

Integrating custom HTML widgets

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Simulation supports the integration of custom HTML widgets through the build-in model library named **UI Widgets Library.mdzip**. You can see its usage in **WebUIWidgets** in **Samples** on the Welcome screen under **Simulation**.

For further technical details, please see also [the tutorial for integrating widgets for simulation](#).



Note

HTML widgets work with most web browsers such as Google Chrome, Microsoft Edge (Chromium), Mozilla Firefox, and Opera. However, if you use older versions of Internet Explorer, e.g., IE 11, you must set the document mode to 11 by doing the following:

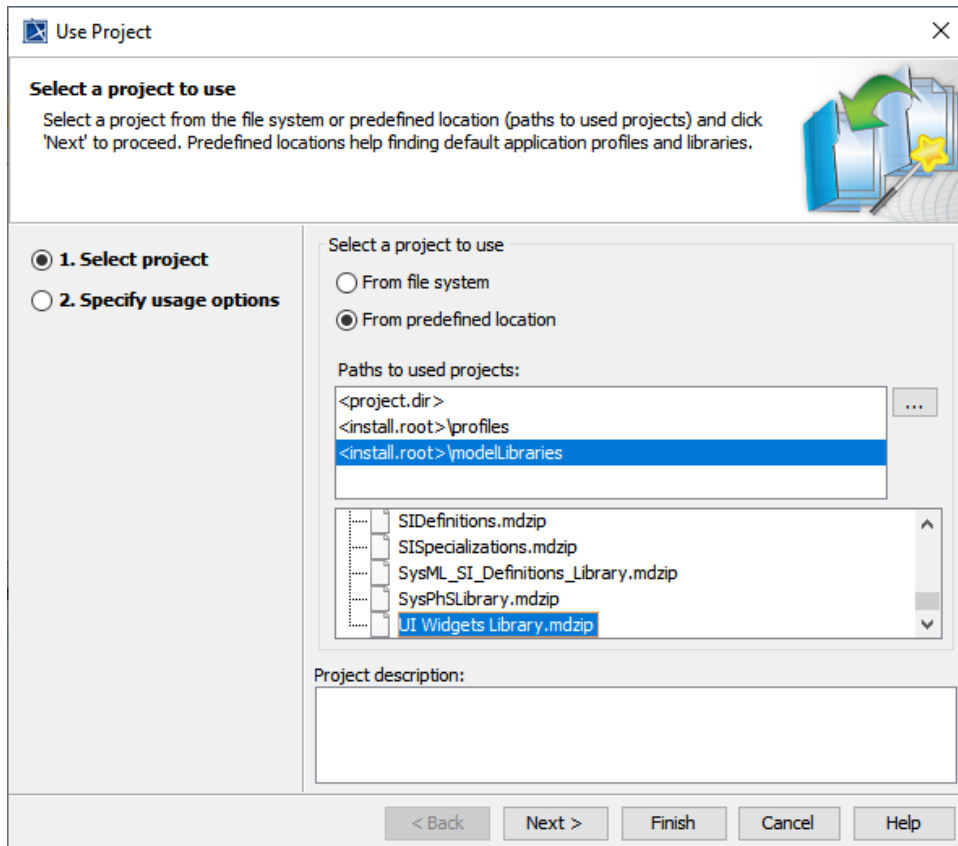
1. Open **Internet Explorer**.

Using the HTML widgets model library

1. Press **F10** to go to the Simulation menu.

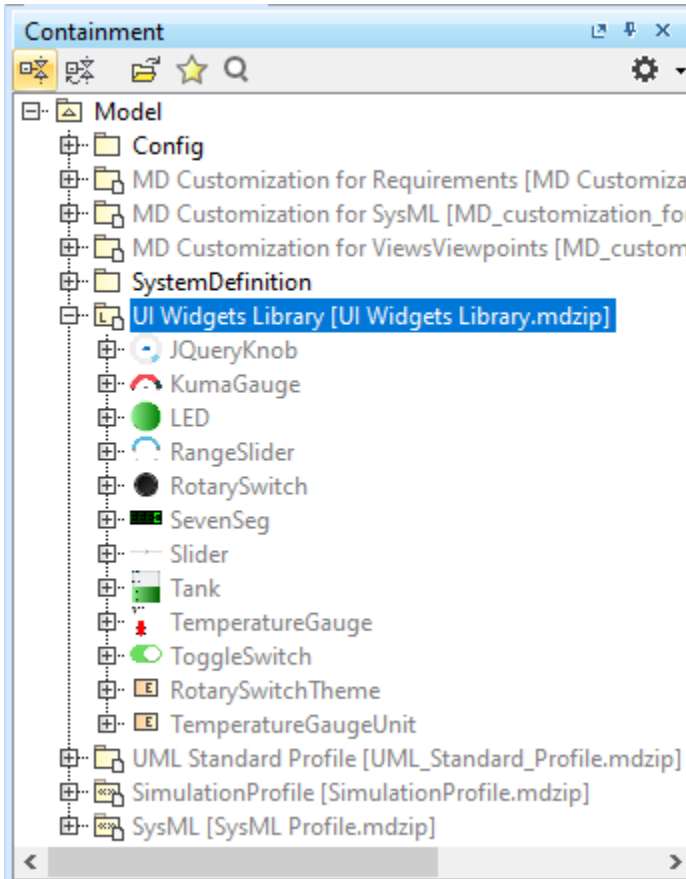
2. Under the **Mode** group, select the **Document mode** list and choose **11**.
To use the HTML widgets model library

1. From the main menu, click **File > Use Project > Use Local Project**. The **Use Project** dialog opens.
2. In the **Use Project** dialog, do the following:
 - Click the **From predefined location** option.
 - Choose **<install.root>\modelLibraries**.
 - Select **UI Widgets Library.mdzip**.



3. Click **Next**. **UI Widgets Library** will be shown as the shared Package.
4. Click **Finish**. A question dialog about auxiliary resources will appear.

- Click **Yes**. **UI Widgets Library.mdzip** will be shown in the Containment tree. There are build-in widgets in the Package, e.g., *jQueryKnob*, *LED*, and *KumaGauge*. Those widgets are ready to be customized and used as user interfaces.



Note

- HTML widgets are self-containing, owned properties (not references to any model elements except only themselves).
- To further customize «Widget», open the **UI Widgets Library.mdzip** library and modify, save, and reattach the zip file of «Widget».

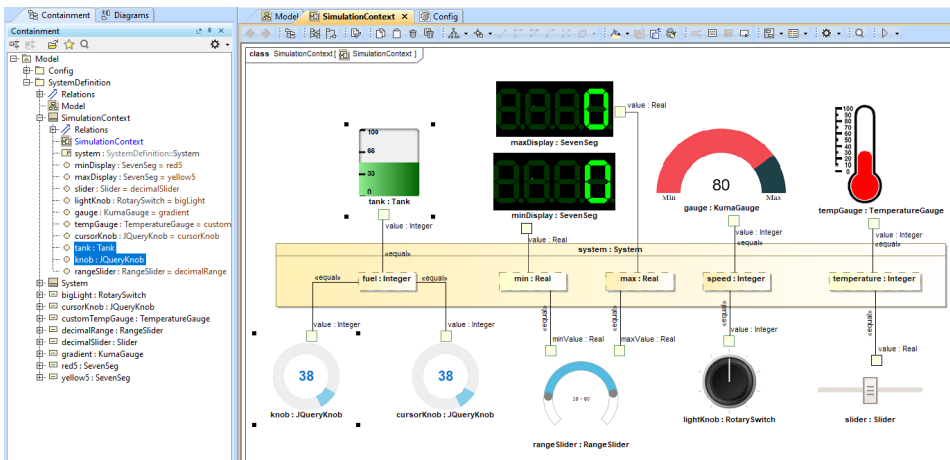
Integrating HTML widgets in projects

You can use widgets in the diagrams based on a Composite Structure diagram as described below.



Widgets are not supported in iterative simulations like Monte Carlo.

- Drag the widget from a **UI Widgets Library** and drop it into the IBD/Composite Structure diagram of the simulation context. Then use a Binding Connector to connect between the value property of the system and Port of the widget with the same Type. The widget can be resized as needed.



2. You can customize properties of any widgets, e.g., changing colors of *cursorKnob*, through the following steps:



- «Widget» Parts in the executionTarget, found at any Package levels, will be automatically generated as HTML files. All generated HTML files will be stored in the project's working directory with the same name as the project.
- The Web Server will automatically start.

Widgets on the IBD will not work until the plugin has been installed.

- c. The **Console** pane will print all generated HTML files, the generated folder, and URL of the Web UI with links.



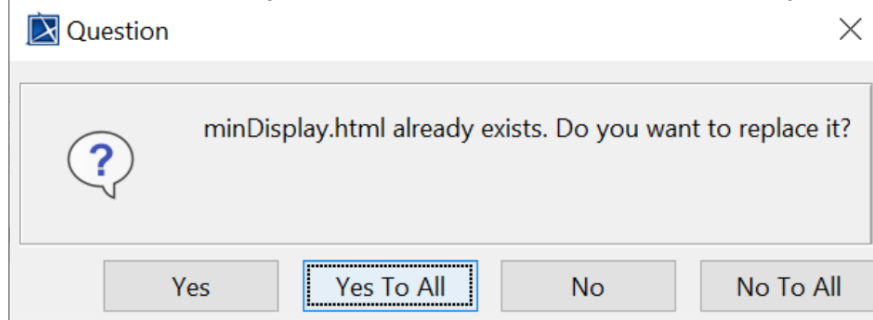


Note

The **Generate HTML** command is available only when there is «Widget» as Part (either Class or Block) in the *executionTarget* of a «SimulationConfig».

6. However, if the HTML files already exist, a question dialog will be shown to prevent you from accidentally overwriting them as shown in the figure below.

because the error from HTML files is not generated, but the *startWebServer* of the «SimulationConfig» is false.



The question dialog to prevent accidentally overwriting the HTML file.

You can select one of the following buttons for a proper action:

- **Yes:** overwrite the existing `<widget>.html` file.
- **Yes To All:** overwrite all `<widget>.html` files.
- **No:** keep the existing `<widget>.html` file.
- **No To All:** keep all existing `<widget>.html` files.

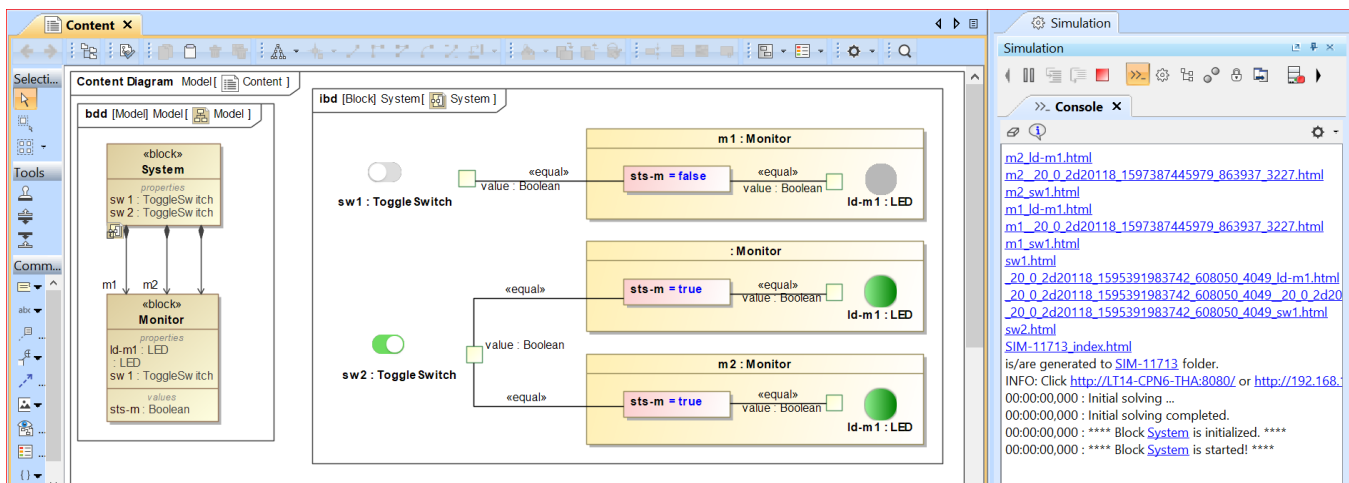


Note

The `<project>_index.html` file is always regenerated at the end of the process.

Widgets in nested Parts supported

You can use widgets in nested Parts. Simulation uses the name (or the element ID if the name does not exist) of the property to construct the full path name for each generated HTML file name, e.g., a nested widget, `Id-m1:LED`, of `Monitor` is generated `m1_Id-m1.html`, `m2_Id-m1.html`, and `<Element ID>_Id-m1.html`.



Widgets in nested Parts and generated HTML file names.



Note

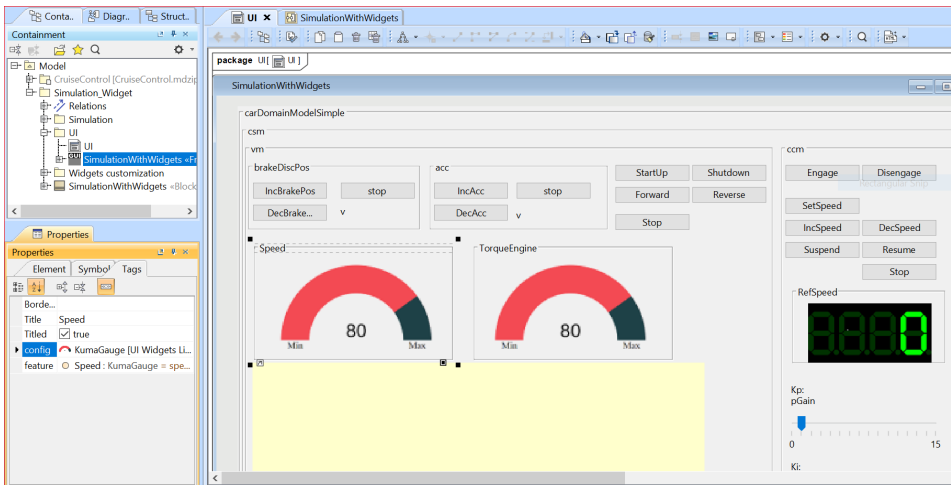
When using widgets, you must define your Parts with distinctive names to shorten generated widget file names that cannot normally be longer than 255 characters as limited by operating systems.

Widgets in UI mockups on a web UI

You can reuse web UI widgets in UI mockups on a web UI when running a `SimulationConfig` with `startWebServer = true` and `UI = «Frame» «UI» hosted widgets`.

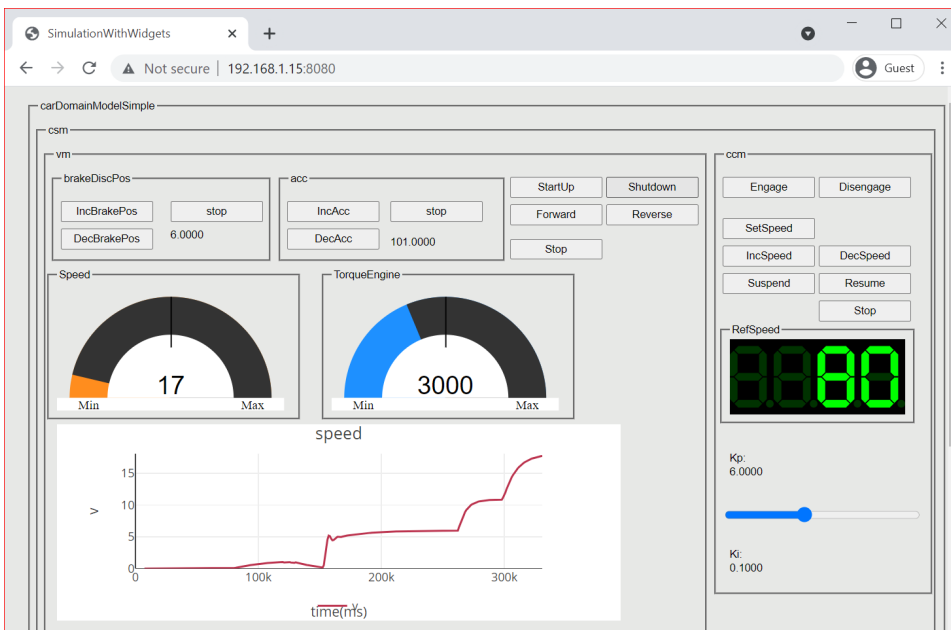
To reuse web UI widgets in UI mockups

1. Create an IBD and connect the Ports of the widgets with value properties to work with runtime values.
2. Drag a property typed widget to a «Frame» «UI». Simulation will automatically set the *config* according to the *feature*. Image of the widget will be automatically be shown, and «NestedUIConfig» will be automatically set. You can use either a group box (by default) or panel as a place holder shown below.



Web UI widgets in «Frame» «UI» mockups with the *config* and *feature* settings.

3. Run a SimulationConfig with *startWebServer = true* and *UI = «Frame» «UI» hosted widgets*. Then, HTML files of the widgets will be generated, and the web server will be automatically started. You must click the URL in the **Console** pane (**INFO: Click <URL> to open web UI**) and select either **Embedded Brower** or **Web Browser** to show the web UI as shown below.



Widgets in UI mockups on a web UI through the Chrome browser.