

R20AN0417EU0111 Rev.1.11 Migrating Existing e² studio Projects to Aug 8, 2017 IAR Embedded Workbench[®] for Renesas Synergy[™]

Introduction

This application note will show you how to migrate a project from e² studio to IAR Embedded Workbench[®] for Renesas SynergyTM (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 e² studio project. Make sure you know the exact path to the WeatherPanel project shown in Figure below.

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📕 S] .project	11/17/2016 3:33 PM	PROJECT File	1 KB	
🥑 V	configuration.xml	11/17/2016 3:33 PM	XML Document	71 KB	
	S7G2-SK_WeatherPanel.pincfg	11/17/2016 3:33 PM	PINCFG File	56 KB	
la On	WeatherPanel Debug.jlink	11/17/2016 3:33 PM	JLINK File	1 KB	
🧢 Thi	WeatherPanel Debug.launch	11/17/2016 3:33 PM	LAUNCH File	8 KB	
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Figure 1 Directory location

Required Software

The following tools are used for this application note. All tools are available in the Synergy Gallery (https://synergygallery.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 e² studio you don't have to worry about the previous SSP versions.
- SSC v5.2.1.016 or later
- GUIX StudioTM v5.3.0.1 or later



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2.	Migrate Project
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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.

File Edit	edded Workbench IDE View Project Renesas Synerg Configurator	Tools Window Help
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	Her	e you will find all the information you need to get started: tutorials, example projects, user reference guides, support information, and release notes.

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.

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Figure 3 Save workspace



Migrating Existing e² studio Projects to IAR Embedded Workbench for Renesas Synergy

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.

C:\Renesas\Synergy\SSC_v5_2_1_016 License file: C:\Renesas\Synergy\SSC_v5_2_1_016\internal\projectgen\arm\Licenses\SSP_License_Exar License information: CUSTOMER INFORMATION: Company: Renesas Electronics America Inc. UserName: Renesas Synergy Evaluation User Email: noreply@renesas.com LICENSE INFORMATION: Issued: 06/02/2016 SUPPORTED COMPONENTS: Component: Synergy BSP	Location where Renesas Synergy SSC/SSP is installed:	
License file: C:\Renesas\Synergy\SSC_v5_2_1_016\internal\projectgen\arm\Licenses\SSP_License_Exar License information: CUSTOMER INFORMATION: Company: Renesas Electronics America Inc. UserName: Renesas Synergy Evaluation User Email: noreply@renesas.com LICENSE INFORMATION: Issued: 06/02/2016 SUPPORTED COMPONENTS: Component: Synergy BSP		
C:\Renesas\Synergy\SSC_v5_2_1_016\internal\projectgen\arm\Licenses\SSP_License_Exar > License information: CUSTOMER INFORMATION: Company: Renesas Electronics America Inc. UserName: Renesas Synergy Evaluation User Email: noreply@renesas.com LICENSE INFORMATION: Issued: 06/02/2016 SUPPORTED COMPONENTS: Component: Synergy BSP		
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Company: Renesas Electronics America Inc. UserName: Renesas Synergy Evaluation User Email: noreply@renesas.com LICENSE INFORMATION: Issued: 06/02/2016 SUPPORTED COMPONENTS: Component: Synergy BSP		
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Component: Synergy BSP	Issued: 06/02/2016	
Component: Synergy BSP		
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Deplace exerusted files with descented files	Replace encrypted files with decrypted files	

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_xxxx.



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Figure 5 SCC/SSP location

- 5. Click **Choose** to set the SSC/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:

 $\label{eq:c:Renesas} Synergy \\ SSC_vx_x_xxx \\ intenal \\ projectgen \\ arm \\ Licenses \\ directory. \\$

 Select SSP_License_Example_EvalLicence_*.xml or SSP_Development_and_Production_License_*.xml located in the directory.



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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**.

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a OneDrive						
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File name: panel	1					
Save as type: Project	t Files (*.ewp)					

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.

Synergy Standalone Configurato	r						-	- 0	×
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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 e² 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 e² 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.



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	Renesas Symergy S7G2 176 LQFP		

Figure 10 Closing the Configurator

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

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File Edit View Project Renesas Synergy Tools Wind
Workspace ×
Debug ~
Files (* 102)
□ panel - Debug ✓ □ ⊕ Synergy □ □ Output □

Figure 11 Project structure

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

		as Synergy J-Link Tools Window Help
Workspace Save Al	_	IAR Information Center for Renesas Synergy
Files ☐ panel - De →	* *	IAR Information Here you will find all the information and reference guides, support information

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.

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	IAR Academy aveather_IAR.gxp 11/17/2016 4:12 PM GXP File	
	November 2	
	STM32F030	
	File name: weather_IAR.gxp ✓ GUIX project files (*.gxp) ✓	
	Open Cancel	
Ready	Registered to: Express Logic Seats Purchased: 0	

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**.

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Project Ed	dit Insert Co	nfigure	Help				Directories			
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Height	320							packed format		
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Transparent							○ 32 bpp			
Draw Selected		\sim								
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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.

Notification	×	
All Output files have been updated		
ОК		

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.



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📌 Quick	.module_descriptions	11/17/2016 4:18 PM	File folder		
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📙 P 🖈	guix_studio	11/17/2016 4:18 PM	File folder		
IAR.	script	11/17/2016 4:31 PM	File folder		
Nov	settings	11/17/2016 4:39 PM	File folder		
STM	🔽 💄 src	11/17/2016 4:27 PM	File folder		
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i OneD	I.cproject	11/17/2016 4:12 PM	CPROJECT File	68 KB	
🗢 This P	.project	11/17/2016 4:04 PM	PROJECT File	1 KB	
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Doc	🖹 configuration.xml	11/17/2016 4:12 PM	XML Document	74 KB	
	panel.custom_argvars	11/17/2016 4:39 PM	CUSTOM_ARGVAR	1 KB	
🔈 Dow	📄 panel.dep	11/17/2016 4:40 PM	DEP File	28 KB	
b Mus	anel.ewd	11/17/2016 4:40 PM	EWD File	46 KB	
📄 Pictı	anel.ewp	11/17/2016 4:40 PM	EWP File	102 KB	
📳 Vide	anel.ewt	11/17/2016 4:40 PM	EWT File	181 KB	
🖀 WSI_	🔀 panel.eww	11/17/2016 4:40 PM	IAR IDE Workspace	1 KB	
🐛 Loca	S7G2-SK_WeatherPanel.pincfg	11/17/2016 4:36 PM	PINCFG File	56 KB	
🥪 Publ	🤍 WeatherPanel Debug.jlink	11/17/2016 4:04 PM	JLINK File	1 KB	
👽 Rafa	WeatherPanel Debug.launch	11/17/2016 4:12 PM	LAUNCH File	14 KB	
🧼 Netwo					

Figure 17 IAR project files

- 23. If your project is not following the e^2 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.



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	Rebuil	d All]			-					
	Clean					-					
	Batch	build			F8						

Figure 18 Make or rebuild project

Note 1: If this project was built by e² 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^2 studio and links them instead of linking those built by IAR EW for Synergy. To avoid this condition, delete the libraries built by e^2 studio and build again. The easiest way to delete the libraries built by e^2 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.



Category:	Factory Setting	gs							
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Runtime Checking C/C++ Compiler Assembler	Setup Download Images Extra Options Multicore Plugins								
Output Converter	Driver Run to								
Custom Build	J-Link/J-Trace V main								
Build Actions Linker Debugger Simulator CMSIS DAP I-jet/JTAGjet J-Link/J-Trace	Setup macros								
	Device description file								
	Override default								
	\$TOOLKIT_DIR\$\CONFIG\debugger\Renesas\R7FS7G27H.d								

Figure 19 Select J-Link/J-Trace driver



Category:	Factory Settings
General Options Static Analysis Runtime Checking	
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Output Converter Custom Build	Suppress download
Build Actions Linker	Use flash loader(s)
Debugger	Override default board file
Simulator CMSIS DAP I-jet/JTAGjet J-Link/J-Trace	\$TOOLKIT_DIR\$\config\flashloader\Renesas\FlashI Edit

Figure 20 Verify download

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



e Edit View Project Renesa	s Synergy J-Link	
Add Files		
Add Group		X IAR Information Center for Renesas Synergy hmi_thread_main.c
Import File List		1 /* HMI Thread entry function */
Add Project Connection		2 (c)
Edit Configurations		3 #include "hmi_thread.h"
-		4 #include "gx_api.h"
Remove		5
Create New Project		6 ☐ #if defined (GNUC) 7 #include "weather resources.h"
Add Existing Project		 Finclude "weather_resources.h" 8 #include "weather specifications.h"
		 9 #elif defined (ICCARM)
Options	Alt+F7	* 10 #include "\guix gen\IAR\weather reso
Version Control System	>	* 11 #include "\guix gen\IAR\weather spec
Make	F7	12 #endif
		13
Compile	Ctrl+F7	* 14 🖂 #if defined (BSP_BOARD_S7G2_SK)
Rebuild All		15
Clean		16 = #if defined (GNUC)
Batch build	F8	17 #include "lcd.h" 18 #elif defined (ICCARM)
C-STAT Static Analysis	>	19 #include "\guix\lcd.h"
C-STAT Static Analysis	/	20 - #endif
Stop Build	Ctrl+Break	21 [‡] endif
Download and Debug	Ctrl+D	22
Debug without Downloading		23 GX_WINDOW_ROOT * p_window_root;

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.

Get Alternative File	×
Could not find the following source file: C:\ExpressLogic\ssp\src\framework\el\tx\tx_src\tx_initialize_kernel_enter.c	
Suggested alternative: <none></none>	
Use this file 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.

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	Add	>	Add Files	17	Music				
	Remove Rename		Add "hmi_thread_main.c" Add Group	18 19 20	Pictures Videos				
	Version Control System	>		21	SURTC_SM2_S				
	Open Containing Folder File Properties			23 24 25 E	Local Disk (C:)		-		
	Set as Active			26	File name: weather_IAR.gxp		All 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**.

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□ □ 	Configure Custom Argument V Configure Tools	Configure Viewers		· · ·	3		"hmi_thread.h" Edit Viewer Extensions
	mkdir - B guix - B guix gen - B guix gen - B hal_entry c - B hmi_thread_entry.c - B hmi_thread_main.c - weather_IAR.gxp - synergy	Extensions Act	ion Jorer Default			OK Cancel New Edit Delete	File name extensions: OK .gxpl Cancel Action Built-in text editor • Use file explorer associations Command line

Figure 25 Configure viewers

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



Renesas Synergy[™] Platform

Migrating Existing e² studio Projects to IAR Embedded Workbench for Renesas Synergy

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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.



Website and Support

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

Technical Contact Details

- America: <u>https://renesas.zendesk.com/anonymous_requests/new</u>
- Europe: <u>http://www.renesas.eu/support/index.jsp</u>
- Japan: <u>http://japan.renesas.com/contact/index.jsp</u>

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Revision History

		Description	
Rev.	Date	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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