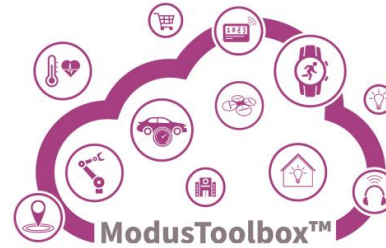


Getting Started with RDK3

Getting Started with CYB06447BZI-BLD53 Development Platform – **RDK3**



1.) Register or/and login to the Infineon website, press on „myInfineon“ tab.

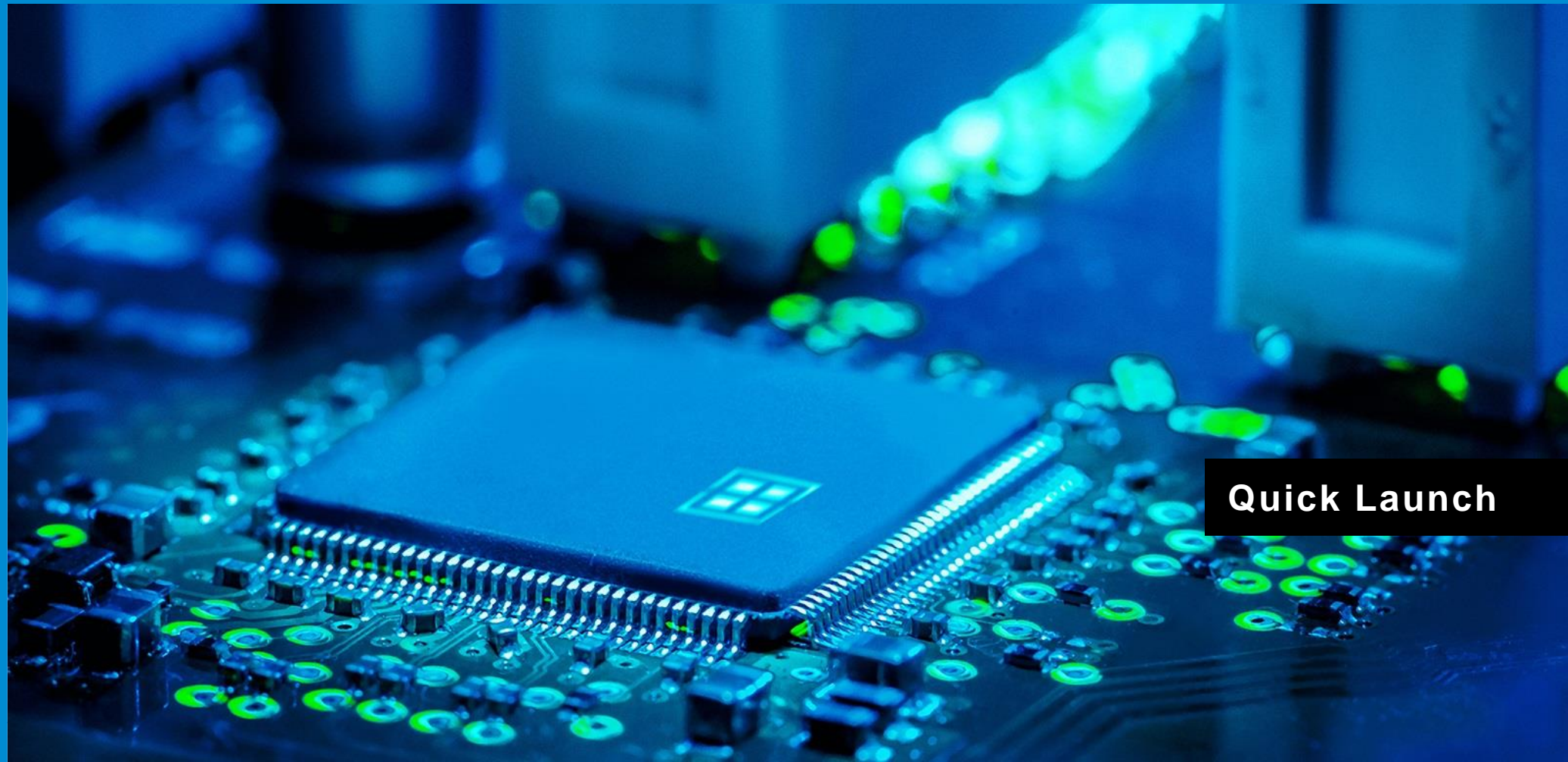
<https://www.infineon.com>

2.) Download and install the latest [ModusToolbox™](#) software.

3.) [Optional] Download and install your preferred terminal emulator, for example: [PuTTY](#), [TeraTerm](#), etc.



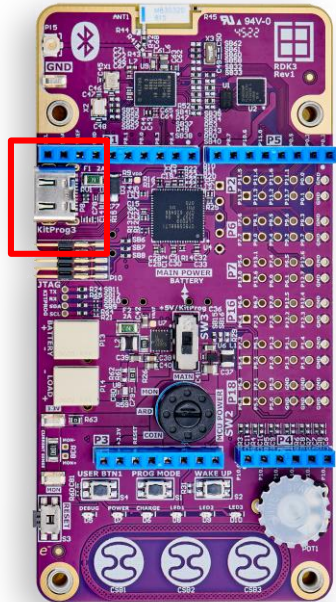
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Quick Launch

Connect the RDK3

Connect the RDK3 to your PC.



**Look for the USB-C
socket with a
marking "KitProg3"**



**Have a USB
Type-C cable**



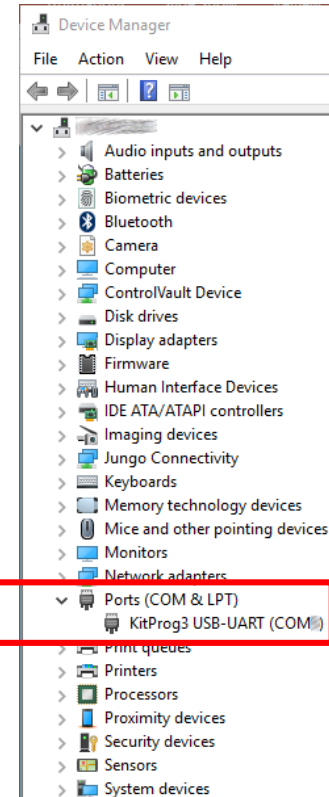
**Connect it
with your PC**

Connect the RDK3

Check if the RDK3 is ready.



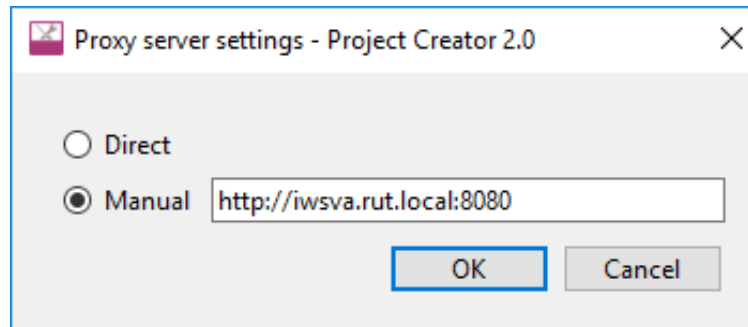
“POWER” and “DEBUG” LEDs must shine constantly. The “CHARGE” LED will be blinking if no battery is connected.



The “KitProg3” must be seen in the “Device Manager” window.

If you are working with your personal PC, (not the Rutronik provided Laptop PC) please skip this setup.

Open the File→New→ “ModusToolbox Application” → Settings → Proxy server settings and enter the proxy address: `http://iwsva.rut.local:8080`





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A close-up photograph of a microchip mounted on a circuit board. The chip is square with a grid of pins along its edges. The circuit board is populated with various electronic components, including capacitors and resistors. The entire image has a strong blue color cast.

The Provisioning of the RDK3

- The RDK3 is equipped with a PSoC™ 64 "Secure" MCU CYB06447BZI-BLD53.
- The PSoC™64 device must be provisioned with keys and policies before being programmed.
- If the unsigned or not properly signed image will be written to the RDK3 PSoC™64 – the microcontroller will not startup.
- You may also refer to the ["Secure Policy" Configurator guide](#).

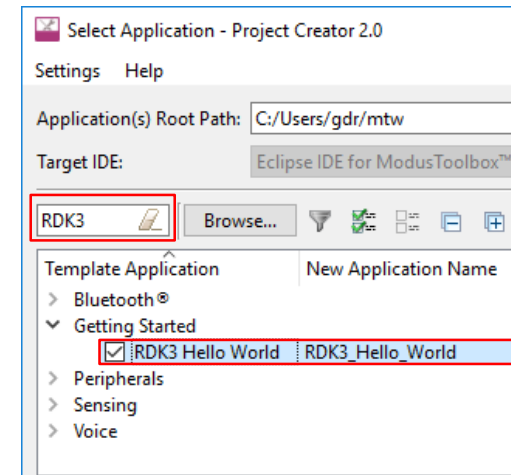
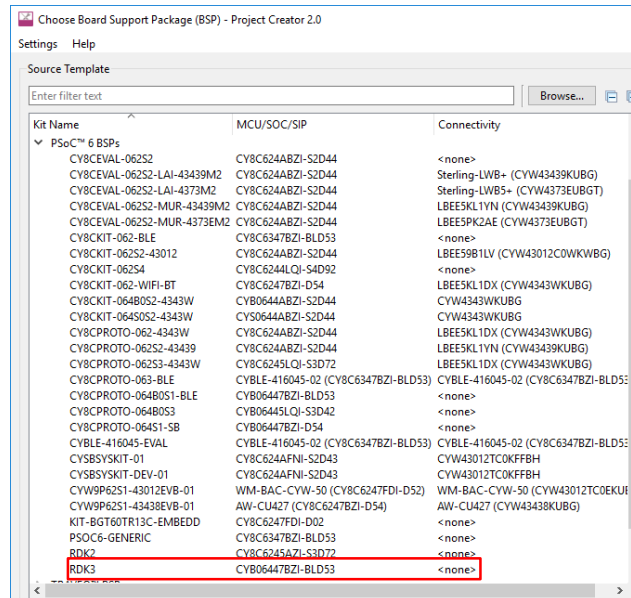
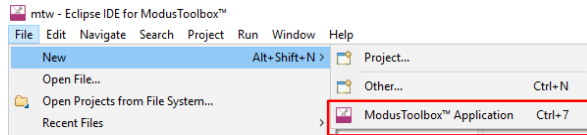
Additional Information

[PSoC™ 64 - Secured MCU](#)

[PSoC™ 64 Provisioning Specification](#)

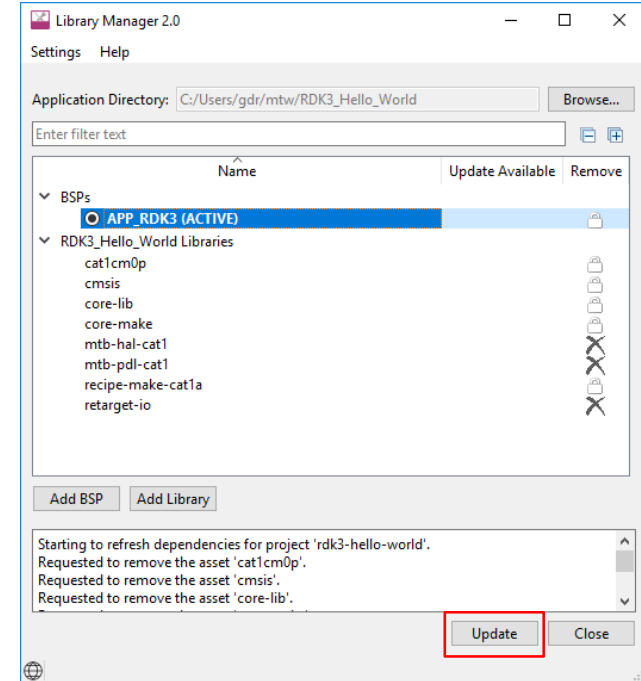
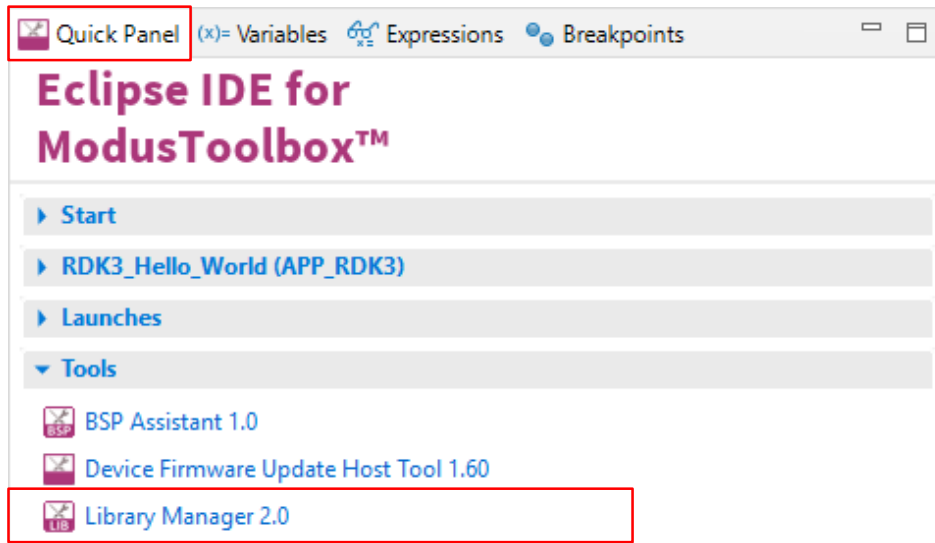
The Provisioning of the RDK3

- 1.) Open the “Project Creator” tool: File → New → ModusToolbox™ Application
- 2.) Select the “RDK3” BSP. It is in PSoC™ 6 BSPs list.
- 3.) Click on “Next”.
- 4.) Write a “RDK3” in a Search... window. Select the example from given categories list.
- 5.) Click on “Create”.



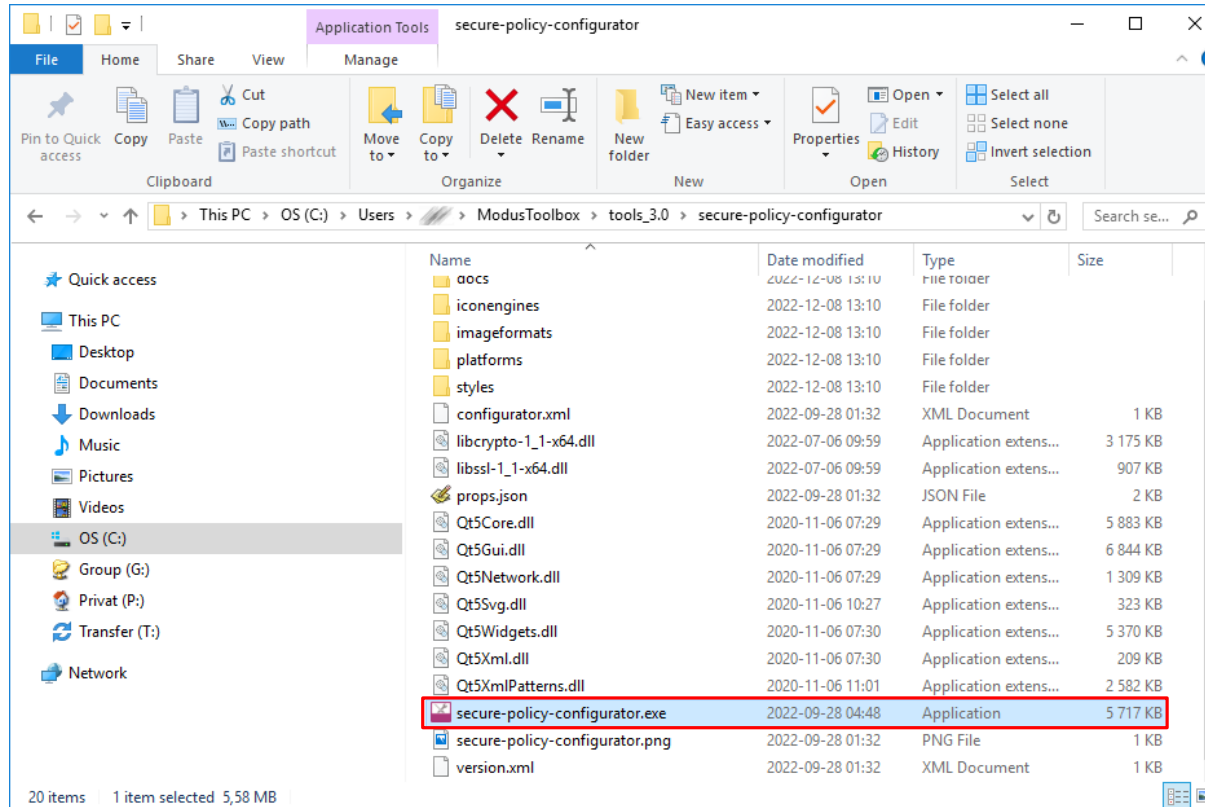
The Provisioning of the RDK3

6.) After project creation is finished - update libraries with “Library Manager” tool.



The Provisioning of the RDK3

7.) Load the “Secure Policy Configurator”.

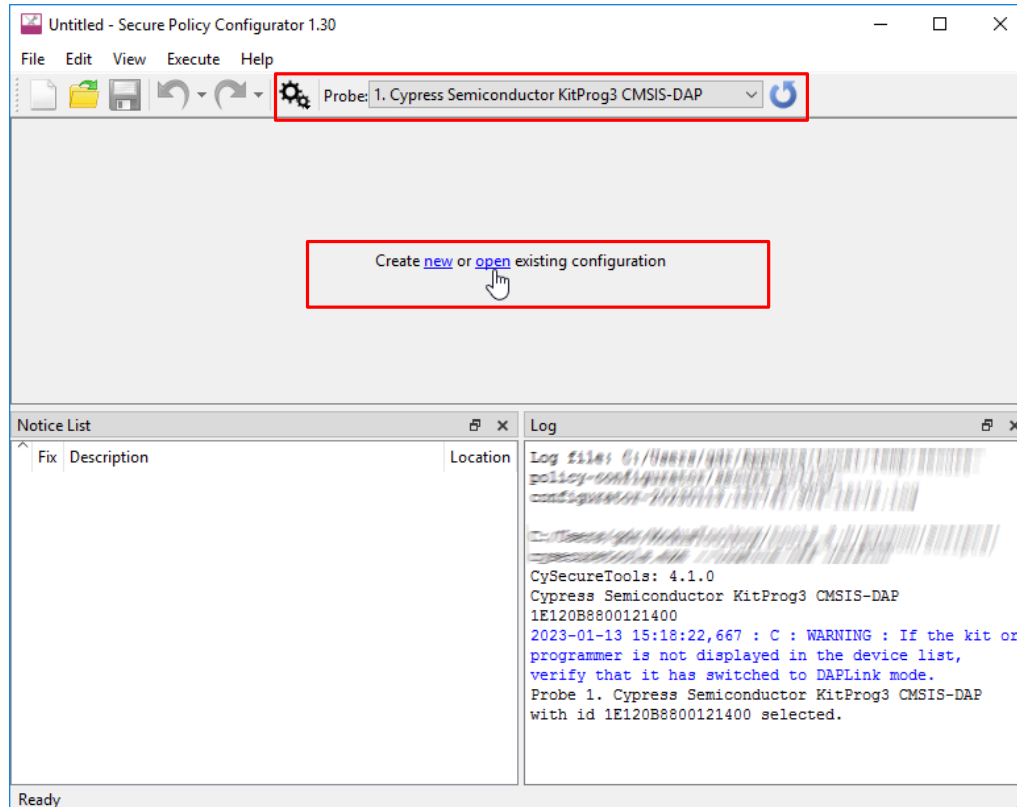


The Provisioning of the RDK3

8.) Load the "Secure Policy Configurator".

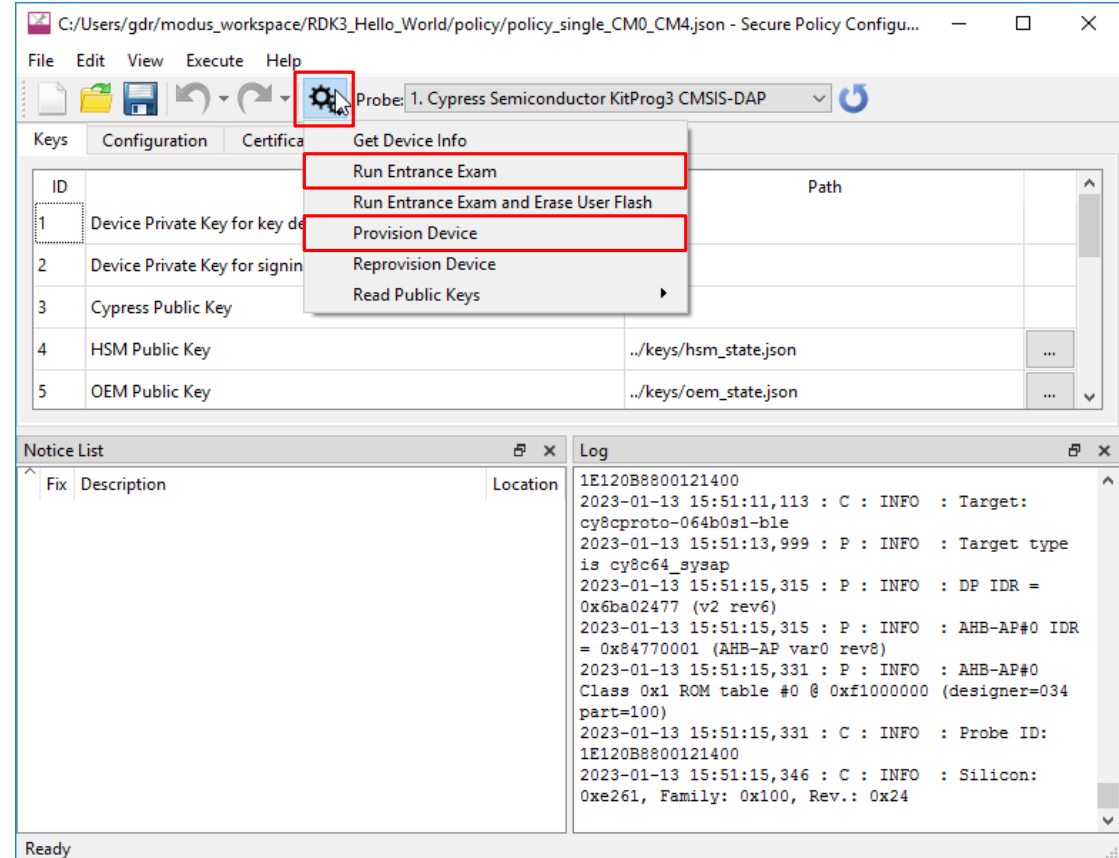
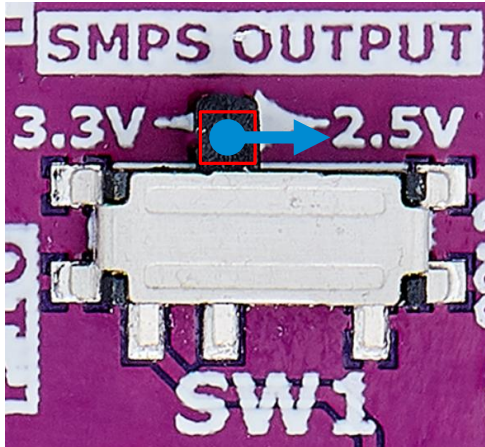
9.) Select the probe: Cypress Semiconductor KitProg3 CMSIS-DAP [press the PROG MODE button if the CMSIS-DAP is not present in a list].

10.) Open existing configuration [Select the RDK3_Hello_World directory\policy\policy_single_CM0_CM4.json].



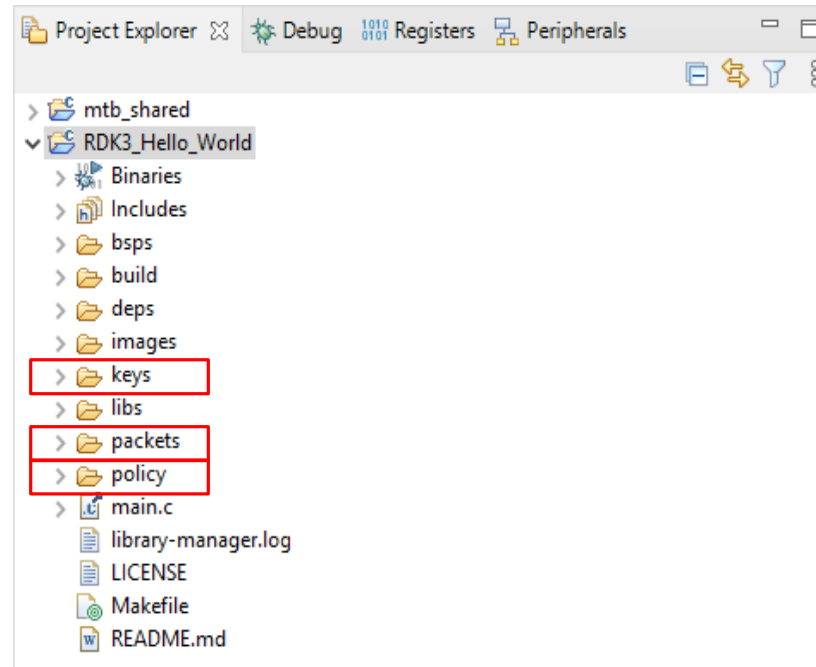
The Provisioning of the RDK3

- 11.) Configure the settings according to your needs or leave them as it is.
- 12.) Set the SW1 "SMPS OUTPUT" to the 2.5V position.
- 13.) "Run The Entrance Exam" and then "Provision the Device"



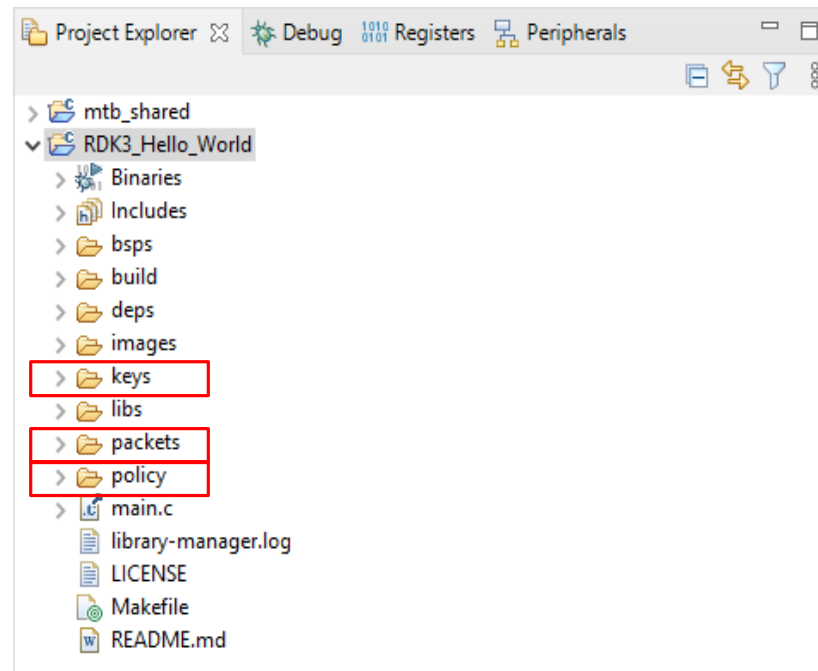
The Provisioning of the RDK3

The provisioning procedure could also be done using a new project that was created using a RDK3 BSP. Load the “Secure Policy Configurator” and select Create “new” configuration. The “keys”, “packets”, and “policy” configurations will be created in your project directory.



The Provisioning of the RDK3

Please store the “keys”, “policy” and “packets” folders with all the content in a safe location for later use.





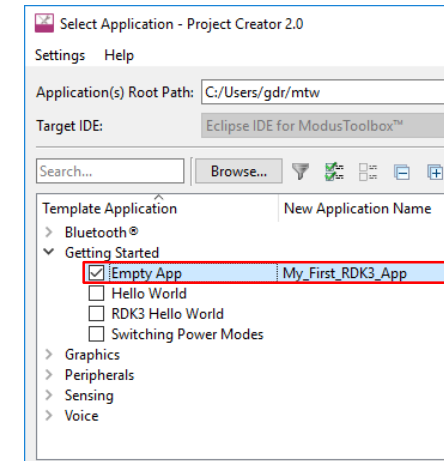
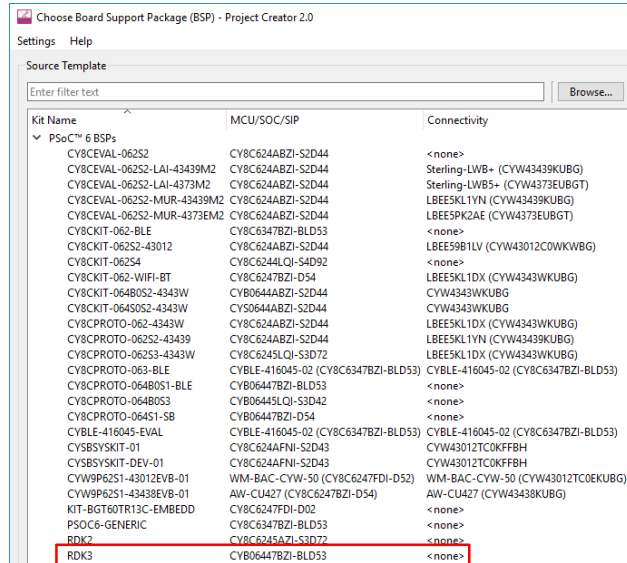
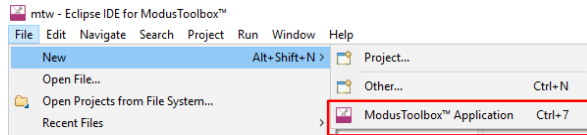
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A close-up photograph of a microchip mounted on a circuit board. The scene is illuminated with a strong blue light, and there are several bright green highlights, possibly from LEDs or reflections, scattered across the board and in the background. The chip is a square component with many pins visible along its edges.

Creating a new project for the RDK3

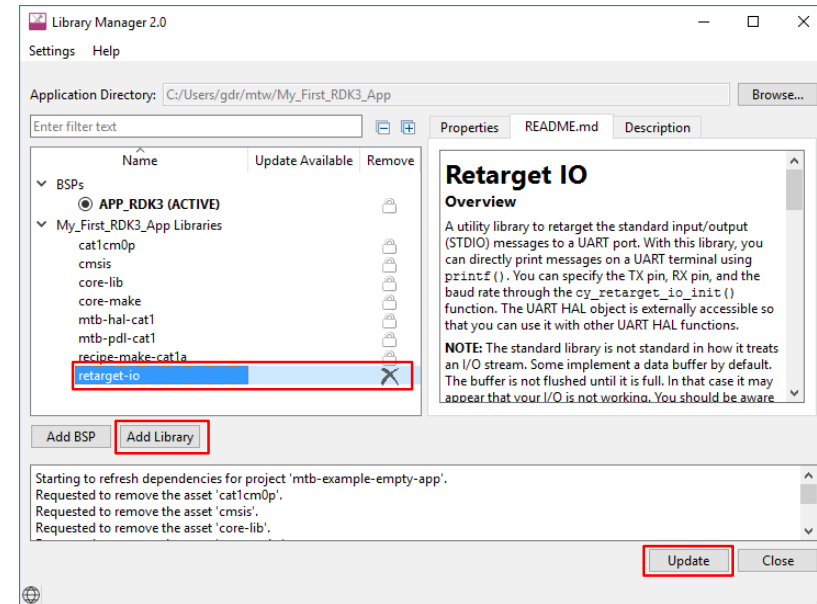
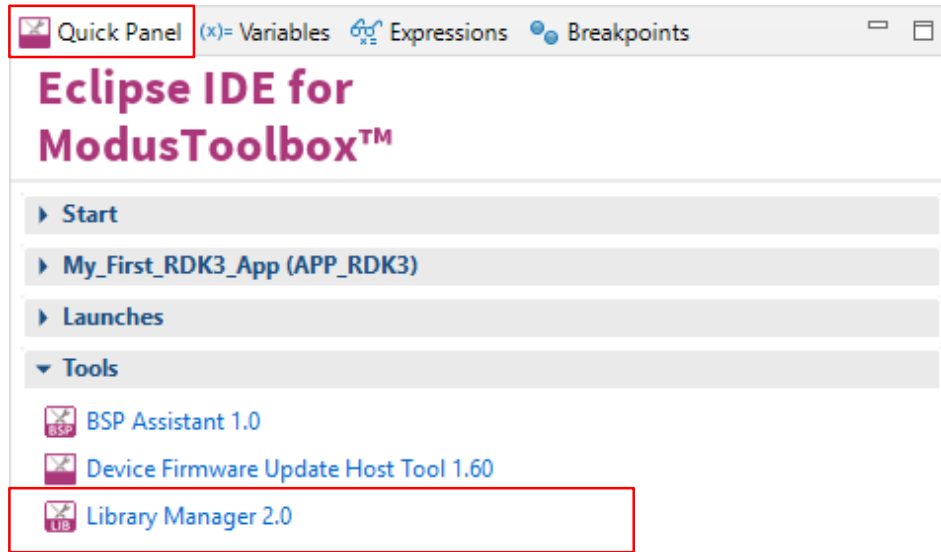
Creating new projects with “Project Creator” tool

- 1.) Open the “Project Creator” tool: File → New → ModusToolbox™ Application
- 2.) Select the “RDK3” BSP. It is in PSoC™ 6 BSPs list.
- 3.) Click on “Next”.
- 4.) Select a “Empty App” in a “Getting Started” category. Name it “My_First_RDK3_App”.
- 5.) Click on “Create”.



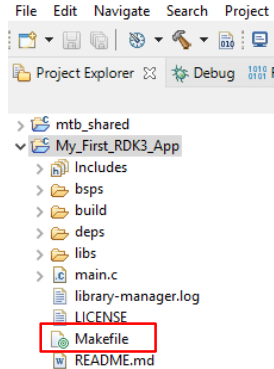
Creating new projects with “Project Creator” tool

6.) Include the “retarget-io” library in a “Library Manager” tool and press “Update”.



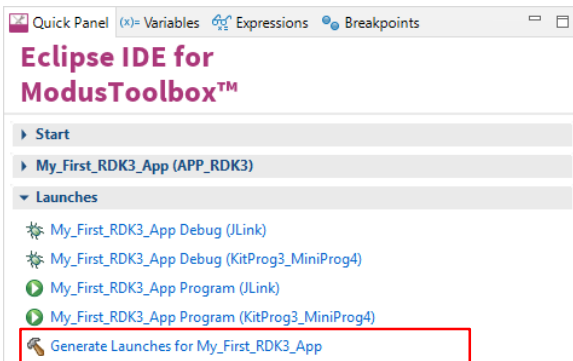
Creating new projects with “Project Creator” tool

7.) Modify the “Makefile” to disable code optimisation*



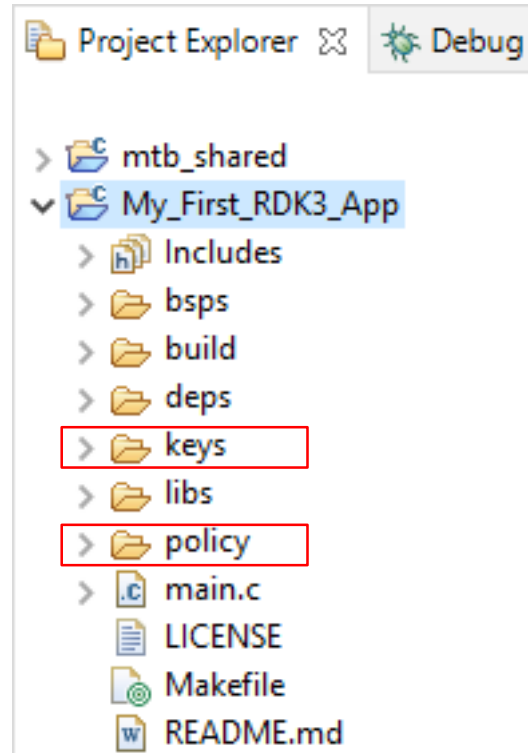
APPNAME=my-first-rdk3-app
CONFIG=Costum
CFLAGS =-O0

8.) Press “Generate Launches” in Quick Panel



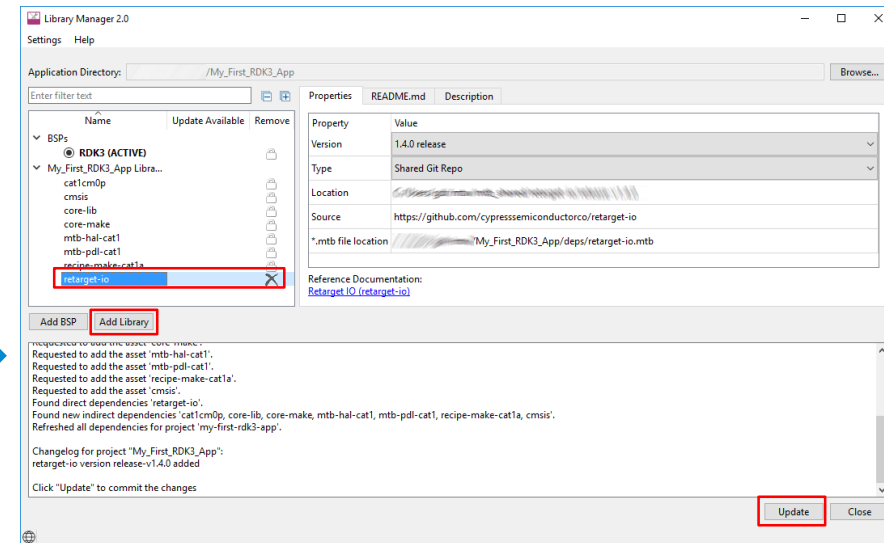
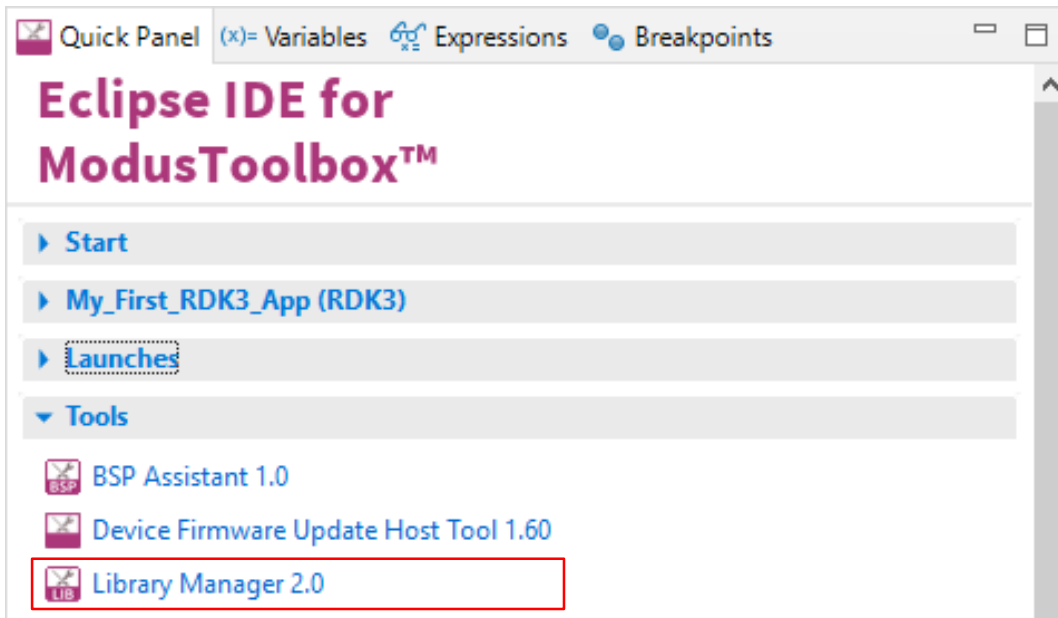
*only for debugging, learning and demo purposes. Normally, code optimisations should never be disabled.

9.) Copy and paste the “keys” and “policy” folders with all the files into your project.



Creating new projects with “Project Creator” tool

10.) Select “retarget-io” library in a “Library Manager” tool and press “Update”.



11.) Copy/Paste and save the code example to the “main.c” file.

```
#include "cy_pdl.h"
#include "cyhal.h"
#include "cybsp.h"
#include "cy_retarget_io.h"

int main(void)
{
    cy_rslt_t result;

    /* Initialize the device and board peripherals */
    result = cybsp_init();
    if (result != CY_RSLT_SUCCESS)
    {
        CY_ASSERT(0);
    }

    __enable_irq();

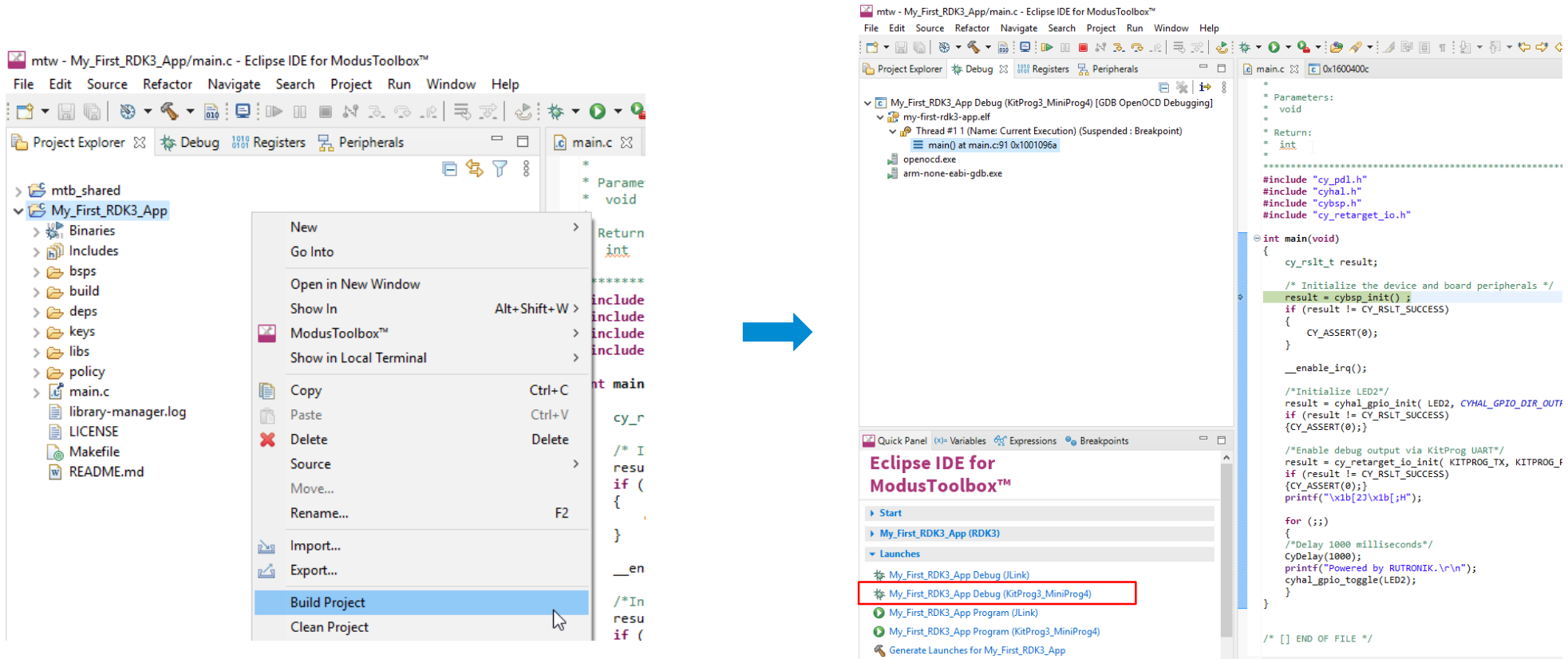
    /*Initialize LED2*/
    result = cyhal_gpio_init( LED2, CYHAL_GPIO_DIR_OUTPUT, CYHAL_GPIO_DRIVE_STRONG, CYBSP_LED_STATE_OFF);
    if (result != CY_RSLT_SUCCESS)
    {CY_ASSERT(0);}

    /*Enable debug output via KitProg UART*/
    result = cy_retarget_io_init( KITPROG_TX, KITPROG_RX, CY_RETARGET_IO_BAUDRATE);
    if (result != CY_RSLT_SUCCESS)
    {CY_ASSERT(0);}
    printf("\x1b[2J\x1b[;H");

    for (;;)
    {
        /*Delay 1000 milliseconds*/
        CyDelay(1000);
        printf("Powered by RUTRONIK.\r\n");
        cyhal_gpio_toggle(LED2);
    }
}
```

Creating new projects with “Project Creator” tool

12.) Build and Debug the active project.



The image shows the Eclipse IDE for ModusToolbox™ interface. On the left, the Project Explorer displays the project structure, including 'My_First_RDK3_App'. A context menu is open over the project, with 'Build Project' highlighted. A blue arrow points from this menu to the right-hand screenshot.

The right-hand screenshot shows the IDE after the build. The 'My_First_RDK3_App Debug (KitProg3_MiniProg4)' configuration is selected in the 'Launches' section of the Quick Panel. The main editor displays the source code for 'main.c', which includes headers like 'cy_pdl.h', 'cyhal.h', 'cybsp.h', and 'cy_retarget_io.h'. The code defines a 'main' function that initializes the device and board peripherals, enables the LED2, and prints a message to the UART.

```
Parameters:
* void
* Return:
* int

#include "cy_pdl.h"
#include "cyhal.h"
#include "cybsp.h"
#include "cy_retarget_io.h"

int main(void)
{
    cy_rslt_t result;

    /* Initialize the device and board peripherals */
    result = cybsp_init();
    if (result != CY_RSLT_SUCCESS)
    {
        CY_ASSERT(0);
    }

    __enable_irq();

    /*Initialize LED2*/
    result = cyhal_gpio_init( LED2, CYHAL_GPIO_DIR_OUT);
    if (result != CY_RSLT_SUCCESS)
    {CY_ASSERT(0);}

    /*Enable debug output via KitProg UART*/
    result = cy_retarget_io_init( KITPROG_TX, KITPROG_F;
    if (result != CY_RSLT_SUCCESS)
    {CY_ASSERT(0);}
    printf("\x1b[23\x1b[J");

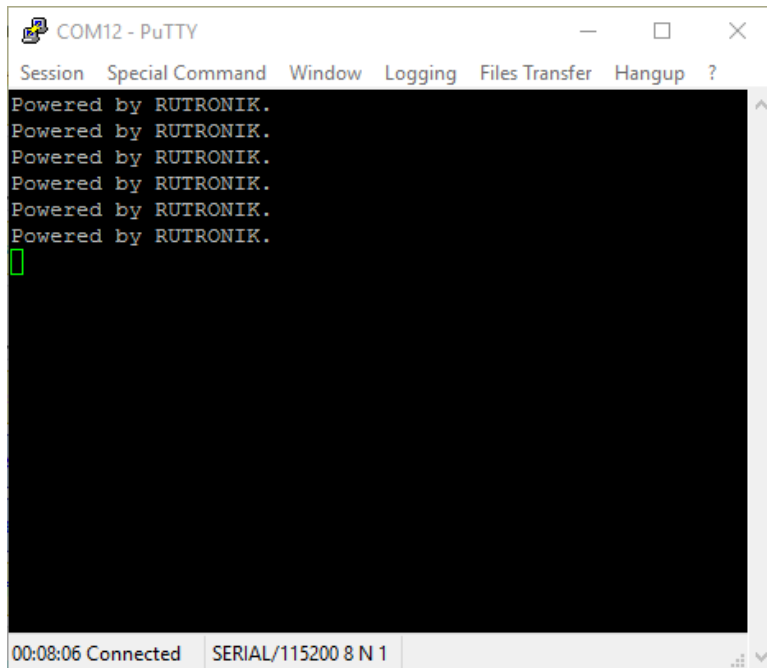
    for (;;)
    {
        /*Delay 1000 milliseconds*/
        CyDelay(1000);
        printf("Powered by RUTRONIK.\r\n");
        cyhal_gpio_toggle(LED2);
    }
}

/* [] END OF FILE */
```

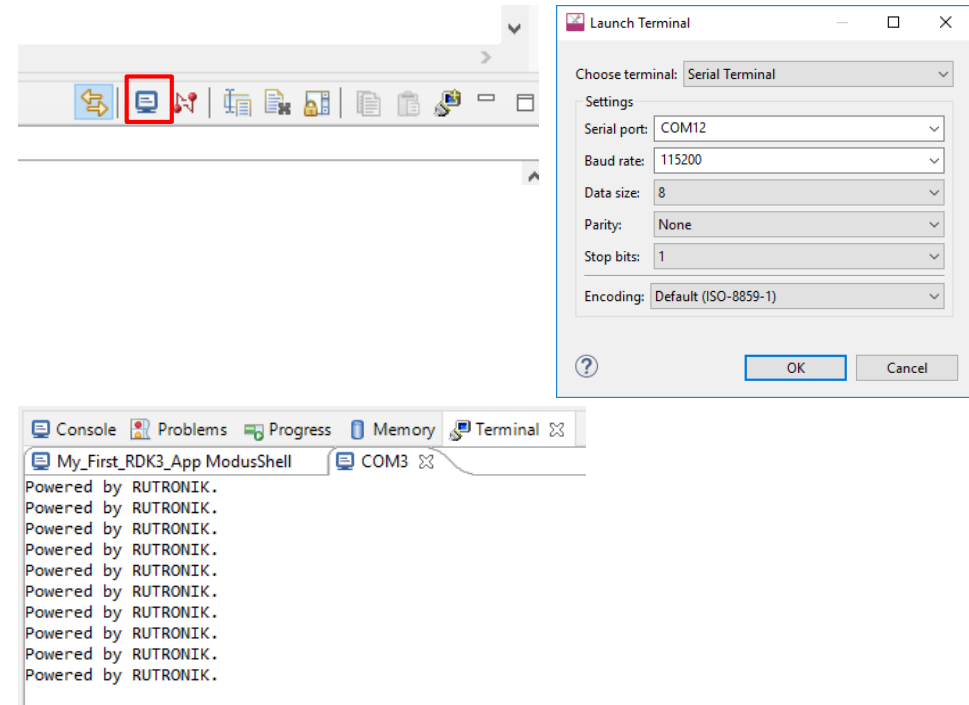
Creating new projects with “Project Creator” tool

The final result is a blinking LED2 on the RDK3 board and text on the terminal window:

PuTTY Terminal



ModusToolbox Terminal





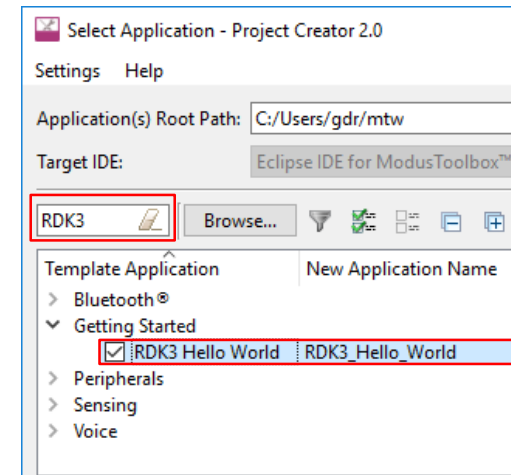
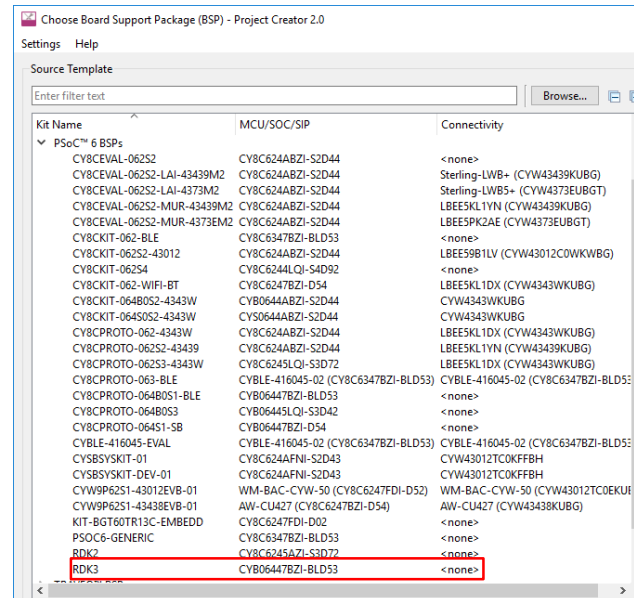
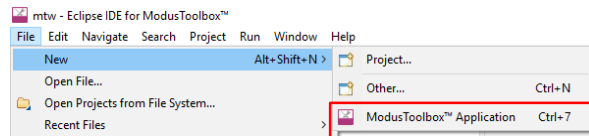
RUTRONIK
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A close-up photograph of a microchip mounted on a circuit board, with various electronic components and solder joints visible. The image is overlaid with a blue gradient.

Importing the existing firmware examples for the RDK3

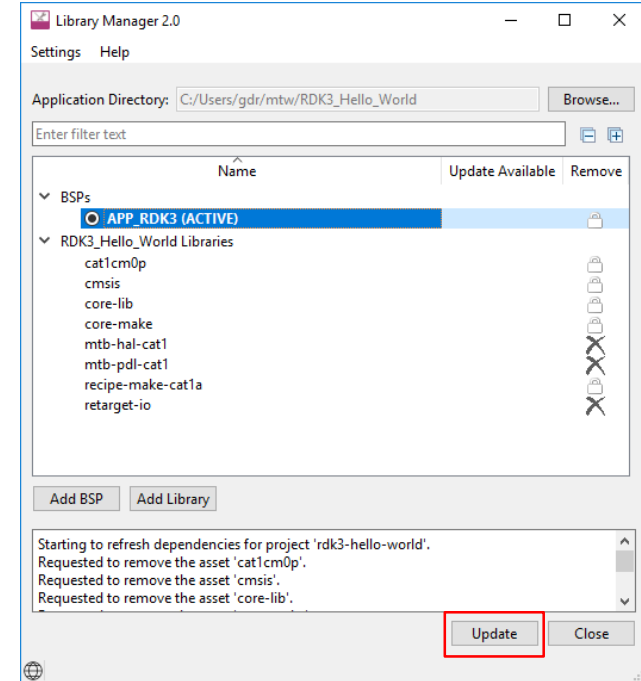
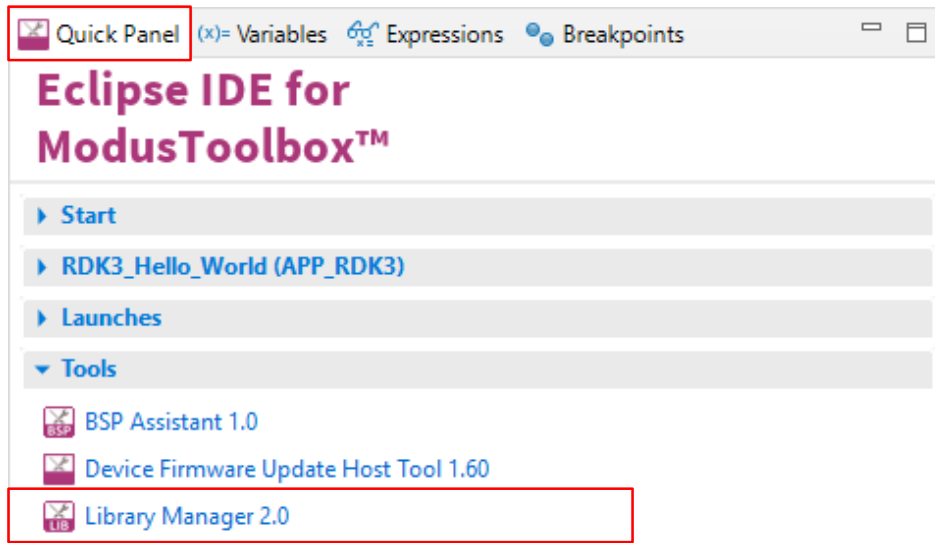
Importing firmware examples with “Project Creator” tool

- 1.) Open the “Project Creator” tool: File → New → ModusToolbox™ Application
- 2.) Select the “RDK3” BSP. It is in PSoC™ 6 BSPs list.
- 3.) Click on “Next”.
- 4.) Write a “RDK3” in a Search... window. Select the example from given categories list.
- 5.) Click on “Create”.



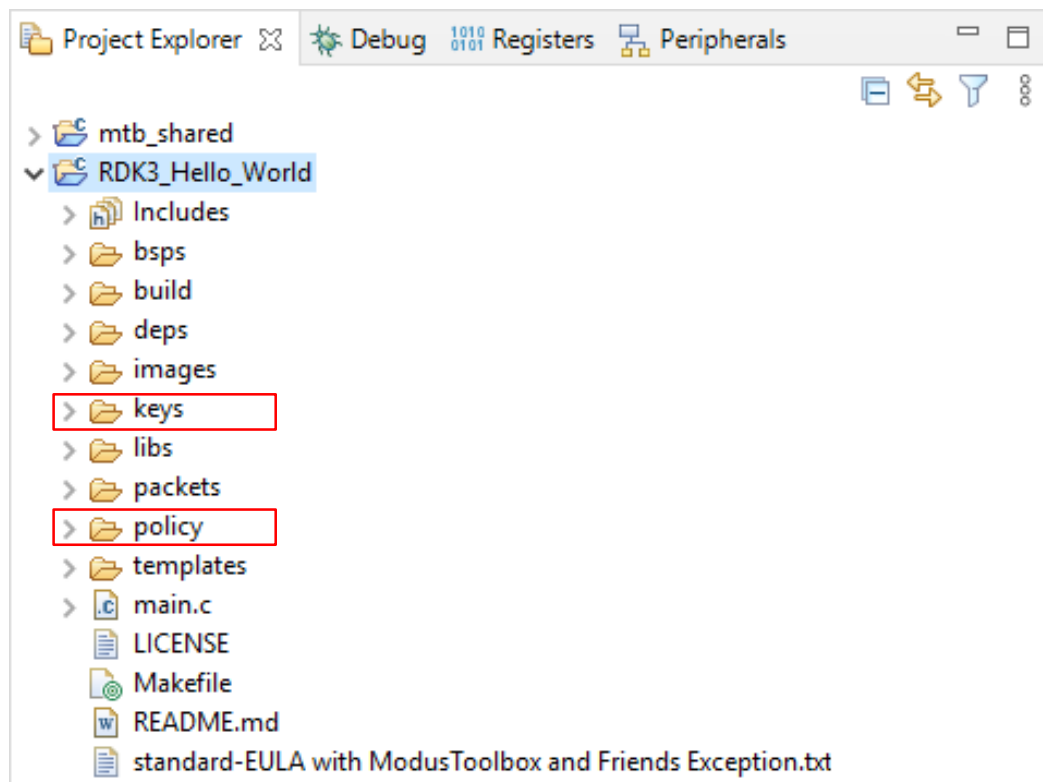
Importing firmware examples with “Project Creator” tool

6.) After project creation is finished - update libraries with “Library Manager” tool.



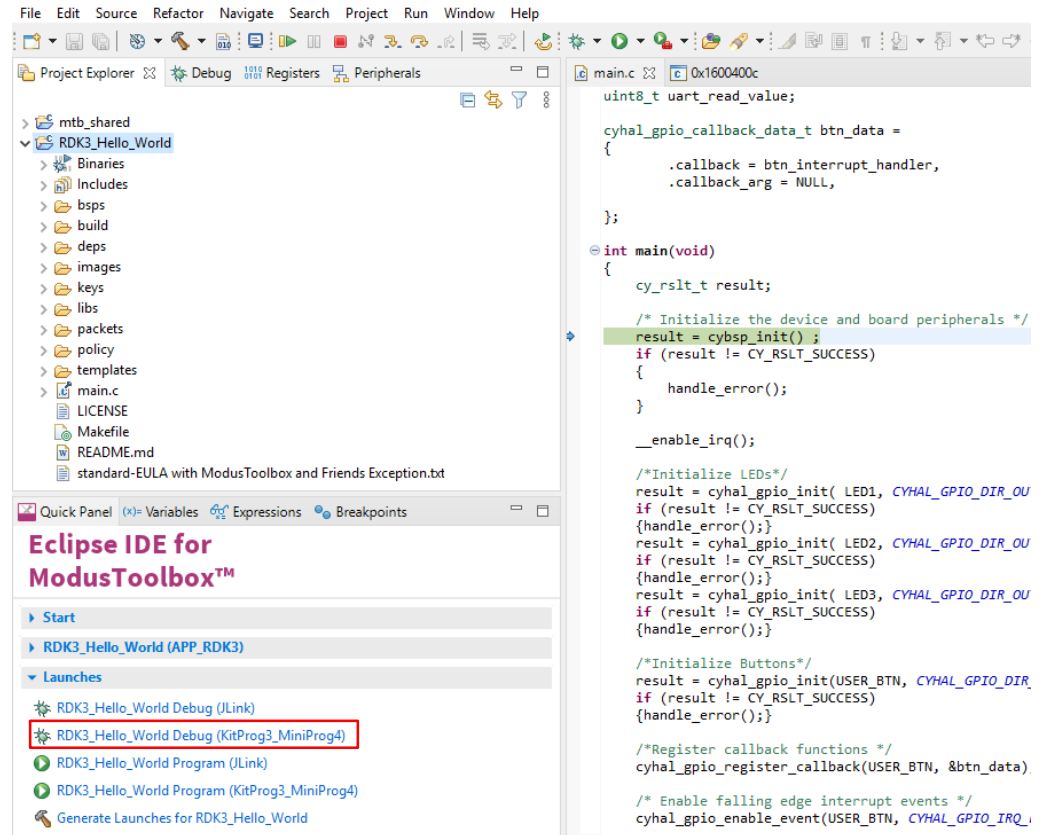
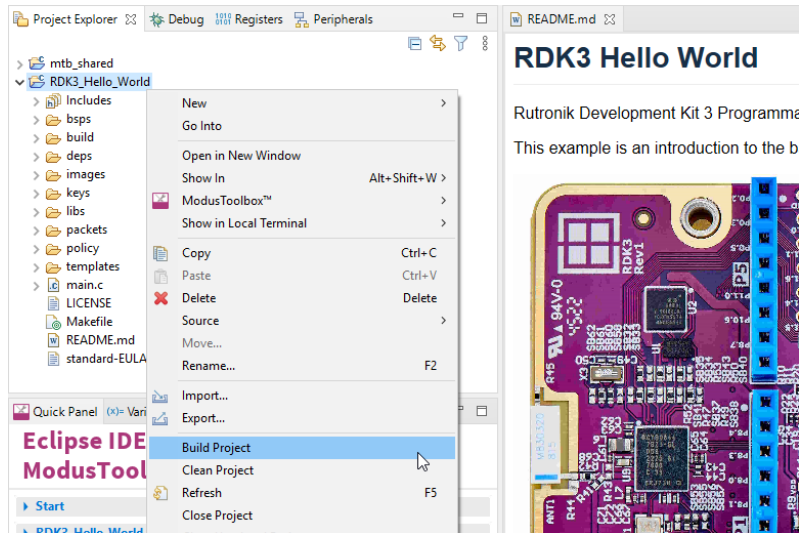
Importing firmware examples with “Project Creator” tool

7.) Copy and paste the “keys” and “policy” folders with all the files into your project. The folder “packets” is optional, needed only for the provisioning.

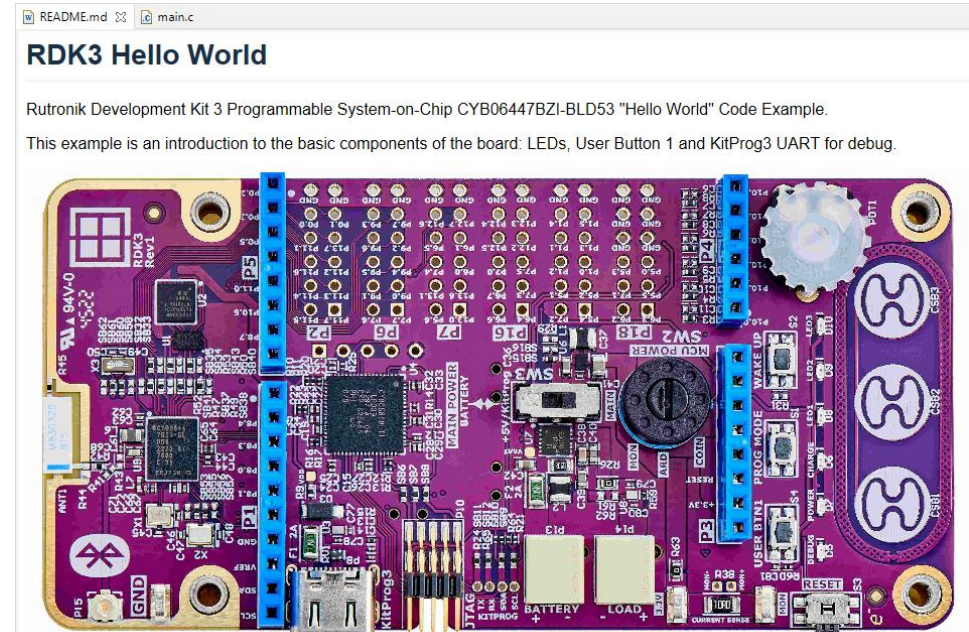
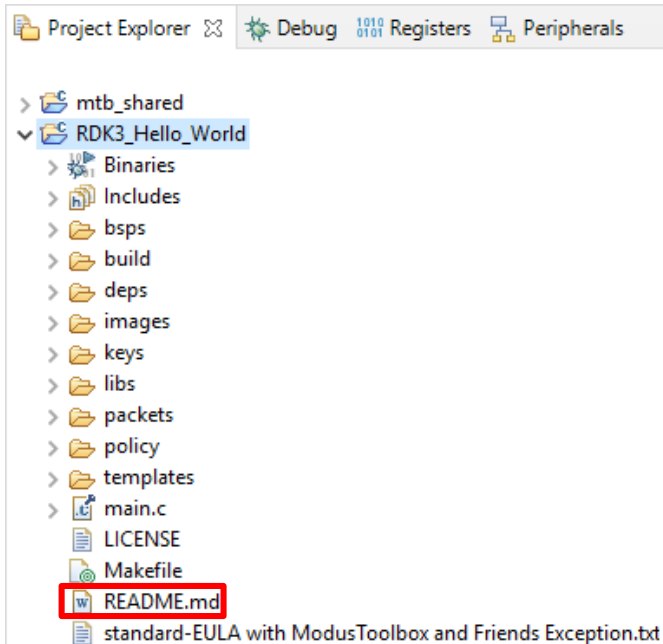


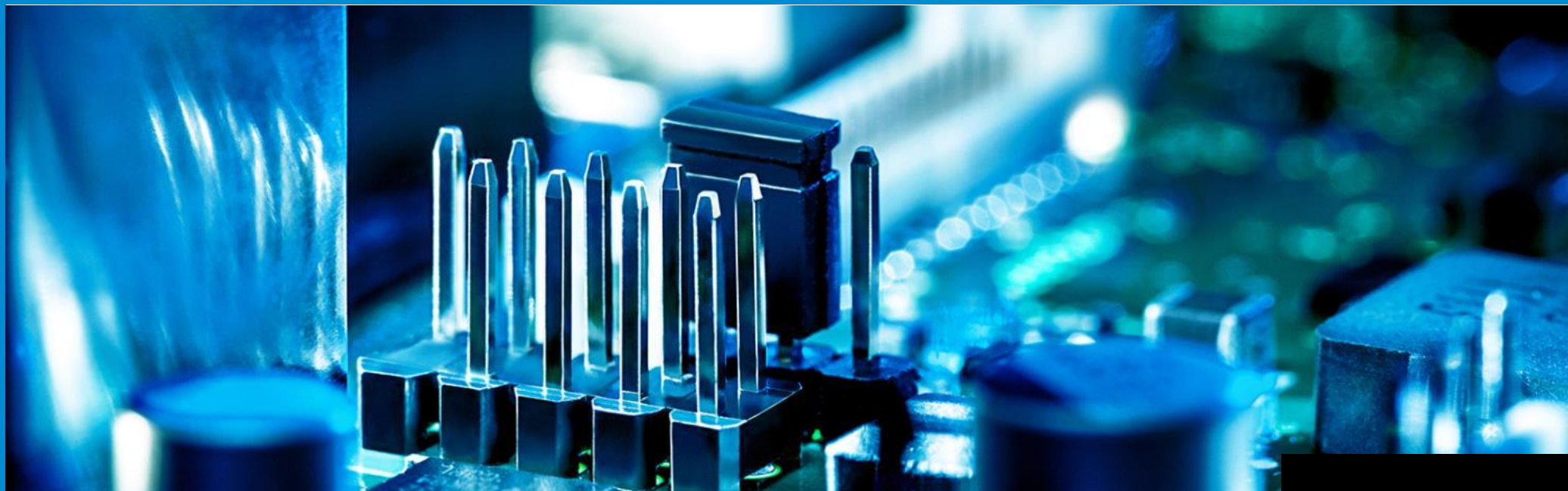
Creating new projects with “Project Creator” tool

8.) Build and Debug the project.



Check the README.md file before starting to explore the code example. You may find important hints or what else is needed to have firmware running properly.





Gintaras Drukteinis

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eMail : gdr@rutronik.com