

Guiliani on Renesas RSK-RZA1 (DisplayIt) and StreamIt Board: Quickstart Guide – “GuilianiDemo” application

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1 Introduction

The “GuilianiDemo” presents some of the capabilities of the Guiliani HMI framework running on the Renesas RZ/A with usage of the TES eGML software rendering engine.

Additionally the efficient way of working for HMI application development by using the Guiliani Streaming Editor (GSE) is introduced. The user may make some first changes to the “GuilianiDemo”, simulate the changes on PC and download the changes to the RZ/A1 board – all without the need of compiling and linking a new executable.

This quick guide runs you through this process within minutes!

- Preparing your PC, i.e. installing and configuring the required tool chain
- Installing the “GuilianiDemo” demo on the DisplayIt and StreamIt boards
- Using the Guiliani Editor (GSE) to simulate the “GuilianiDemo” on PC and to make your own first changes to the “GuilianiDemo”.
- Exporting your changes and loading them to the DisplayIt and StreamIt board
- Compiling your own GSE and StreamRuntime

2 System Preparation

- The board for which the software and this manual are developed is *Renesas DisplayIt and StreamIt for RZ/A1*:
http://www.renesas.com/products/tools/introductory_evaluation_tools/renesas_starter_kits/rsk_rza1/index.jsp
<https://www.renesas.com/en-eu/solutions/key-technology/human-interface/rz-stream-it.html>
- JLink drivers need to be installed:
<http://www.segger.com/jlink-software.html>

3 Load pre-built example project

- For RSK-RZA1 board, set the switch SW6 to “OFF ON OFF ON ON ON” on the board (Fig. 1). Note: This will select the on-board QSPI flash. No such setting is required to be done for StreamIt board.

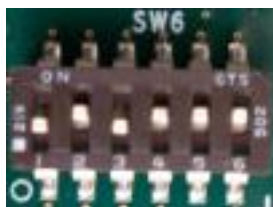


Fig. 1 Settings for Switch SW6

- Connect the board to the computer via JLink probe and to the power supply. USB2 is recommended.
- Execute the file “FlashGuilianiDemo.bat”, located in the folder “FlashTools”. This batch file will install the demo: The Guiliani Runtime Engine with eGML Software Renderer and application and the resources (e.g. the application behavior, pictures, textures, fonts...). Select the three options one by one (Fig. 2). The choice order is irrelevant, but we recommend the given sequence from 1 to 3. For each of the three options, there are two options available – one for DisplayIt and second for StreamIt.

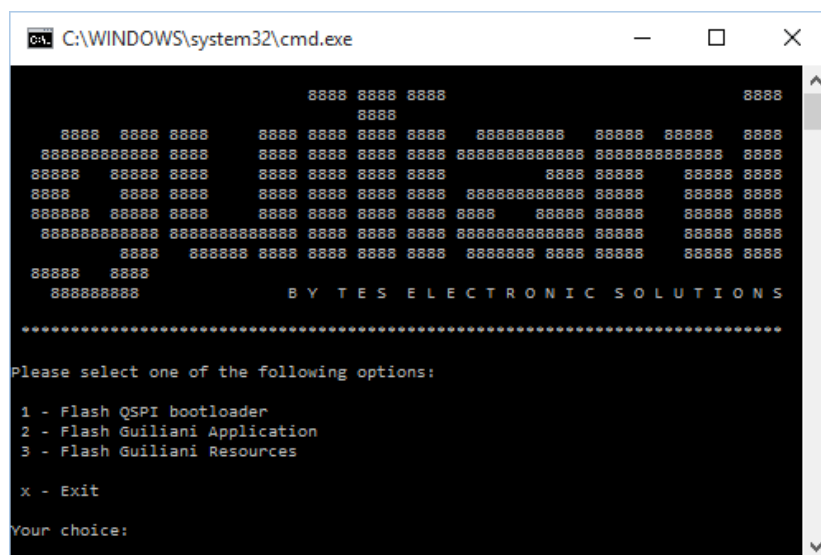


Fig. 2 Batch Script for Flashing Guiliani Demo

- Note: Since the batch script can be used for flashing bootloader of both the DisplayIt and StreamIt boards, make sure that the correct board is selected. Flashing a wrong bootloader may damage your board. Once you choose an option, it will ask you for confirmation and then only start flashing the bootloader (Fig. 3).

```

C:\WINDOWS\system32\cmd.exe
WARNING: Please make sure that you select the correct bootloader and connect the J-Link Lite Probe with the appropriate board.
Choosing incorrect option and hence flashing incorrect bootloader may damage your board.

Drücken Sie eine beliebige Taste . . .
Which bootloader to flash?
Bootloader for DisplayIt   = 1
Bootloader for StreamIt    = 2
Go to main menu           = x
1
You are about to flash bootloader for DisplayIt, do you want to proceed? (y/n)
-
  
```

Fig. 3 Flash Bootloader

- For flashing Guiliani application, there are three options available (Fig. 4). The option 1 is for flashing DisplayIt board with GuilianiDemo built with RGA (Renesas Graphics Architecture) library. This option is only available for full license and this is not available in this SDK. So the option 1 can be ignored for this SDK. The option 2 is for flashing DisplayIt with eGML library and option 3 is for StreamIt board with eGML library. The option 2 and 3 are available for Lite and Evaluation license.

```

C:\WINDOWS\system32\cmd.exe
Which binary to flash?
Release version for RZA1H DisplayIt built with RGA Library   = 1
Release version for RZA1H DisplayIt built with eGML Library = 2
Release version for StreamIt built with eGML Library         = 3
Go to main menu                                             = x
  
```

Fig. 4 Flash Guiliani Application

- Wait until the flash process has finished. This will take several minutes.
- Now you can start playing with the demo on the board

3.1 Demo description

After flashing as described above, you can start the “GuilianiDemo”. This demo has a main screen in which you can choose between several options. In each of them you can test the functionality implemented using the Guiliani API.

- Animations:** the animation screen exhibits the animation functionality. For each of the possible animation’s setting on the left applies an animation shown at the right.
- Buttons:** This screen depicts some of the button-related widgets available in Guiliani. Additionally skinning is demonstrated.
- Slider:** Here you can see how the slider-based widget works, vertically and horizontally. Dragging the knob will update the bar accordingly.

- Text: In this screen you can see how normal and rich text is displayed, the translation of the text and the dynamic re-structuring of it. Additionally multi-language support is demonstrated.
- Gauge and Wheel: In dependence of the value you choose with the wheel, the gauge will be set to the same value.
- Carousel: A carousel is a widget that implements a flowing visual effect on the objects that are contained. By dragging the frontal picture left or right, the widget will displace all the pictures according to the speed of the dragging. On the left side of the screen, you will see a slider with which you can choose the vertical positions of the shown pictures. The slider on the right handles the spacing between pictures and the one at the bottom manages the amount of pictures shown. Also, there is a button that allows you to change between classic carousel and cover flow mode. In cover flow mode, the pictures are displayed from left to right. The sliders work likewise.
- Keyboard: Here a keyboard will be simulated. When selecting the text below user, you can enter text using the keyboard. With the “abc” button you can select between capital and small letter. The button “123” let you choose numbers and special characters. The password field will hide the entered text as asterisks.
- Settings: Here you can set the language, the kind of transition and easing and skinning.
- Scratchpad: You can extend the demo's functionality using the Guiliani Streaming Editor (GSE). This screen is left blank on purpose, so you can see how other widgets work. All the necessary information for extending functionality and using GSE is available in this SDK.

4 Edit example project on the computer

Please read chapter 5 in the document “GSE Getting started.pdf” to learn about how to edit the GuilianiDemo (see /documentation folder).

5 Load edited example project onto the board

- In the previous step we were able to edit a GSE project and see the modifications on a running simulation on the computer. Now we will see those changes on the board.
- Connect the board to the computer via JLink probe and to the power supply.
- If you did not test the pre-built example project (as described in 3Load pre-built example project), do all the steps described in Load pre-built example project. With the GSE project open, export the resources (i.e. the GuilianiDemo application including all pictures etc.) by clicking Resources ➔ Export (Fig. 5).

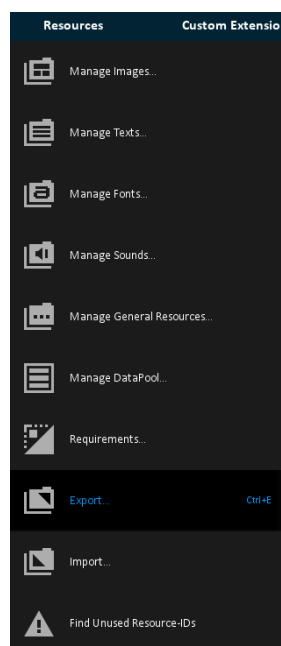


Fig. 5 Export Option

- In the Export window (Fig. 6) make sure Main has been chosen as the Start dialog and all the options are selected as shown except Export directory.

In there, please write (or navigate) the path to the *Export* folder:

For DisplayIt: <*Path where the SDK is*> /Export/DisplayIt. (*)

For StreamIt: <*Path where the SDK is*> /Export/StreamIt. (*)

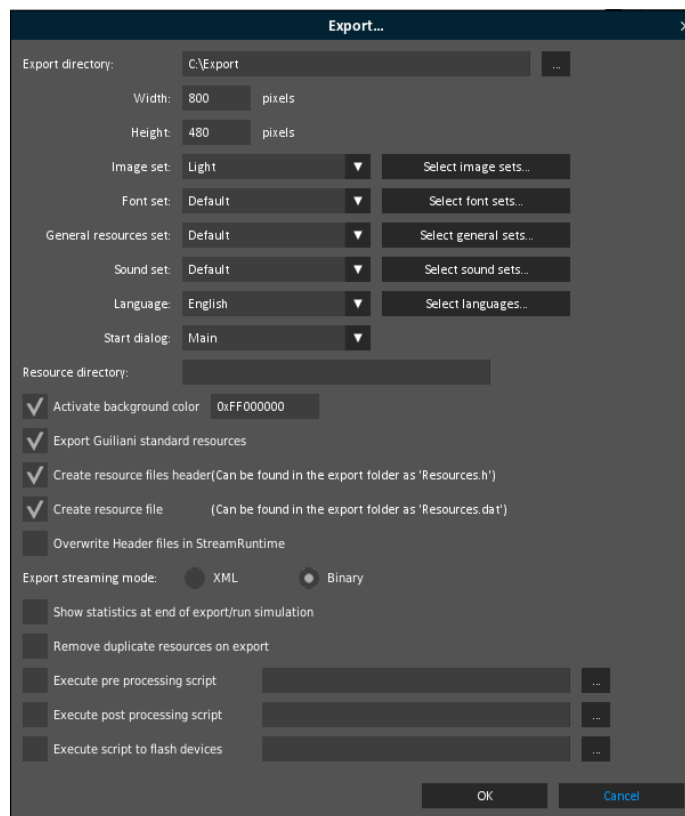


Fig. 6 Exporting Configuration

- Click on *OK*
- Execute *FlashGuilianiDemo.bat* (located in the folder “FlashTools”) and select the option 3 (Flash Guiliani Resources). This batch script will install the resources (e.g. application behavior, pictures, textures, fonts...).
- Wait until the flash process has finished. This will take several minutes.
- Now you can start playing with the GuilianiDemo demo on the board. Navigate to “SCRATCHPAD” and you will see your first own Guiliani HMI application running on the target board.

(*) If you want to export the project to a different folder, you will have to modify the *FlashGuilianiDemo.bat* file (Fig. 7). Please substitute the text *"..\Export\DisplayIt\Resources.dat"* for DisplayIt and *"..\Export\StreamIt\Resources.dat"* for StreamIt with the required path, where the resources will be exported.

Note: The file which will be flashed is “Resources.bin” which is a copy from your “Resources.dat”. The script will automatically copy your file and rename the new one.

```

138 :DisplayIt
139 if not exist "..\Export\DisplayIt\Resources.dat" goto :errorNoResourceFile_DisplayIt
140 copy ..\Export\DisplayIt\Resources.dat ..\Export\DisplayIt\Resources.bin>nul
141 cd JLink
142 cls
143 JLink.exe -if JTAG -speed 12000 -device R7S721001_DualSPI -jtagconf -1,-1 -CommanderScript FlashResources_DisplayIt.Command
144 pause
145 cd ..
146 goto :loop
147 :StreamIt
148 if not exist "..\Export\StreamIt\Resources.dat" goto :errorNoResourceFile_StreamIt
149 copy ..\Export\StreamIt\Resources.dat ..\Export\StreamIt\Resources.bin>nul
150 cd JLink
151 cls
152 JLink.exe -if JTAG -speed 12000 -device R7S721031_DualSPI -jtagconf -1,-1 -CommanderScript FlashResources_StreamIt.Command
153 pause
154 cd ..
155 goto :loop

```

Fig. 7 FlashGuilianiDemo.bat

You will also need to change J-Link command files present under *"FlashTools\JLink"*. To modify the path for the resources of DisplayIt board, open *FlashResources_DisplayIt.command* file (Fig. 8) and change the path of loadbin and verifybin command. For StreamIt board, open *FlashResources_StreamIt.command* file (Fig. 9) and change the path of loadbin and verifybin command.

```

4 exec device = R7S721001_DualSPI
5 loadbin ..\..\Export\DisplayIt\Resources.bin,0x19000000
6 verifybin ..\..\Export\DisplayIt\Resources.bin,0x19000000
7

```

Fig. 8 Command File for Flashing Resources for DisplayIt Board

```

4 exec device = R7S721031_DualSPI
5 loadbin ..\..\Export\StreamIt\Resources.bin,0x19000000
6 verifybin ..\..\Export\StreamIt\Resources.bin,0x19000000
7

```

Fig. 9 Command File for Flashing Resources for StreamIt Board

6 Compiling your own GSE and StreamRuntime

If you like to extend your GSE project with your own functionality, you have to re-compile GSE and StreamRuntime. For this you have to take CMake as the build environment. Please refer to chapter “3.Preparation and compilation” inside the manual “Custom Extensions.pdf” which you will find in the documentation folder.