

# Renesas Synergy™ Platform

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## Migrating Existing e<sup>2</sup> studio Projects to IAR Embedded Workbench® for Renesas Synergy™

### Introduction

This application note will show you how to migrate a project from e<sup>2</sup> studio to IAR Embedded Workbench® for Renesas Synergy™ (IAR EW for Synergy). The migration process is straightforward. In this application note, making use of the **WeatherPanel** project and the SK-S7G2 Synergy MCU Group board because it is a complex application and describes most of the migration tasks a project will require.

**IMPORTANT:** Notice that the IAR IDE project needs to be placed exactly in the same folder from the e<sup>2</sup> studio project. Make sure you know the exact path to the WeatherPanel project shown in Figure below.

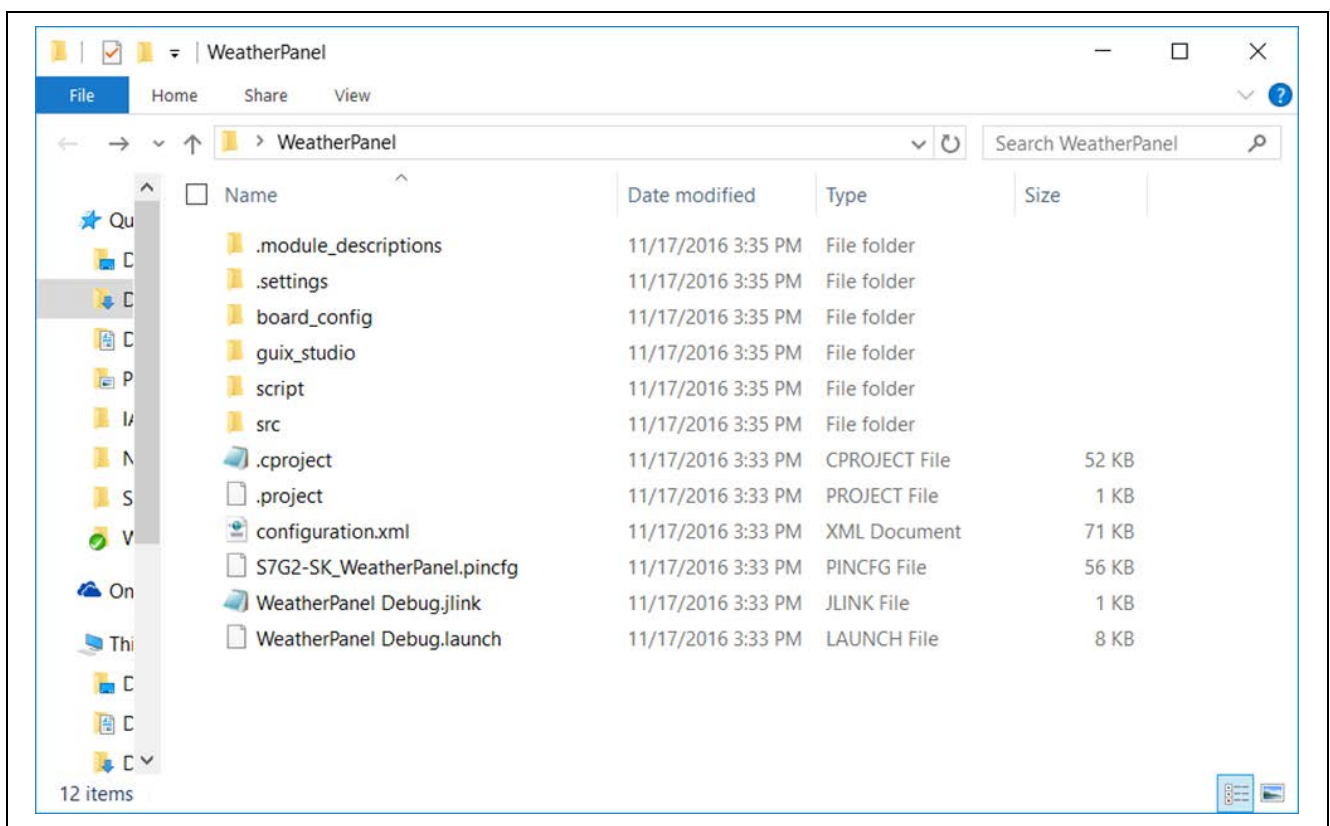


Figure 1 Directory location

### Required Software

The following tools are used for this application note. All tools are available in the Synergy Gallery (<https://synergycastle.renesas.com/>).

- IAR Embedded Workbench for Renesas Synergy (v7.71.1 or later)
- SSP v1.2.0 or later. Consult the migration guide to SSP v1.2.0 since it might be that SSP v1.1.3 is required for the SSP conversion process. If the project has been upgraded to the latest SSP in e<sup>2</sup> studio you don't have to worry about the previous SSP versions.
- SSC v5.2.1.016 or later
- GUIX Studio™ v5.3.0.1 or later

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## 1. Create a Basic Project in the IAR EW for Synergy IDE

1. Open EW for Synergy by clicking on the IAR Embedded Workbench icon in the Windows Start menu: All **Programs > IAR Systems > IAR Embedded Workbench for Renesas Synergy** folder.
2. Start a new project by clicking on the Renesas Synergy menu: New Renesas Synergy Project.

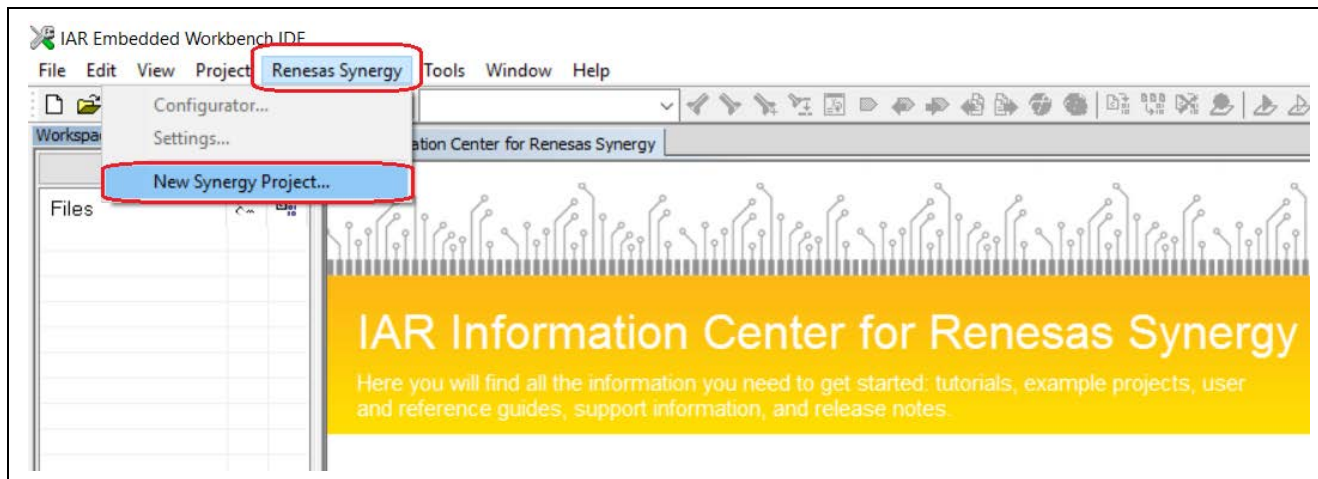


Figure 2 Create new project

## 2. Migrate Project

1. Define the location and name for the IAR workspace to be migrated. Select the destination folder as the folder from the WeatherPanel project. Enter a name for the workspace in the filename text field, for example **panel**. Save the workspace to start the Synergy configurator wizard.

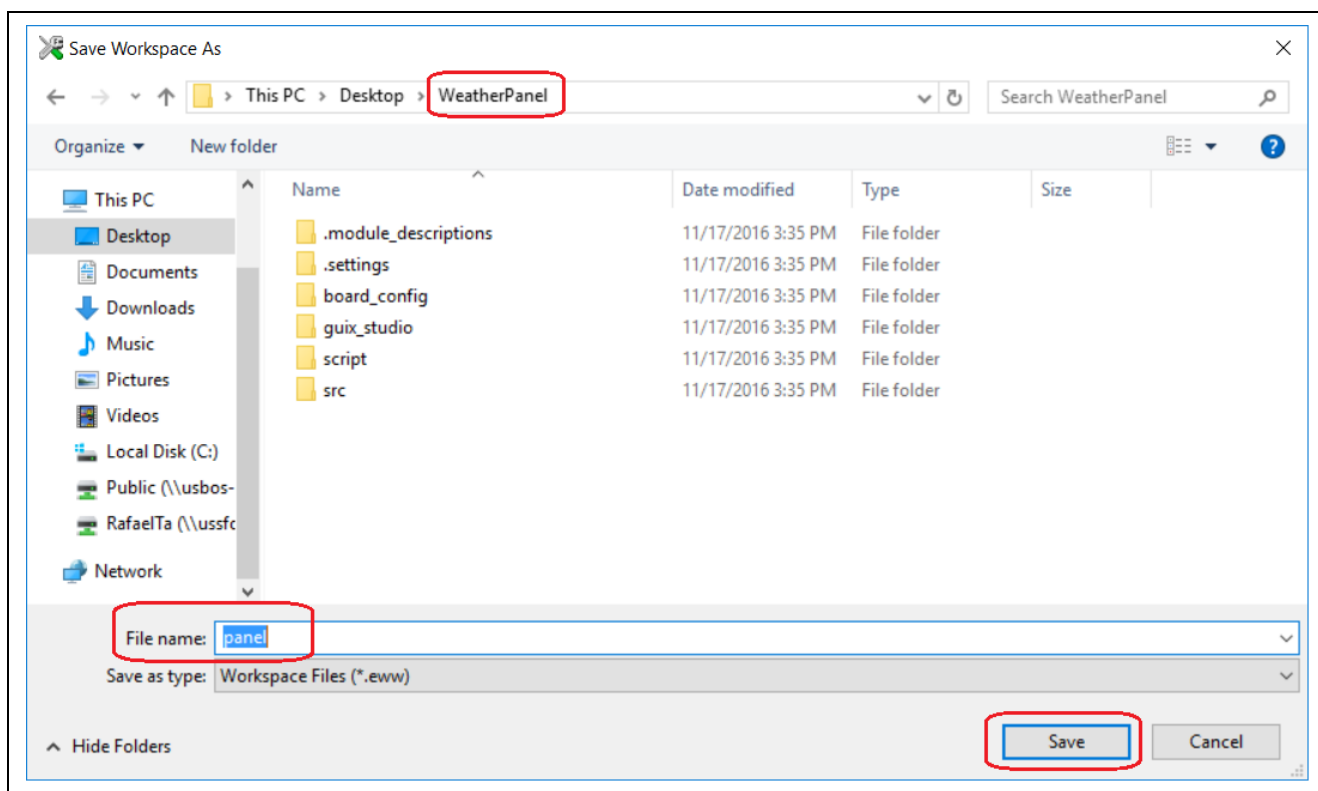
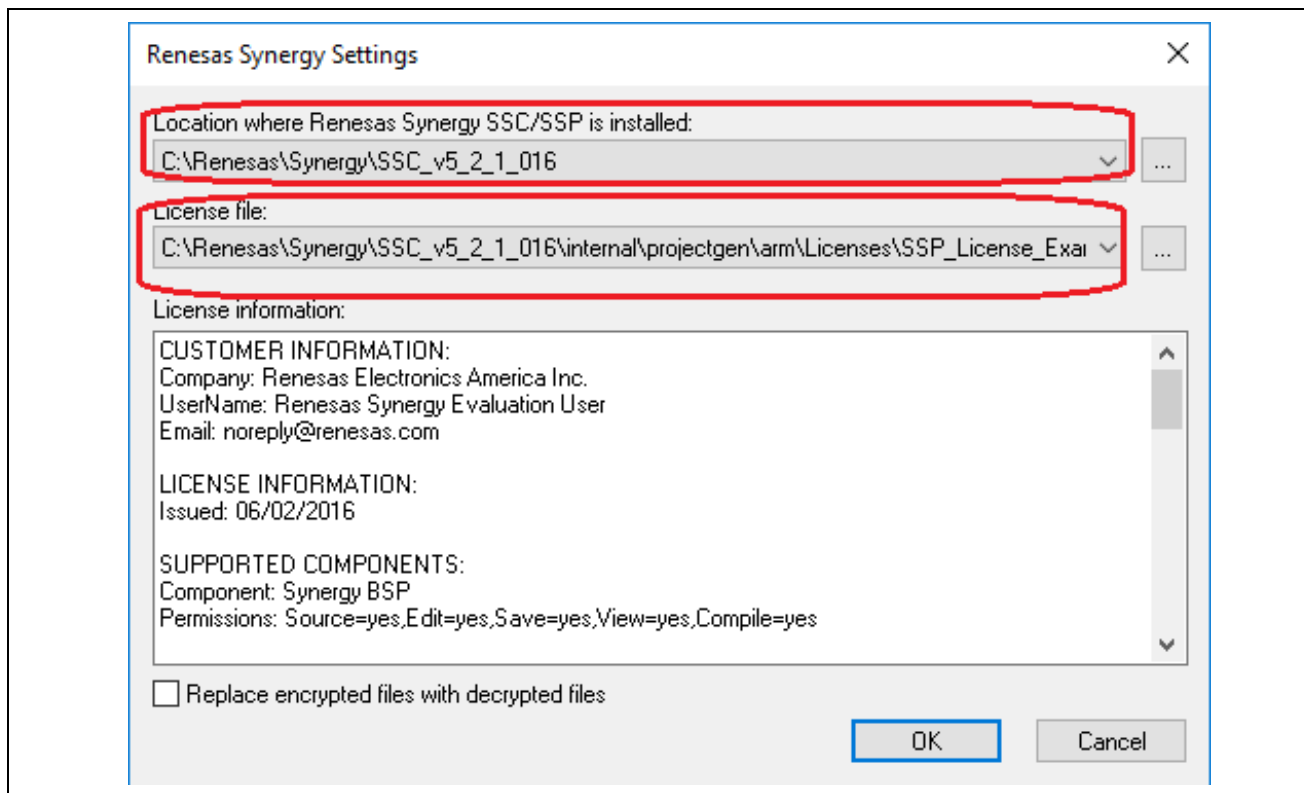


Figure 3 Save workspace

2. If the License file and the SSC/SSP folder are already configured, the License area and SSC/SSP location of the form will look like the figure below. If it does, skip to step 9.



**Figure 4 License area**

3. If it is empty or not pointing to C:\Renesas\Synergy\SSC\_vx\_x\_xxx for example SSC\_v5\_2\_1\_016 for v5.2.1.016, continue with the steps below (4-10). These settings only need to be done once.
4. Click the **browse ...** button for the SSC/SSP location. The EW for Synergy will display the **Open Dialog** box.

Note: If you installed the SSC/SSP to the default location, then the SSC/SSP folder is located in directory:  
C:\Renesas\Synergy\SSC\_vx\_x\_xxx.

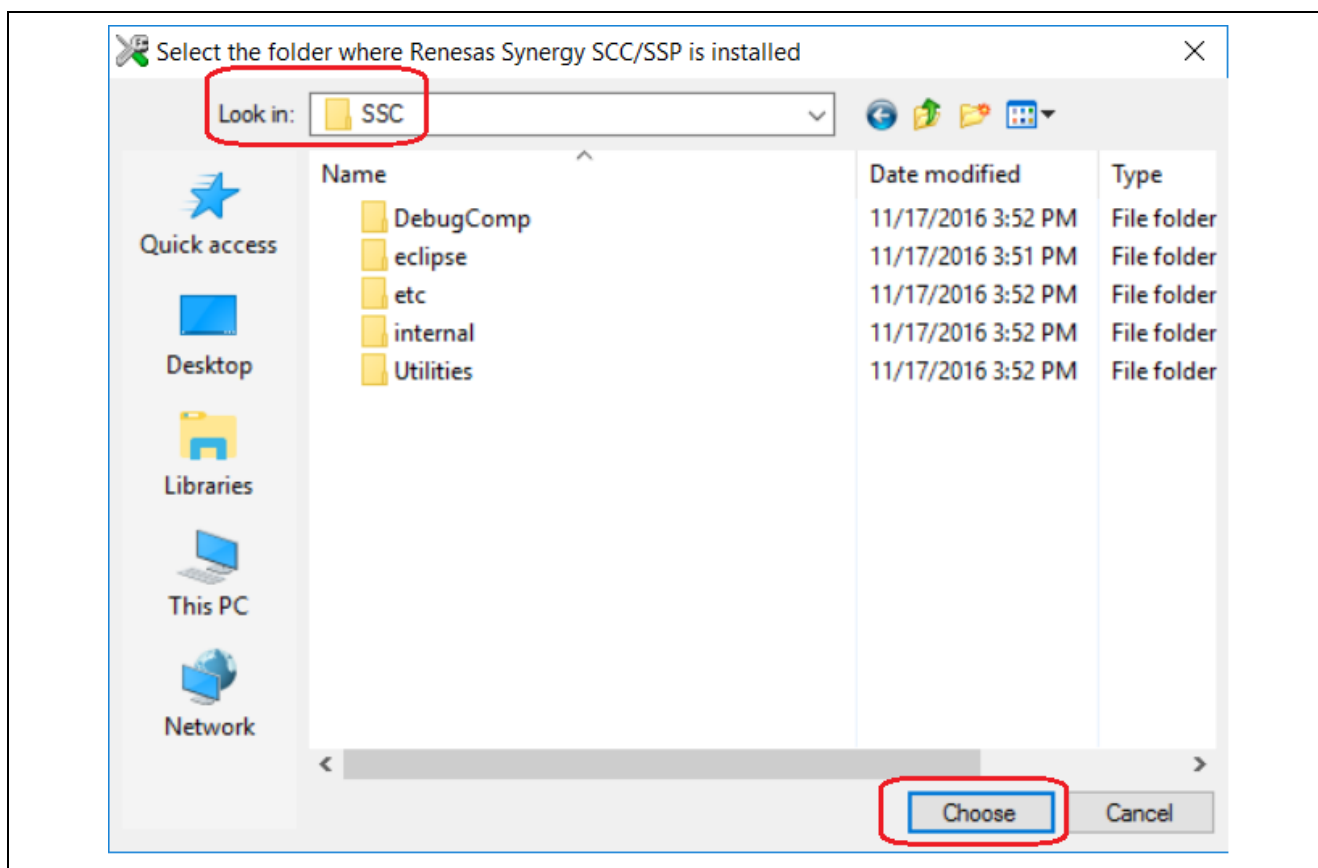


Figure 5 SCC/SSP location

5. Click **Choose** to set the SCC/SSP location.
6. Click the **browse ...** button for the license file. The IEW for Synergy IDE will display the Open Dialog box.  
Note: The SSP license is located in C:  
C:\Renesas\Synergy\SSC\_vx\_x\_xxx\internal\projectgen\arm\Licenses directory.
7. Select SSP\_License\_Example\_EvalLicence\_\*.xml or  
SSP\_Development\_and\_Production\_License\_\*.xml located in the directory.

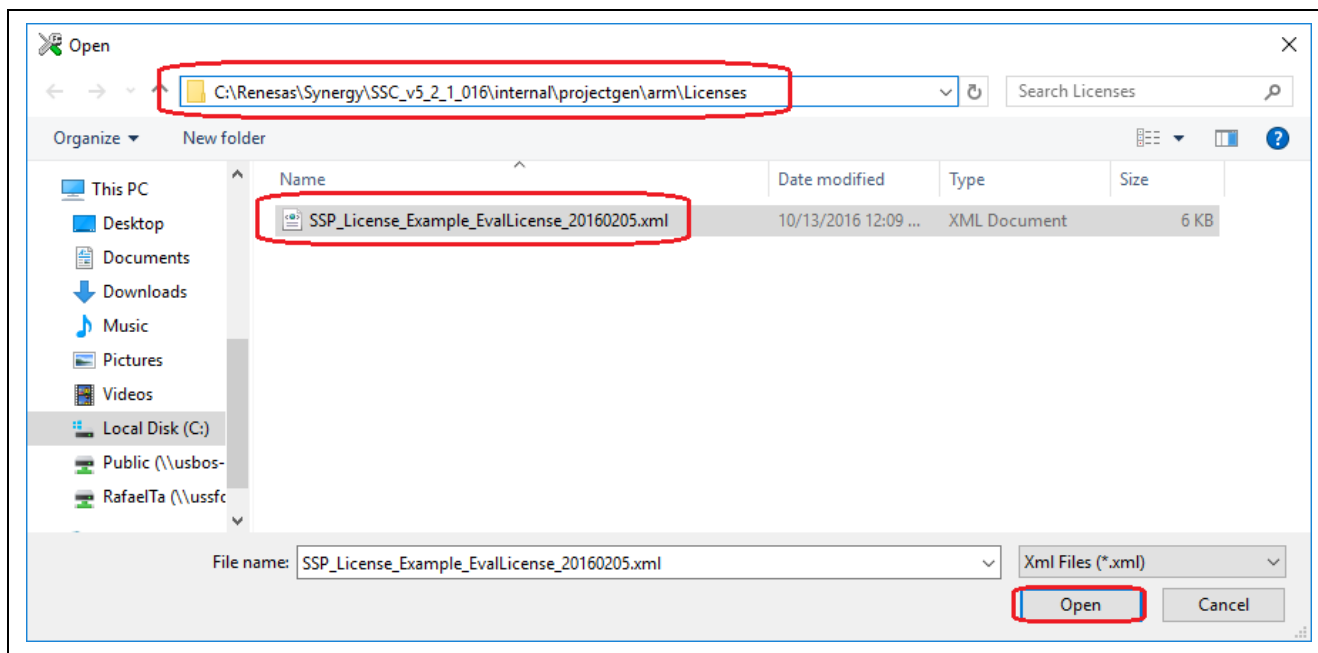


Figure 6 Select license file

8. Click **Open** to set the License file and confirm the configuration window with **OK**.
9. Select the destination folder of the WeatherPanel project and enter a new name for the IAR IDE project in the **File name** text field, for example **panel**. Save the project by confirming with **Save**.

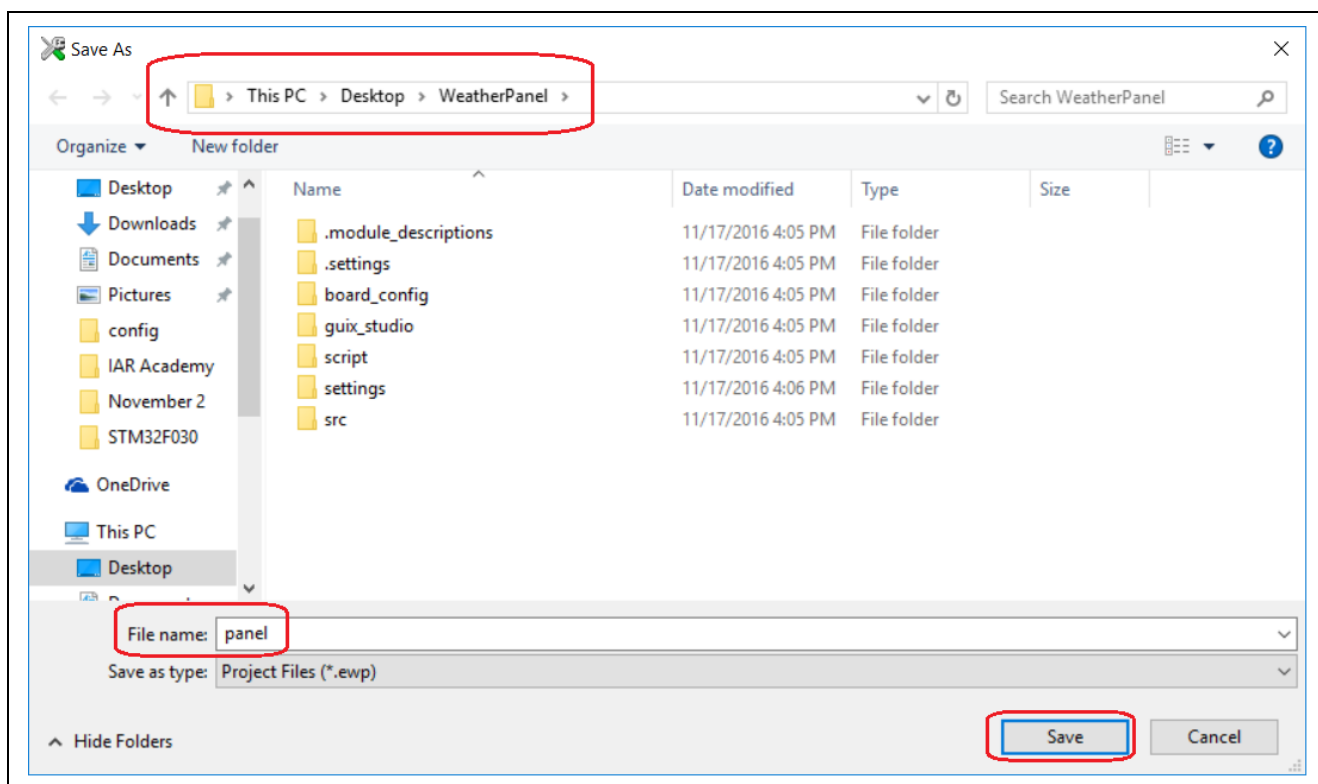
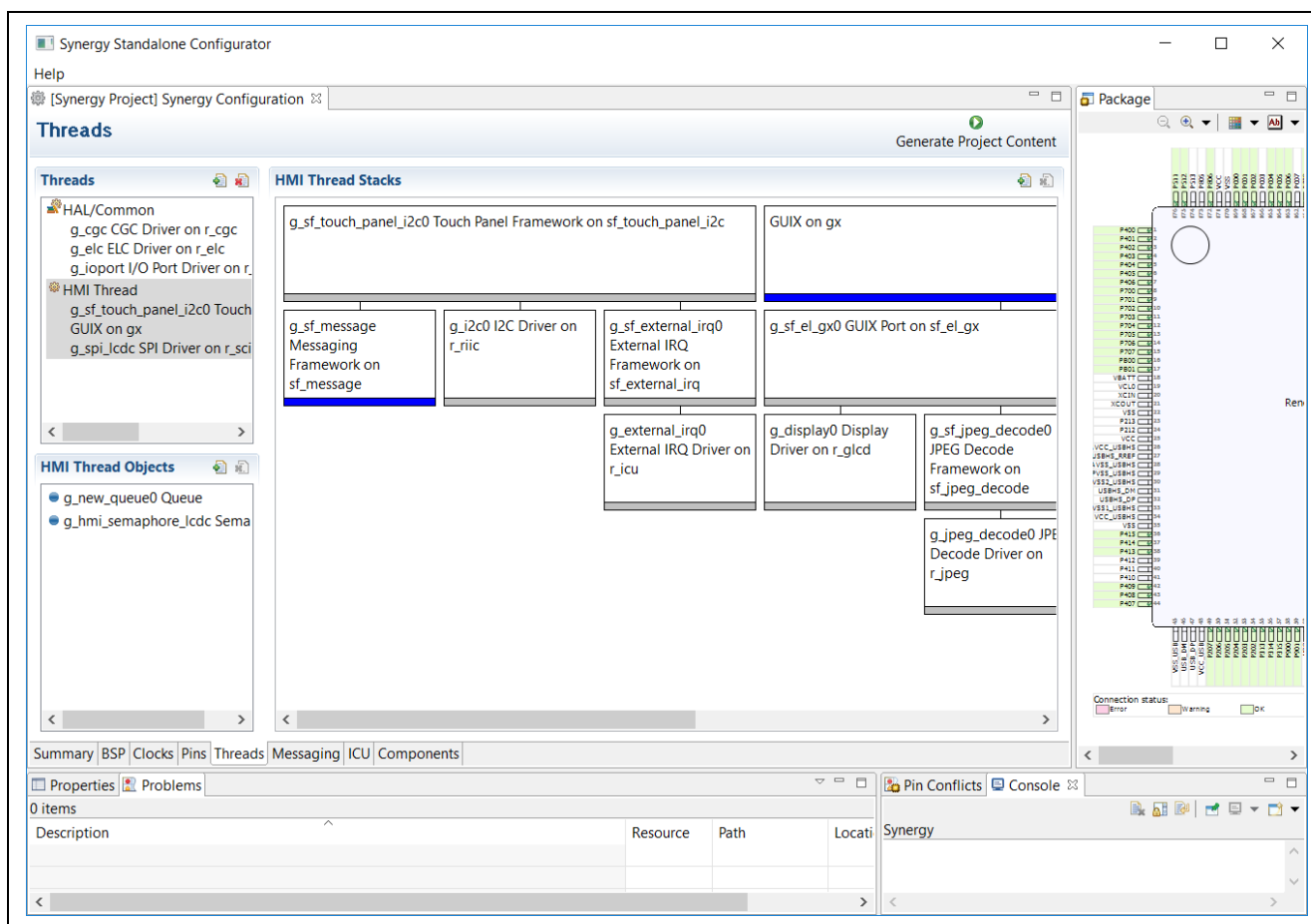


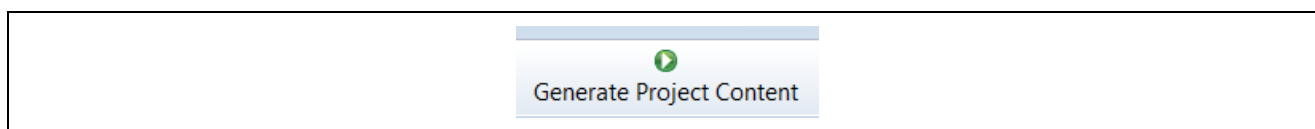
Figure 7 Save IAR IDE project

10. The configurator will be loaded with all preexisting settings. There is no need to select a board or even select the SSP package.
11. Navigate in the **Threads** and **Component** tabs and notice the existing threads and selected components.



**Figure 8 Threads panel**

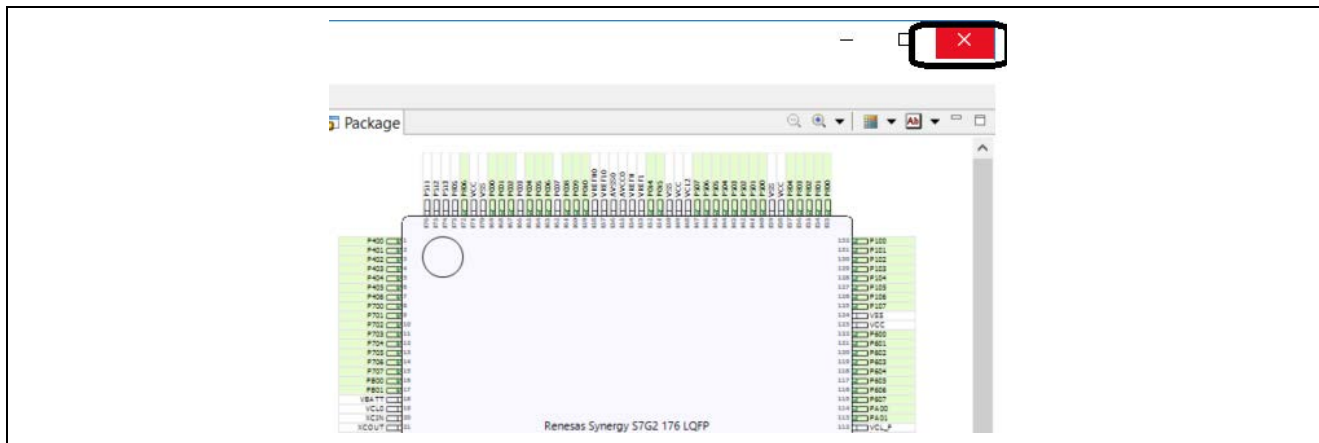
12. Click on the **Generate Project Content** button to update the project files in the IAR IDE based on the preexisting .xml and .pincfg files.



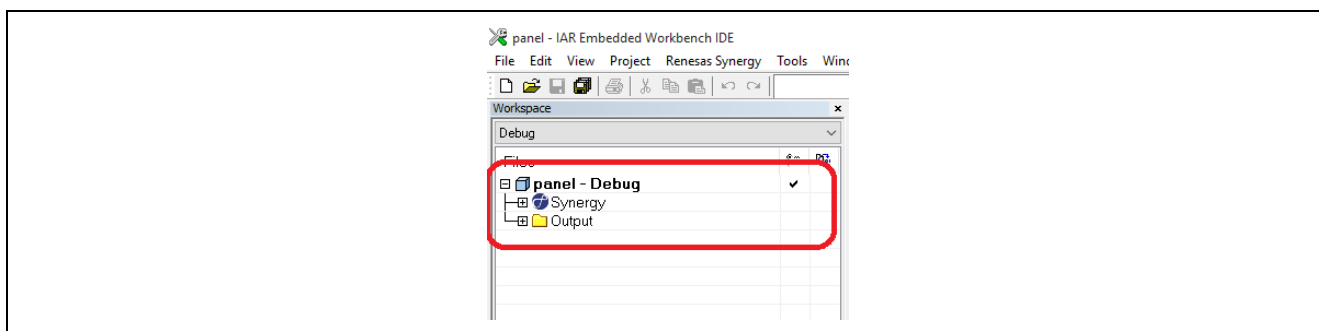
**Figure 9 Generate Project Content button**

Note: When migrating a project from e<sup>2</sup> studio to IAR IEW for Synergy, delete the **synergy** folder if it exists, before generating the files for IAR. The problem is that SSC (Standalone Synergy Configurator) will add the IAR files on top of the GCC files used in e<sup>2</sup> studio). This will cause linker-goo errors at the end of the build process. This process of deleting the **synergy** is also required when switching the tools back and forth.

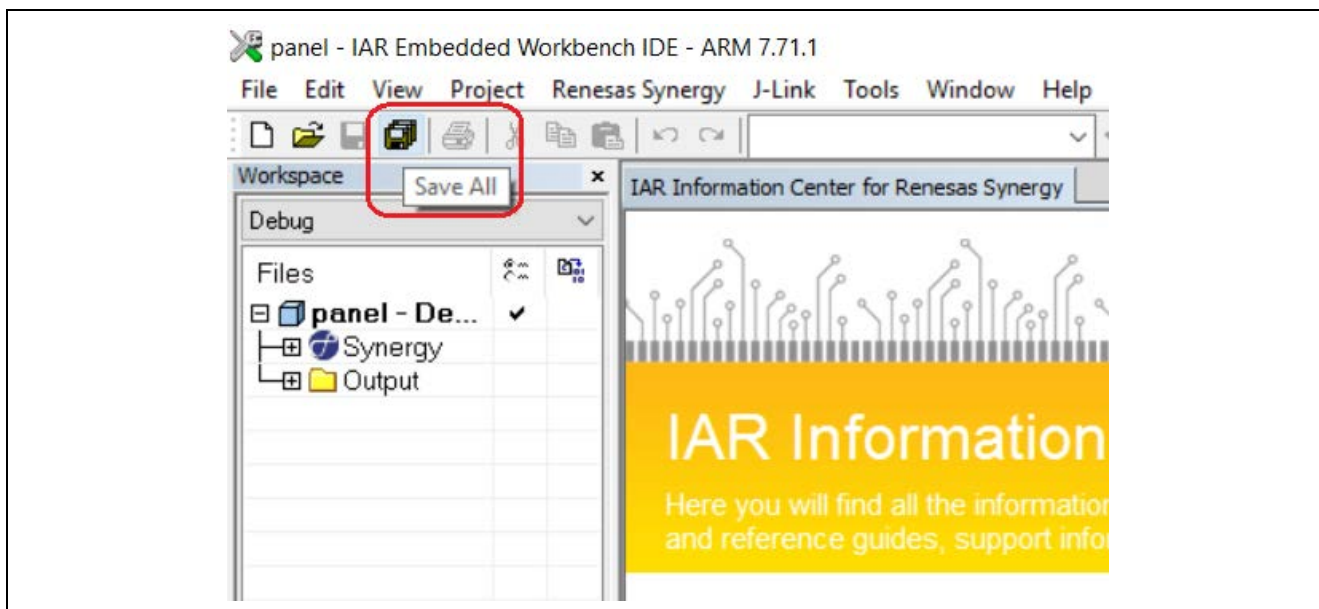
13. Close the Configurator. Notice this step if optional. Once you switch to the IAR IDE view the files will be generated automatically.

**Figure 10 Closing the Configurator**

14. In the IAR IDE you will see the project structure in the IDE.

**Figure 11 Project structure**

15. Save all files through the **Save All** icon at the IDE or through **File > Save All**.

**Figure 12 Save All**



16. Before you can build the WeatherPanel project, it is also necessary to regenerate the GUIX Studio files for IAR.
17. Open GUIX Studio by clicking the desktop icon or by clicking on the **GUIX** icon in the Windows **Start** menu: **All Programs > Express Logic > GUIX Studio 5.3.0.1** folder.
18. Open the GUIX Studio project `weather.gxp` for the Weather panel at `..\WeatherPanel\guix_studio\`. You should also be able to open the GUIX Studio and WeatherPanel project by double-clicking on the `weather.gxp` file. It's possible to add the `.gxp` file to the project then to start GUIX Studio by double-clicking the file in the IDE. The steps required for the integration are described at the end of the application note.

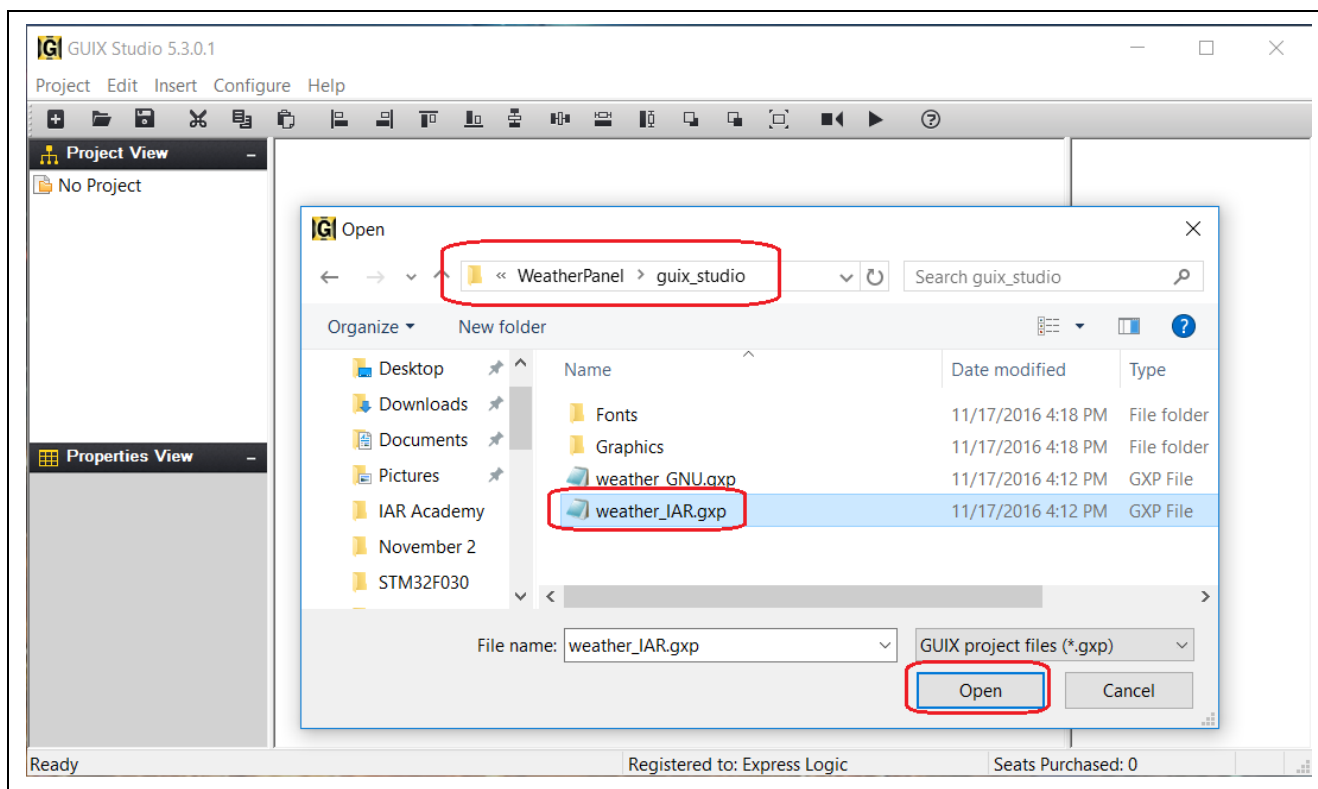


Figure 13 Weather project icon

19. Go to the **Configure > Project/Displays** tab and change the toolchain to **IAR**. Confirm and save the new settings with **Save**.

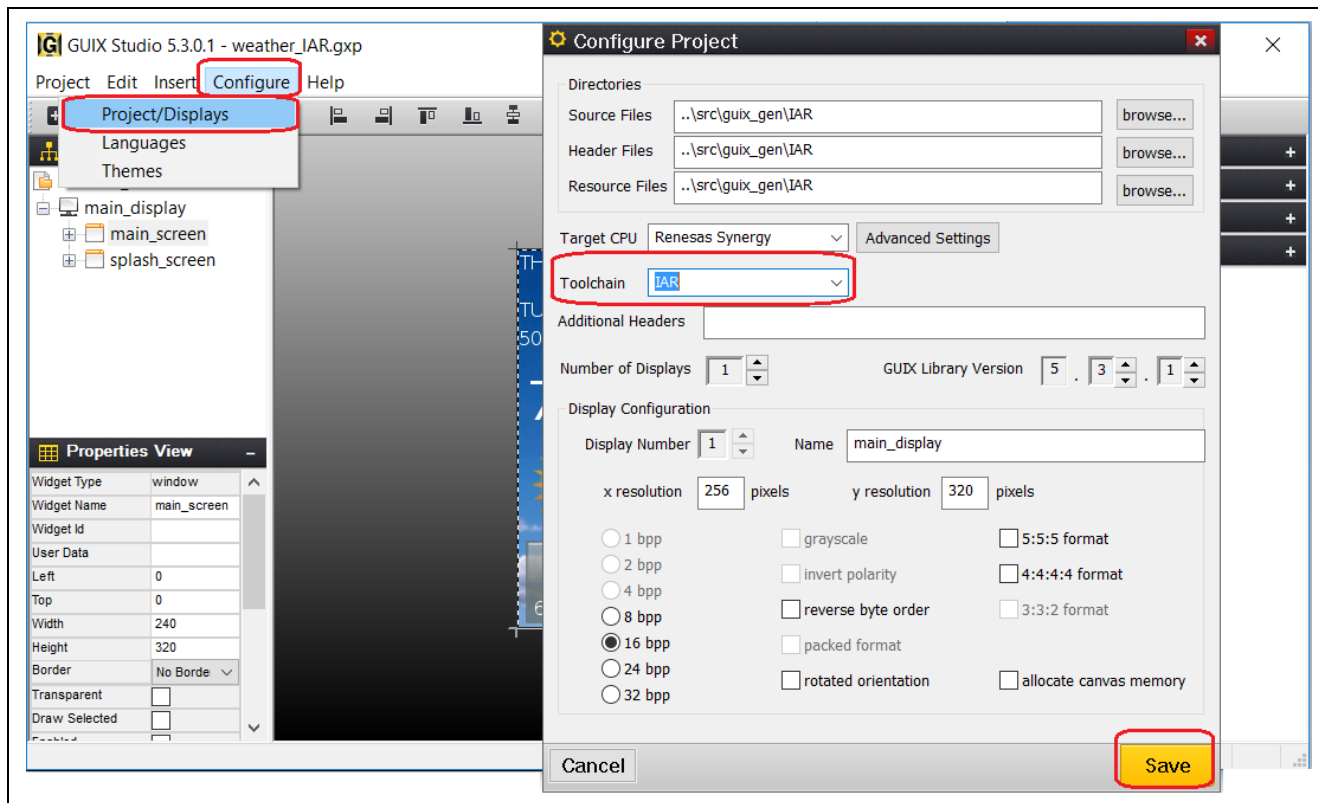
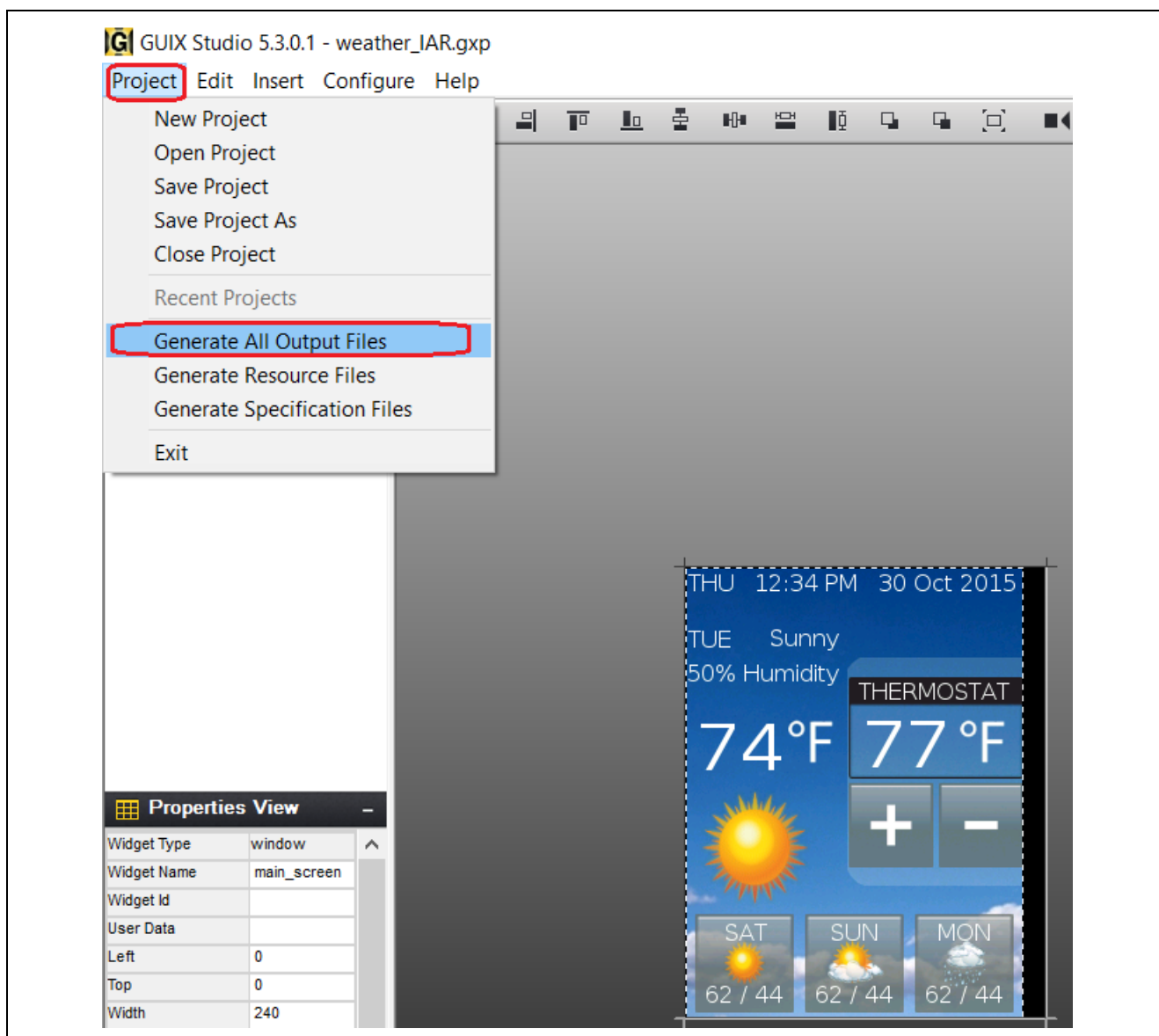
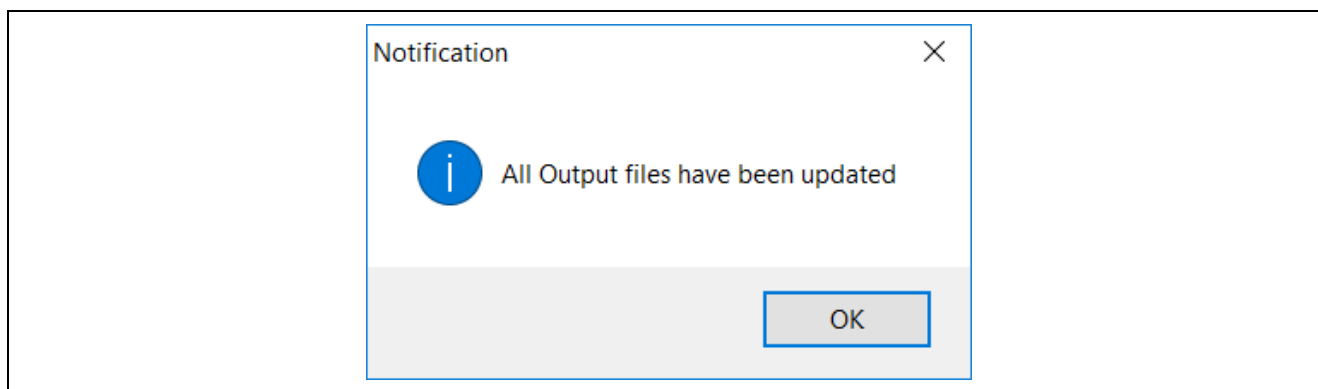


Figure 14 Set toolchain

20. The final step from GUIX Studio is to generate the new output files for IAR. The new files can be generated through **Project > Generate All Output Files**.

**Figure 15 Generate all output files**

21. Confirm with **OK** when all files have been updated.

**Figure 16 Confirm output files**

22. Make sure that the folder structure of your project and IAR project files look like Figure below, especially the .ewp files.

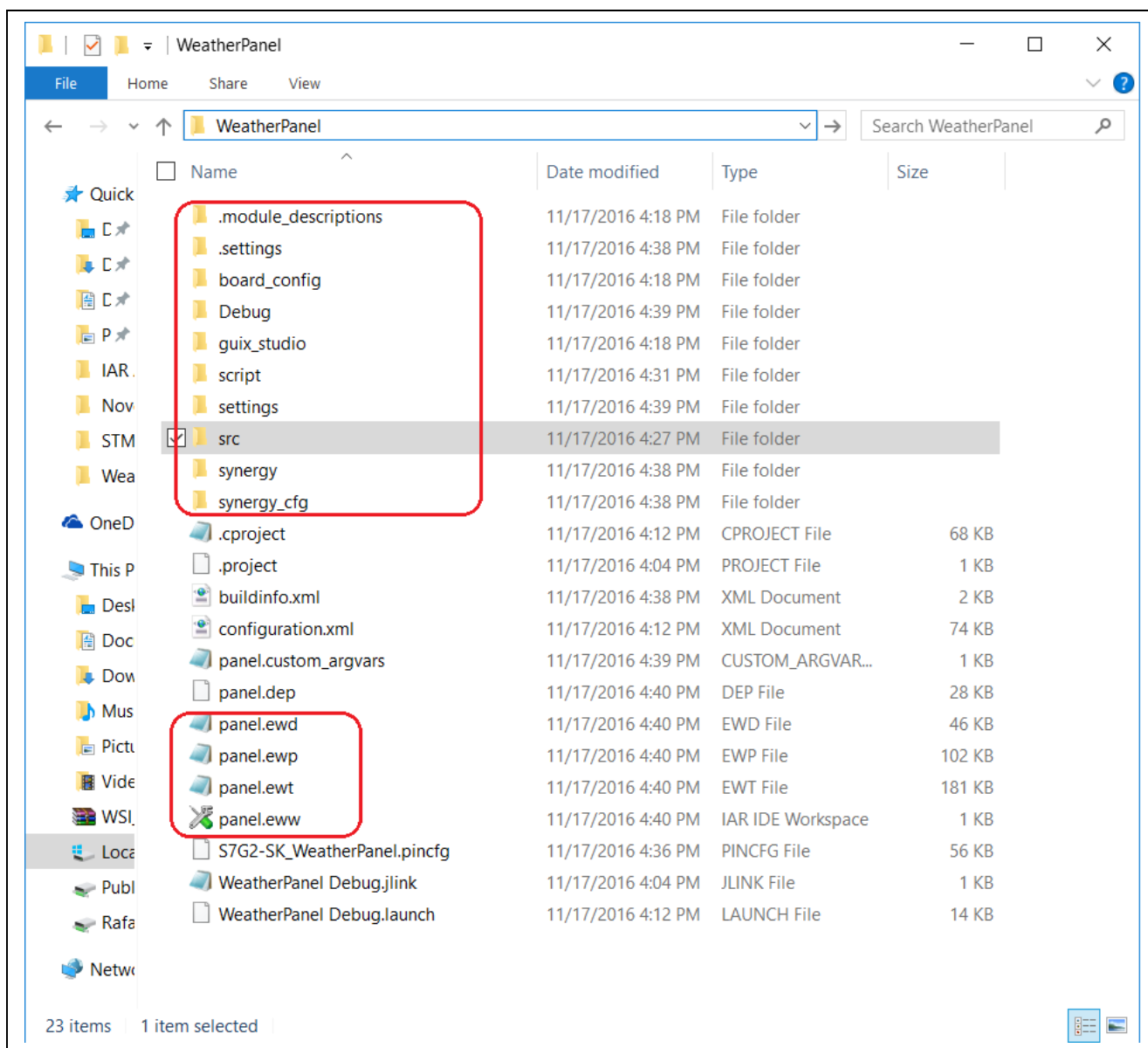
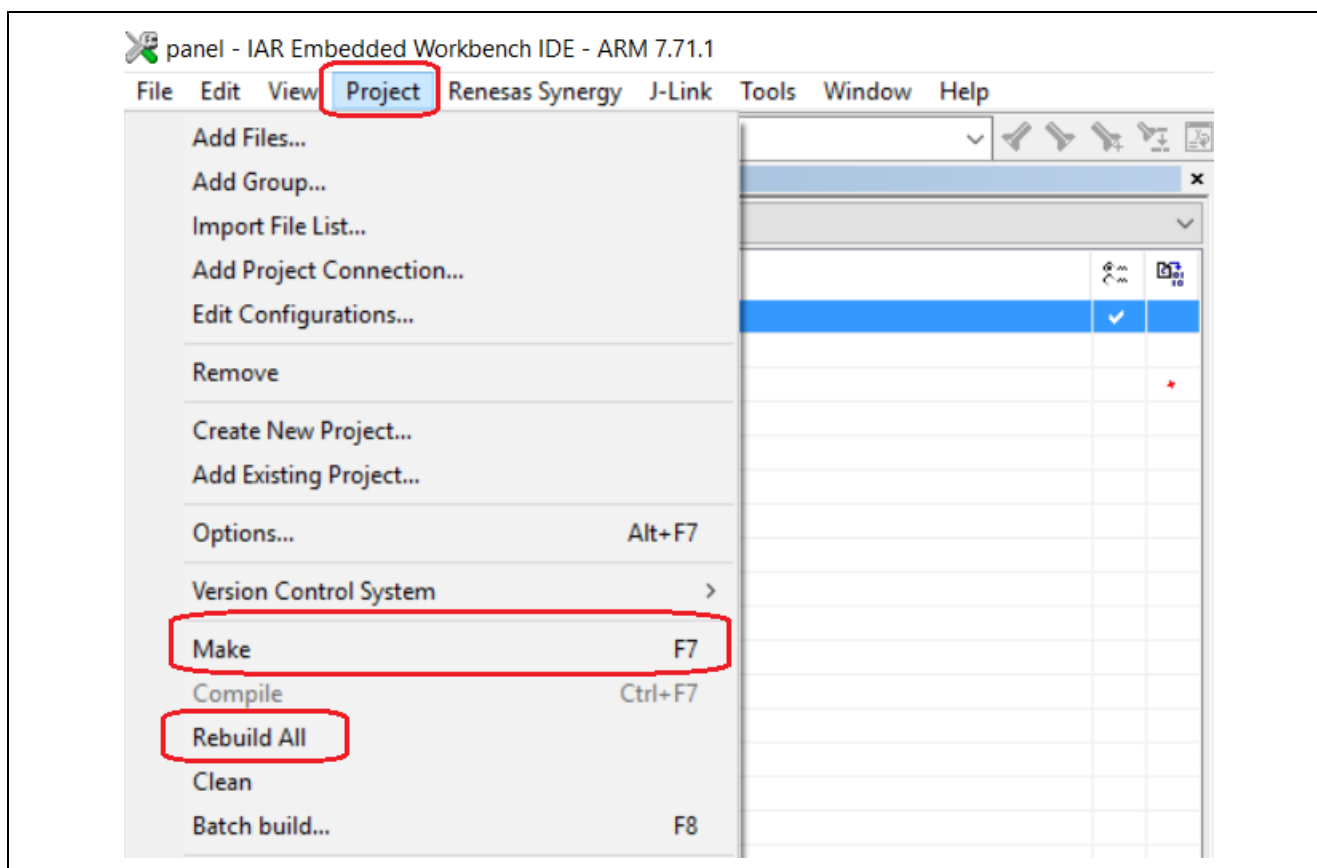


Figure 17 IAR project files

23. If your project is not following the e<sup>2</sup> studio structure you will probably get build errors since the references to the header files and source code will be wrong.
24. Build the project via **Project > Make** or shortcut key F7. Alternatively, you can also use **Project > Rebuild All**.



**Figure 18 Make or rebuild project**

Note 1: If this project was built by e<sup>2</sup> studio before this step, the following errors may be seen:

Error[Li005]: no definition for "\_\_StackLimit"

Error[Li005]: no definition for "\_\_StackTop"

Error[Li005]: no definition for "\_\_RAM\_segment\_used\_end\_\_"

These errors occur because the IAR linker finds the libraries built by e<sup>2</sup> studio and links them instead of linking those built by IAR EW for Synergy. To avoid this condition, delete the libraries built by e<sup>2</sup> studio and build again. The easiest way to delete the libraries built by e<sup>2</sup> studio is to delete the entire **synergy** folder in the project.

Note 2: In case of getting the following linker build error:

Fatal Error[Lp049]: there was no reference to \_\_iar\_data\_init3, but it is needed to initialize section .bss

Please make sure that the latest SSP v1.2.0 is selected in the BSP settings from the SSC. The following workaround will be required in case a previous version of SSP v1.1.x is required with IAR EW for Synergy v7.71 and SSC v5.2.1.016. Override the following line in the linker script file (for example S7G2.icf) located in the **scripts** folder from:

```
do not initialize { section .noinit };
to
do not initialize { zeroinit };
```

25. Before programming the WeatherPanel application to the target, make sure that the SK-S7G2 Synergy MCU Group is connected to your PC or desktop via the USB cable. The USB\_DEBUG connector (J19) with the J-Link On-Board will be used for this example.
26. Make sure to select the correct driver for your debug probe. J-Link is the On-Board probe on the SK-S7G2 Synergy MCU Group board that you can also make use of the I-jet and I-jet Trace from the IAR Systems if you have one of these probes.

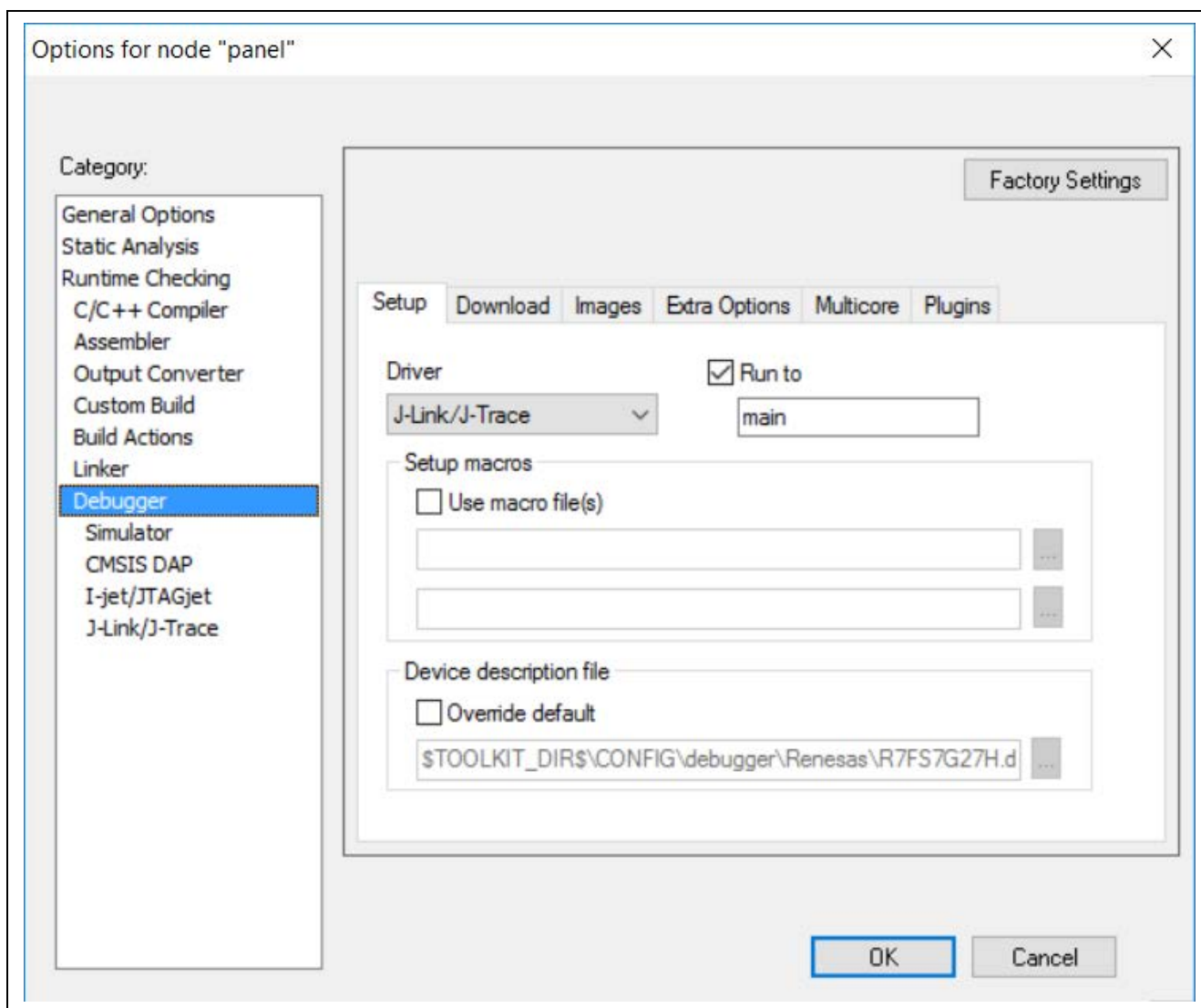
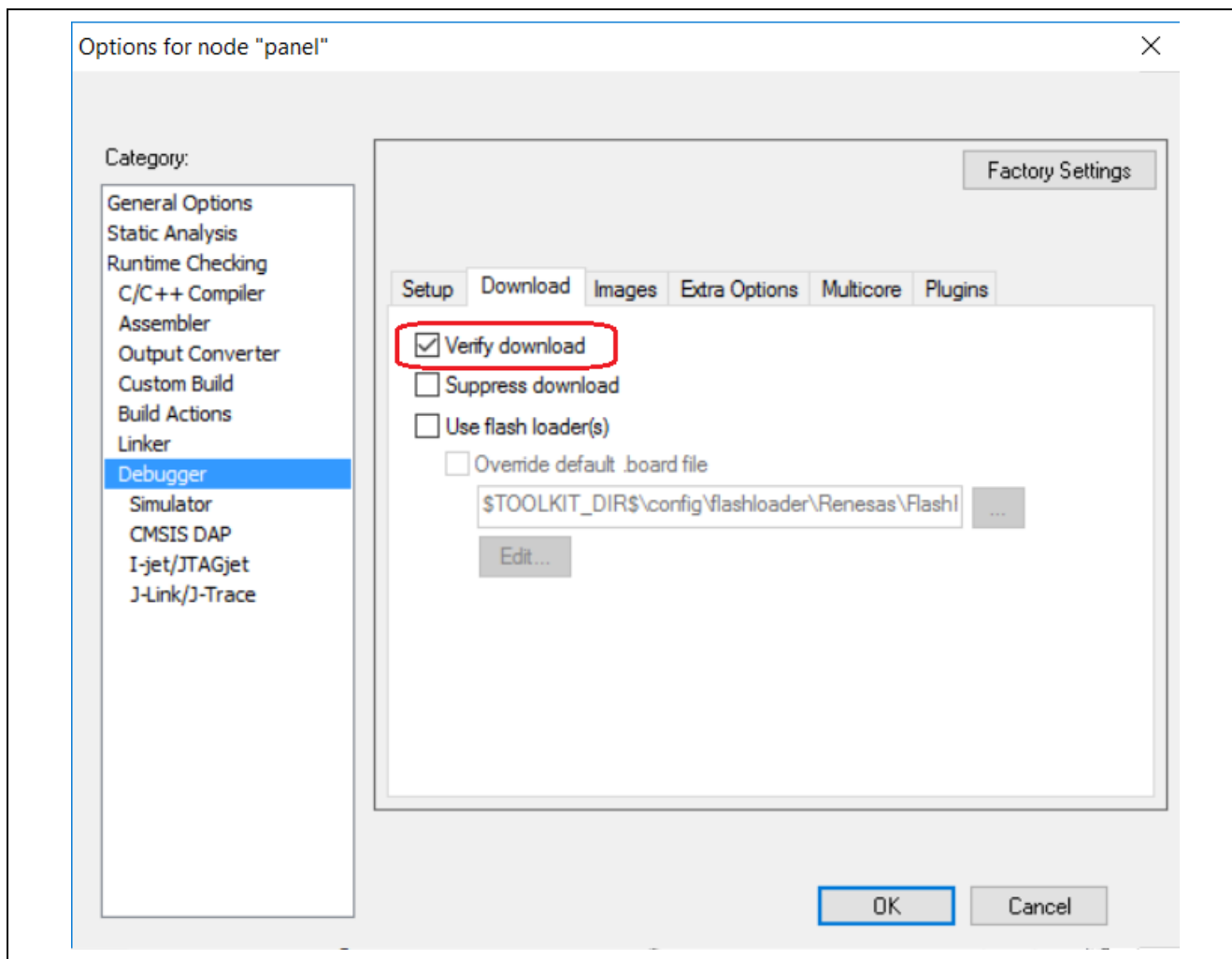


Figure 19 Select J-Link/J-Trace driver



**Figure 20 Verify download**

27. You can program the target via **Project > Download and Debug** (shortcut is CTRL+D).

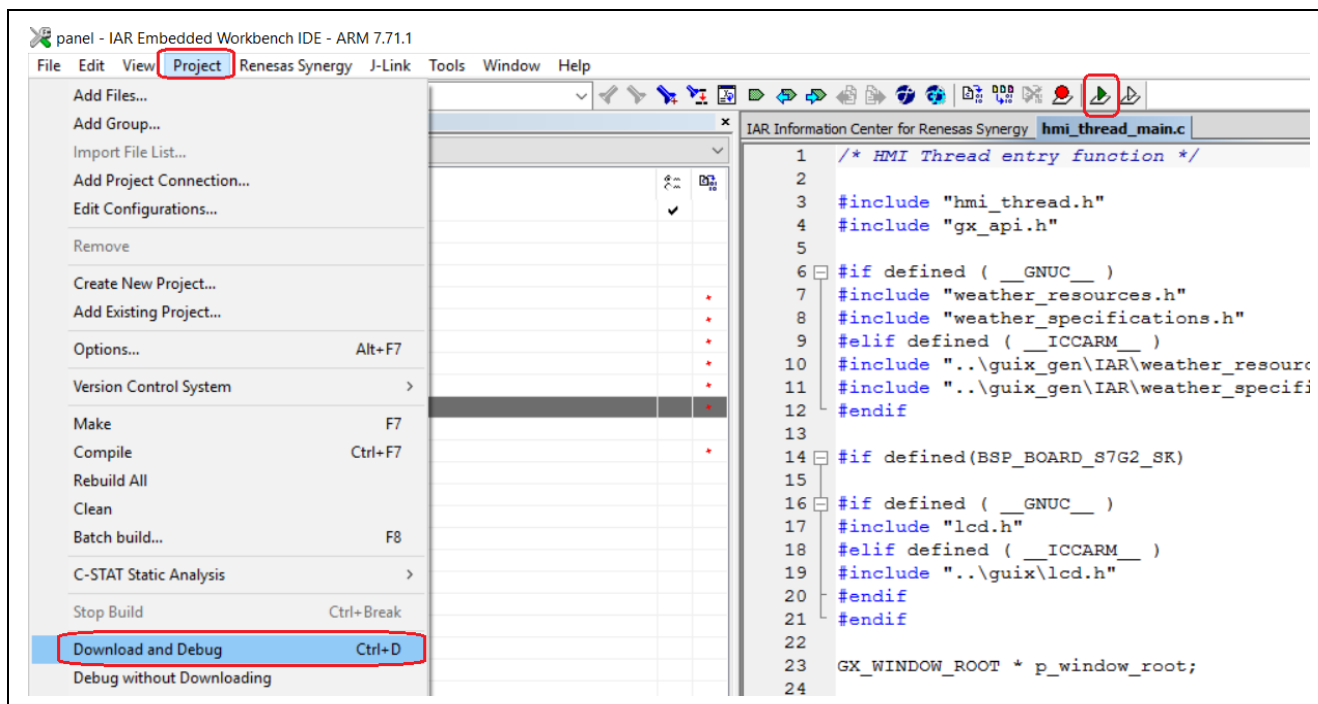


Figure 21 Program target

28. You might get a pop-up asking for the source code of ThreadX®. You can just ignore it by clicking **Skip**.

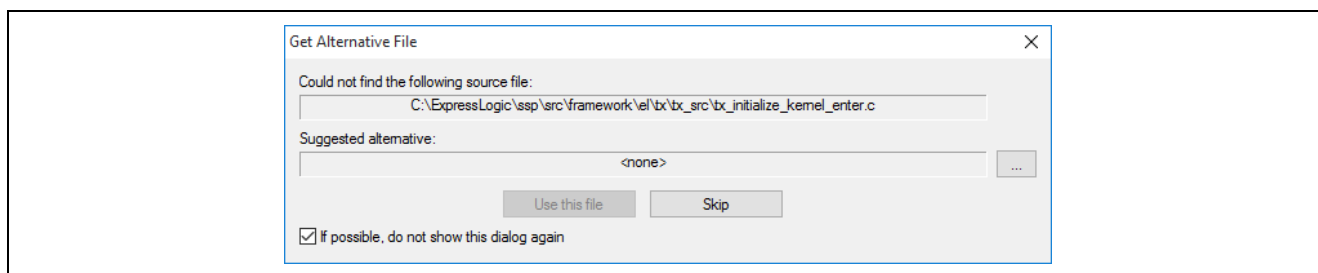


Figure 22 Skip pop-up

29. Leave the application running and notice the WeatherPanel in the display of the board. Is it working? Just like out of the box? Congratulations! You did it!

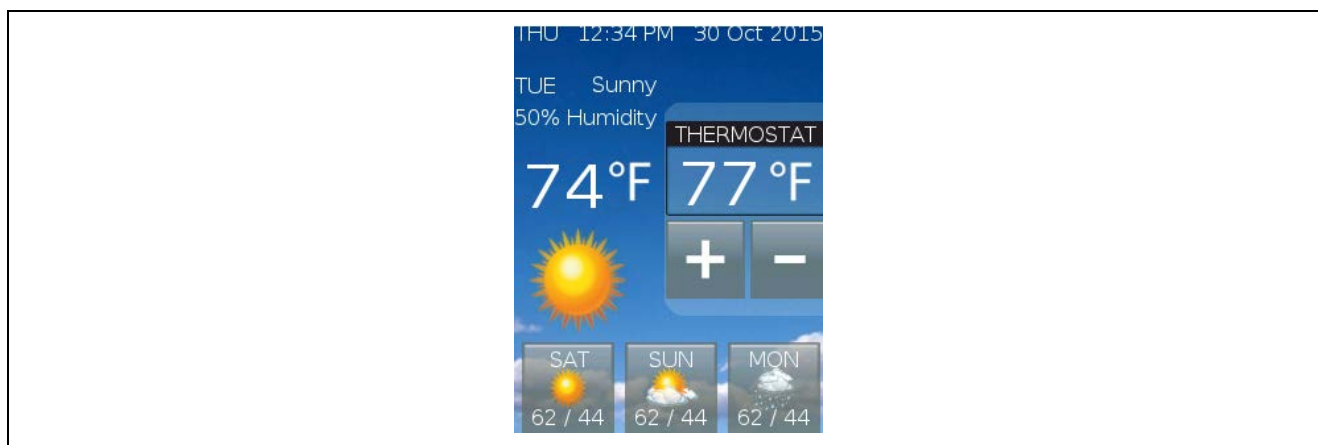


Figure 23 Running weather panel application



### 3. Extension and shortcut for GUIX Studio project in IAR EW for Synergy

It is possible to add the GUIX Studio project into the IAR EW for Synergy project by just adding the file with the extension `.gxp` into the project tree.

1. Select the project and add the file in **Options > Add > Add Files...**: `*.gxp`. Notice that all files should be displayed otherwise you only have access by default to the `.C` and `.H` files.

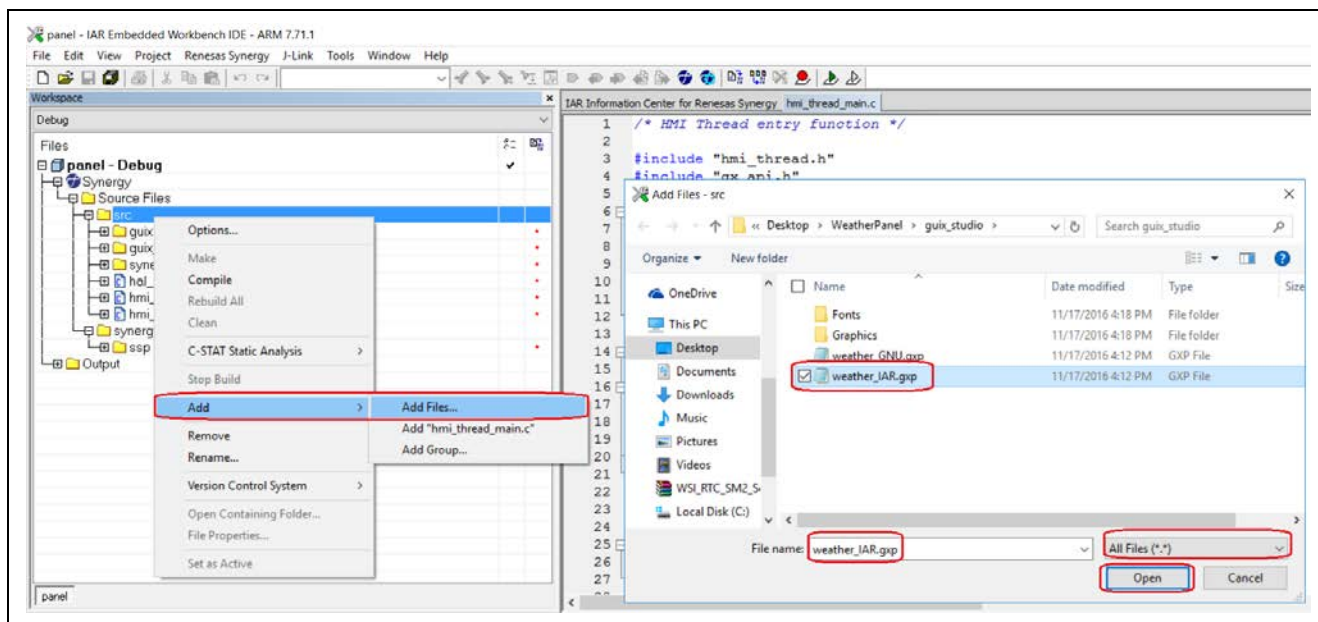


Figure 24 Add .gxp files

2. The IDE will only recognize the `.gxp` extension and the correct viewer after adding the `.gxp` in the viewer options in **Tools > Configure Viewers**.

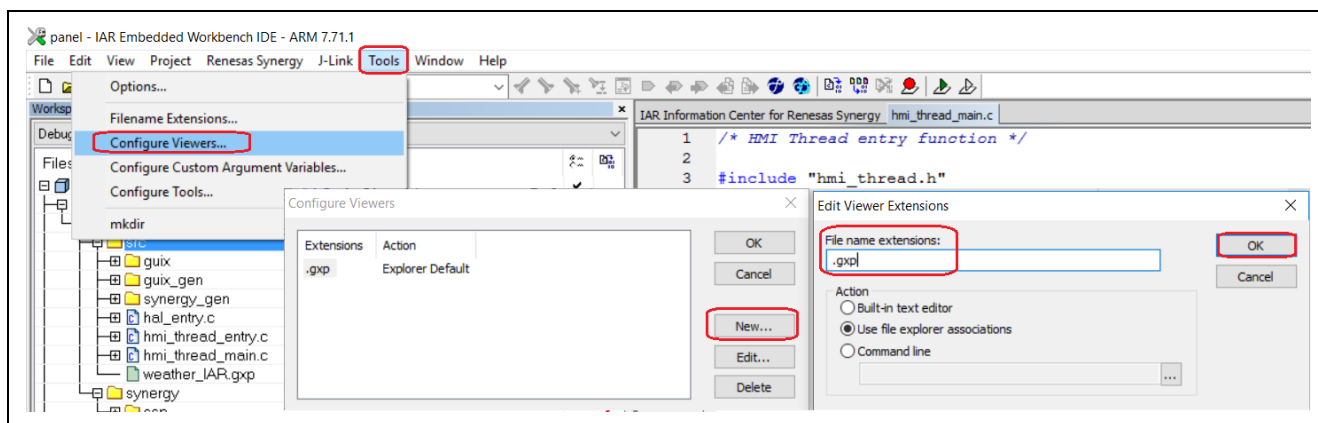


Figure 25 Configure viewers

3. Then in **New > File Extension**, add `.gxp` with the option **Use file Explorer Associations**. Confirm with **OK**.

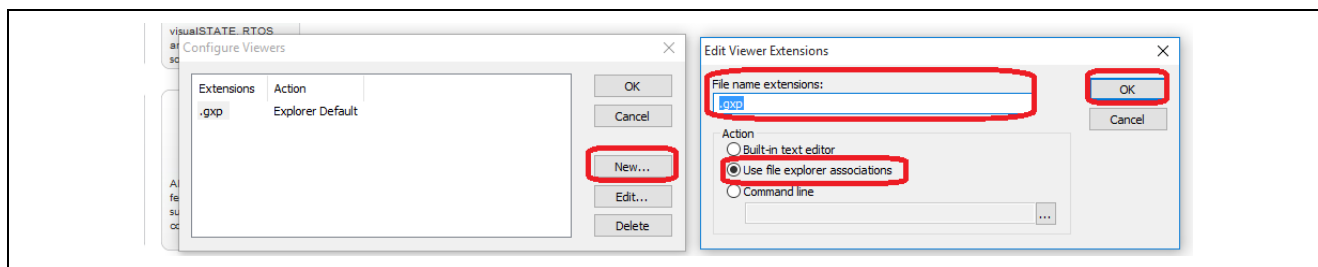


Figure 26 Add file extension

4. From now on, double-clicking on the .gxp file will start the GUIX Studio and load the associated project file.

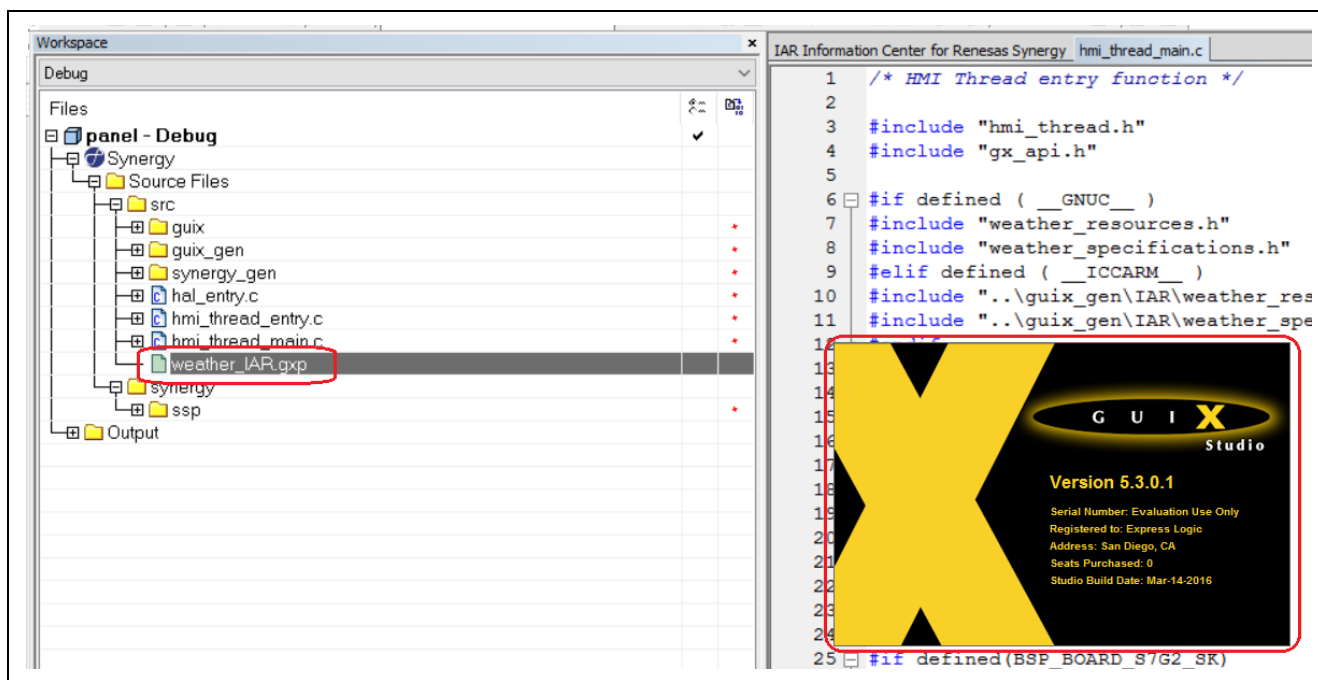


Figure 27 Starting GUIX Studio

This concludes the migration of the weather panel.

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Support <https://synergygallery.renesas.com/support>

### Technical Contact Details

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**Revision History**

Rev.	Date	Description	
		Page	Summary
1.00	Aug 17, 2016	-	Initial version
1.10	Feb 9, 2017	-	Updated to support SSP v1.2.0
1.11	Aug 8, 2017	-	Updated with new template/final release

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