EB GUIDE extension examples

Working with EB GUIDE GTF and EB GUIDE Monitor extension examples

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1. Background information

With EB GUIDE you can use extensions and applications to customize the visual appeareance and behavior of your EB GUIDE model or to enhance EB GUIDE Monitor with additional functionalities. A collection of ready-to-use examples show you how to create your own EB GUIDE GTF and EB GUIDE Monitor extensions.

To download these examples, see https://www.elektrobit.com/ebguide/learn/resources/.

The downloaded `EB_GUIDE_Examples.zip` file contains all files needed for building and using the examples:

▶ The folder `sdk` contains examples for the EB GUIDE GTF extensions.

▶ The folder `monitor` contains examples for the EB GUIDE Monitor extensions.

▶ The folder `doc` contains this documentation.

The following instructions show you how to work with and build the EB GUIDE GTF and EB GUIDE Monitor extension examples.

	NOTE	**Default window layout**
	(i)	All instructions and screenshots use the default window layout. If you want to follow the instructions, we recommend to set the EB GUIDE Studio window to default layout by selecting **Layout** > **Reset to default layout**.

	NOTE	**Default window layout**
	(i)	All instructions and screenshots use the default window layout. If you want to follow the instructions, we recommend to set the EB GUIDE Monitor window to default layout by selecting **Layout** > **Reset to default layout**.

2. Working with EB GUIDE GTF examples

For EB GUIDE you can create extensions and applications as for example custom widgets, widget features, EB GUIDE Script functions, and enhanced graphical effects in addition to the basic widgets as for example rectangle. Thus you have more options to design the visual appearance of your EB GUIDE model.

NOTE	**Migration of EB GUIDE projects with custom EB GUIDE GTF extensions**
ⓘ	The custom EB GUIDE GTF extensions must first be build against the EB GUIDE SDK of the new EB GUIDE Studio version. In the next step you can replace the `.dll` files in the `resources` sub-folder of the EB GUIDE project with the newly build file version. Afterwards you can migrate the EB GUIDE project to the new EB GUIDE Studio version.

For more information, see .

2.1. Background information

2.1.1. List of current EB GUIDE GTF examples

The following EB GUIDE GTF examples are currently available:

Table 1. List of current EB GUIDE GTF examples

Name	Content
`ApplicationInteractionExample`	Shows interaction between HMI and business logic
`BasicExample`	Shows basic structure of an EB GUIDE GTF extension
`BloomEffect`	Adds a bright light effect for an image
`ConfigurationImporterExample`	Shows how to load an own custom configuration `JSON` file, other than the ones provided by the export
`CoreStageExample`	Shows how to use core stages in EB GUIDE GTF
`CrepuscularEffect`	Adds a volumetric light scattering effect for special visual effects of the scene
`DatapoolExample`	Shows basic concept of datapool communication
`DependencyResolverExample`	Shows the dependency resolving example in EB GUIDE GTF
`EventExample`	Shows concept of event communication
`ExtendedContainerWidget`	Adds a custom container widget with child visibility control
`ExternalKeyInputExample`	Shows concept of key-based interaction
`ExternalTouchInputExample`	Shows concept of touch-based interaction
`FocusPolicyWidgetFeature`	Adds a custom focus policy to a widget

Name	Content
`FocusedWidgetFeature`	Adds a custom focus reaction on rectangle widgets
`ImagedataExample`	Shows how to load images from an application into the datapool items of a model. The images can be static, like `.png` files or dynamic like a Mandelbrot image.
`ModelStageExample`	Shows how to use model stages in EB GUIDE GTF
`RippleEffect`	Adds a ripple effect for special visual effects of the scene
`ScriptFunction`	Adds custom `add` EB GUIDE Script function
`ScreenshotExample`	Shows how to capture the last renderer result
`SettingsExample`	Shows how to deal with EB GUIDE GTF settings
`TriangleWidget`	Adds a basic triangle-shaped widget for different design options
`TraceOutputExample`	Adds own output plugin for printing trace messages in a `.csv` file
`WindowListExample`	Shows basic concept with list handling

2.1.2. Structure of EB GUIDE GTF examples

The folder `sdk` contains two folders:

► `cmake` contains the CMake files.

► `examples` contains the source code of the EB GUIDE GTF examples:

  ► `concepts` contains the code for EB GUIDE GTF concepts, for example EB GUIDE GTF extension examples.

  ► `model_extensions` contains the source code for EB GUIDE GTF model extensions, for example custom widgets examples.

  ► `model_interactions` contains the source code for basic EB GUIDE GTF model interactions, for example how to connect and interact with an HMI model from underlying business logic.

Each example in the `examples` folder consists of the following:

► EB GUIDE model in the `model` folder.

  Each model contains prebuilt examples and you can use them without previous compilation.

► Example source code in the `src` folder

► build files

2.2. Building the EB GUIDE GTF examples

The following instructions show you how to build the EB GUIDE GTF examples. If you want to update your EB GUIDE Studio installation to a higher version, you have to build the examples before migrating your EB GUIDE project to the new EB GUIDE Studio version.

2.2.1. Building the EB GUIDE GTF examples with Visual Studio

All EB GUIDE GTF examples are provided with Visual Studio 2017 solution and project files.

NOTE	**Preconfigured Visual Studio solution files**
(i)	All Visual Studio solution files are preconfigured to use required files from the EB GUIDE default installation directory. If you have installed EB GUIDE in a custom directory, adapt the values of `Additional include directories` and `Additional library directories` in the Visual Studio project file.

Building the EB GUIDE GTF examples with Visual Studio

All EB GUIDE GTF examples are provided with Visual Studio 2017 solution and project files.

Prerequisite:

▪ Visual Studio 2017 is installed.

Step 1
Open the solution file of the example in Visual Studio 2017 and run the build.

If EB GUIDE Studio is not installed in the default path, adapt the paths accordingly in your Visual Studio project.

Step 2
Copy the resulting `.dll` files into the resource sub-folder of the EB GUIDE project. Hereby you overwrite the existing `.dll` files.

The extension is now available in your EB GUIDE model.

2.2.2. Building the EB GUIDE GTF examples with CMake generated Visual Studio solution file

With CMake 3.7.1 you can generate the Visual Studio solution file for the EB GUIDE examples. Afterwards, you can open the generated solution file with Visual Studio and build the `.dll` files of the EB GUIDE examples all at once.

Building the EB GUIDE GTF examples with CMake generated Visual Studio solution

Prerequisite:

- Visual Studio 2017 is installed.

- CMake 3.7.1 is installed.

Step 1
Start `cmake-gui` of CMake 3.7.1.

Step 2
Set **Where is the source code:** to the root folder of the EB GUIDE GTF examples.

Step 3
Set **Where to build the binaries:** to a dedicated working directory with write permissions, e.g. `C:\Users\...\Desktop\eb_guide_sdk_examples_build`.

Step 4
Click **Configure**.

Agree on creating missing folders and using the generator for **Visual Studio 15 2017**.

Step 5
CMake will report an error in the configuration process.

Set the value of the CMake variable `CMAKE_INSTALL_PREFIX` a dedicated install directory with write permissions, e.g. `C:\Users\...\Desktop\eb_guide_sdk_examples_install`.

Step 6
Set the value of the CMake variable `GTF_TARGET_SDK_ROOT` to the directory that contains the EB GUIDE GTF EB GUIDE SDK.

Step 7
Click **Configure**.

CMake should not report an error anymore.

Step 8
Click **Generate**.

Your Visual Studio solution for the EB GUIDE examples is now generated and you can close `cmake-gui`.

Step 9
Start Visual Studio and open the `sdk_examples.sln` from the directory you configured previously for *Where to build the binaries:* in the `cmake-gui`.

Step 10
In the **Solution Explorer** of Visual Studio do a right click on **INSTALL**. Select **Build** from the context menu to build and install all EB GUIDE GTF example plug-ins.

All EB GUIDE GTF examples plug-ins are now available in the directory you configured previously for `CMAKE_INSTALL_PREFIX` in the `cmake-gui`.

Step 11
Copy the resulting `.dll` files into the resource sub-directory of the EB GUIDE projects. Hereby you overwrite the existing `.dll` files.

Your plug-ins are now available in your EB GUIDE models.

For information on how to use CMake, see https://cmake.org/runningcmake.

2.3. Using the EB GUIDE GTF extension examples

The following instruction shows you how to use the extension examples in EB GUIDE Studio.

Using an EB GUIDE GTF extension example in your EB GUIDE project

Prerequisite:

- You downloaded and unzipped the `EB_GUIDE_examples` file.

Step 1
Go to `.../EB_GUIDE_Examples/sdk/examples` and open a one of the following folders:

► To use a concept example, navigate to `examples\concepts`.

► To use a model extension example, navigate to `examples\model_extensions`.

► To use a model interactions example, navigate to `examples\model_interactions`.

Step 2
Select an example and navigate to `model`.

Step 3
Double-click the EB GUIDE project file.

Your plug-in is now available in your EB GUIDE model.

2.4. Migrating EB GUIDE projects with custom widgets

You cannot migrate an EB GUIDE project with added custom widgets from one EB GUIDE version to another. If your project contains custom widgets and you want to update your EB GUIDE installation, do the following:

| | Migrating the EB GUIDE project |

Step 1
Build the EB GUIDE GTF examples with the new EB GUIDE version.

Step 2
Copy the solution files into the ressource folder of your EB GUIDE project.

Step 3
Migrate the EB GUIDE project by opening it with the new EB GUIDE Studio version and confirm the migration prompt.

The EB GUIDE project is migrated to the new EB GUIDE Studio version.

3. Working with EB GUIDE Monitor extension examples

For EB GUIDE Monitor you can create custom extensions with additional functionalities. The provided examples present the supplementary components for graphical user interface of EB GUIDE Monitor.

3.1. Background information

3.1.1. List of current EB GUIDE Monitor extension examples

The following EB GUIDE Monitor extension examples are currently available:

Table 2. List of current EB GUIDE Monitor extension examples

Name	Content
monitor_ui_extension	Shows how to create a simple tab component in EB GUIDE Monitor
monitor_ui_extension_detapool	Shows how to add a list of all datapool items in a separate tab component in EB GUIDE Monitor
monitor_ui_extension_events	Shows how to add a list of all events in a separate tab component in EB GUIDE Monitor
monitor_ui_extension_target_viewer	Shows how to get and save a screenshot from the currently running EB GUIDE model

Name	Content
`monitor_ui_extension_view_plugin`	Shows an extension example that takes single screenshots, or takes screenshots constantly depending on the properties that are set

3.1.2. Structure of EB GUIDE Monitor extension examples

The folder `monitor` contains a subfolder for every EB GUIDE Monitor extension example with the following files:

► Visual Studio solution file

► Visual Studio project file

► `.props` file

Find the precompiled `.dll` files in the `/bin/x86/Release` directory of the respective extension example.

3.2. Building the EB GUIDE Monitor extension examples with Visual Studio

Building the EB GUIDE Monitor extension examples with Visual Studio

Prerequisite:

▪ Visual Studio 2017 is installed.

▪ You downloaded and unzipped the `EB_GUIDE_Examples` folder.

Step 1
Go to `.../EB_GUIDE_Examples/sdk/examples` and navigate to an extension example that you want to use.

Step 2
In the extension example directory, navigate to the `.props` file and open it.

Step 3
Set the `MonitorLibPath` property to the `$GUIDE_INSTALL_PATH/tools/monitor/lib/ui` directory.

Step 4
In Visual Studio, open the `.sln` file and build the project.

A `.dll` file is created.

Step 5

Copy the `.dll` file to `$GUIDE_INSTALL_PATH/tools/monitor/lib/ui`.

When you start EB GUIDE Monitor, you find the corresponding extension example in the menu **Layout**.

NOTE	**Preconfigured Visual Studio solution files**
(i)	All Visual Studio solution files are preconfigured to use required files from the EB GUIDE default installation directory. If you installed EB GUIDE in a custom directory, adapt the values of `Additional include directories` and `Additional library directories` in the Visual Studio project file.

3.3. Using the EB GUIDE Monitor extension examples

Using an EB GUIDE Monitor extension example

Prerequisite:

- You downloaded and unzipped the `EB_GUIDE_Examples` directory.

Step 1

Go to `.../EB_GUIDE_Examples/sdk/examples` and navigate to an extension example that you want to use.

Step 2

Select an extension example and navigate to `/bin/x86/Release`.

Step 3

Copy the `.dll` file to `$GUIDE_INSTALL_PATH/tools/monitor/lib/ui`.

When you start EB GUIDE Monitor, you find the corresponding extension example in the menu **Layout**.