Elektrobit

EB tresos® AutoCore Generic 8 EventToTaskMappingAs documentation

Module release 4.1.1

Elektrobit Automotive GmbH
Am Wolfsmantel 46
91058 Erlangen, Germany
Phone: +49 9131 7701 0
Fax: +49 9131 7701 6333
Email: info.automotive@elektrobit.com

Technical support

https://www.elektrobit.com/support

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Table of Contents

1. Overview

Welcome to the EventToTaskMappingAs product release notes and documentation.

This document provides:

- Chapter 2, “EventToTaskMappingAs module release notes“: details of changes and new features in the current release
- Chapter 3, “EventToTaskMappingAs user's guide“: concept information and configuration instructions
- Chapter 4, “EventToTaskMappingAs module references“: configuration parameters and the application programming interface

2. EventToTaskMappingAs module release notes

- Module version: 4.1.1.B632837
- Supplier: Elektrobit Automotive GmbH

2.1. Change log

This chapter lists the changes between different versions.

Module version 4.1.1

2022-04-06

- Fix ClassCastException when a ParameterSwComponentType is used in system model.

Module version 4.1.0

2022-02-05

Module version 4.0.2

2022-02-03

- Improved error message when an inconsistency in internal model is detected.
- Improve error message when missing container RteSwComponentInstance/RteEventToTaskMapping/RteEventRef or RteBswInstance/RteBswEventToTaskMapping/RteBswEventRef for a to-be-mapped event.
- Add generator that exports existing mappings to XML format.

Module version 4.0.0

2021-11-16

- Name and location of the generated CSV file is adapted to be consistent with naming conventions followed by ACG modules

Module version 3.0.4

2021-11-09

Module version 3.0.3

2021-10-19

Module version 3.0.2

2021-09-23

- Fixed error during wizard run when manually configured mappings are used as input source and multiple SWC or BSW instances are present in system model.

Module version 3.0.1

2021-09-09

Module version 3.0.0

2021-08-31

- Glob Pattern support for input file entries.

Module version 2.1.1

2021-07-21

- Improved stability of CSV mapping info generator.

Module version 2.1.0

2021-06-29

- Use table for input file selection instead of single text field.
- Support auto-mapping of events of basic software main functions.

Module version 2.0.0

2021-04-22

- Changes for CSV and XML input format

Module version 1.1.0

2021-04-16

- Improve ECU configuration cleanup behaviour in order to avoid orphaned configuration parameter values from previous unattended wizard runs.

Module version 1.0.0

2021-03-29

- Initial release

2.2. New features

2.3. Elektrobit-specific enhancements

This module is not part of the AUTOSAR specification.

2.4. Deviations

This module is not part of the AUTOSAR specification.

2.5. Limitations

This chapter lists the limitations of the module. Refer to the module references chapter *Integration notes*, subsection *Integration requirements* for requirements on integrating this module.

- Enabling both Derive Rte configuration and Recalculate position in task for manually mapped events parameters on wizard will lead to a problem of loosing user edited data and set to default values.
- Glob pattern support for configuring input fies in wizard does not support all use cases of glob patterns.

  Supported use cases are as below,

  - Path without any glob special character
  - Path contains glob special characters in the last path segment only.
  - Backslash is used as path separator.
  - Path is canonical.
  - Directory represented by second last path segment does not contain any folders with files in their subtree that match the pattern from the last path segment

  Except above mentioned use cases, others will fail.

2.6. Open-source software

Open-source software information is not available for this module.

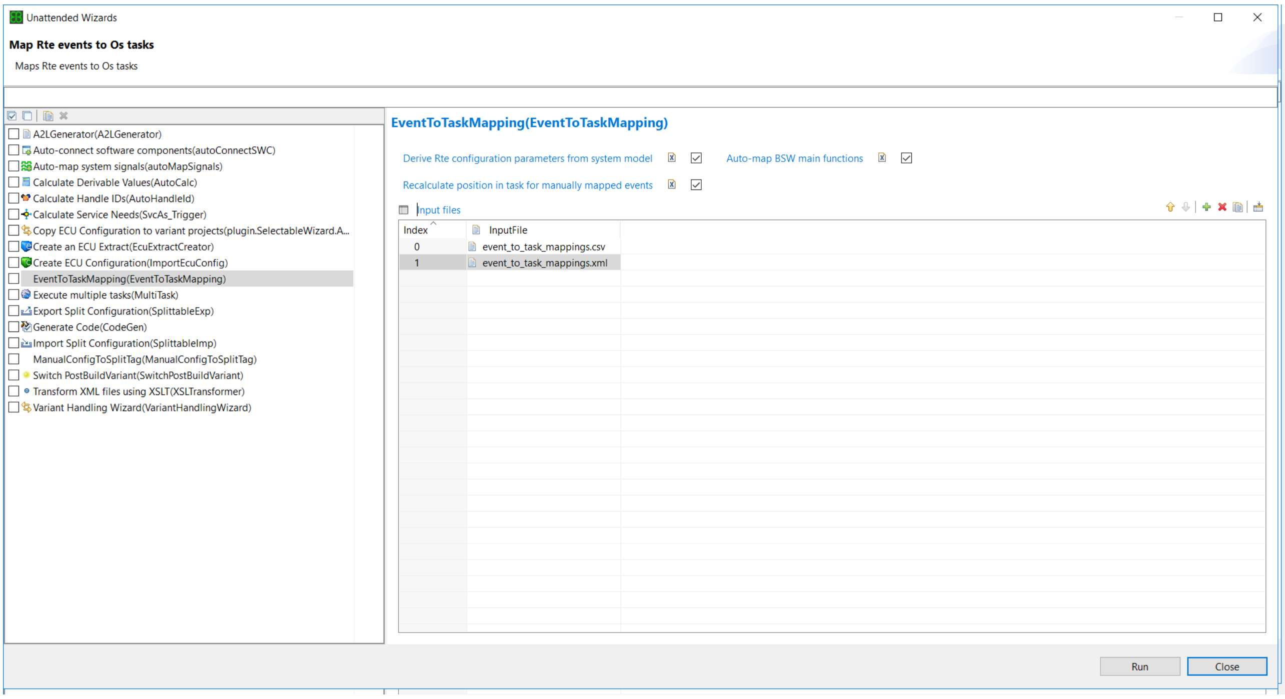
3. EventToTaskMappingAs user's guide

3.1. Overview

`Event-to-Task Mapping Unattended Wizard` provides a means to map events in Rte configuration to Os tasks without user interaction in a graphical module configuration editor. It considers the events' data dependencies that are provided in the supported input formats and calculates an appropriate order inside each task that is suited to fulfill these dependencies.

3.2. Unattended wizard configuration

`Event-to-Task Mapping Unattended Wizard`'s configuration page (see figure Figure 3.1, “`Event-to-Task Mapping Unattended Wizard` configuration.”) is available via tresos Studio's unattended wizards menu as entry *EventToTaskMapping*. Input files are provided as a file or directory path in each row of table. Glob patterns can be used while providing input file paths. For further information on *unattended wizards*, see section 7.8.9 *Autoconfiguring routine jobs* of `EB tresos Studio`'s user's guide.



Unattended Wizards

Map Rte events to Os tasks

Maps Rte events to Os tasks

- □ A2LGenerator(A2LGenerator)
- □ Auto-connect software components(autoConnectSWC)
- □ Auto-map system signals(autoMapSignals)
- □ Calculate Derivable Values(AutoCalc)
- □ Calculate Handle IDs(AutoHandleId)
- □ Calculate Service Needs(SvcAs_Trigger)
- □ Copy ECU Configuration to variant projects(plugin.SelectableWizard.A...
- □ Create an ECU Extract(EcuExtractCreator)
- □ Create ECU Configuration(ImportEcuConfig)
- □ EventToTaskMapping(EventToTaskMapping)
- □ Execute multiple tasks(MultiTask)
- □ Export Split Configuration(SplittableExp)
- □ Generate Code(CodeGen)
- □ Import Split Configuration(SplittableImp)
- □ ManualConfigToSplitTag(ManualConfigToSplitTag)
- □ Switch PostBuildVariant(SwitchPostBuildVariant)
- □ Transform XML files using XSLT(XSLTransformer)
- □ Variant Handling Wizard(VariantHandlingWizard)

EventToTaskMapping(EventToTaskMapping)

Derive Rte configuration parameters from system model ☑

Auto-map BSW main functions ☑

Recalculate position in task for manually mapped events ☑

Input files

Index	InputFile
0	event_to_task_mappings.csv
1	event_to_task_mappings.xml

Figure 3.1. `Event-to-Task Mapping Unattended Wizard` configuration.

3.3. Input sources and formats

`Event-to-Task Mapping Unattended Wizard` supports CSV and XML data as its input. Moreover, events for basic software modules' main functions can be auto-mapped.

3.3.1. CSV

The CSV input format provides data in a tabular text file format. It can easily be created or processed by text processing tools as well as spreadsheet software. The used CSV dialect uses semicolon as its separator character and always contains the column header names in the first line.

```
Task;SwcOrBswmd;Event
OsTask_0;BswModuleDescription_Bsw;TimingEvent_MainFunction
OsTask_1;/Bsw/Bsw;TimingEvent_Bsw_MainFunction
OsTask_1;/Swc/Swc;TimingEvent_Swc
```

Figure 3.2. `Event-to-Task Mapping Unattended Wizard` CSV format

The columns are:

- *Task*: Name of the `Os` task that an event shall be mapped to.
- *SwcOrBswmd*: Short name or full short name path of the event's software component or basic software module description (SwComponentType or BswModuleDescription in AUTOSAR system model).
- *Event*: Short name of the RTE or BSW event (subtypes of RTEEvent and BswEvent in AUTOSAR system model) that shall be mapped to the task.

3.3.2. XML

`Event-to-Task Mapping Unattended Wizard`'s XML input format is based on XML schema `event-to-task_mapping.xsd` and contains the event and component information as shown below. In addition to the fields present in CSV format, the XML format supports relative dependencies between events that are resolved to an absolute order of events inside a task on each unattended wizard run.

```
<?xml version="1.0" encoding="UTF-8"?>
<event-to-task-mappings xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:noNamespaceSchemaLocation="event-to-task_mapping.xsd">
   <event-to-task-mapping>
      <event>
         <short-name>RteEventName</short-name>
         <swc-or-bswmd>/Package/SwComponentTypeName</swc-or-bswmd>
      </event>
      <target-task>OsTask_1</target-task>
      <trigger-after>
         <event>
            <short-name>RteEventName</short-name>
            <swc-or-bswmd>BswModuleDescriptionName</swc-or-bswmd>
         </event>
      </trigger-after>
      <trigger-before/>
   </event-to-task-mapping>
</event-to-task-mappings>
```

Figure 3.3. `Event-to-Task Mapping Unattended Wizard` input XML format

- `event-to-task-mappings` contains a list of `event-to-task-mapping` elements, which then provides the event that shall be mapped (`event`), its target Os task name (`target-task`) as well as collections of events for which data dependencies to the mapped event exist.
- The event dependency relations are described by `trigger-after` (events that shall be triggered before the mapped event) and `trigger-before` (events that shall be triggered after the mapped event).
- `event` is specified by the event's short name (`short-name`) as well as the AUTOSAR short name or full AUTOSAR short name path (`swc-or-bswmd`) of its containing software component (SwComponentType in AUTOSAR system model) or basic software module description (BswModuleDescription in AUTOSAR system model).

3.3.3. Basic software main functions

Basic software modules can provide information on preferred tasks and relative call orders of their main functions and the corresponding events. If setting *Auto-map BSW main functions* is enabled in the unattended wizard's configuration page, that information is considered for the auto-mapping of events.

3.4. Export of existing event-to-task mappings

If a tresos project's `Rte` configuration already contains mappings of events to tasks, these can be exported to `Event-to-Task Mapping Unattended Wizard`'s supported formats as follows:

1. Add module `EventToTaskMapping` to your project (right click on the ECU symbol in Project Explorer > *Module Configurations...*).
2. Run code generation for that module in mode `generate_doc` (right click on the module configuration in Project Explorer > *Build Configuration* > *generate_doc*).
3. Files are created in the project's code generation output folder (e. g. `output/generated`).

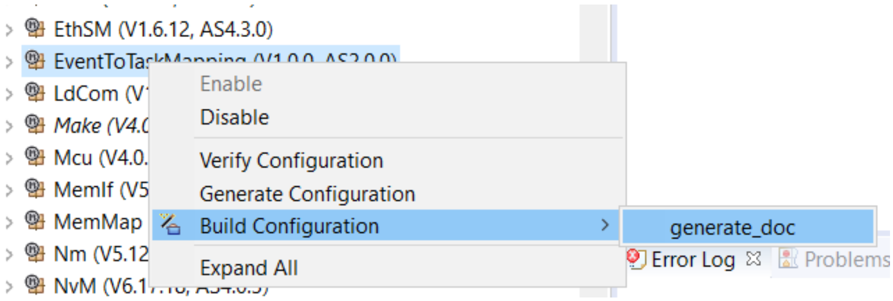


Figure 3.4. Running the code generator for export.

3.4.1. Table-based overview (CSV)

The exported CSV file contains an overview of all tasks and their assigned events.

3.4.2. XML for each SWC or BSW

Each XML file holds mapping information on all events of one SWC or BSW. It serves as a template to provide dependency information on event call order. By default, the generated XML files do not contain any dependency information, as this cannot be reconstructed from the Rte configuration reliably.

With module configuration parameter `XmlDeriveDependenciesFromRelativeEventOrderInsideTask` enabled, dependencies can be guessed (a dependency is assumed between neighboring events for a task) to enforce retaining the existing call order during calculations of the unattended wizard. As the guesses usually will result in constraints that the SWC or BSW actually would not require, and will result in increased effort to maintain the XML files later, this export mode typically is not the preferred one.

4. EventToTaskMappingAs module references

EventToTaskMappingAs configuration parameter reference is not available.

EventToTaskMappingAs API reference is not available.

4.1. Integration notes

4.1.1.1. EventToTaskMappingAs dependencies

The usage of the module depends on the following other modules

- OemApiLib

4.1.1.2. WorkFlow Requirement

Execute ECUExtractCreation wizard before EventToTaskMappingAs