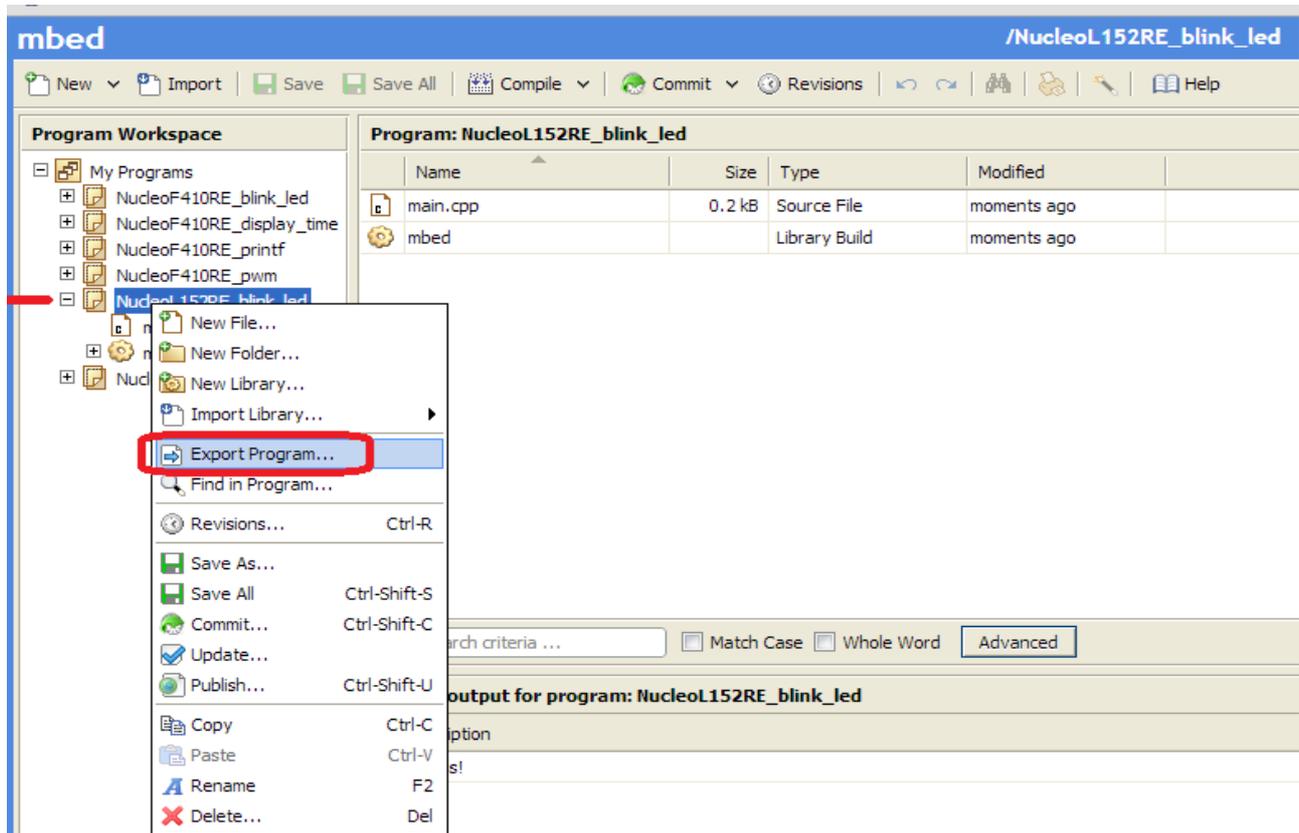
---

Clik [HERE](#) to go on top

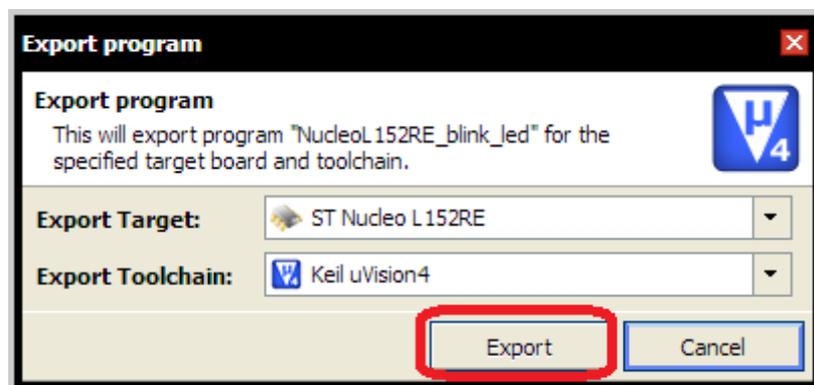
## Export your programs to KEIL, IAR, etc

**First:** select the program that you need to export..

**Second:** click on it with the right mouse button and from the window that appears select Export Program, see below.



From the new window that appears, select the name of the toolchain and click on EXPORT button.



## A minimum debug using pc.printf

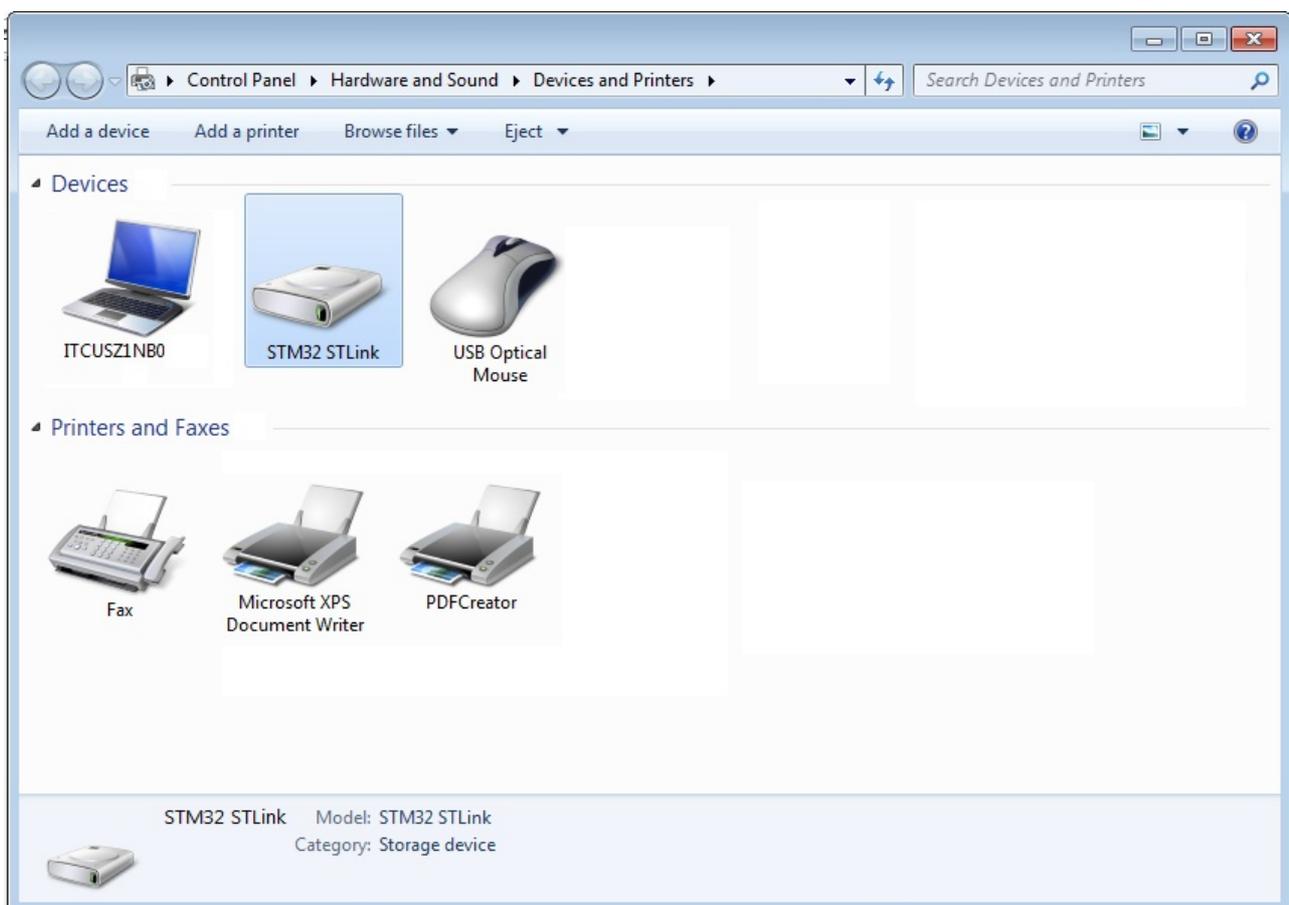
Up to now it is not present a serious debug tool in Mbed, the only possibility that you have is to use the **pc.printf** or **printf** that sends a message (text, variable, etc) via USB port to the PC.

The PC see the NUCLEO-L152RE as a **Virtual COM Port**.

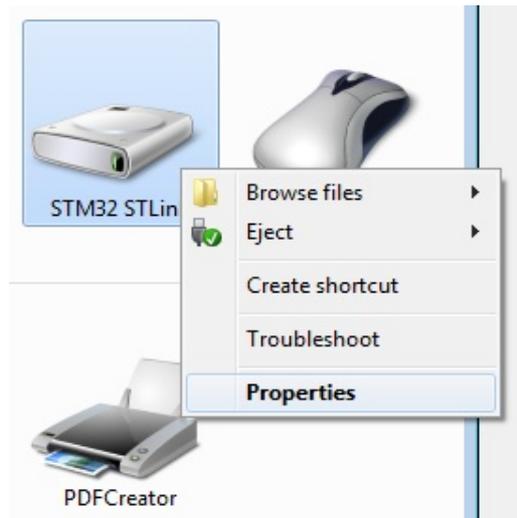
To check if the **Virtual COM Port** is installed correctly on **Windows 7**, follow the instructions below.

Select: **START -> Device and Printer**

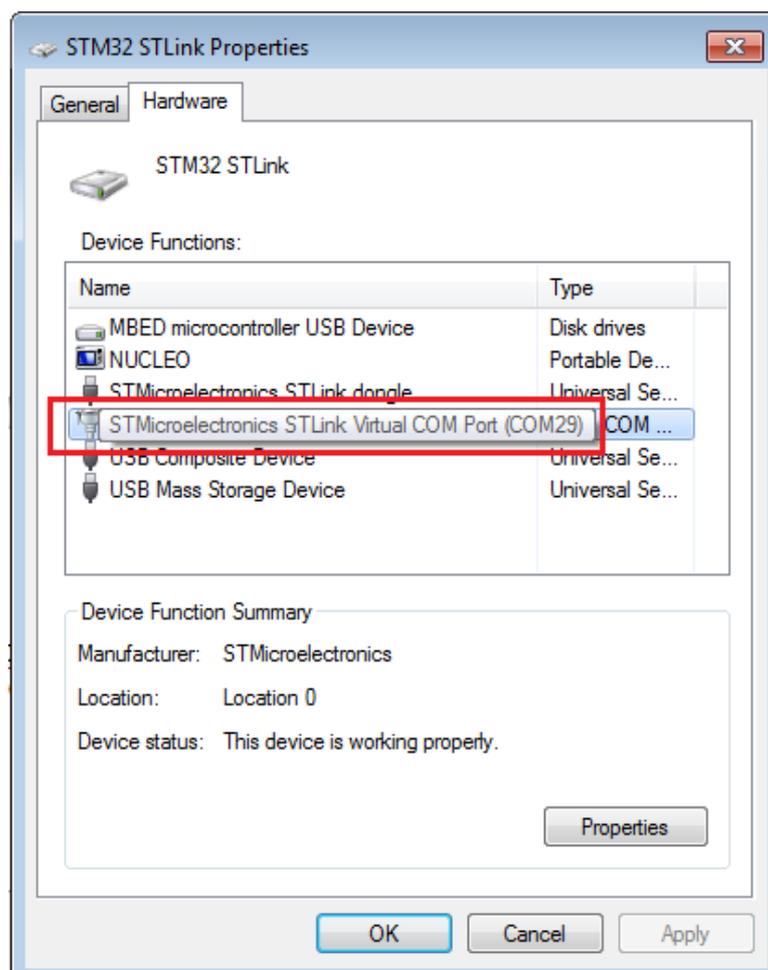
You must see something like below.



Now select the **STM32 STLink** and click on it using the right button of the mouse. From the window that appears, select **Properties**, see below.

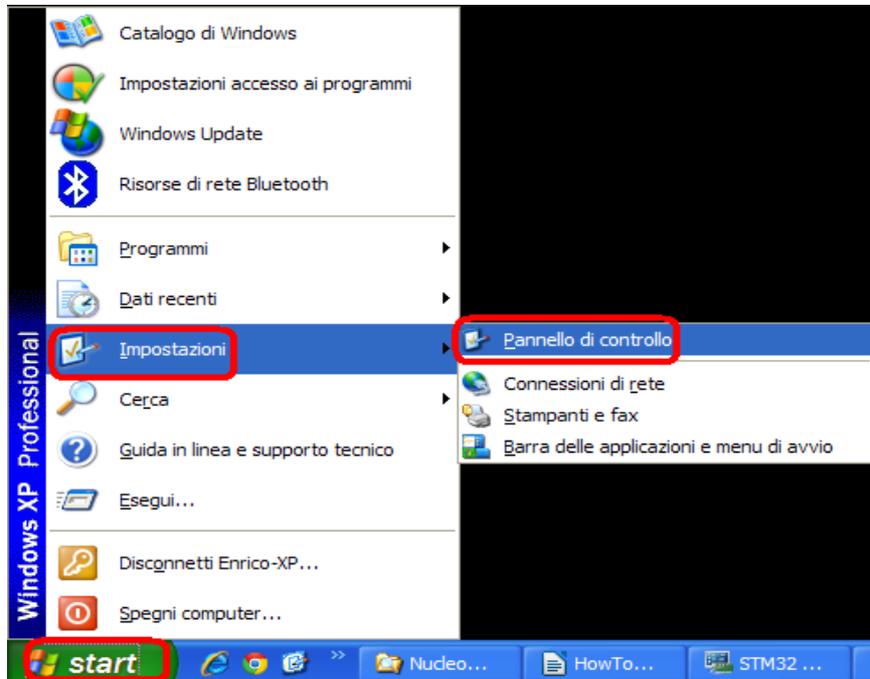


From the window that appears, select **Hardware**.  
You must see something like below.  
My Virtual COM Port is **COM29**.

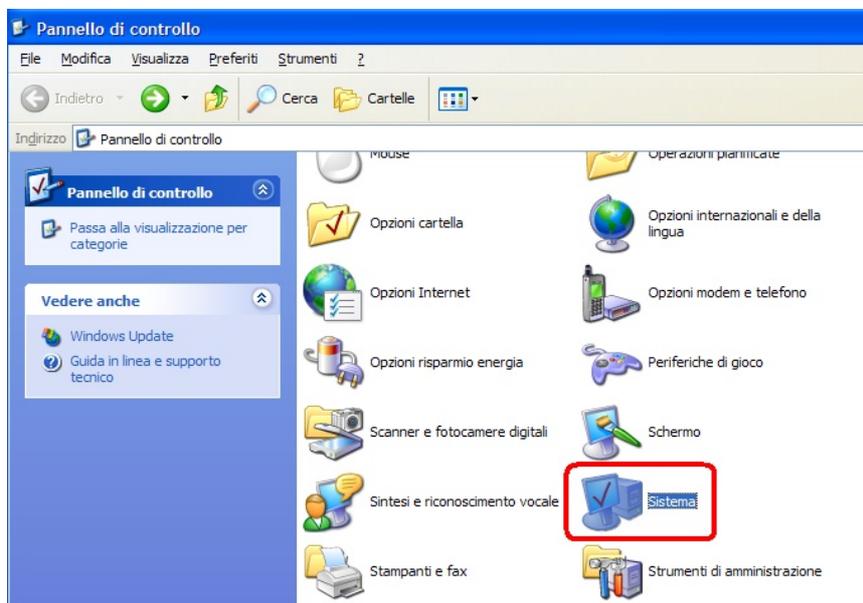


To check if the **Virtual COM Port** is installed correctly on **Windows XP** , follow the instructions below.

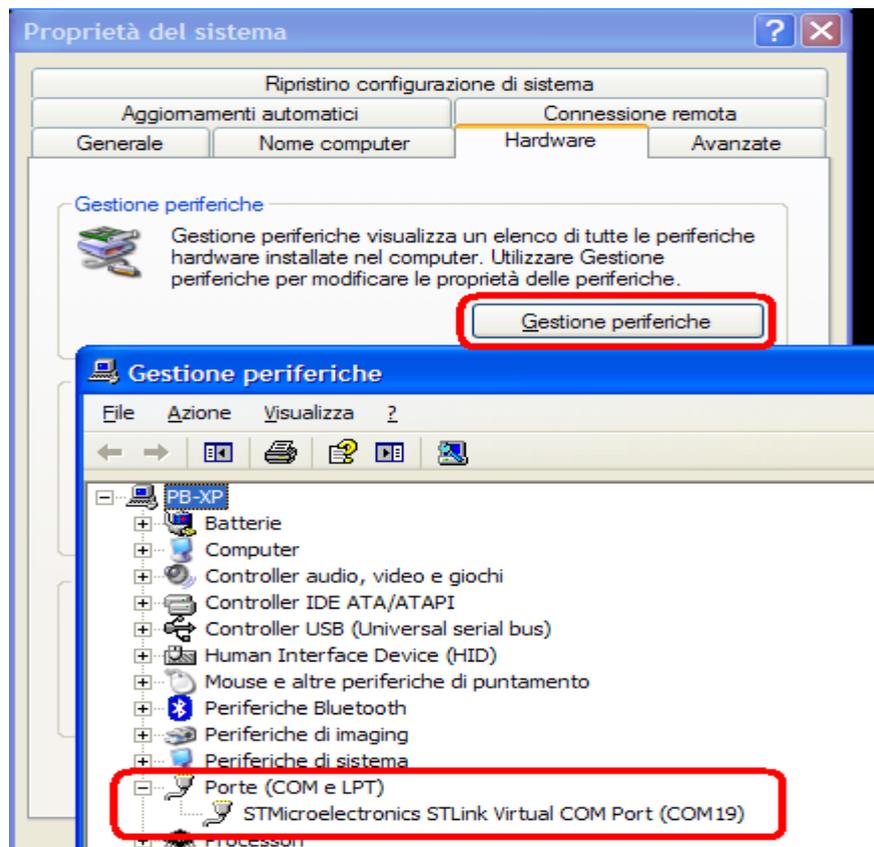
**START** → **Impostazioni** → **Pannello di Controllo**



From **Pannello di Controllo** select **Sistema**, see below.



From the new window that appears, select **Gestione Periferiche** and a new window appear. From this window select **Porte (COM e LPT)**, see below.



At this point you must see the STLink Virtual Com Port, in my case is COM19.

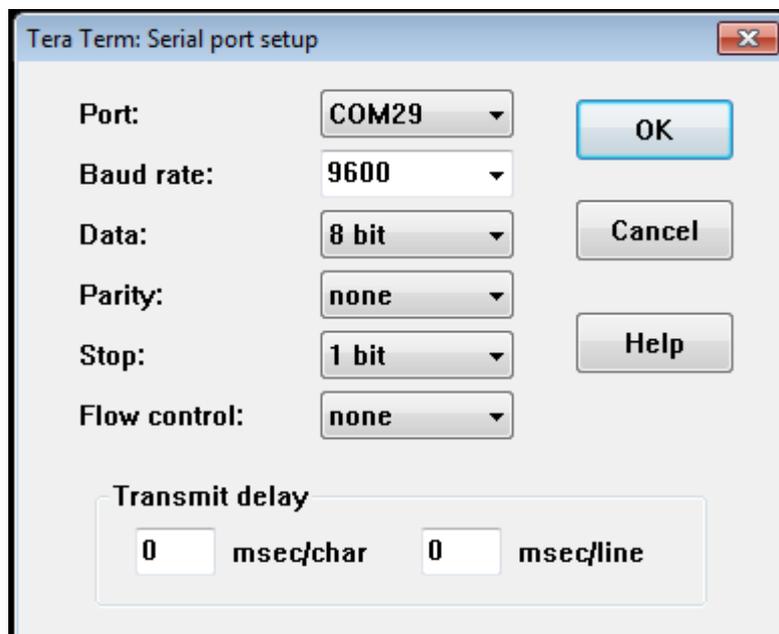
Now use the example **Nucleo\_printf** and **programming** your **Nucleo-L152RE**.  
Below there is the content of **main.cpp**

```
#include "mbed.h"
//-----
// Hyperterminal configuration
// 9600 bauds, 8-bit data, no parity
//-----
Serial pc(SERIAL_TX, SERIAL_RX);

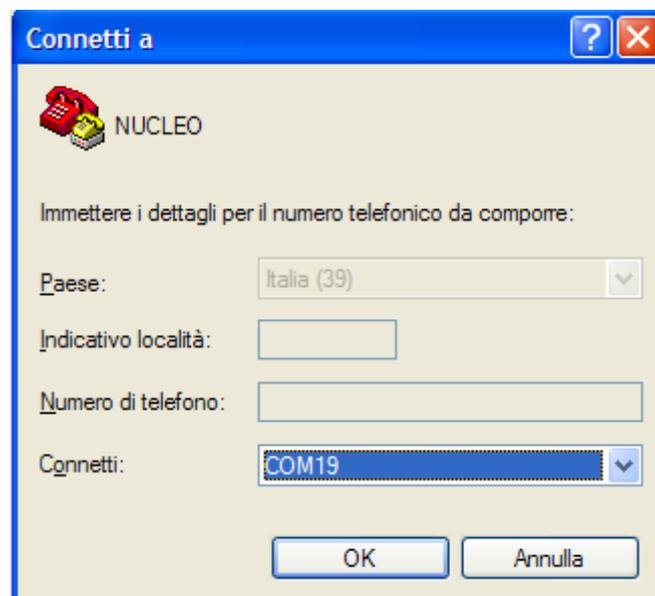
DigitalOut myled(LED1);

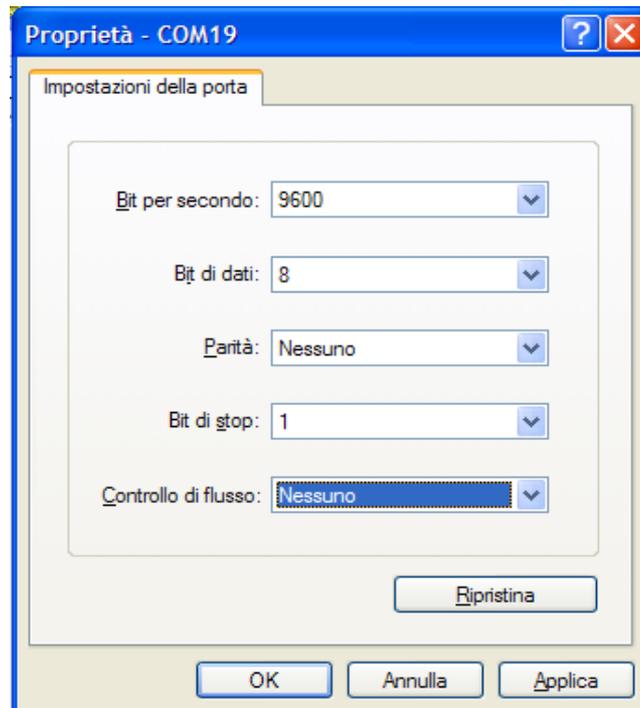
int main() {
    int i = 1;
    pc.printf("Hello World !\n");
    while(1) {
        wait(1);
        pc.printf("This program runs since %d seconds.\n", i++);
        myled = !myled;
    }
}
```

Configure your **TeraTerm** (on **Windows 7**) using the following parameters:

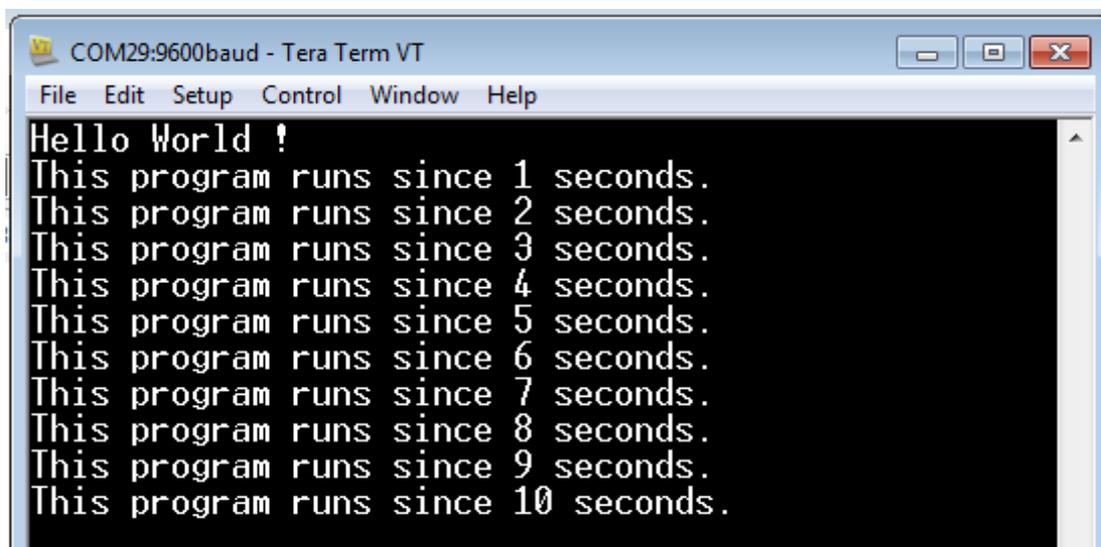


On **Windows XP** use **HyperTerminal** and configure it how to show below.

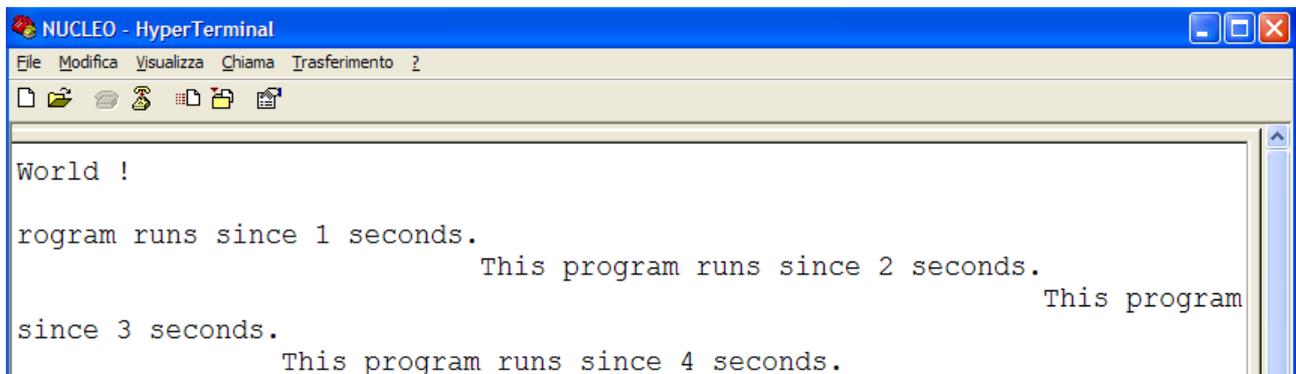




On your PC, you must see something like below, on **Windows 7** (Tera Term).



On your PC, you must see something like below, on **Windows XP** (Hyper Terminal).

A screenshot of a HyperTerminal window titled "NUCLEO - HyperTerminal". The window has a menu bar with "File", "Modifica", "Visualizza", "Chiama", and "Trasferimento ?". Below the menu bar is a toolbar with icons for file operations. The main text area contains the following output:

```
World !  
rogram runs since 1 seconds.  
                This program runs since 2 seconds.  
                This program  
since 3 seconds.  
                This program runs since 4 seconds.
```

And on the **NUCLEO-L152RE** you must see the **green led** that **flashing**.

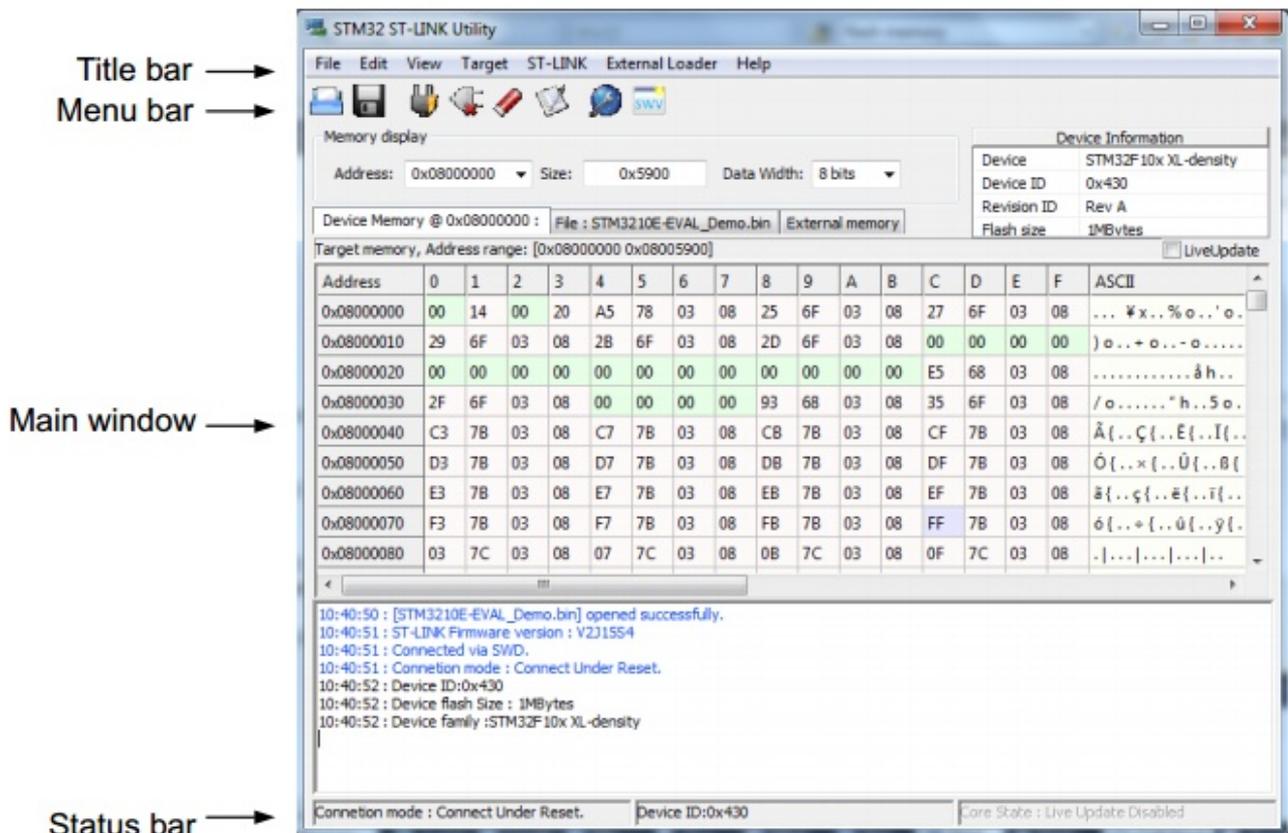
## How to use ST-Link-Utility

The STM32 ST-Link Utility software facilitates fast in-system programming of the STM32 microcontroller families in both development and production environments via the ST-Link tool.

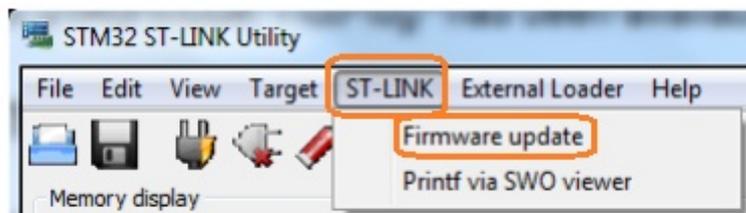
The reference page is:

<http://www.st.com/internet/evalboard/product/251168.jsp>

This tool is compatible with ST-LINK and ST-LINKv2.

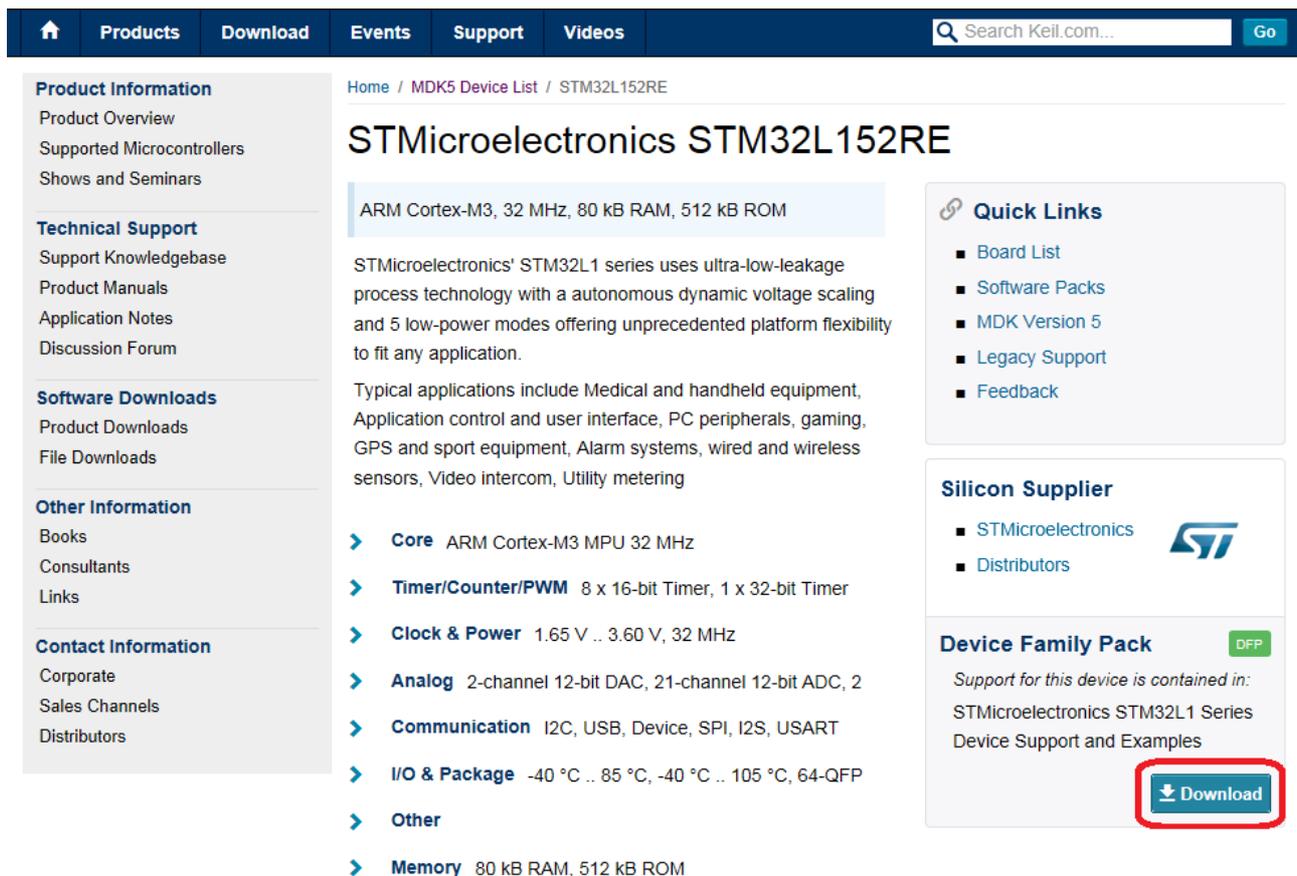


To update the firmware on ST-Link select the menù show below.



## How to update KEIL v.5.10.0.2 for support STM32L152RE using the Device Family Pack

On the KEIL v.5.10.0.2 is not present the STM32L152RE.  
To add the support to the STM32L152RE it is necessary to download and install the Device Family Pack that is [here](#). See below.



The screenshot shows the product page for the STM32L152RE on the Keil website. The page is titled "STMicroelectronics STM32L152RE" and features a navigation menu at the top with options like "Products", "Download", "Events", "Support", and "Videos". A search bar is also present. The main content area includes a sidebar with categories like "Product Information", "Technical Support", "Software Downloads", "Other Information", and "Contact Information". The central content area displays the product name, a key specification box for "ARM Cortex-M3, 32 MHz, 80 kB RAM, 512 kB ROM", and a detailed description of the device's features and typical applications. A "Quick Links" section on the right provides shortcuts to "Board List", "Software Packs", "MDK Version 5", "Legacy Support", and "Feedback". Below this, there is a "Silicon Supplier" section for STMicroelectronics and a "Device Family Pack" section with a "Download" button highlighted by a red box.

After the download, simply click on the file for start the update.

## Update the USB driver for ST-LINK-v2

### NOTE:

Do this update only if the: [Update the FW on NUCLEO-L152RE](#) fails.

Update the usb driver for ST-LINK-v2, chose it from the list below.

[STSW-LINK003](#) ST-LINK/V2 USB driver for Windows 7, Vista and XP

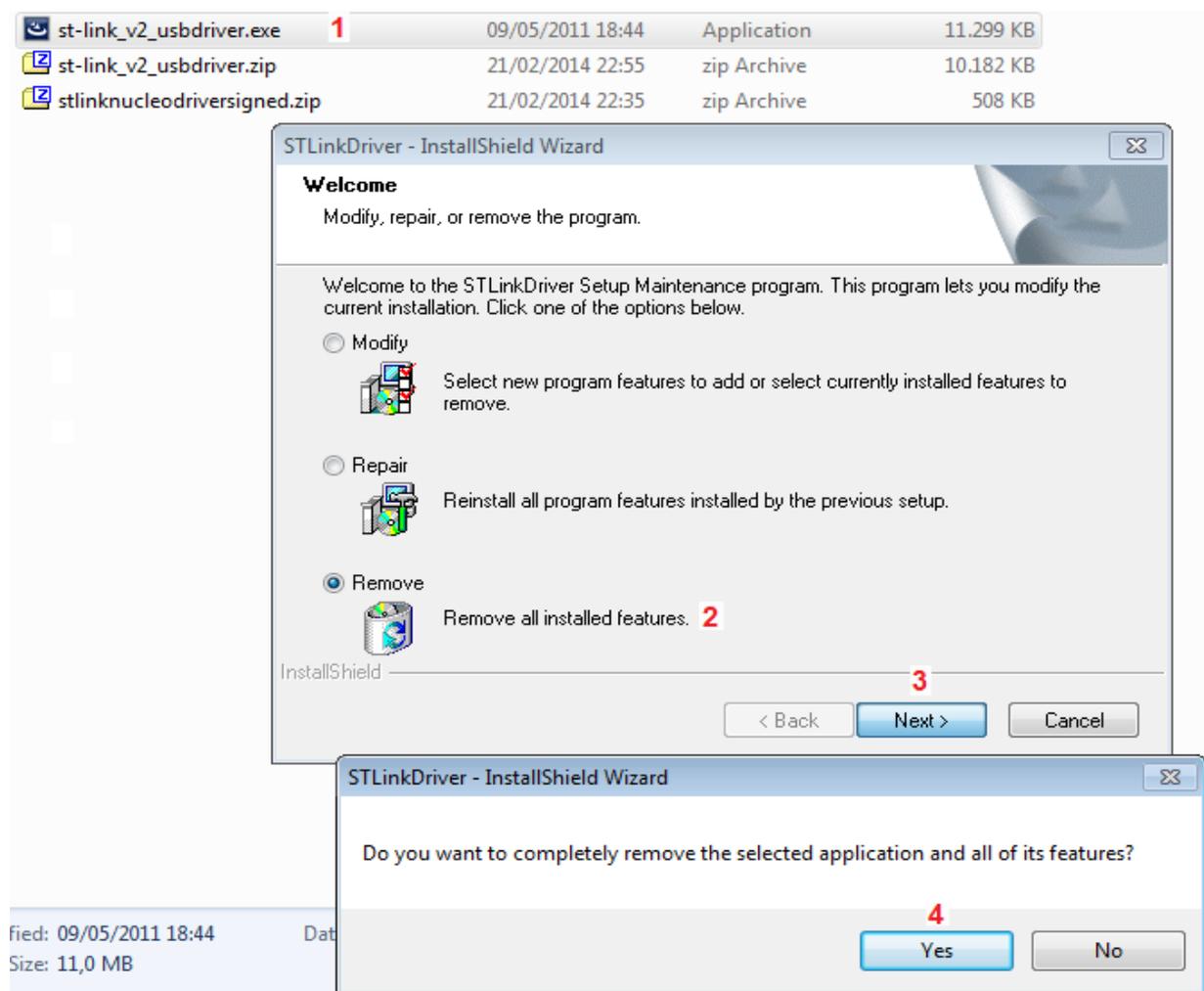
[STSW-LINK006](#) ST-LINK/V2 USB driver for Windows 8

Unzip the file and run it, with the privilege of ADMINISTRATOR, the file is:

**st-link\_v2\_usbdriver.exe**

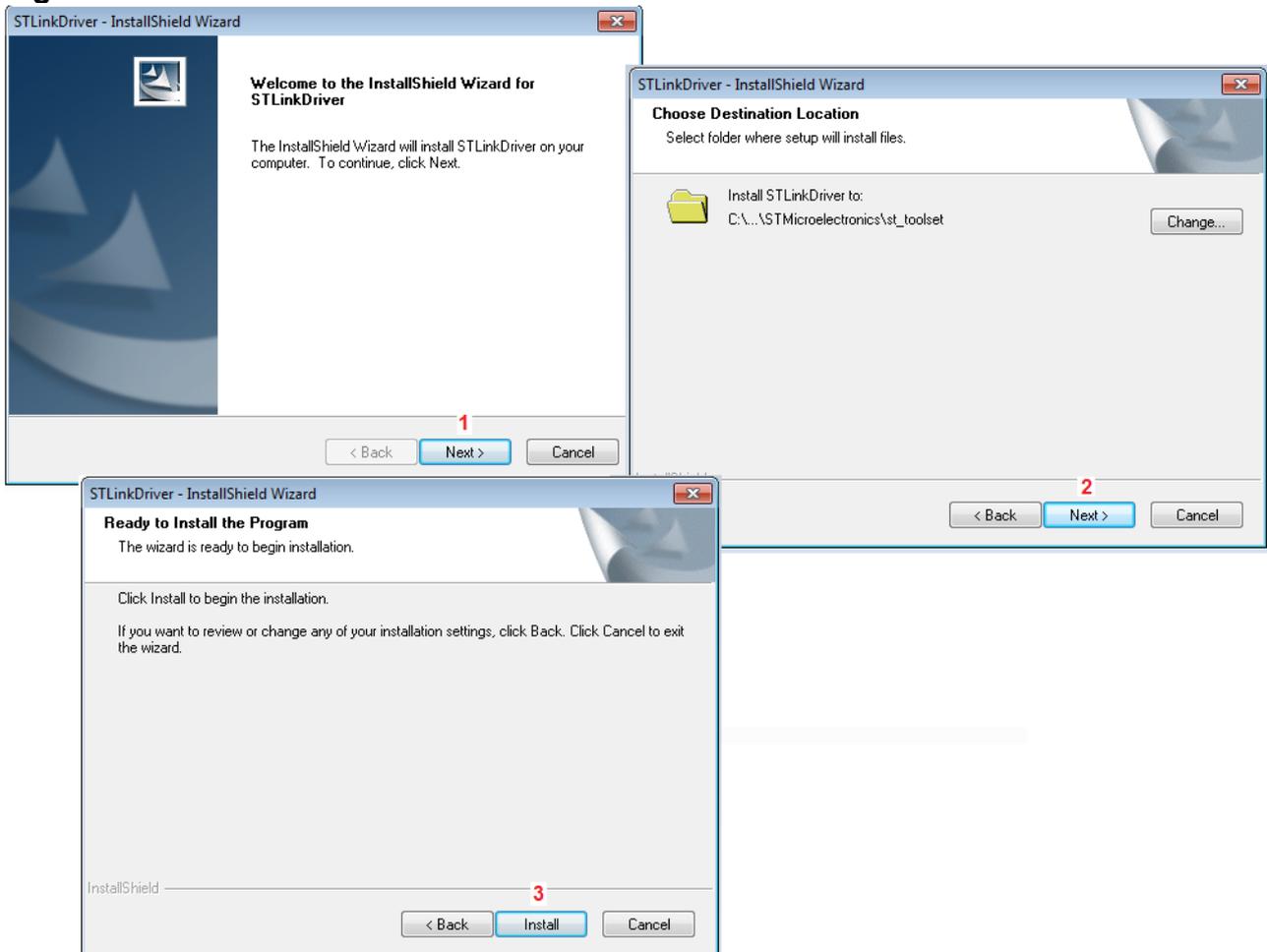
If the USB drive **is already installed** on your PC, first remove it (Fig.1) and next re-install it (Fig.2), see below.

### Fig.1 – remove the previous installation

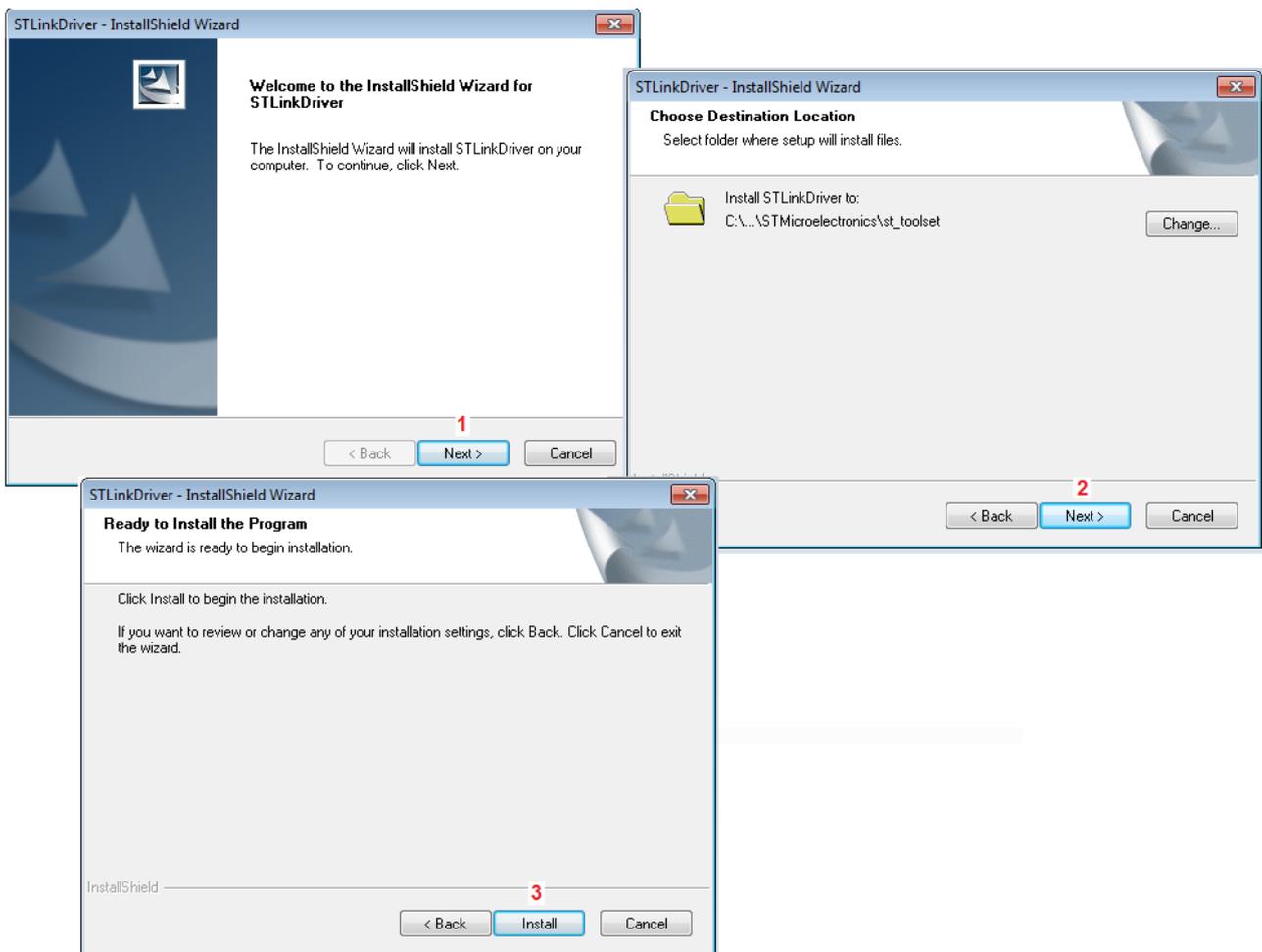


Now re-run the **st-link\_v2\_usbdriver.exe** and follow the steps below (1...3).

**Fig.2**



If the USB drive **is not already installed** on your PC, follow the steps below (1...3).



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## LINKs

- [NUCLEO eva board](#)
- For who has Windows 7/8 we suggest **TeraTerm**  
[http://en.wikipedia.org/wiki/Tera\\_Term](http://en.wikipedia.org/wiki/Tera_Term)  
download it from this link: <http://tssh2.sourceforge.jp/index.html.en>
- From this [link](#) you find my doc, examples, etc, regarding **NUCLEO boards**.  
From this [link](#) you find the **Mbed NUCLEO-L152RE** doc, example, etc.
- **Mbed** [home page](#)
  - [General sw](#)
  - [Library](#), provides the C/C++ software platform and libraries to build your applications