

ETAS ASCET V6.4

AUTOSAR to ASCET Converter



User Guide

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ASCET V6.4 | User Guide R09 EN | 06.2024

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1 Introduction

In this chapter, you can find information about the intended use, the addressed target group, and information about safety and privacy related topics.

Please adhere to the ETAS Safety Advice (accessible via **Help > Product Disclaimer** in the ASCET Component Manager) and to the safety information given in the user documentation.

ETAS GmbH cannot be made liable for damage which is caused by incorrect use and not adhering to the safety information.

1.1 Intended Use

The ASCET tools support model-based software development. In model-based development, you construct an executable specification — the model — of your system and establish its properties through simulation and testing in early stages of development. When a model behaves as required, it can be converted automatically to production-quality code via ASCET.

The AUTOSAR to ASCET Converter allows you to convert your AUTOSAR models, given as a collection of *.arxml files, into an ASCET model based on the AMD V6.4.8 format. The model can be imported in an ASCET database or workspace.

1.2 Target Group

This user guide addresses qualified personnel working in the fields of automobile control unit development and calibration. Specialized knowledge of ASCET and the AUTOSAR concepts (especially of the AUTOSAR Software Component Template, available at www.autosar.org) is required.

1.3 Classification of Safety Messages

Safety messages warn of dangers that can lead to personal injury or damage to property:



DANGER

DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.



WARNING

WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.



CAUTION

CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE indicates a situation that, if not avoided, could result in damage to property.

1.4 Safety Information

Observe the following safety information when using the NVRAM capabilities of the ASCET-RP or ASCET-SE targets, to avoid injury to yourself and others as well as damage to property:

**WARNING****Harm or property damage due to unpredictable behavior of vehicle or test bench**

Wrongly initialized NVRAM variables (NV variables) can lead to unpredictable behavior of a vehicle or a test bench. This behavior can cause harm or property damage.

ASCET projects that use the NVRAM possibilities of AUTOSAR expect a *user-defined* initialization that checks whether all NV variables are valid for the current project, both individually and in combination with other NV variables. If this is not the case, all NV variables have to be initialized with their (reasonable) default values.

Due to the NVRAM saving concept, this is *absolutely necessary* when projects are used in environments where any harm to people and equipment can happen when unsuitable initialization values are used (e.g. in-vehicle-use or at test benches).

Adhere to the ETAS Safety Advice and the safety information given in the online help and user guides. You can open the ETAS Safety Advice from the main ASCET window with **Help > Product Disclaimer**. A PDF version is available on the installation medium: `Documentation\ETAS Safety Advice.pdf`

In addition, take all information on environmental conditions into consideration before setup and operation (see the documentation of your computer, hardware, etc.).

Further safety advice is given in the ASCET V6.4 safety manual available at ETAS upon request.

1.5 Data Protection

If the product contains functions that process personal data, legal requirements of data protection and data privacy laws shall be complied with by the customer. As the data controller, the customer usually designs subsequent processing. Therefore, he must check if the protective measures are sufficient.

1.6 Data and Information Security

To securely handle data in the context of this product, see the next sections about data and storage locations as well as technical and organizational measures.

1.6.1 Data and Storage Locations

The following sections give information about data and their respective storage locations for various use cases.

1.6.1.1 License Management

When using the ETAS License Manager in combination with user-based licenses that are managed on the FNP license server within the customer's network, the following data are stored for license management purposes:

Data

- Communication data: IP address
- User data: Windows user ID

Storage location

- FNP license server log files on the customer network

When using the ETAS License Manager in combination with host-based licenses that are provided as FNE machine-based licenses, the following data are stored for license management purposes:

Data

- Activation data: Activation ID
Used only for license activation, but not continuously during license usage

Storage location

- FNE trusted storage

`C:\ProgramData\ETAS\FlexNet\fne\license\ts`

1.6.1.2 Problem Report

When an error occurs, ASCET offers to send an error report to ETAS for troubleshooting. ETAS uses the personal information to have a contact person in case of system errors.

The problem report may contain the following personal data or data category:

Data

- Communication data: IP address
- User data: Windows user ID, user name

Storage location

- `EtasLogFiles<index number>.zip` in the ETAS-specific log files directory

Additionally to the problem information that is entered by the users themselves, ASCET collects the available product-related log files in a ZIP archive to support the bug fixing process at ETAS. The zip file is named according to the pattern `EtasLogFiles<index number>.zip`. See also chapter 5 "Support Function for Feedback to ETAS in Case of Errors" in the ASCET Getting Started manual.

All ETAS-related log files in the ETAS-specific log files directory and the zip archives created by the Problem Report feature can be removed after closing all ETAS applications if they are no longer needed.

1.6.2 Technical and Organizational Measures

We recommend that your IT department takes appropriate technical and organizational measures, such as classic theft protection and access protection to hardware and software.

1.6.2.1 Locations for Generated Files

Names and paths of files generated by ASCET may contain personal data, if they refer to the current user's personal directory or subdirectories (e.g., `C:\Users\UserId\Documents\...`).

If you do not want personal information to be included in the generated files, make sure of the following:

- The workspace of the product points to a directory without personal reference.
- All settings in the product (accessed via the menu function **Tools > Options** in the product) refer to directories and file names without personal reference.
- All project settings in the projects (accessed via the menu function **File > Properties** in the ASCET project editor) refer to directories and file names without personal reference.
- Windows environment variables (such as the temporary directory) refer to directories without personal reference because these environment variables are used by the product.

In this case, please also make sure that the users of this product have read and write access to the newly set directories.

2 About the AUTOSAR to ASCET Converter

The AUTOSAR to ASCET Converter allows you to convert your AUTOSAR models, given as a collection of *.arxml files, into an ASCET model based on the AMD V6.4.8 format. The model can be imported in an ASCET database or workspace.

The input for AUTOSAR to ASCET conversion is a set of *.arxml files.

The AUTOSAR to ASCET Converter supports several AUTOSAR versions (see Tab. 2.1), but all files converted/imported at the same time must be of the same AUTOSAR version.

- R4.0.2	- R4.2.2	- R4.3.0
- R4.0.3		- R4.3.1

Table 2.1: Supported AUTOSAR versions

2.1 Typical Workflow

The typical conversion/import workflow consists of the following steps:

- A. A set of *.arxml files is sent to the AUTOSAR to ASCET Converter.
- B. The AUTOSAR to ASCET Converter checks if all input files have the same AUTOSAR version.
 - **Yes**: Conversion/Import continues.
 - **No**: Conversion/Import aborts with an error message.
- C. The AUTOSAR to ASCET Converter collects information on the following AUTOSAR items:
 - Application-Software-Component types (cf. section 4.1)
 - Required and Provided ports
 - runnable entities
 - OperationInvoke event
 - ModeSwitch event
 - Timing event
 - AUTOSAR interfaces
 - CalPrm/parameter interfaces (cf. section 4.6)
 - sender-receiver interfaces (cf. section 4.2)
 - mode-switch interfaces¹ (cf. section 4.3)
 - NVData interfaces¹ (cf. section 4.5)
 - client-server interfaces (cf. section 4.7)
 - mode declaration groups (cf. section 4.4)
 - record types (cf. section 4.8)
 - array types (cf. section 4.9)
 - compu methods² (cf. sections 4.10 and 4.11)
 - primitive data types (cf. section 4.12)
 - variation points (cf. section 4.13)

¹ available since AUTOSAR R4.0.2

² only IDENTICAL, LINEAR, RATFUNC and TEXTTABLE are considered

- DataDefProps³ (cf. section 4.14)

D. The AUTOSAR to ASCET Converter uses the information gathered in step C to generate the corresponding ASCET counterparts, i.e. *.amd files in the AMD version V6.4.8. If desired (see section ""AUTOSAR Conversion" Node" on page 23), an ASCET project is created for each AUTOSAR SWC.

The generated files are stored on the Windows file system, in a configurable directory.

E. If a database or workspace is currently open in ASCET, and if the respective conversion option is activated (see section ""AUTOSAR Conversion" Node" on page 23), the generated *.amd files are imported into ASCET.

AUTOSAR name spaces are mapped to folder structures in the ASCET database or workspace. An AUTOSAR element with a path of /BaseSystem/DataTypes/VoltBatt will be imported to the top-level folder BaseSystems, subfolder DataTypes, component VoltBatt.

If desired, the entire package paths for interfaces and units can be imported, too; see also section ""AUTOSAR Conversion" Node").

2.2 Terms and Abbreviations

AMD	An XML-based data exchange format in ASCET.
ARXML	An XML language used to describe AUTOSAR configurations.
AUTOSAR	AUT omotive O pen S ystem AR chitecture – a standardized software architecture targeted at automotive applications, aimed at fostering the reuse of application software over multiple vehicle platforms. See also www.autosar.org .
ASCET	ETAS development tool for ECU software
GUI	G raphical U ser I nterface
SWC	AUTOSAR s oftware c omponent; the smallest non-dividable software unit in AUTOSAR.
XML	eX tensible M arkup L anguage

³ only SW-CALIBRATION-ACCESS, SW-IMPL-POLICY, and SW-ADDR-METHOD are considered

3 Installation

The AUTOSAR to ASCET Converter installation is part of the ASCET base system; it cannot be installed separately.

At least one of the add-ons ASCET-MD, ASCET-RP and ASCET-SE must be installed, too, before you can use the AUTOSAR to ASCET Converter. ASCET-SE is required for AUTOSAR code generation in ASCET.

See the ASCET installation guide, *ASCET V6.4 Installation Guide.pdf*, for details on ASCET installation.



Note

If you install only ASCET-SE or ASCET-RP, you can import AUTOSAR models into ASCET, but you cannot edit the imported models. It is therefore recommended that you install both ASCET-SE and ASCET-MD.

The AUTOSAR to ASCET Converter is installed in the `<ASCET-Root>1\tools\AutosarToAscetImporter` directory. The executable to start the application is called `A2AImporter.exe`.

3.1 Licensing

The ASCET product family uses the following licenses:

License name	Functionality
ASCET-MD	ASCET Modeling and Design (includes the AUTOSAR to ASCET Converter)
ASCET-RP	ASCET Rapid Prototyping
ASCET-SE	ASCET Software Engineering
ASCET-DIFF	ASCET Difference Viewer
ASCET-VIEW	ASCET Model Viewer (part of the ASCET-DIFF software)
ASCET-SCM	ASCET Software Configuration Management

Table 3.1: Licenses used by the ASCET product family

A valid license is required to use the software. You can obtain a license in one of the following ways:

- from your tool coordinator
- via the self-service portal on the ETAS website at www.etas.com/support/licensing
- via the ETAS License Manager

To activate the license, you must enter the Activation ID that you received from ETAS during the ordering process.

¹`<ASCET-Root>` is, e.g., `C:\ETAS\ASCET6.4`

For more information about ETAS license management, see the [ETAS License Management FAQ](#) or the ETAS License Manager help.

To open the ETAS License Manager help

The ETAS License Manager is available on your computer after the installation of any ETAS software.

1. From the Windows Start menu, select **E > ETAS > ETAS License Manager**.
The ETAS License Manager opens.
2. Click in the ETAS License Manager window and press <F1>.
The ETAS License Manager help opens.

4 AUTOSAR Features and their ASCET Counterparts

This section lists the AUTOSAR features that can be converted to ASCET features, and their ASCET counterparts.

4.1 Software Components

AUTOSAR software components (AUTOSAR SWC) are converted to ASCET *software components* (ASCET SWC).

4.1.1 Ports

AUTOSAR ports are converted to ASCET ports as follows.

- For each AUTOSAR P-PORT-PROTOTYPE, a provided port is created in the ASCET SWC.
- For each AUTOSAR P-PORT-PROTOTYPE of type client-server interface, a public diagram named `<port_name>_<interface_name>` is created.
 - For each operation of the P-PORT-PROTOTYPE of type client-server interface, a runnable with corresponding signature is created in the public diagram.
- For each AUTOSAR R-PORT-PROTOTYPE, a required port is created in the ASCET SWC.

4.1.2 Internal Behavior: Runnable Entities and Events

Each `<SWC-INT-BEHAVIOR>` section is checked if it belongs to the current AUTOSAR SWC and if it provides runnable entities.

The `UUID` of the internal behavior is assigned to the `Main` diagram in the ASCET SWC.



Note

Only one internal behavior per SWC is supported.

- For each runnable entity in the `<SWC-INT-BEHAVIOR>` section, a corresponding *runnable entity* is created in the ASCET SWC.

Runnable entity attributes, such as `MINIMUM-START-INTERVAL`, `UUID`, and `CAN-BE-INVOKED-CONCURRENTLY`, are transferred to ASCET.

`CAN-BE-INVOKED-CONCURRENTLY` and `MINIMUM-START-INTERVAL` are available in the signature editor of the respective runnable.

The implementation of the ASCET runnable entity is set as follows:

Implementation parameter	Value
Inlining	set to <code>Automatic</code> , read-only
Use FPU	activated
Memory Location	derived from AUTOSAR parameter <code>SW-ADDR-METHOD-REF</code>
Memory Segment	<code>Automatic</code>
Symbol	derived from AUTOSAR parameter <code>SYMBOL</code> in the <code><RUNNABLE-ENTITY></code> declaration

- For each operation-invoked event in `<SWC-INT-BEHAVIOR>`, a corresponding *OperationInvoked event* is created in the ASCET SWC.
- For each timing event, a corresponding *timing event* specification is created in the ASCET SWC.
- For each mode-switch event, a corresponding *ModeSwitch event* specification is created in the ASCET SWC.

4.1.3 Internal Behavior: Interrunnable Variables

Scalar, array and record interrunnable variables in an AUTOSAR SWC are converted to *interrunnable variables* in the ASCET SWC. The properties of the AUTOSAR interrunnable variables (e.g., explicit/implicit, type, implementation) are converted, too.

In AUTOSAR, interrunnable variables can have init values. If the init values are specified as `NUMERICAL-VALUE-SPECIFICATION` or `ARRAY-VALUE-SPECIFICATION`, they are converted to ASCET according to the following rules.

- If the AUTOSAR interrunnable variable is associated to an application data type, the representation of init values in numeric data is interpreted as model values in ASCET.
If not, the init values are interpreted as implementation values in ASCET.
- For Boolean interrunnable variables, the init values (`0/1`, `true/false`, `TRUE/FALSE`) are converted to the ASCET model representation `true/false`.
- For an interrunnable variable of Enumeration type, values and symbolic labels of the init values are converted to the ASCET model representation according to the definitions in the `CompuMethod`.
- For scalar interrunnable variables, init values given in implementation representation are converted to ASCET model representation by applying the appropriate `CompuMethod`.

4.2 Sender-Receiver Interfaces

AUTOSAR sender-receiver interfaces are converted to ASCET *SenderReceiver interfaces*.

Interface elements are converted to ASCET independent of the value of the `IS-QUEUED` attribute.

A sender-receiver interface can contain only data elements (scalar, array, matrix, record). The corresponding ASCET `SenderReceiver` interface also contains only data elements.

Mode group parameters are contained in Mode-Switch interfaces; see next section.

4.3 Mode-Switch Interfaces

An AUTOSAR mode-switch interface (introduced in AUTOSAR R4.0.2) is mapped to an ASCET `SenderReceiver` interface that contains only mode group parameters.

4.4 Mode Declaration Group

An AUTOSAR mode declaration group is converted to an ASCET *mode group*.

The initial mode of the mode declaration group is used as first mode in the ASCET mode group.

4.5 NV-Data Interfaces

AUTOSAR NV-data interfaces are converted to ASCET *NVData interfaces*.

4.6 Parameter Interfaces

AUTOSAR Parameter interfaces are converted to ASCET *Calibration interfaces*, with all elements and implementation information.

4.7 Client-Server Interfaces

AUTOSAR client-server interfaces are converted to ASCET *ClientServer interfaces*.

Operation prototypes in AUTOSAR client-server interfaces are converted to public methods (with arguments) in ASCET.

The errors defined in the `<Possible-Errors>` section of the AUTOSAR interface are converted to an ASCET enumeration, which is named `<name of client-server interface>_AppError`.

4.8 Record Types

AUTOSAR record types are converted to ASCET *records*, with all elements and implementation information. The element order of the record types is preserved.

4.9 Array Types

One-dimensional AUTOSAR array types with fixed array size are converted to ASCET *arrays* without variant size.

The size of the ASCET array is derived from `MAX-NUMBER-OF-ELEMENTS` in the AUTOSAR definition.



Note

Dynamic AUTOSAR arrays or arrays with more than one dimension are not supported in ASCET V6.4.

4.10 CompuMethods

In AUTOSAR, CompuMethods are organised in AR-packages. Depending on the category of a CompuMethod, its ASCET counterpart is either a *formula*, which is connected to ASCET projects, or an ASCET enumeration.

The following CompuMethod categories are converted to ASCET formulas:

CompuMethod category	ASCET formula
IDENTICAL	ident formula
LINEAR	linear formula
RAT_FUNC (if convertible to Moebius formula)	Moebius formula

CompuMethods of category `TEXTTABLE` in combination with an integer type are converted to ASCET enumerations; see next section.

CompuMethods of other categories cannot be converted to an ASCET feature. A log message is issued for each unsupported CompuMethod in the `*.arxml` input files.

4.11 CompuMethods of Category `TEXTTABLE`

A CompuMethod of category `TEXTTABLE` in combination with an AUTOSAR integer type is converted to an ASCET *enumeration*. The name of the ASCET enumeration is derived from the `<SHORT-NAME>` of the AUTOSAR integer type.

Each `COMPU-SCALE` definition in the CompuMethod is converted to an enumerator in the ASCET enumeration. The value in `UPPER-LIMIT` and `LOWER-LIMIT` becomes the enumerator value in ASCET, and the text given in `COMPU-CONST` becomes the enumerator label.

The following criteria must be met for a successful import:

- `UPPER-LIMIT` and `LOWER-LIMIT` in one `COMPU-SCALE` must be identical.
- Upper and lower limit must be integer values.
The limit values in consecutive `COMPU-SCALES` do not have to be consecutive. ASCET V6.4 allows non-consecutive enumerator values.
- The information given in `COMPU-CONST` must be valid.
If no valid enumerator label can be retrieved, a warning is issued. Import is continued, with `_<lower limit as string>` instead of the invalid `COMPU-CONST` information.

4.12 Primitive Types

AUTOSAR R4.0.2 introduced a type concept that can describe elements from application and implementation point of views. With that, the AUTOSAR to ASCET Converter is able to retrieve the appropriate model data type as well as, partially, a suitable implementation data type and implementation attributes from `*.arxml` files.

- **Logic**
If an AUTOSAR element is associated with an application type of category `BOOLEAN`, or the element's underlying platform type is `/AUTOSAR_PlatformTypes/ImplementationDataTypes/boolean`, the ASCET model data type is `logic` with implementation data type `bool`.
- **Enumeration**
If an AUTOSAR element is associated with an integer type, and this type is associated with a CompuMethod of category `TEXTTABLE`, the element will be converted to an ASCET enumeration.
- **Discrete**
If an AUTOSAR element is associated with an integer type, and if this integer type is associated with a CompuMethod of category `IDENTICAL`, or does not have any CompuMethod, the resulting ASCET model data type is `sdisc` or `udisc`.
The AUTOSAR to ASCET Converter uses the associated constraint rules and the defined `Lower-Limit` to select `sdisc` (`Lower-Limit < 0`) or `udisc` (`Lower-Limit ≥ 0`).

Min/Max values in the ASCET implementation are derived from the associated constraint rules, if available.

– **Continuous**

- a. If an AUTOSAR element is associated with an integer type, and if this integer type is associated with a CompuMethod of category `LINEAR` or `RATFUNC`¹, the resulting ASCET model data type is `continuous`.
Min/Max values in the ASCET implementation are derived from the associated constraint rules, if available.
The AUTOSAR CompuMethod is converted to an appropriate ASCET formula; see also section 4.10 on page 14.
- b. If an AUTOSAR element is associated with a real type, the resulting ASCET model data type is `continuous`.
Min/Max values in the ASCET implementation are derived from associated constraint rules, if available.
The CompuMethod is converted to an ASCET formula of type `Identity`.

4.13 System Constants and Variation Points

AUTOSAR R4.0.2 introduced some concepts for variant management. These are supported since ASCET 6.4.2.

However, the variation points are not part of the model, but inferred from the specified behavior. For this reason, variation points and also variation point proxies are not imported, but also do not lead to an error if they occur in the ARXML.

Variation points and variation point proxies refer to system constants, and these are imported as exported elements in the project, if one is created (see also section 5.1.2.1).

4.14 DataDefProps

AUTOSAR uses the `<SW-DATA-DEF-PROPS>` section to attach various properties and associations to the definitions of data types and prototypes. The AUTOSAR to ASCET Converter converts the following properties in the `SW-DATA-DEF-PROPS`:

– `SW-CALIBRATION-ACCESS`

This AUTOSAR property is converted to a suitable setting of **Write** and **Read** in the "Calibration Access" area of the ASCET element's properties editor.

AUTOSAR value	ASCET settings
<code>READ-ONLY</code>	Write deactivated, Read activated
<code>READ-WRITE</code>	Write activated, Read activated
<code>NOT-ACCESSIBLE</code>	Write deactivated, Read deactivated

If `SW-CALIBRATION-ACCESS` is not set in AUTOSAR, the AUTOSAR to ASCET Converter uses the following defaults:

- elements of `CalPrm` / `Parameter` interfaces: **Write** activated, **Read** activated
 - other elements: **Write** deactivated, **Read** activated
- `SW-IMPL-POLICY`

All possible values (`STANDARD`, `CONST`, `FIXED`, `MEASUREMENT_POINT`, `QUEUED`) of this AUTOSAR property are copied one-to-one to the "Policy"

¹ must be convertible to a Moebius formula

combo box in the "AUTOSAR" tab of the ASCET element's implementation editor.

If `SW-IMPL-POLICY` is not set in AUTOSAR, the AUTOSAR to ASCET Converter uses `STANDARD` as default.

– `SW-ADDR-METHOD`

This AUTOSAR property is copied one-to one to the "Memory Location of Instance" combo box of the ASCET element's properties editor.

If `SW-ADDR-METHOD` is not set in AUTOSAR, the AUTOSAR to ASCET Converter uses `Default`.

5 AUTOSAR to ASCET Converter: User Interface

If you have some *.arxml files containing an AUTOSAR model, you can use the AUTOSAR to ASCET Converter to convert them to the ASCET AMD format. If desired, you can import the converted files into ASCET in the same step.

This chapter describes the graphical user interface of the AUTOSAR to ASCET Converter, chapter 6 on page 29 describes using the AUTOSAR to ASCET Converter via command-line interface.

To open the AUTOSAR to ASCET Converter

1. Start ASCET.
2. Open or create an empty ASCET database or workspace.
3. In the component manager, select **Tools > AUTOSAR to ASCET Converter**.

The "AUTOSAR to ASCET Transfer" dialog window, shown in Fig. 5.1 on page 19, opens.

As an alternative, you can open the Windows Explorer, navigate to the `<ASCET-Root>\tools\AutosarToAscetImporter` directory, and double-click the `A2AImporter.exe` file to open the AUTOSAR to ASCET Converter.

To activate automatic import in ASCET

1. Open the AUTOSAR to ASCET Converter (cf. page 18).
2. In the "AUTOSAR to ASCET Transfer" dialog window, select **Window > Preferences**.
3. In the "Preferences" window, go to the "Conversion Options" node.
4. Activate the **Transfer results to the database/workspace currently opened in ASCET** option.
5. Click **OK** to close the "Preferences" window.

With that setting, the next time you start a conversion while ASCET is running, the converted files are directly imported into ASCET.

5.1 Description of the Graphical User Interface

Fig. 5.1 shows the "AUTOSAR to ASCET Transfer" window, i.e. the graphical user interface of the AUTOSAR to ASCET Converter.

5.1.1 Main Window

The main window of the AUTOSAR to ASCET Converter is the "AUTOSAR to ASCET Transfer" window.

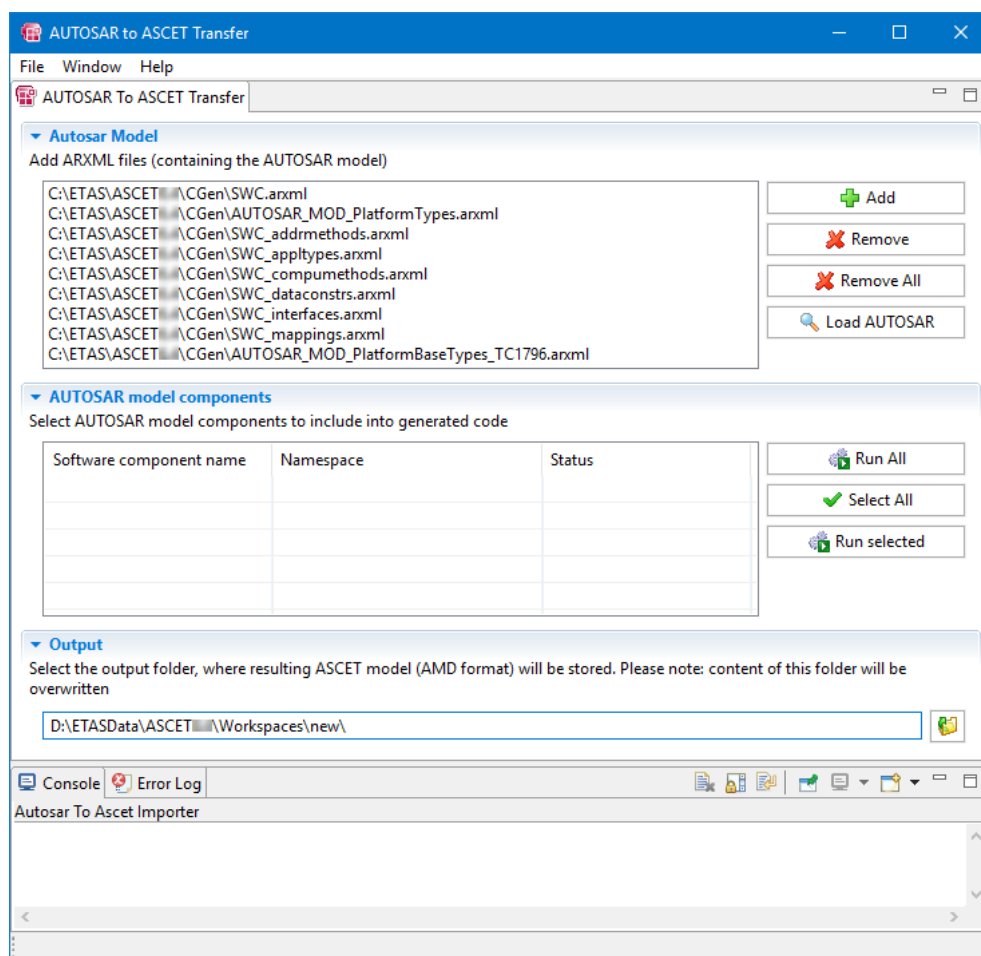


Figure 5.1: Main Window of AUTOSAR to ASCET Converter

5.1.1.1 Menus

The "AUTOSAR to ASCET Transfer" window contains the following menus.

- **File**
 - **Add ARXML File** (<Ctrl> + <o>)

Opens a file selection dialog window where you can select the *.arxml files you want to import.
 - **Remove ARXML File** (<Delete>)

Removes a selected file from the list area of the "AUTOSAR to ASCET Transfer" tab.
 - **Start Conversion** (<Ctrl> + <r>)

Starts the conversion/import.
 - **Restart**

Closes and re-opens AUTOSAR to ASCET Converter.
 - **Exit** (<Ctrl> + <x>)

Closes the AUTOSAR to ASCET Converter.
 - **Convert Line Delimiters to**

Converts line delimiters in the ARXML files to the selected format (**Windows** or **Unix**).
 - **Open File**

Opens a selected file in an appropriate editor or viewer.
- **Window**
 - **Preferences** (<Ctrl> + <Alt> + <o>)

Opens the "Preferences" dialog window.
- **Help**
 - **About AUTOSAR to ASCET Converter**

Opens the "About AUTOSAR to ASCET Converter" window with information on the installation.
 - **User Manual** (<F1>)

Opens this User Guide in an appropriate reader.
 - **Show Active Keybindings** (<Ctrl> + <Shift> + <I>)

Opens a window with keyboard shortcuts for AUTOSAR to ASCET Converter.
 - **Cheat Sheets**

Opens the "Cheat Sheet Selection" window.

5.1.1.2 "AUTOSAR to ASCET Transfer" Tab

The "AUTOSAR to ASCET Transfer" tab contains the following elements.

- "AUTOSAR Model" area
 - list area


Lists the *.arxml files selected for conversion/import.

The context menu in the list area contains the options **Add**, **Remove**, and **View**. The latter opens the selected *.arxml file in a text editor. See also section ""[Miscellaneous](#)" Node".

- **Add** button
The same as **Add ARXML File** in the **File** menu (cf. page 20).
 - **Remove** button
The same as **Remove ARXML File** in the **File** menu.
 - **Remove All** button
Removes all *.arxml files.
 - **Load AUTOSAR** button
Loads the *.arxml files into the AUTOSAR to ASCET Converter. The AUTOSAR SWC found in the *.arxml files are shown in the "AUTOSAR model components" area.
Issues detected during load are shown in the "Console" tab (see also section ""[Console](#)" Tab").
- "AUTOSAR model components" area
- table area
When **Load AUTOSAR** was clicked, the table lists all AUTOSAR SWC found in the *.arxml files.
You can select/deselect an SWC by activating/deactivating the option in the respective row.
 - **Run All** button
The same as **Start Conversion** in the **File** menu.
 - **Select All / Unselect All** button
Selects/deselects all AUTOSAR SWC listed in the table. When you click **Select All**, the button becomes **Deselect All**, and vice versa.
 - **Run Selected** button
Converts the AUTOSAR SWC selected in the table.

**Note**

If you click **Run Selected** when no SWC is selected in the table, an error is issued.

- "Output" area
 - input field
Shows the folder for the converted files. The folder can be entered directly, or selected via the adjacent button.
 -  button
Opens the "Output Folder Selection" dialog window where you can select a folder for the converted files.

5.1.1.3 "Console" Tab

This tab displays the messages issued by the conversion procedure¹. Error and warning messages are numbered, information messages are unnumbered.

5.1.1.4 "Error Log" Tab

This tab shows all eclipse-internal errors and problems.

5.1.2 "Preferences" Window

Fig. 5.2 on page 22 shows the "Preferences" window, where you can set up the behavior of the AUTOSAR to ASCET Converter.

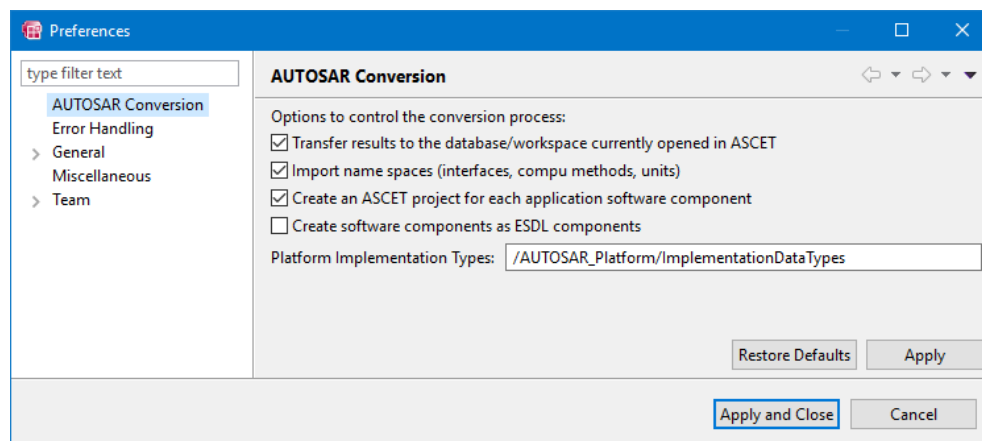


Figure 5.2: "Preferences" Window of the AUTOSAR to ASCET Converter

This window contains the following elements:

- At the top left, a filter for node names.
- At the left, a tree view with the option groups as nodes.
- At the right, the display field for the options of the selected node.
- **Restore Defaults** button
Restores the default settings of the selected node.
- **Apply** button
Accepts your changes without closing the window.
- **OK** button

¹ Messages issued by the import procedure are displayed in the ASCET monitor window.

- **Cancel** button

The nodes specific to the AUTOSAR to ASCET Converter are described in the following sections.

5.1.2.1 "AUTOSAR Conversion" Node

This node contains the following options:

- **Transfer results to the database or workspace currently opened in ASCET**

Default: activated

This option must be activated if you want to import the converted files immediately into ASCET.

If the option is deactivated, or if no database or workspace is open in ASCET, or if no ASCET is running, the converted files are only written to the output directory.

NOTICE

Data loss due to overwriting

If **Transfer results *** is activated, the AUTOSAR to ASCET Converter imports the generated *.amd files into the currently open ASCET database or workspace.

When an item is imported that already exists in the target database or workspace, the existing item is overwritten without notification.

To avoid the loss of your models, do the following:

- Before starting the conversion/import, make sure that the correct ASCET instance is running and the correct database or workspace is open.

- **Import name spaces (interfaces, compu methods, units)**

Default: activated

AUTOSAR name spaces are mapped to folder structures in the ASCET database or workspace (see section 2.1, step D). If the **Import name spaces *** option is activated, the entire package path for interfaces and units is imported, too.

For interfaces, the information is written to the "AUTOSAR Package Name" field in the "Settings" tab of the implementation editor (see also Fig. 5.3 on page 24).

For units, the information is written to the "Comment" field of the respective formula editor (see also Fig. 5.4 on page 24).

- **Create an ASCET project for each application software component**

Default: activated

In AUTOSAR, COMPU-METHODS are organized in AR-Packages. The ASCET counterparts of COMPU-METHODS are formulas, which are connected to ASCET projects.

If the **Create an ASCET project *** option is activated, an ASCET project is created for each imported SWC. The project is named <swc_name>P; it is stored in the same ASCET folder as the SWC.

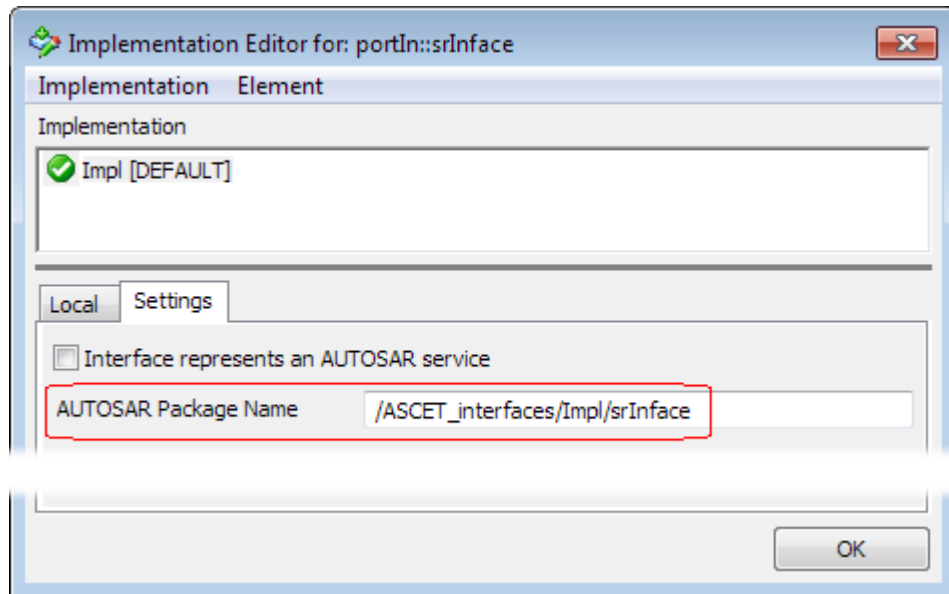


Figure 5.3: "Settings" tab of the implementation editor

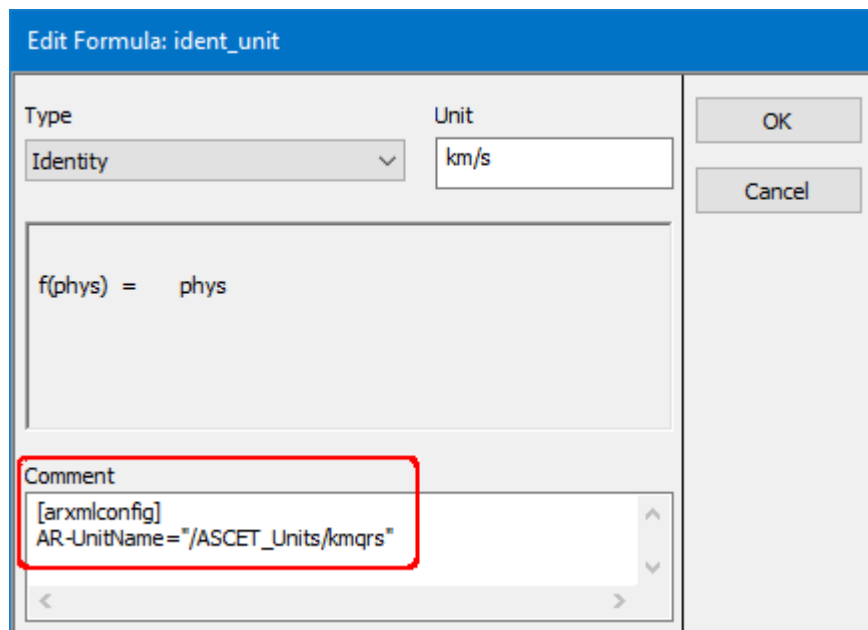


Figure 5.4: Formula editor with unit information

Each SWC's `COMPU-METHODS` of categories² `IDENTICAL`, `LINEAR` and `RAT_FUNC` (if convertible to a Moebius formula) are converted to the respective formulas in the project.



Note

If **Create an ASCET project** * is deactivated, and thus no projects are created, import of `COMPU-METHODS` as ASCET formulas is impossible.

– Create software components as ESDL components

Default: deactivated

Since ASCET version 6.4.2, software components can be specified using either block diagrams or ESDL. By default, the AUTOSAR to ASCET Converter creates block diagram software components. If this option is enabled, ESDL software components are created.

– Platform Implementation Types

The implementation data types in the ARXML input often refer to platform implementation types, that are not defined inside the ARXML. To import such files, the importer recognizes the types `sint8`, `uint8`, `sint16`, `uint16`, `sint32`, `uint32`, `float32`, `float64`, `sint8_least`, `uint8_least`, `sint16_least`, `uint16_least`, `sint32_least`, `uint32_least` and `boolean` in the specified package name as available implementation types and does not issue an error due to a missing type.



Note

The current default value of **Platform Implementation Types** is suitable for AUTOSAR versions R4.1 and higher.

AUTOSAR R4.0 needs a value of `/AUTOSAR_PlatformTypes/ImplementationDataTypes`.

5.1.2.2 "Error Handling" Node

This node contains the following options:

- "Consider As Error" input field
This field can be used to promote a warning to an error. Enter the number of the warning, without square brackets.
- "Consider As Warning" input field
This field can be used to downgrade an error to a warning. Enter the number of the error, without square brackets.
- **Prompt if no ASCET instance was found**
Default: activated
If activated, a warning opens if the option **Transfer results** * (see page 23) in the "Conversion Options" node is activated, but no ASCET is running when conversion and import are started.

² `COMPU-METHODS` of category `TEXTTABLE` are converted to enumerations, see section 4.11 on page 15. `COMPU-METHODS` of other categories than mentioned here are not supported; log entries are created for them.

- **Prompt if no database or workspace is open in ASCET** Default: activated
If activated, a warning opens if the option **Transfer results** * (see page 23) in the "Conversion Options" node is activated, but no database or workspace is currently open in ASCET when conversion and import are started.
- **Prompt if transfer is initiated**
Default: activated
If activated, a warning opens if the option **Transfer results** * (see page 23) in the "Conversion Options" node is activated and import into ASCET starts.

5.1.2.3 "Miscellaneous" Node

This node contains the following options:

- "Editor Path" input field and **Browse** button
This field can be used to specify a text editor that will open when you select **View** from the context menu of an *.arxml file in the "AUTOSAR to ASCET Transfer" tab (cf. section "AUTOSAR to ASCET Transfer" Tab on page 20).

5.1.3 Message Windows

Depending on the settings in the "AUTOSAR Conversion" (cf. page 23) and "Error Handling" (cf. page 25) nodes of the "Preferences" window, three message windows can open. These message windows are structured as shown in Fig. 5.5 on page 26.



Figure 5.5: Message windows of the AUTOSAR to ASCET Converter

Read the message text carefully before you respond.

- Activate the **Don't show this message again** option and click **OK** if you want to suppress the respective warning and continue the operation according to the message text in all following cases.
Suppressed warnings can be reactivated with the options in the "Error Handling" node (cf. page 25).
- Click **OK** and deactivate **Don't show this message again** to continue the operation according to the message text, without suppressing the respective warning.
- Click **Cancel** to abort the operation.
If you click **Cancel**, the **Don't show this message again** option has no effect, the warning appears the next time the respective state is detected.

5.2 Converting and Importing AUTOSAR Models

To convert and import ARXML files

- In the "AUTOSAR to ASCET Transfer" dialog window, do one of the following.
 - Select **File > Add ARXML File**.
 - Click the **Add** button.
 - Press <Ctrl> + <o>.

A file selection window opens.

- In the file selection window, navigate to the folder that contains your AUTOSAR model, and select one or more *.arxml files.
- Click **Open** to add the file(s) to the list in the transfer window.



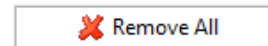
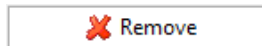
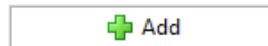
Note

The AUTOSAR to ASCET Converter requires input files with **identical** AUTOSAR versions.

If you select *.arxml files with different AUTOSAR versions, conversion/import is aborted and an error message is issued.

You can also drag files or folders from the Windows Explorer and drop them on the list area of the "AUTOSAR to ASCET Transfer" tab.

- Use the **Add**, **Remove**, or **Remove All** buttons to refine your selections.




- In the "Output" area, do one of the following to specify a folder for the resulting *.amd files.



Note

You must select an *empty* folder. A non-empty folder causes an error.

- In the input field, enter an output folder.
If the folder you entered does not exist, it is created when conversion/import is started.
 - Use the  button to select an output folder.
 - In the input field, press <Ctrl> + <Space> to open a list of suggested output folders.
You can select one of the suggested folders or <create new temp folder>.
- If you want to import the converted files into ASCET, make sure that automatic import is activated (see also page 18).


7. If desired, click  **Load AUTOSAR** to load the *.arxml files into the AUTOSAR to ASCET Converter.



Note

Load AUTOSAR causes an error if no path is specified in the "Output" area.

The SWC found in the files are listed in the "AUTOSAR model components" area. Issues detected during load are shown in the "Console" tab (cf. section [5.1.1.3](#) on page [22](#)).

8. If desired, select the AUTOSAR SWC you want to convert/import.
You can use the **Run Selected** button only if you selected at least one AUTOSAR SWC.
9. Do one of the following to start conversion/import:
- Click  **Run All** to convert/import all AUTOSAR SWC in the selected files.



Note

Run All works even without preceding **Load AUTOSAR** .

- Click  **Run Selected** to convert/import the selected AUTOSAR SWC.

Log messages are shown in the "Console" tab of the AUTOSAR to ASCET Converter. If the conversion succeeds, and if the **Transfer results** * option is activated (see page [23](#)), the AUTOSAR models are imported into the database or workspace currently open in ASCET.

6 AUTOSAR to ASCET Converter: Command-Line Interface

This chapter describes the command-line interface of the AUTOSAR to ASCET Converter. Chapter 5 "AUTOSAR to ASCET Converter: User Interface" describes how to use the AUTOSAR to ASCET Converter via its graphical user interface.

It is possible to use the AUTOSAR to ASCET Converter directly from the command line, without GUI. The command-line syntax looks as follows:

```
A2AImporter.exe -nosplash -consoleLog
  --launcher.suppressErrors -application
  com.etas.ascet.importer.a2a.headless.appl
  -platformimplementationtypes pck
  (-projects|-namespaces|-transfer|-inv t)* -outdir path
  (-file f)+
```

Listing 6.1: Command Line Syntax

The first part is required to start the application itself:

```
A2AImporter.exe -nosplash -consoleLog
  --launcher.suppressErrors -application
  com.etas.ascet.importer.a2a.headless.appl
```

-nosplash

Eclipse-specific option to suppress the splash window.

-consoleLog

Requires eclipse to redirect all outputs to stdout stderr stream to a logfile in the workspace.

--launcher.suppressErrors

Suppresses the eclipse launcher window, which would appear if the command line could not be processed correctly.

-application <appl name>

Starts the main plug-in of the application.

`com.etas.ascet.importer.a2a.headless.appl` is the *<appl name>* of the AUTOSAR to ASCET Converter for the command-line use case.

The second part passes the configuration parameters for the conversion process to the AUTOSAR to ASCET Converter:

```
-platformimplementationtypes pck
  (-projects|-namespaces|-transfer|-inv t)* -outdir path
  (-file f)* -wspport p -ESDLaswc -packname -swc f
```

The following configuration parameters can be specified:

-file f

This option is used to define the input file.

f must be an absolute path to an `*.arxml` file.

-file f can be repeated several times in the command line.

-platformimplementationtypes pck

This option is used to pass the AUTOSAR package for platform implementation types to the AUTOSAR to ASCET Converter.

pck must be the package used by the AUTOSAR file(s) you want to import, e.g., /AUTOSAR_Platform/ImplementationDataTypes.

**Note**

-platformimplementationtypes pck is mandatory. If you omit this parameter, the conversion aborts.

-outdir path

This options specifies the output folder **path**, where the generated AMD files will be located.

path can be an absolute or relative path.

The output folder must be empty to avoid mixing AMD files of different origins.

-projects

This option requests the AUTOSAR to ASCET Converter to create a project for each AUTOSAR SWC.

-projects is required if you want to transfer AUTOSAR CompuMethods to ASCET formulas.

-namespaces

If this option is used, the entire package path for interfaces and units is converted to ASCET.

For interfaces, the information is written to the "AUTOSAR Package Name" field in the "Settings" tab of the ASCET implementation editor (see also Fig. 5.3 on page 24).

For units, the information is written to the "Comment" field of the respective formula editor (see also Fig. 5.4 on page 24).

-transfer

This option starts the import of the converted AMD files into the current ASCET database or workspace.

-transfer works only if a database or workspace is currently open in ASCET.

**Note****Data loss due to overwriting**

When an item is imported that already exists in the target ASCET database or workspace, the existing item is overwritten without notification.

To avoid the loss of your models, do the following:

- Before calling AUTOSAR to ASCET Converter, make sure that the correct ASCET instance is running and the correct database or workspace is open.

If you are using the command line interface, it is often better not to use the **-transfer** option, but generate only a converted ASCET model and import the model from within ASCET.

-inv t

You can write all options in a separate text file and then use the **-inv** option to pass the text file to the AUTOSAR to ASCET Converter as a command file.

t must be the absolute path to the text file.

-inv t can be repeated several times in the command line to specify several command files.

-wsport p

This option specifies the web service port **p** required to transfer the model to a particular ASCET instance.

**Note**

Only relevant if ASCET is running in multi-instance mode.

See also section "Running Multiple ASCET Instances from One Installation" in the ASCET Installation Guide.

-ESDLaswc

If this option is specified, the created software components will use the ESDL specification. If it is omitted, they will use block diagrams.

-packname

Specifies the package name for data types.

-swc f

Specifies the short name of the SWC from an input file.

f must be the absolute path to the file.

-swc f can be repeated several times in the command line to specify several files.

A2AImporter.exe

```
-nosplash -consoleLog --launcher.suppressErrors
-application com.etas.ascet.importer.a2a.headless.appl
-platformimplementationtypes
  /AUTOSAR_Platform/ImplementationDataTypes
-outdir D:\temp\headless
-projects
-namespaces
-transfer
-file C:\Working\ARImport\AR\SWComponent.arxml
-file C:\Working\ARImport\AR\autosar_types.arxml
-file C:\Working\ARImport\AR\SWComponent_interfaces.arxml
-file C:\Working\ARImport\AR\SWComponent_types.arxml
```

Listing 6.2: Command-line syntax (example)

7 Contact Information

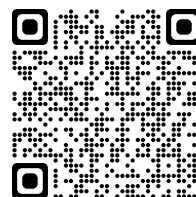
Technical Support

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