ETAS ASCET-DEVELOPER 7.9.0

Getting Started

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ASCET-DEVELOPER 7.9.0 | Getting Started R01 EN | 01.2024

Contents

1. Safety and Privacy Information

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 > ETAS Safety Advice**) 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 messages.

1.1. Intended Use

ASCET-DEVELOPER 7.9.0 is a development tool to help you build object-based, real-time, high-performance, low-overhead, ultra-portable, safe and secure software for embedded hardware.

ASCET-DEVELOPER 7.9.0 lets you build programs using graphical and textual notations and uses advanced, proven-in-use, code generation technology to automatically turn the model into C code. The code generator handles important but tedious jobs that you normally need to worry about when writing C code, for example, under- and overflow, division by zero, array boundary violations, etc. You can concentrate on getting your job done while letting ASCET-DEVELOPER handle the details. With that, ASCET-DEVELOPER makes higher quality, shorter innovation cycles, and cost reductions a reality.

NOTE

This ETAS product fulfills standard quality management requirements. If requirements of specific safety standards (e.g. IEC 61508, ISO 26262, DO-178b, EN50128 and other similar standards) need to be fulfilled, these requirements must be explicitly defined and ordered by the customer. Before use of the product, customers must verify the compliance.

1.2. Target Group

This manual addresses trained embedded software engineers. They have knowledge of the C programming language, including the compilation, assembly, and linking of C code for embedded applications with your chosen tool chain.

They should also be familiar with common use of the Microsoft Windows operating system.

New ASCET-DEVELOPER users should read the ASCET-DEVELOPER Getting Started guide before installing and using ASCET-DEVELOPER 7.9.0.

1.3. Classification of Safety Messages

The safety messages used here 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

Please adhere to the ETAS Safety Advice and to the following safety instructions to avoid injury to yourself and others as well as damage to the device.

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 for this ETAS product is available in the following formats:

- In electronic form; see `Documentation\ETAS Safety Advice.pdf` for details.
- The "ETAS Safety Advice" window that opens when you start the program, or when you select **Help > ETAS Safety Advice**.
- The ASCET-DEVELOPER safety manual, available at ETAS upon request.

1.5. Privacy Notice

Your privacy is important to ETAS, so we have created the following Privacy Statement that informs you which data are processed in ASCET-DEVELOPER, which data categories ASCET-DEVELOPER uses, and which technical measure you have to take to ensure your privacy. Additionally, we provide further instructions where this product stores and where you can delete personal data.

Data Processing

Note that personal data or data categories is processed when using this product. As the controller, the purchaser undertakes to ensure the legal conformity of these processing activities in accordance with Art. 4 No. 7 of the General Data Protection Regulation (GDPR). As the manufacturer, ETAS GmbH is not liable for any mishandling of this data.

Data Categories

Please note that this product creates files containing file names and file paths, e.g., for purposes of error analysis, referencing source libraries, or for communicating with third-party programs.

The same file names and file paths 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, please make sure

of the following:

- The workspace of the product points to a directory without personal reference.
- All settings in the product (see menu **Window > Preferences** in the product) refer to directories and file names without personal reference.
- All project settings in the product (see menu **Project > Properties**) 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 you have read and write access to all relevant directories.

When using the ETAS License Manager in combination with user-based licenses, particularly the following personal data or data categories are recorded for the purposes of license management:

- User data: UserID
- Communication Data: IP address

Technical and Organizational Measures

This product does not itself encrypt the personal data that it records. Please ensure that the data recorded is secured by means of suitable technical or organizational measures in your IT system, e.g. by using classic anti-theft and access protection on the measurement hardware.

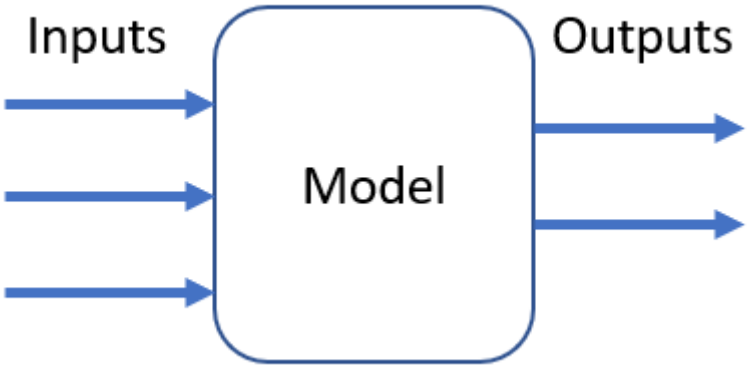
Personal data in generated files can be deleted by tools in the operating system.

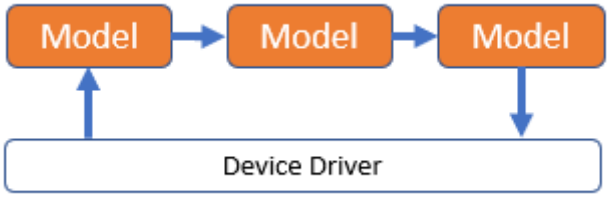
2. About ASCET-DEVELOPER

ASCET-DEVELOPER is a model-based engineering tool that helps you develop object-based, real-time, high-performance, low-overhead, ultra-portable, safe and secure software for embedded hardware.

2.1. Model-Based Development Approach

A model is essentially a software component which takes inputs, computes something, and sends outputs. Your models are usually combined to form some logical composition.





2.2. ASCET-DEVELOPER Workflow

The typical workflow in ASCET-DEVELOPER has three steps:

1. Develop your models using the different editors that ASCET-DEVELOPER provides.
2. Simulate and test your models to verify that they behave as expected.
3. Generate code to deploy your models on a target device of your choice.

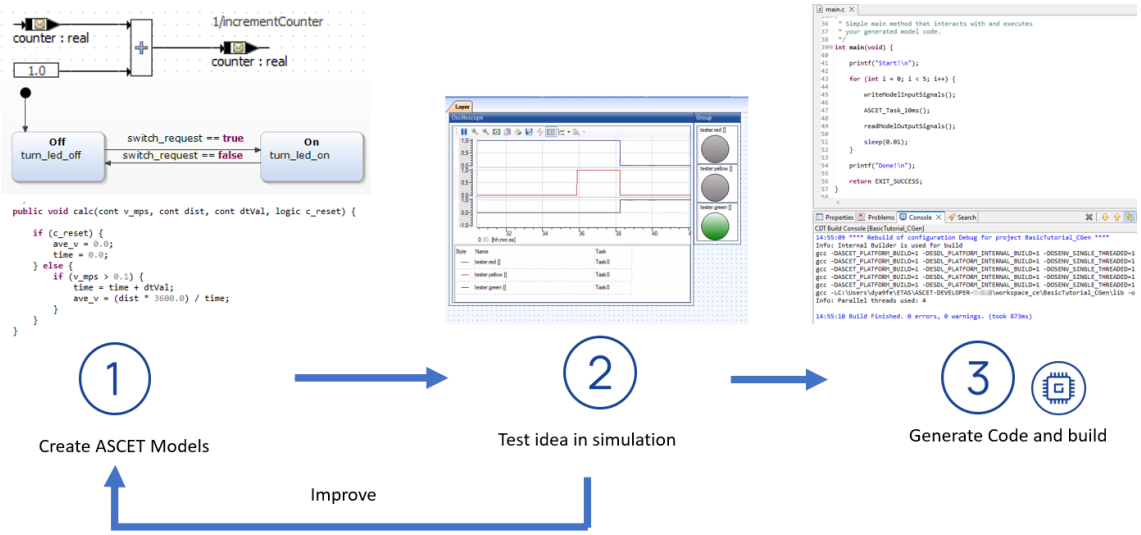


Figure 1. ASCET-DEVELOPER workflow

2.3. ASCET-DEVELOPER Editors

ASCET-DEVELOPER provides several editors to develop your models. Each of these editors comes with powerful features like content assist and model validation. Let's have a look at the different editors:

Block Diagram Editor

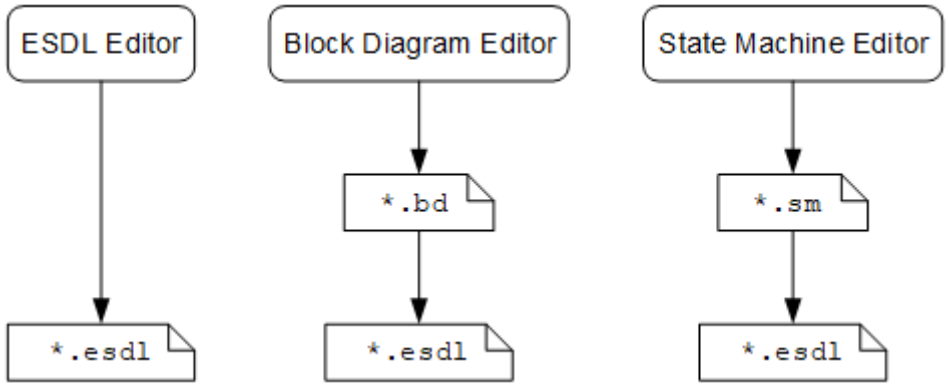
A graphical editor wherein you implement your ASCET-DEVELOPER model using blocks and signals. Block diagram files have the `.bd` extension.

State Machine Editor

A graphical editor in which you mainly work with states and transitions. State machine files have the `.sm` extension.

ESDL Editor

This textual editor supports you in implementing your models by directly using ASCET's Embedded Software Development Language (ESDL). The corresponding files have the `.esdl` extension.



NOTE

In ASCET-DEVELOPER, the model behavior is defined in ESDL files only. Graphical editors are used to help you create ESDL code.

2.4. About ESDL

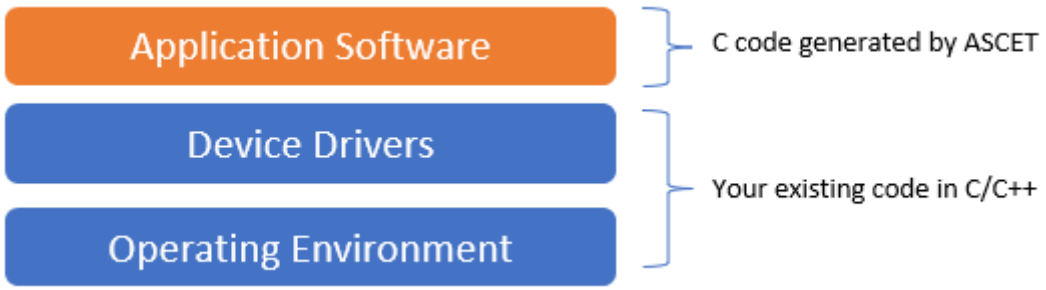
ESDL is a text-based modeling language developed by ETAS. It has a similar syntactic style to the C language family (C, C++, Java, C#). If you are familiar with any of these languages, then you should feel comfortable with ESDL. However, unlike these languages, ESDL has been designed to prevent many categories of coding errors and to make it easier to find other categories of coding errors that cannot be prevented by a language alone.

ESDL embodies a best-practice approach to engineering software, using techniques and methods that produce better results. Designing models in ESDL and then automatically generating C code produces software that is free from the insecurities, vulnerabilities and portability issues which are a key source of software engineering problems.

2.5. C Code Generation

In ASCET-DEVELOPER, the code generator translates your model, which consists of one or more ESDL files, into C code. The benefit in using the ASCET-DEVELOPER code generator is that it handles important but tedious jobs you would normally need to worry about when writing C code, e.g. integer underflow/overflow, division by zero or array boundary violations. With that, you can concentrate on getting your job done while letting ASCET-DEVELOPER handle the details.

The generated code is target-independent. This gives you the flexibility to integrate your models on basically any embedded device.



Application Software

ASCET-DEVELOPER models can be used to generate the application software code of your embedded project.

Device Drivers

Device drivers directly interface with and control specific hardware functions within the microcontroller unit (MCU), such as bus or I/O initialization and transaction drivers, memory and memory management drivers, and control drivers.

Operating Environment

This could, for example, be a real time operating system (OS) - a full-featured one like Linux or bare metal with an infinite loop.

3. Installation

This chapter provides relevant information to all users who install, maintain or uninstall ASCET-DEVELOPER on a PC or a network.

3.1. Preparing the Installation

ASCET-DEVELOPER is provided as a downloadable electronic installation image. You will have been provided with access to the download when the product was purchased.

3.1.1. Delivery Scope

The delivery scope of ASCET-DEVELOPER contains the following content:

- ASCET-DEVELOPER 7.9.0 program files
- ETAS Experiment Environment
- ETAS Virtual Prototyping Platform
- ASCET-DEVELOPER Getting Started manual in PDF format (reader required)
- information on open-source components used in ASCET-DEVELOPER

3.1.2. System Requirements

The software prerequisites and system requirements are listed in the release notes of ASCET-DEVELOPER.

3.2. All-in-One Installation

This section describes the common installation of ASCET-DEVELOPER, the ETAS Experiment Environment, and the ETAS Virtual Prototyping Platform (*VP Platform* in short). The ETAS Experiment Environment and the ETAS Virtual Prototyping Platform are necessary if you want to use the ASCET-DEVELOPER PC experiment.

NOTE

The all-in-one installation does not allow user-defined parameters.

User-defined parameters, e.g., installation path, are only possible when you install each tool separately. See also section 3.3, “Separate Installations”.

3.2.1. Installation via Dialog Windows

This section describes the installation via dialog windows. Command-line installation is described in section 3.3.1.2, “Command-Line Installation”.

To start the ASCET-DEVELOPER installation

1. In the file system, open the `ASCET-DEVELOPER 7.9.0.iso` file.[1]
2. Double-click the `Setup ASCET-DEVELOPER 7.9.0.exe` file.

   The ASCET-DEVELOPER Setup Wizard is launched.

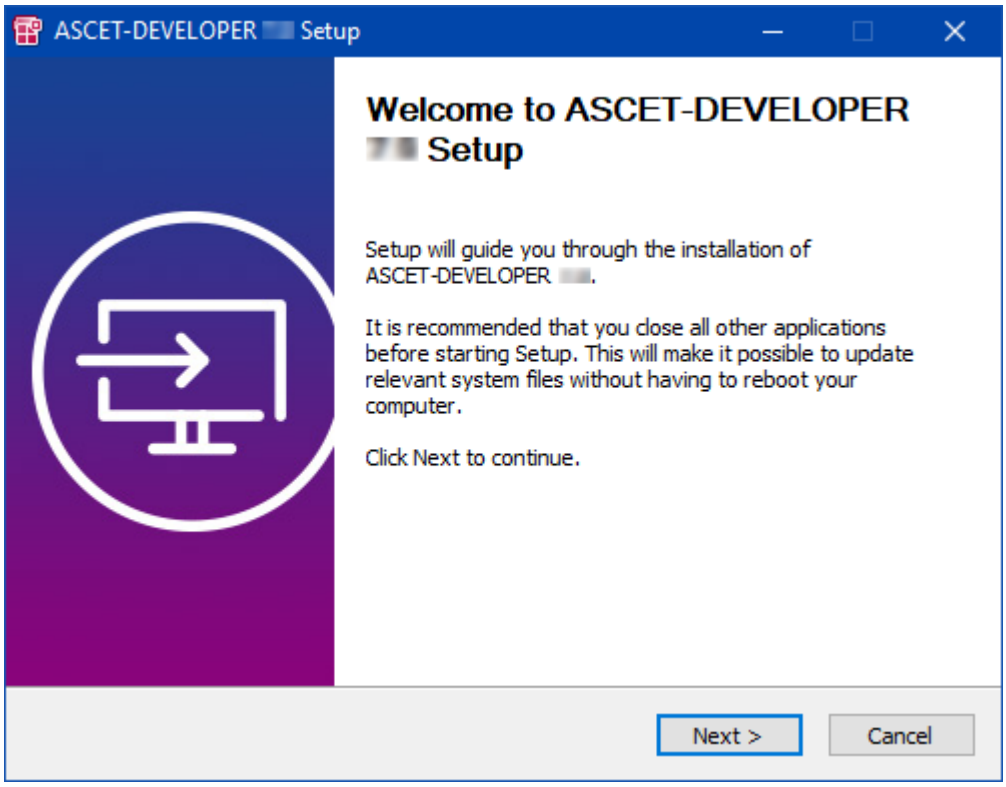
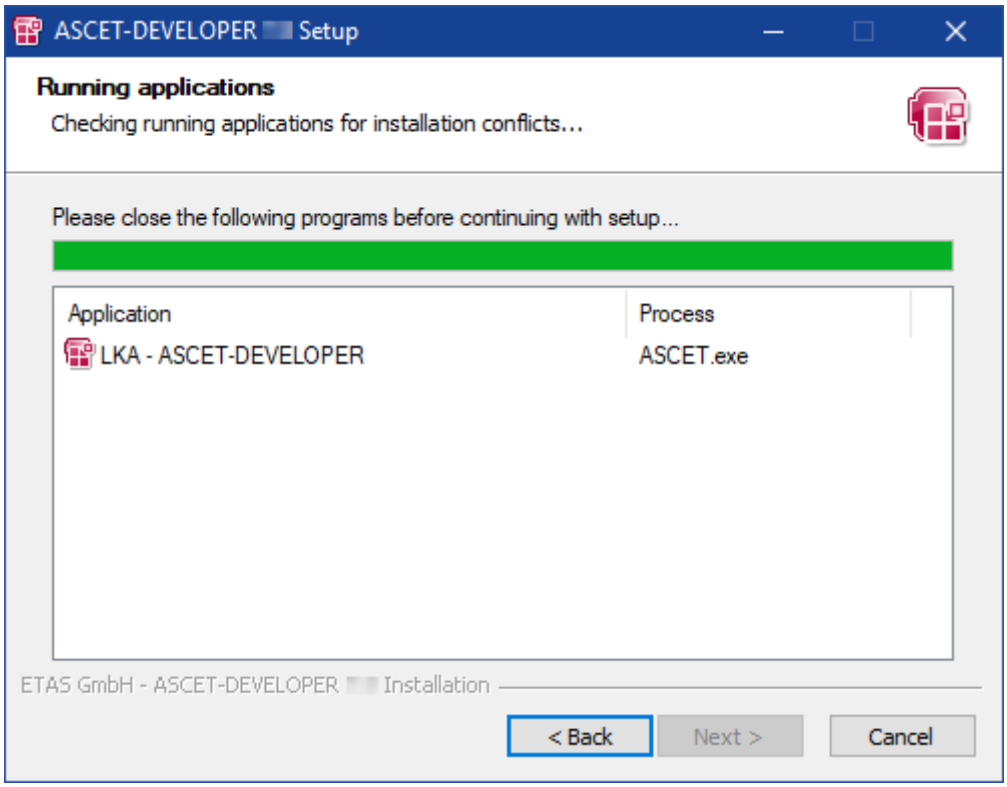


Figure 2. ASCET-DEVELOPER Setup Wizard

3. Click **Next**.

To check for blocking applications

The "Running applications" window shows running applications that block the installation.



1. Do the following:
    i. Close each application with its native closing mechanism.
    ii. In the "Running applications" window, right-click each application and select **Close** from the context menu.

    Once all blocking applications are closed, the installation continues automatically.

To select components to be installed

The "Choose Components" window lists all components that can be installed.

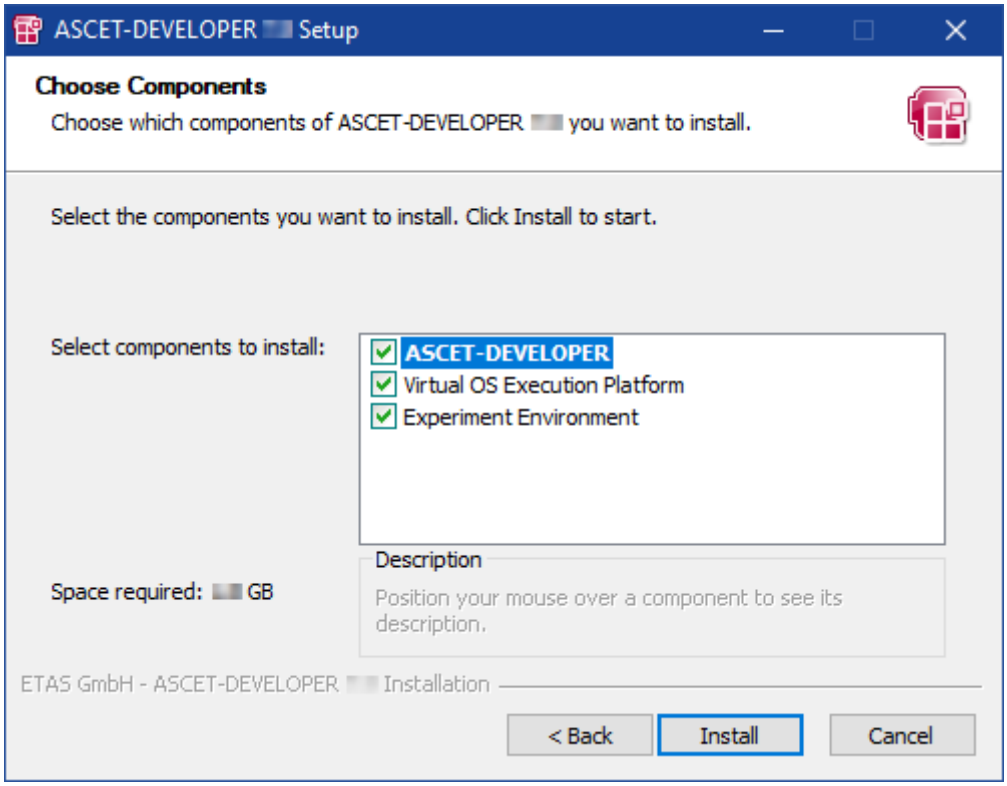


Figure 3. ASCET-DEVELOPER Setup — Choose Components

1. Activate the checkbox of each component you want to install.

   By default, all checkboxes are activated.

To install ASCET-DEVELOPER

NOTE The next step starts the installation. You cannot abort it.

1. In the "Choose Components" window, click **Install**.

   The installation is performed. A progress indicator shows how the installation is progressing. When the installation is complete, the "Installation Complete" window opens.

2. Click **Next**.

   You are prompted to finish the installation.

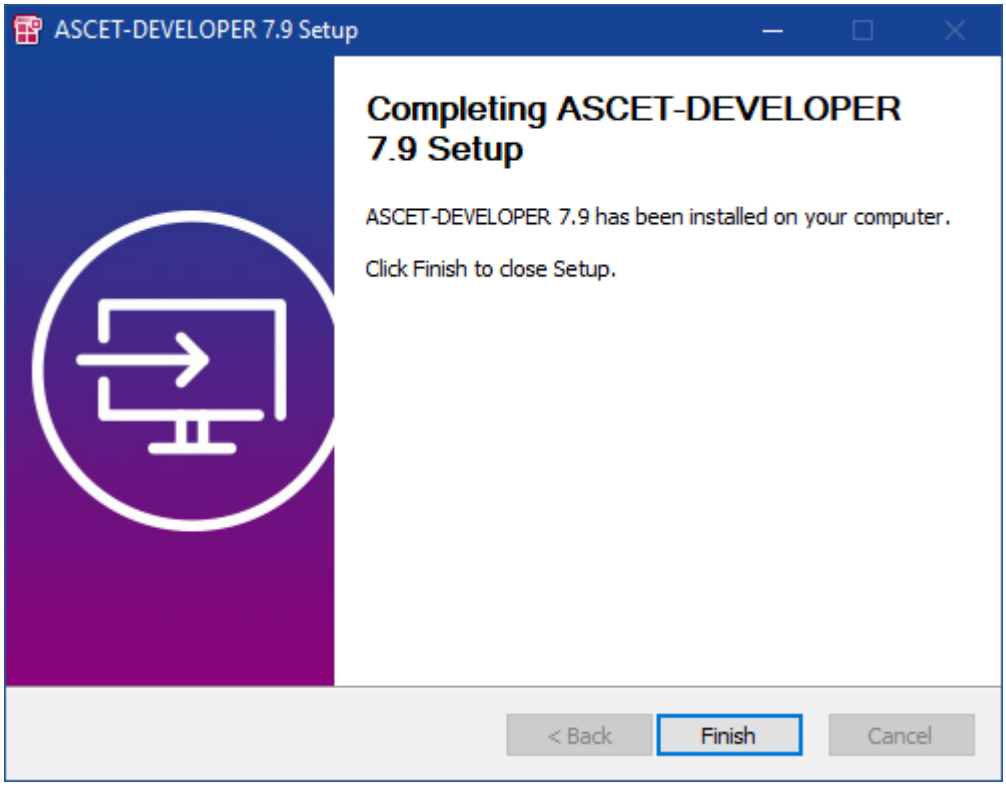


Figure 4. Completing the all-in-one installation

3. Click **Finish** to complete the installation.

ASCET-DEVELOPER

For ASCET-DEVELOPER, a folder named `ETAS ASCET-DEVELOPER 7.9` is created in the **ETAS** program group of the Windows Start menu. It contains the following entries:

– **ASCET-DEVELOPER 7.9**

  Starts ASCET-DEVELOPER.

– **ASCET-DEVELOPER 7.9.0 Getting Started**

  Link to the Getting Started manual for ASCET-DEVELOPER.

– **ASCET-DEVELOPER 7.9.0 Release Notes**

  Link to the Release Notes for ASCET-DEVELOPER.

The following icon is placed on the desktop of your computer:

The ETAS License Manager has an entry **ETAS License Manager** in the **ETAS** program group of the Start menu.

Experiment Environment

For the experiment environment, a folder `ETAS Experiment Environment <a>.<b>`[2] is created in the Windows Start menu. This folder contains the following items:

– **Experiment Environment V<*a*>.<*b*>**[2]

  Opens the experiment environment.

– **Experiment Environment V<*a*>.<*b*>**[2] **Tools**

  Opens a folder with the following shortcuts in the Windows Explorer:

  - `Associate to INCA`

    Determines the INCA version that can be used with the experiment environment, and the version of the shared modules.

  - `Associate to RTA-TRACE`

    Checks the installation of RTA-TRACE. If the check fails, hints for troubleshooting are given.

– **INCA <*x*>.<*y*> Target Server — Tools**

  Opens a folder with the following shortcuts in the Windows Explorer:

  - `ETAS Network settings`

    Starts the assistant for the configuration of the ETAS network.

  - `Search for connected hardware`

    The Target server is started. A search for connected hardware is conducted.

– **Manuals and Tutorials**

  Opens the `ETAS Manuals` folder in the Windows Explorer. The `ETAS Manuals` folder contains a shortcut `Experiment Environment V<a>.<b>`[2], which opens the `Docs` folder with the following online help files:

  - `EE.chm`

    The Experiment Environment online help.

  - `InstrumentProgramming.chm`

    A help file that offers assistance for programming and integrating user-defined instruments to the ETAS experiment environment.

  - `ScriptingAPI_EE.chm`

    A help file that describes the scripting API of the experiment environment.

  - `XILAPI_EE.chm`

    A help file that describes the XIL API of the experiment environment.

The following icon is stored on the desktop of your computer:

The SMF editor has its own entries in the Start menu; they can be found at **E > ETAS > ***, with * being one of the following:

– **SMFEditor User Guide**

Opens the online help for the SMF editor.

– **SuT Mapping File Editor**

  Opens the SMF editor.

VP Platform

For the VP Platform, a folder `ETAS ETAS Virtual OS Execution Platform <c>.<d>`[3] is created in the Windows Start menu. This folder contains a single entry, **Signal Configuration Editor V*<m>.<n>***[4], which is irrelevant for ASCET-DEVELOPER.

3.2.2. What is Installed?

After installing completes, a number of new files and folders are created in the ASCET-DEVELOPER installation directory `C:\ETAS\ASCET-DEVELOPER7.9`. The following table describes the most important elements:

File/Folder	Description
`ASCET.exe`	The ASCET-DEVELOPER IDE executable
`ASCET.ini`	Startup configuration options for ASCET-DEVELOPER
`amd-to-esdl-cli.bat`	ASCET 6 AMD to ESDL translation tool
`ascet-cli.bat`	The ASCET-DEVELOPER command line code generator driver
`configuration`	Folder with configuration files
`documents`	Folder with user documentation in PDF form
`features`	Standard Eclipse Folder: Contains definitions of which plugins contribute to which feature
`jre`	Standard Eclipse Folder: Java SE Runtime Environment
`LicenseConfigurationInfo`	Folder with license features to which the ETAS License Manager needs to grant access.
`p2`	Standard Eclipse Folder: Plugin dependency management
`plugins`	Standard Eclipse Folder: IDE plugins
`SDK`	Folder with ZIP files for ASCET-DEVELOPER SDK and ASCET-DEVELOPER Javadoc.

Table 1. ASCET-DEVELOPER — most important files and folders

The ASCET-DEVELOPER 7.9.0 installation includes the Eclipse C/C++ Development tools (see www.eclipse.org/cdt/) so that you can work easily with generated C code.

3.3. Separate Installations

This section describes the separate installations of ASCET-DEVELOPER, the ETAS Experiment Environment, and the ETAS Virtual Prototyping Platform (VP Platform in short). The ETAS Experiment Environment and the ETAS Virtual Prototyping Platform are necessary if you want to use the ETAS PC experiment.

NOTE

When you install ASCET-DEVELOPER, the ETAS Experiment Environment, and the VP Platform separately, you can set some installation parameters for each tool.

3.3.1. Installing Only ASCET-DEVELOPER

The ASCET-DEVELOPER installer installs the following items:

- ASCET-DEVELOPER product
- ETAS License Manager
- all 3rd-party tools required to run ASCET-DEVELOPER or the ETAS License Manager

3.3.1.1. Installation via Dialog Windows

This section describes the installation via dialog windows. Command-line installation is described in section 3.3.1.2, “Command-Line Installation”.

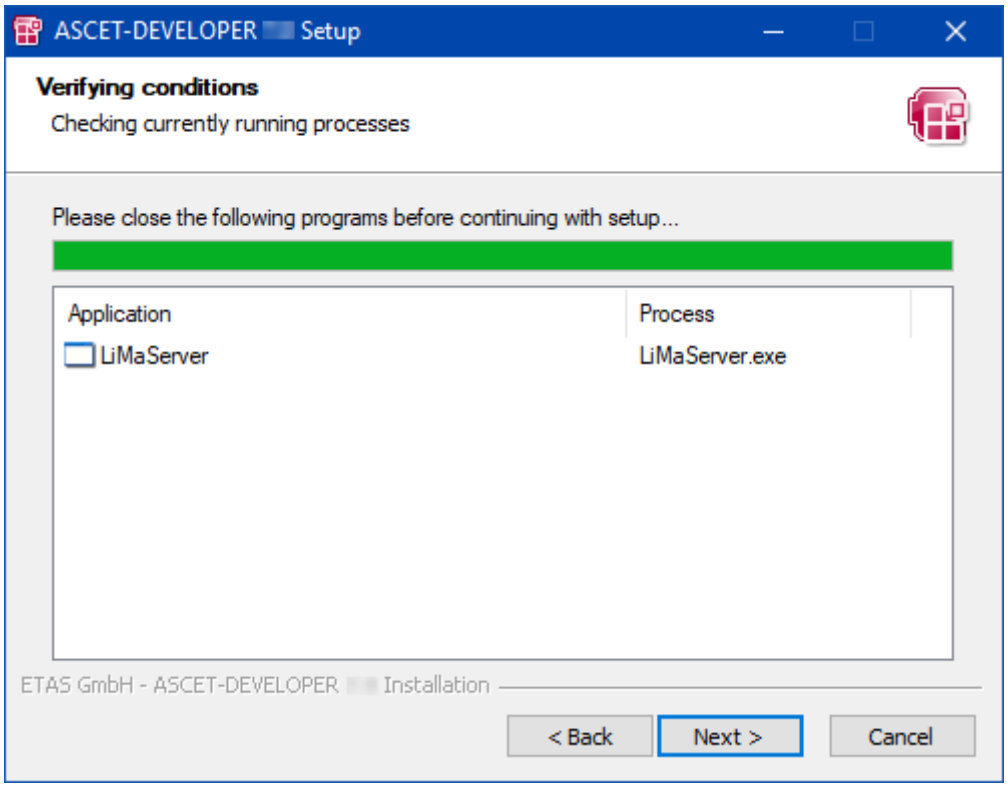
To start the ASCET-DEVELOPER installation

1. In the file system, open the `ASCET-DEVELOPER 7.9.0.iso` file.[1]
2. In the `install` folder of the `ASCET-DEVELOPER 7.9.0.iso` file, double-click `setup.exe`.

   The ASCET-DEVELOPER Setup Wizard (see Figure 2) is launched.
3. Click **Next** to get to the next installation window.

To check for blocking applications

The "Verifying conditions" window shows running applications that block the installation.



1. Close each applications with its closing mechanism.

   Once all blocking applications are closed, the installation continues automatically.

Or

2. Do the following:
   i. Click **Next** without closing the blocking applications.

      You are asked if you want to close the applications.

   ii. Click **Yes** to continue.

      If an application cannot be closed normally, you are asked if you want to kill the respective process.

NOTICE	**Killing a process can lead to data loss.** Make sure that no data will be lost before you agree to kill the process.

   iii. Click **Yes** to continue.

To define path settings

In the "Choose Install Location" window, you are prompted to enter a destination directory for the installation (later referred to as *<installation>*.

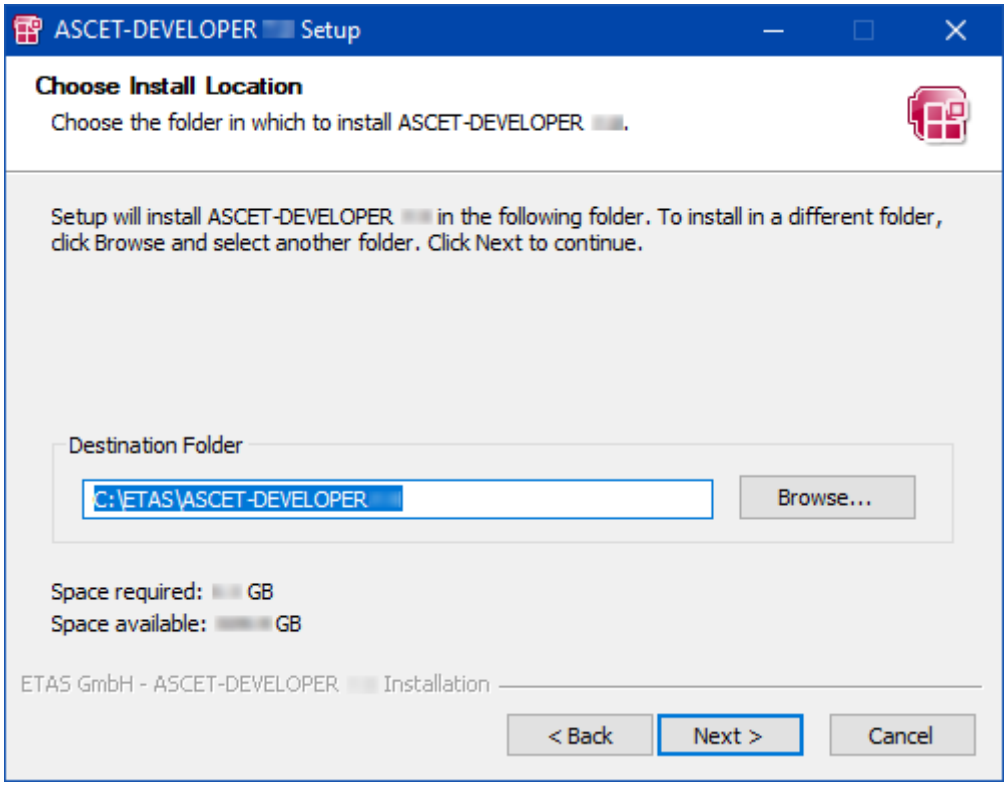


Figure 5. ASCET-DEVELOPER Setup — Choose Install Location

1. Enter or select (via the **Browse** button) a valid path.

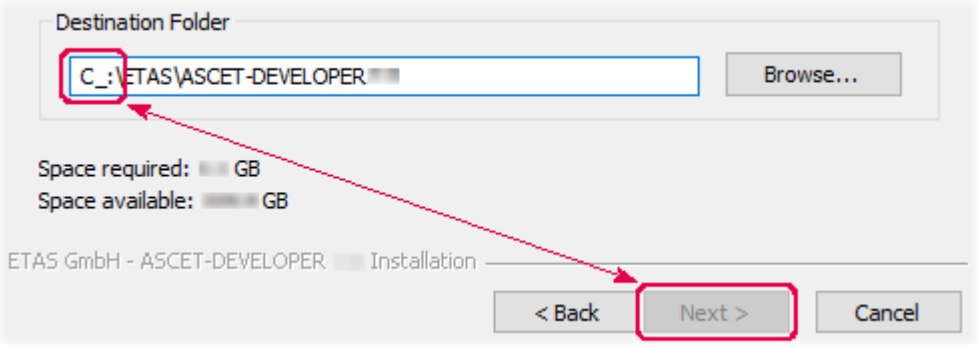
   NOTE

   Make sure that you select an installation directory that offers write access during ASCET-DEVELOPER operation; ASCET-DEVELOPER writes to files in the installation directory.

   It is recommended that you do ***not*** use the `Program Files` directory as installation directory.

   The default installation directory for ASCET-DEVELOPER 7.9.0 is `C:\ETAS\ASCET-DEVELOPER7.9`.

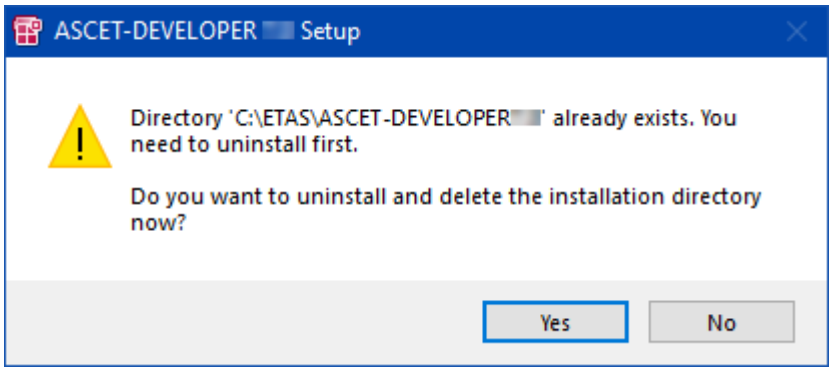
   An invalid path deactivates the **Next** button. You have to correct the path before you can continue.



2. Click **Next**.

   If ASCET-DEVELOPER 7.9.* is already installed in the selected directory, or if you

selected an existing directory, you are asked to uninstall the existing installation.



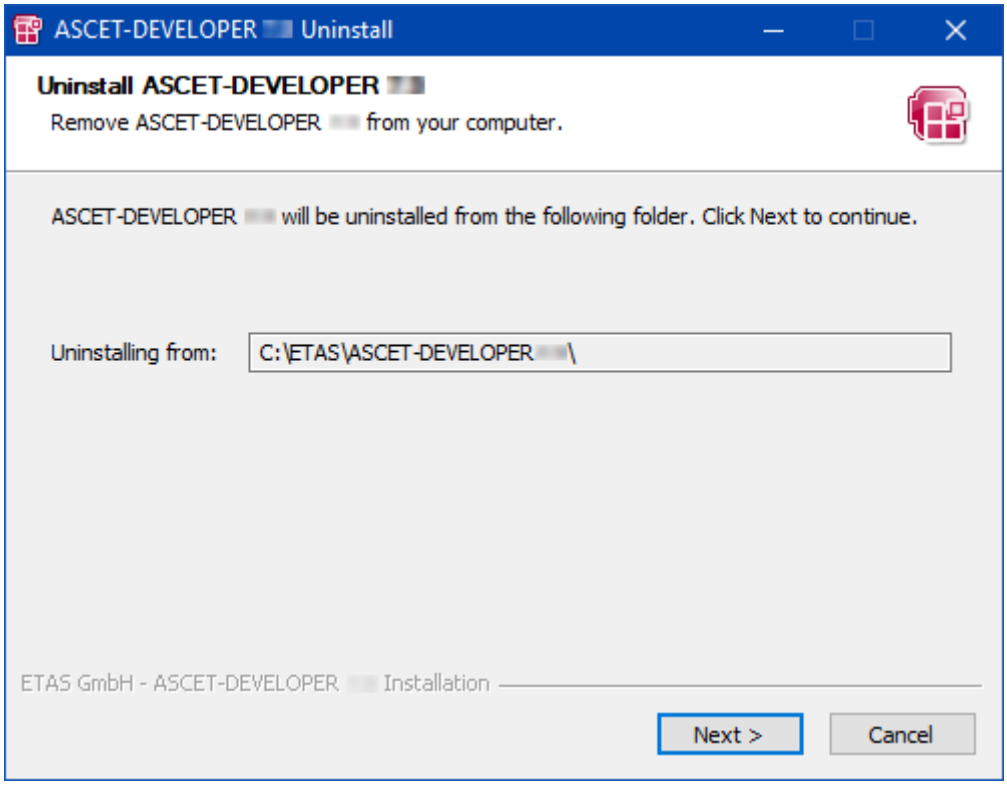
3. Click **Yes** to continue.

   Use **No** to return to the "Choose Install Location" window and specify another installation directory.

   If the existing folder does ***not*** contain an installation of ASCET-DEVELOPER 7.9.*, the folder is deleted. Continue reading at "To specify a folder in the Start menu".

To uninstall an existing version

If you selected an existing folder that contains an installation of ASCET-DEVELOPER, the "Uninstall ETAS ASCET-DEVELOPER" window opens.



1. Click **Next**.

   The existing version is uninstalled. Once uninstallation is complete, the **Close** button is available.

2. Click **Close**.

The installation continues.

To specify a folder in the Start menu

In the "Choose Start Menu Folder" window, you are prompted to enter or select a Start menu folder for ASCET-DEVELOPER.

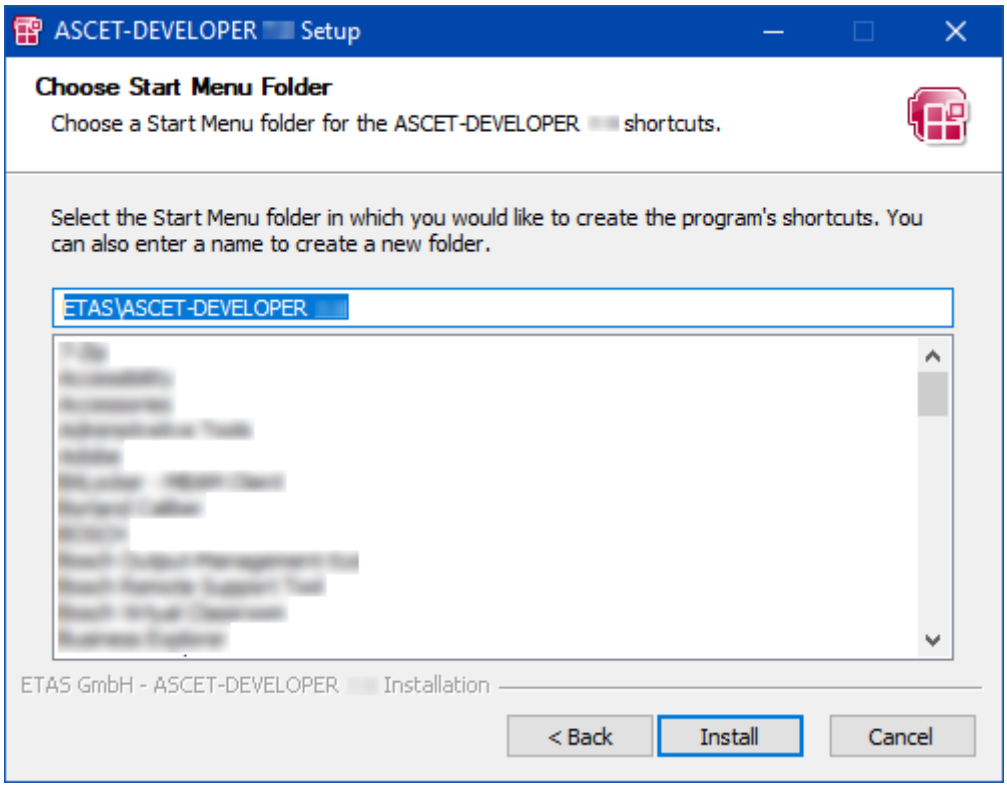


Figure 6. ASCET-DEVELOPER Setup — Choose Start Menu Folder

1. Do one of the following:
   - Accept the default folder name.
   - Enter a new folder name.

     If desired, you can enter folder and subfolder.

To install ASCET-DEVELOPER

NOTE The next step starts the installation. You cannot abort it.

1. In the "Choose Start Menu Folder" window, click **Install**.

   The installation is performed. A progress indicator shows how the installation is progressing. When the installation is complete, the "Installation Complete" window opens.
2. Click **Next**.

   You are prompted to finish the installation.

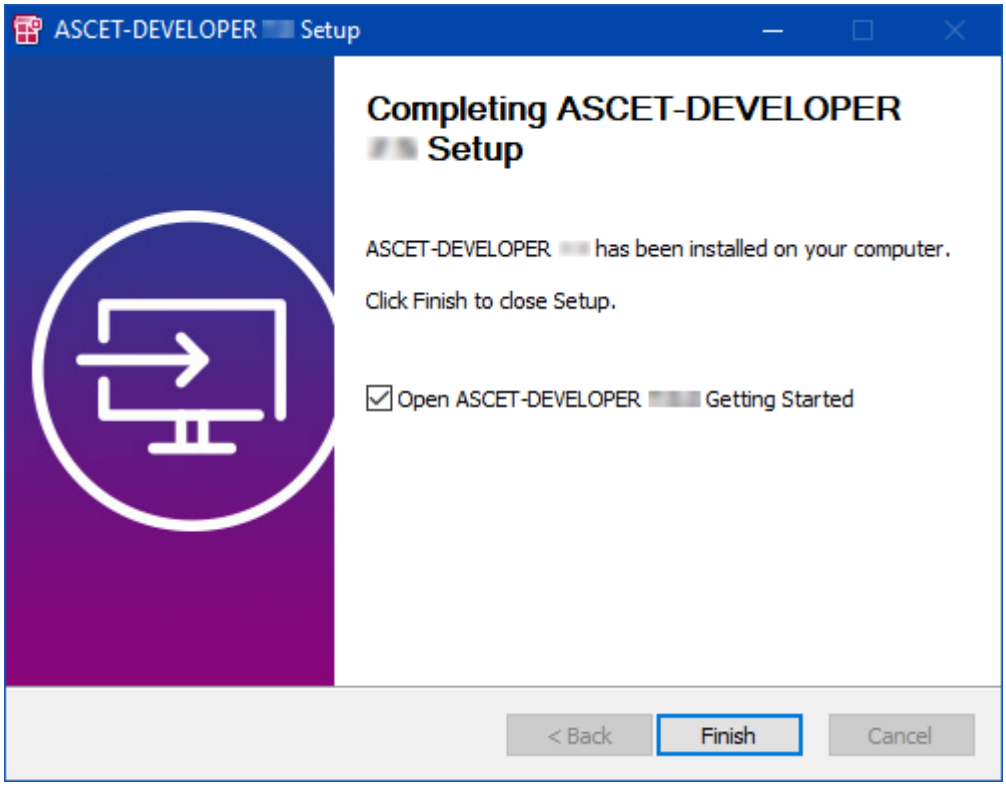


Figure 7. Completing the ASCET-DEVELOPER installation

3. If desired, activate the **Open ASCET-DEVELOPER 7.9.0 Getting Started** option.
4. Click **Finish** to complete the installation.

In the Windows Start menu, the specified folder is created. By default, that folder is named `ETAS ASCET-DEVELOPER 7.9`; see also "To specify a folder in the Start menu". See section ASCET-DEVELOPER for a list of the folder's content.

The following icon is placed on the desktop of your computer:

Table 1 lists the most important files and folders of the ASCET-DEVELOPER installation.

3.3.1.2. Command-Line Installation

This section describes the command-line installation. Installation via dialog windows is described in section 3.3.1.1.

When you start the ASCET-DEVELOPER installation from a command line, you can use several command-line parameters to customize the installation.

NOTE

The command-line options are case-sensitive. For example, `/S` will cause a silent installation, but `/s` will not.

`/?` or `/h`

Opens a window with the valid command line arguments.

`/S` or `/silent`

Silent installation mode. With this installation mode, no dialog windows requiring user information open.

Default values are used for all information normally requested in installation windows. Error messages are hidden, too.

> **NOTE** `/silent` must be the first command-line argument. If other arguments precede it, `/silent` has no effect.

`/NCRC`

Skips CRC check of the installer (ignored if `CRCCheck force` is set in the installer).

`/D`

Sets the installation directory (`$INSTDIR`).

`/D` must be the last parameter in the command line. `/D` must not contain any quotes.

Syntax

without spaces — `/D=C:\ETAS\ASCET-DEVELOPER<x>.<y>`[5]

with spaces — `/D=C:\Program Files\ASCET-DEVELOPER`

Examples

`setup.exe /S /EULAAccepted`

Triggers a silent installation with default installation path and CRC check.

`setup.exe /NCRC /D=C:\Tools\ASCET-DEVELOPER<x>.<y>` [5]

Triggers a non-silent installation without CRC check and with user-defined installation directory.

3.3.2. Installing the Experiment Environment

You need the ETAS Experiment Environment and the ETAS Virtual Prototyping Platform if you want to use the ASCET-DEVELOPER PC experiment.

You cannot choose the installation path of the experiment environment. The experiment environment is installed in the `Program Files (x86)` folder, `Common Files\ETAS\Experiment Environment\<a>.<b>`[2] subfolder, on your system drive.

3.3.2.1. Installation via Dialog Windows

To start the experiment environment installation

1. In the file system, open the `ASCET-DEVELOPER 7.9.0.iso` file.[1]
2. In the `install\ExperimentEnvironment` folder of the `*.iso` file, double-click `setup.exe`.

The ETAS Installer is launched.

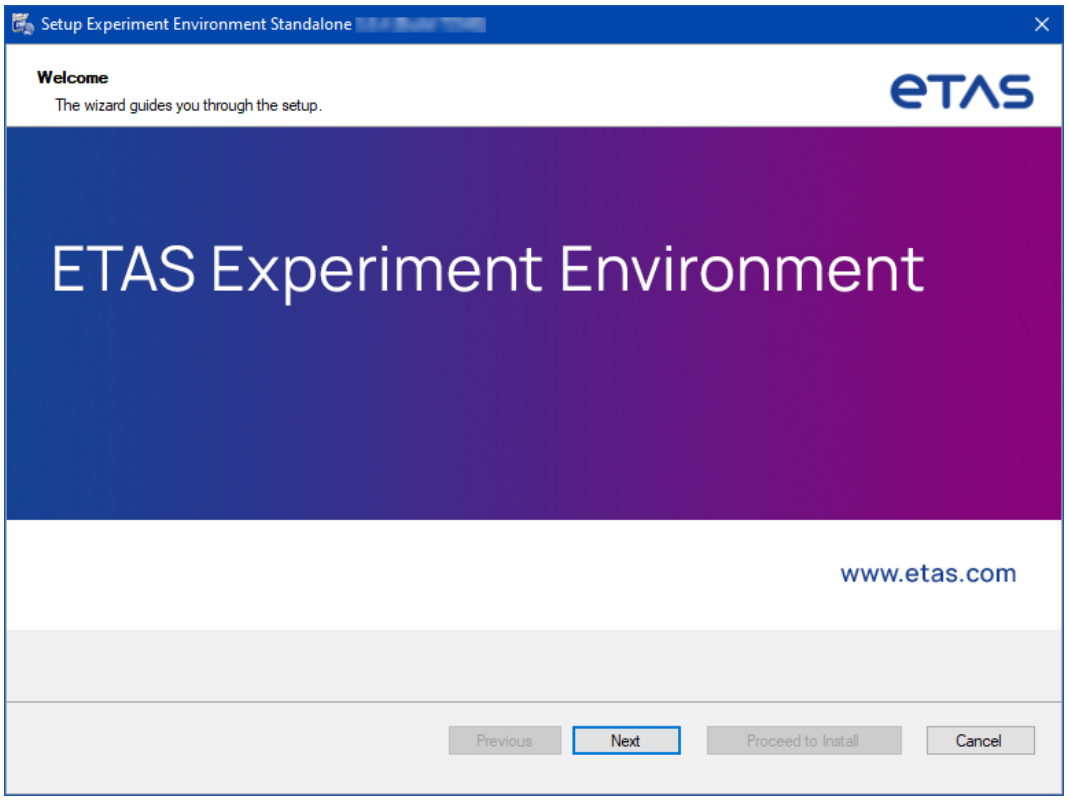


Figure 8. ETAS Installer for the experiment environment

3. Click **Next** to continue.

   The installer checks if your computer meets the system requirements for installation of the experiment environment. The result is displayed in the "System Check" window.

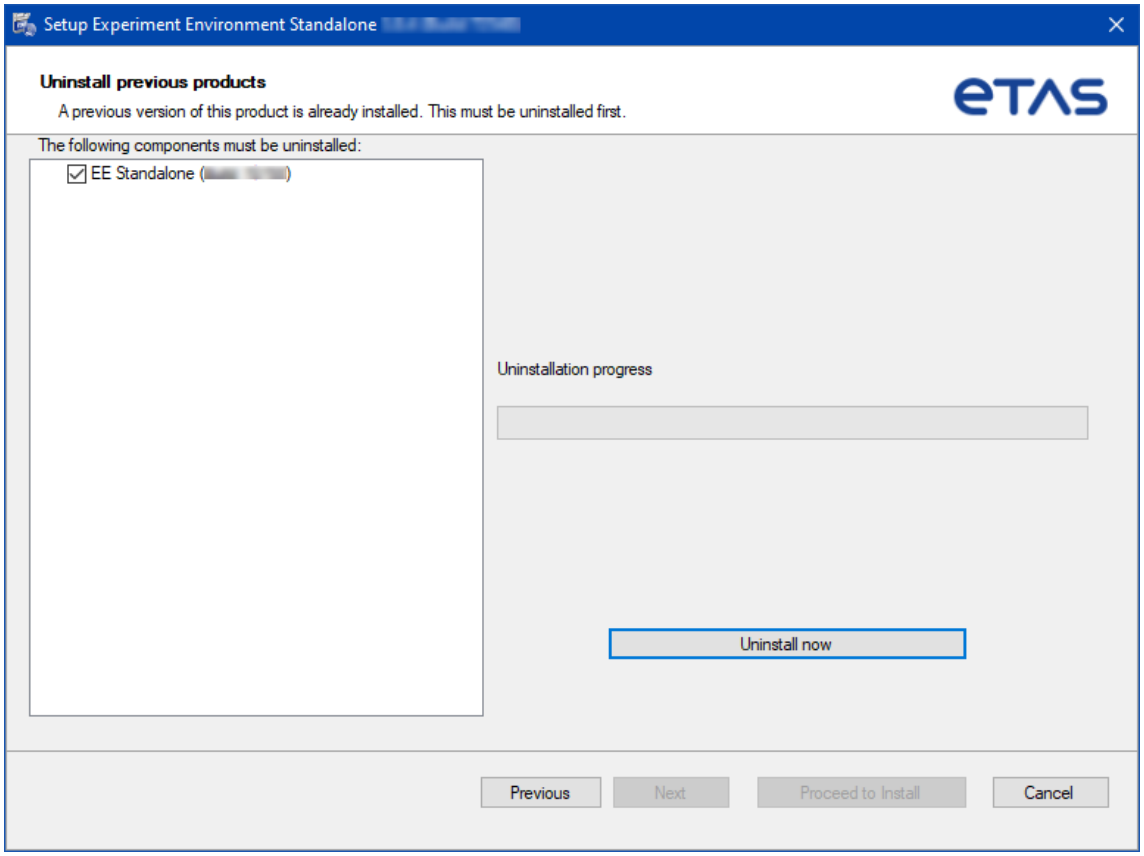
   If your system meets the installation requirements, the installer proceeds automatically to the next window.

To uninstall an existing version

NOTE

If no incompatible version of the Experiment Environment is installed on your computer, continue with To accept the license agreement.

If an Experiment Environment version incompatible with the version you are about to install is present on your computer, that version is listed in the "Uninstall previous products" window.



1. Click **Uninstall now**.

   The previous version of the Experiment Environment is uninstalled. You can now continue the installation of the new version of the Experiment Environment.

To accept the license agreement

The next window shows the license agreement.

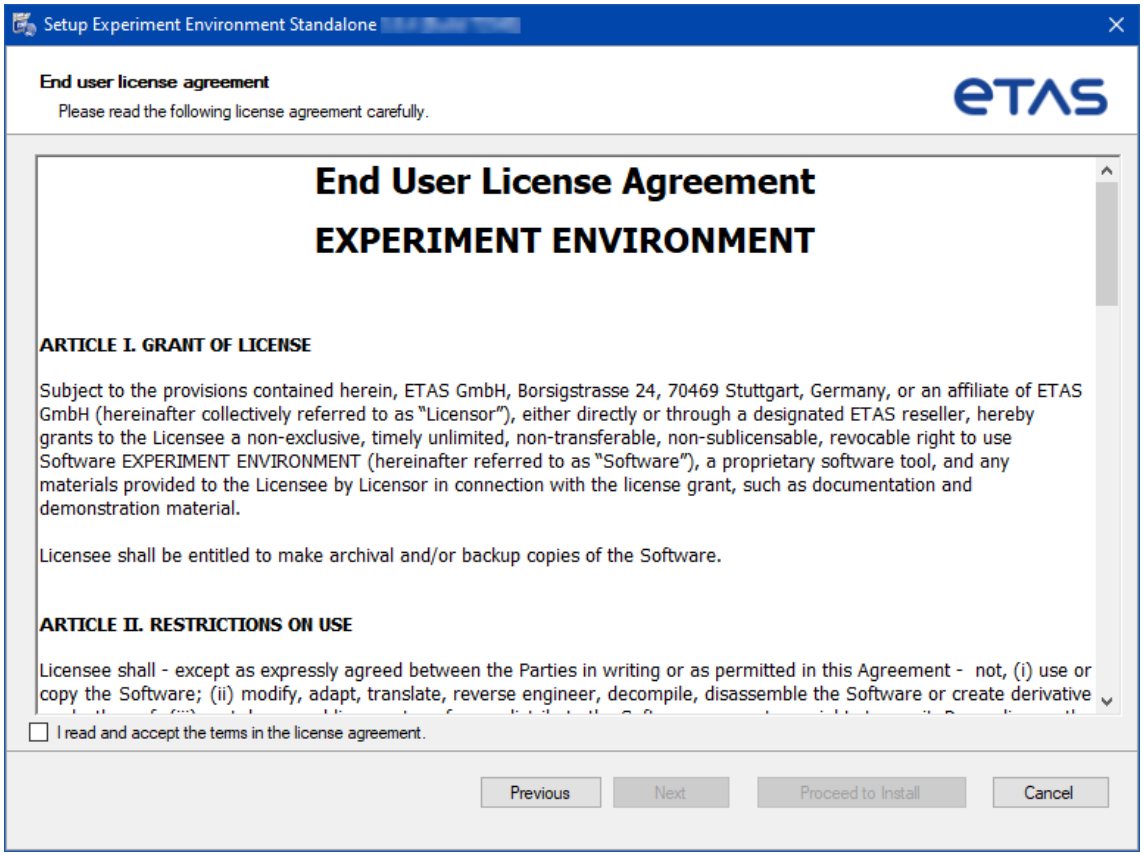


Figure 9. Experiment environment installation — license agreement

1. Read the license agreement, then activate the **I read and accept the terms in the License Agreement** option.

   If you do not accept the license agreement, you cannot continue the installation.

2. Click **Next**.

To associate with INCA

The "Associate to INCA" window offers all INCA versions on your PC that can access the same target server as the experiment environment.

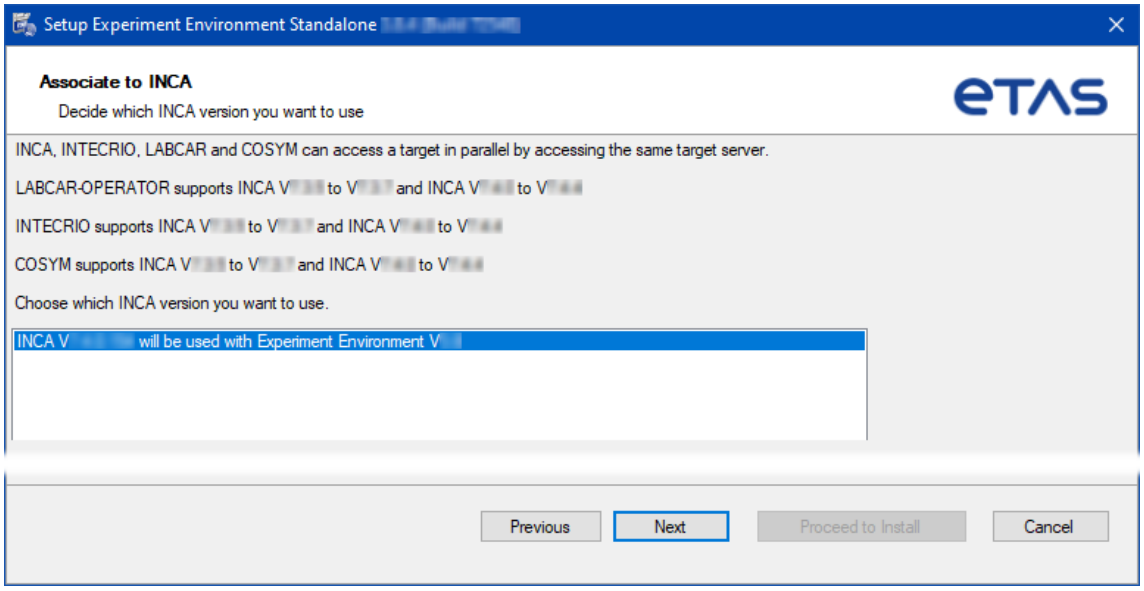
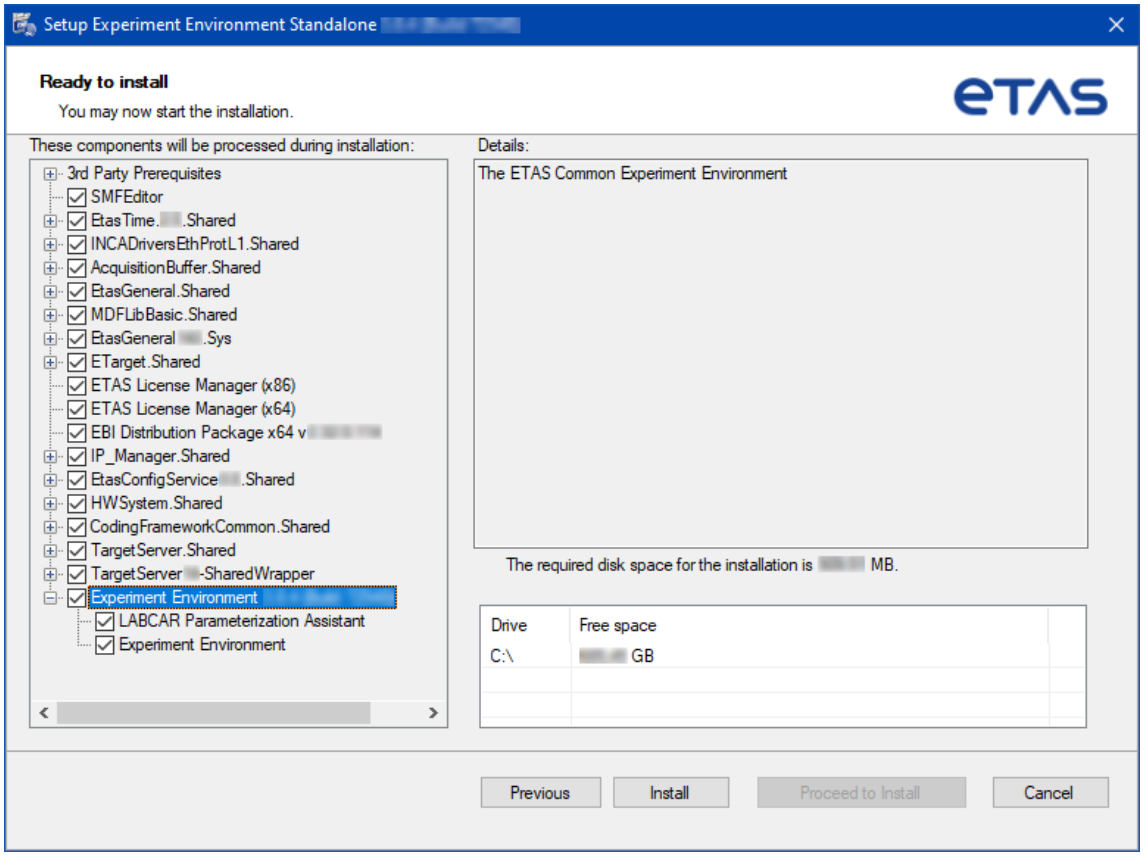


Figure 10. Experiment environment installation — associate with INCA

1. Select the INCA version you want to associate with the ETAS experiment environment.
2. Click **Next** to continue.

To install the experiment environment

The "Ready to install" window lists the components selected for installation.



NOTE

The next step will start the installation. You ***cannot*** cancel installation once it is running; the **Cancel** button is deactivated.

1. In the "Ready to Install" window, click **Install**.

   The ETAS Experiment Environment is installed. A progress indicator shows how the installation is progressing.

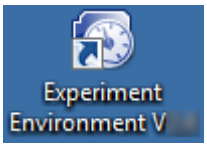
To complete the installation

Once all components have been installed successfully, you are prompted to end the installation.

1. Click **Finish** to end the installation.
2. If you are asked to restart the computer, do so before you start the Experiment Environment.

The entry **E > ETAS Experiment Environment *<a>.<b>***[2] is created in the Windows Start menu. See section Experiment Environment for a list of the entry's content.

The following icon is stored on the desktop of your computer:



3.3.2.2. Setting the Licensing Behavior

You can define the way in which the experiment environment (and other ETAS software programs) accesses the required licenses in the `[Licensing]` section of an `*.ini` file.

The `install\ExperimentEnvironment\Packages\ExperimentEnvironment` folder in your `ASCET-DEVELOPER 7.9.0.iso` file contains such an `*.ini` file, i.e. `Licensing.ini`. You can copy this file to a local directory and adapt it according to your needs.

To define the access to the required licenses

1. Open the `Licensing.ini` file with a text editor.
2. Modify the settings in the `[Licensing]` section as desired.

   The parameters and their settings are described below.

3. Save your changes.

The following parameters can be used:

- `LicenseFileName`

  Defines the absolute path and file name of the license file which is to be added.

- `LicensesToBorrow`

  You can use this setting if licenses can be borrowed from a license server. To enable the borrow mechanism, you must enter the name of the product or features license (e.g., `EE`). If you enter more than one license, the license names must be separated by blanks.

  The experiment environment uses the following licenses:

License name	Functionality
EE	experiment environment
INT_VP_EE	Virtual Prototyping Package for the experiment environment
COSYM_CCI, COSYM_SIL_EE, INT_RP_EE, INT_UCC_LCO_FIL, LCS_LCO_CCI, LCS_LCO_LCE, LCS_LCO_LCX	irrevelant for the combination of the ETAS Experiment Environment and ASCET-DEVELOPER

– `BorrowExpiryMode`

  Defines the way in which the expiration of the borrow status is given. Possible values are:

  - `Date`

    If the `BorrowExpiryMode` is set to `Date`, the borrow period will expire at a certain date which is specified under `BorrowExpiryDate`.

  - `Interval`

    If the `BorrowExpiryMode` is set to `Interval`, the borrow period will expire after a certain number of days which is specified under `BorrowExpiryInterval`.

– `BorrowExpiryDate`

  If the `BorrowExpiryMode` is set to Date, this parameter specifies the date when the borrow period expires. The format is `yyyy-mm-dd`.

– `BorrowExpiryInterval`

  If the `BorrowExpiryMode` is set to `Interval`, this parameter specifies the length of the borrow period in days.

– `BorrowAutomaticExtensionInterval`

  This parameter specifies the borrow interval in days that is applied when an automatic extension of the borrow period is executed (as defined under `ExecuteBorrowAutomaticExtensionInterval`).

– `ExecuteBorrowAutomaticExtensionInterval`

  Defines at what point of time the borrow period will be automatically extended. This parameter specifies the number of days before the expiration of the current borrow period. When this time is reached, the borrow period is automatically extended to the interval specified under `BorrowAutomaticExtensionInterval`.

– ImmediateBorrow

  You can define that a license is automatically borrowed. Possible values are:

  - `true`

    The license is borrowed automatically at installation time.

NOTE

`ImmediateBorrow='true'` works only for the user who performs the installation. Other users who work on the same computer do not own the borrowed license.

- `false`

  The license will be borrowed at the first time when the program connects to the license server.

– `CustomLicenseFolder`

  Due to the fact that the default location for added license files (e.g., `C:\ProgramData\ETAS\FlexNet` for Windows 10) is only writable for users with admin rights, a different path for the license file folder may be specified with this parameter.

The following example defines that borrowing is enabled for the experiment environment. The license will be borrowed when the experiment environment is started for the first time; by default the licenses expire after 100 days.

```
[Licensing]
LicenseFileName = 'd:\licenses\MyLicense.lic'
LicensesToBorrow = 'EE'
LicensesToBorrow = 'INT_VP_EE'
BorrowExpiryMode = 'Interval'
BorrowExpiryInterval = '100'
ImmediateBorrow = 'false'
```

3.3.2.3. Command-Line Installation

If you start the installation of the experiment environment from a command line, you can use several command-line parameters to customize the installation.

The following command-line options exist:

`/silent`

Silent installation mode. With this installation mode, no dialog windows requiring user information open.

NOTE

To accept EULA (cf. Figure 9) during silent installation, you must use the command-line parameter `/EULAAccepted`.

To deal with a possible request for a computer restart, you must use either the `/NoRestart` or the `/AllowRestart` command-line parameter.

To automatically uninstall an existing older version of the experiment environment, you must use the `/UninstallPreviousVersion` command-line parameter.

Default values are used for all information normally requested in installation windows. Error messages are hidden, too.

`/EULAAccepted`

Accepts the license agreement.

The text of the license agreement is provided on the installation disk, in the `experimentEnvironment\EULA` subfolders.

`/NoRestart`

Suppresses a computer restart that may be required at the end of the installation. If a reboot is suppressed, a log message is issued.

`/AllowRestart`

Allows a computer reboot restart that may be required at the end of the installation. A restart is performed without further notice.

`/UninstallPreviousVersion`

Uninstalls an existing older version of the experiment environment installed on your computer.

> **NOTE** If you do not use this command-line parameter, `setup.exe` will abort with an error if a previous version of the experiment environment is found.

`/UninstallPreviousVersion` is not used in combination with `/Uninstall`.

`/Debug`

Writes additional log files for `*.msi` packages.

These files are stored in the `%appdata%\ETAS\SETUP` folder.[6]

`/DefaultSettings`

Allows to specify an own XML file with default settings (instead of using InstallationDefaultSettings.xml).

You can specify a relative path if the file is relative to setup.exe, otherwise you have to specify an absolute path.

Syntax: `/DefaultSettings:"<path>\<filename>.xml"`

`/uninstall`

Uninstalls the experiment environment. Can be combined with `/silent` for uninstallation without user interaction.

Use the `setup.exe` file provided in the `C:\Program Files (x86)\ETAS\GENericSetup\EE EE Standalone\<a>.<b>.<c>.<d>` folder.

Examples

`Setup.exe /silent /EULAAccepted`

Triggers a silent installation.

`"C:\Program Files (x86)\ETAS\GENericSetup\EE EE Standalone\<a>.<b>.<c>.<d>\setup.exe" /uninstall /Debug`

Triggers a non-silent uninstallation and writes additional logs.

`setup.exe /DefaultSettings:"D:\myOwnSettings.xml"`

Triggers a non-silent installation that uses your own default settings for the installation.

3.3.3. Installing the ETAS Virtual Prototyping Platform

You need the ETAS Experiment Environment and the ETAS Virtual Prototyping Platform (*VP platform*) if you want to use the ASCET PC experiment.

To start the VP Platform installation

1. In the file system, open the `ASCET-DEVELOPER 7.9.0.iso` file.[1]
2. In the `install\VirtualOSExecutionPlatform` folder of the `*.iso` file, double-click `setup.exe`.

   The ETAS Installer is launched.

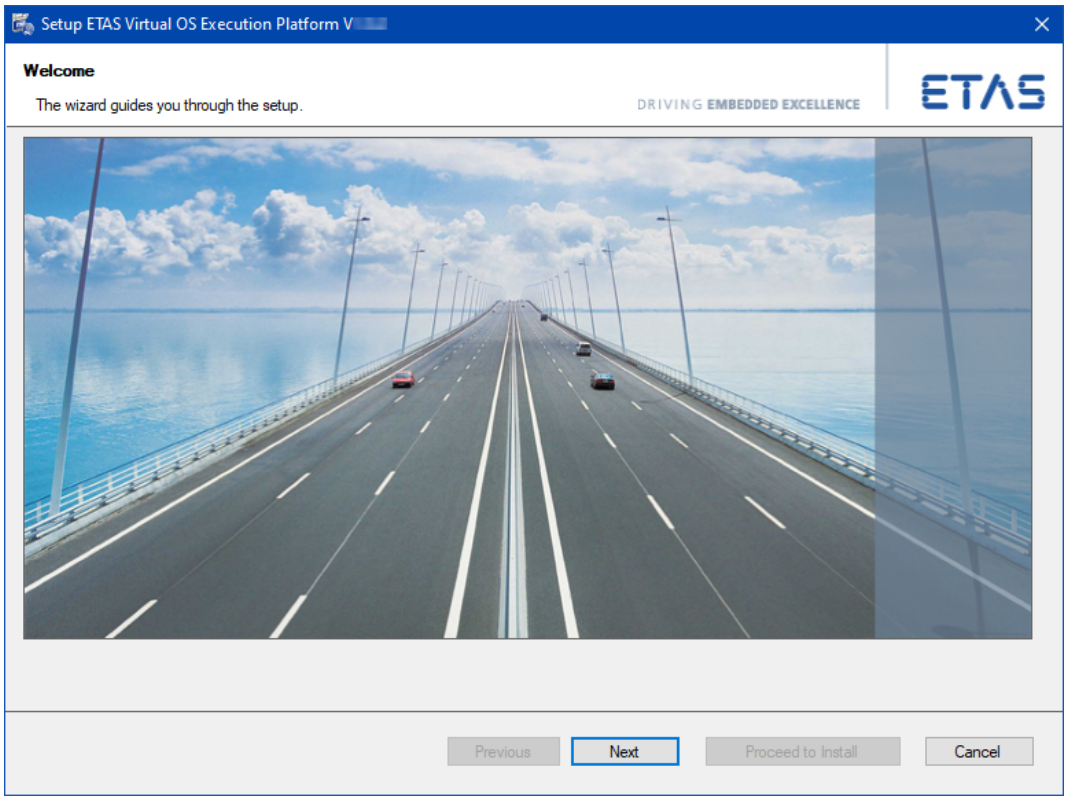


Figure 11. ETAS Installer for the Virtual Prototyping Platform

3. Follow the instructions in the installer window.
4. After installation, you are asked if you want to reboot. You ***must*** reboot before an experiment can be run.

3.4. Licensing

A valid license is required for using ASCET-DEVELOPER. 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.

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.

3.5. Post-Installation Setup

It is recommended that you install the MinGW PC-hosted C compiler so that you can compile the code natively for the PC using the Eclipse CDT (e.g. so that you can test programs running on the host PC).

ASCET-DEVELOPER includes an installation of GCC in the `<installation>\plugins\org.mingw.gcc.x86_Win32_<i>.<j>.<k>.<l>\mingw` folder.[7]

To use this version with the Eclipse CDT version, add `<installation>\plugins\org.mingw.gcc.x86_Win32_<i>.<j>.<k>.<l>\mingw\bin` to the Windows path.

3.6. Changing the Installation Location after Installation

The ASCET-DEVELOPER installation is self-contained. To change the installation location after installing, simply copy the entire ASCET-DEVELOPER folder to the required location

3.7. Uninstalling ASCET-DEVELOPER

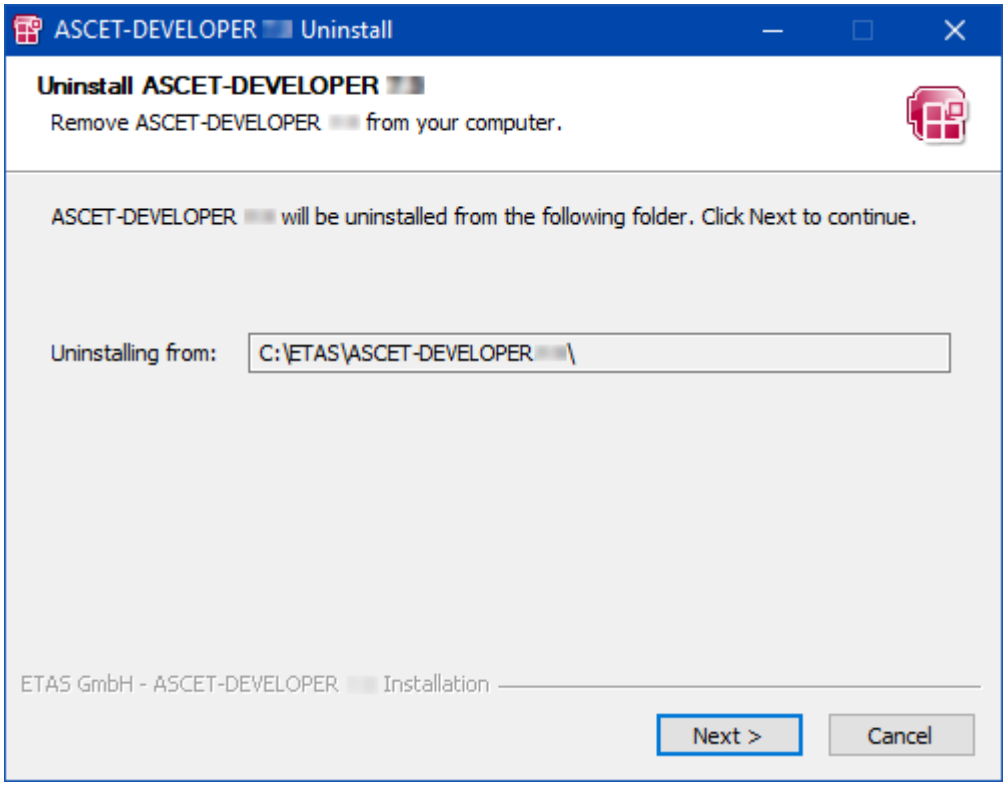
Use one of the following ways to start the uninstall process for the ASCET-DEVELOPER:

- **Programs and Features** from the Windows control panel
- **Apps > Apps & features** from the Windows Settings

To uninstall ASCET-DEVELOPER via dialog windows

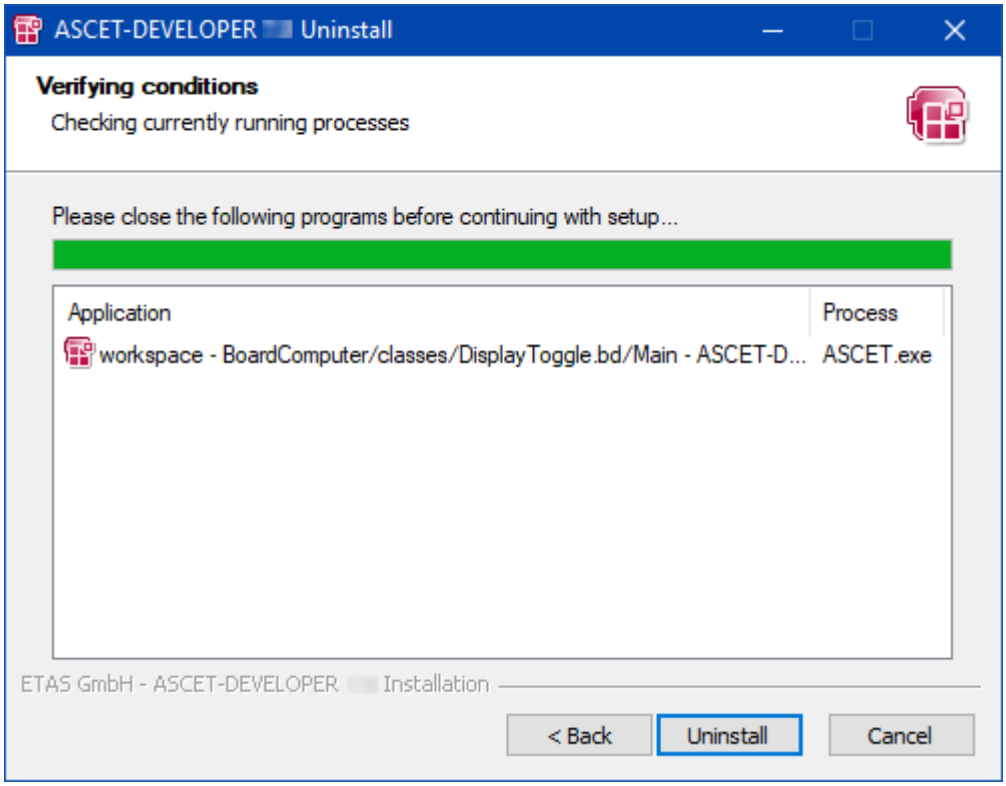
1. Start the uninstall procedure.

   The uninstaller is launched.



2. Click **Next** to uninstall ASCET-DEVELOPER.

   The uninstaller checks if your computer allows uninstallation of ASCET-DEVELOPER. If not, the "Verifying conditions" window opens. It lists the applications that disallow uninstallation.



NOTE

The next step will start the uninstallation. You ***cannot*** cancel the uninstallation once it is running.

3. Close each blocking application with its closing mechanism, then click **Uninstall**.

OR

4. Do the following:
    i. Click **Uninstall** without closing the blocking applications.

       You are asked if you want to close the applications.

    ii. Click **Yes** to continue.

       If an application cannot be closed normally, you are asked if you want to kill the respective process.

       NOTICE

       Killing a process can lead to data loss.

       Make sure that no data will be lost before you agree to kill the process.

    iii. Click **Yes** to continue.

    ASCET-DEVELOPER is uninstalled.

    A progress indicator shows how the uninstallation is progressing. Once all components have been uninstalled, a success window opens.

5. Click **Close** to end the uninstallation.

You can also use the `uninstall.exe` file in the ASCET-DEVELOPER installation directory to

uninstall ASCET-DEVELOPER via command line. The command-line parameter `/S` (see Silent Installation) is also available for silent uninstallation.

[1] You can mount the `*.iso` file with a double-click, or you can unpack the file with an archive tool like 7-zip.

[2] *<a>.<b>* is the 2-digit version number of the ETAS Experiment Environment.

[3] *<c>.<d>* is the version number of the VP Platform.

[4] *<m>.<n>* is the version number of the signal configuration editor.

[5] *<x>.<y>* is the ASCET-DEVELOPER version number

[6] By default, **%appdata%** = `C:\Users\<username>\AppData\Roaming`.

[7] *<i>*, *<j>*, *<k>*, and *<l>* are parts of the compiler's version number

4. Developing Software with ASCET-DEVELOPER

ASCET-DEVELOPER is an Eclipse-based product. If you are familiar with using the Eclipse environment then you should feel at home. If ASCET-DEVELOPER is the first Eclipse-based application you have used, then section 4.1 provides some basic information to get you started.

4.1. Starting ASCET-DEVELOPER for the First Time

To start ASCET-DEVELOPER, run the program from the Start Menu, the desktop icon, or by navigating to the installation directory and double-clicking `ASCET.exe`.

When you start ASCET-DEVELOPER for the first time, you are asked for a workspace location. A workspace is the root Windows folder where all your programs and the generated code will be saved.

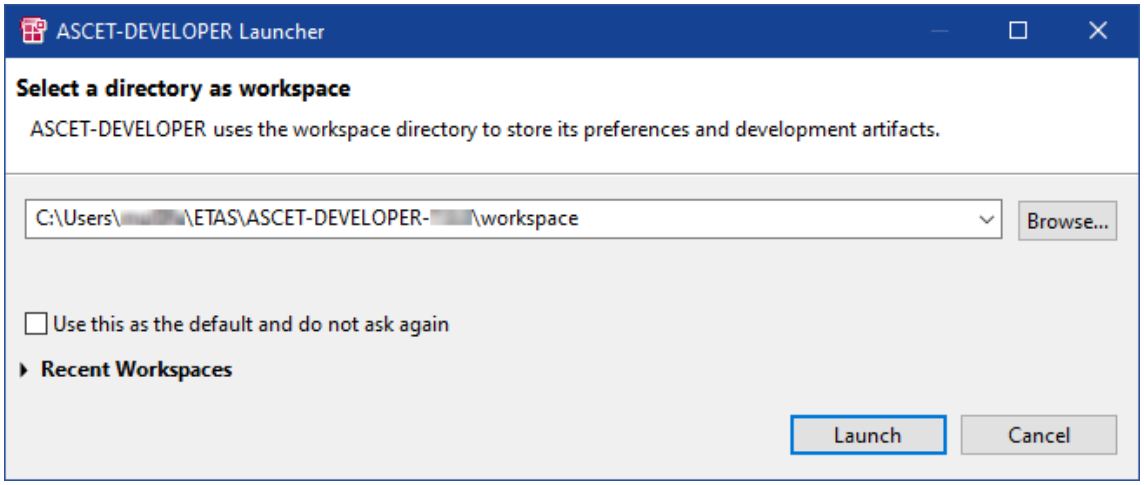


Figure 12. "Workspace Launcher" window

You can do the following:

- Enter or select (via the **Browse** button) an existing folder.
- Enter or select a new folder.
- Activate **Use this as the default …** to make the folder the default workspace and avoid further inquiries.

  You can undo the activation in the "Preferences" window, "General\Startup and Shutdown\Workspaces" node.

  You can change the workspace later from within ASCET-DEVELOPER.
- Continue (**Launch**) or cancel the procedure.

Next, the "ETAS Safety Advice" window opens. It contains safety information in several languages.

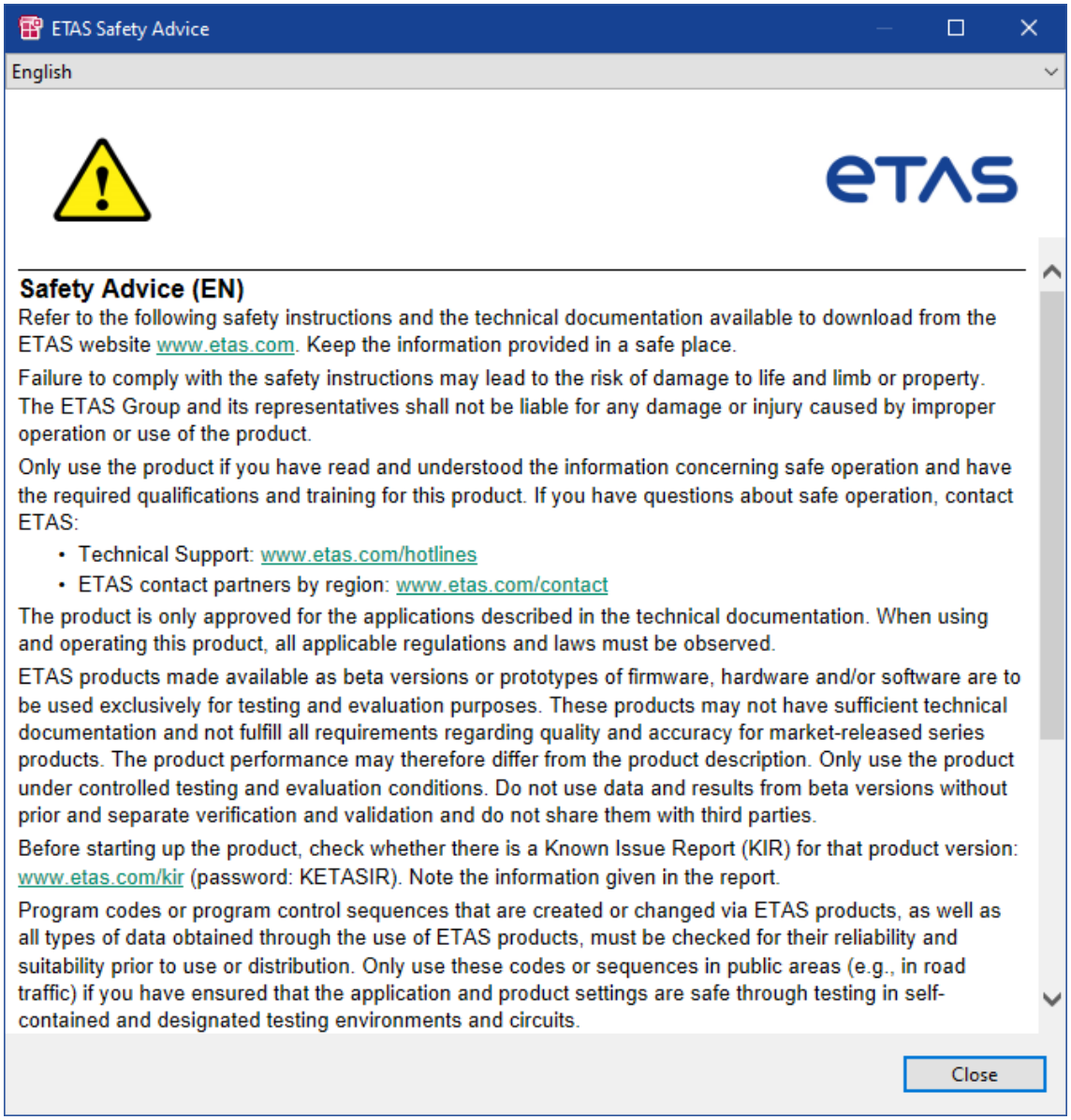


Figure 13. ETAS Safety Advice

NOTE

Read the Safety Advice carefully before you click **Acknowledged**.

You can open the Safety Advice in the ASCET-DEVELOPER window via **Help > Safety Advice**. A PDF version, `ETAS Safety Advice.pdf`, is available in the ASCET-DEVELOPER installation directory, `documents` subfolder.

The first time you run ASCET-DEVELOPER, you are shown the "Welcome" page. This page provides links to useful information.

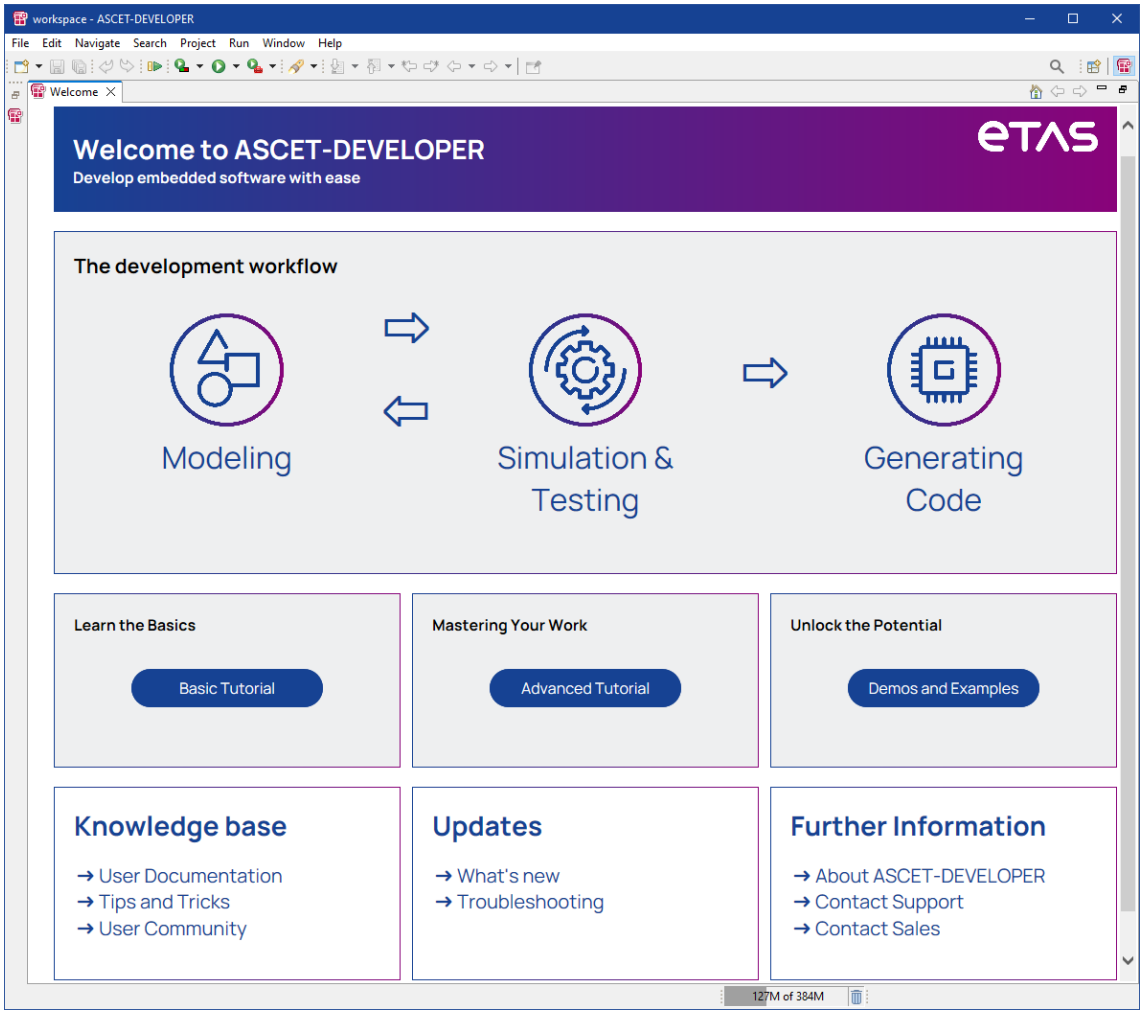


Figure 14. ASCET-DEVELOPER window, showing the Welcome page

To reach the workbench, close the Welcome page.

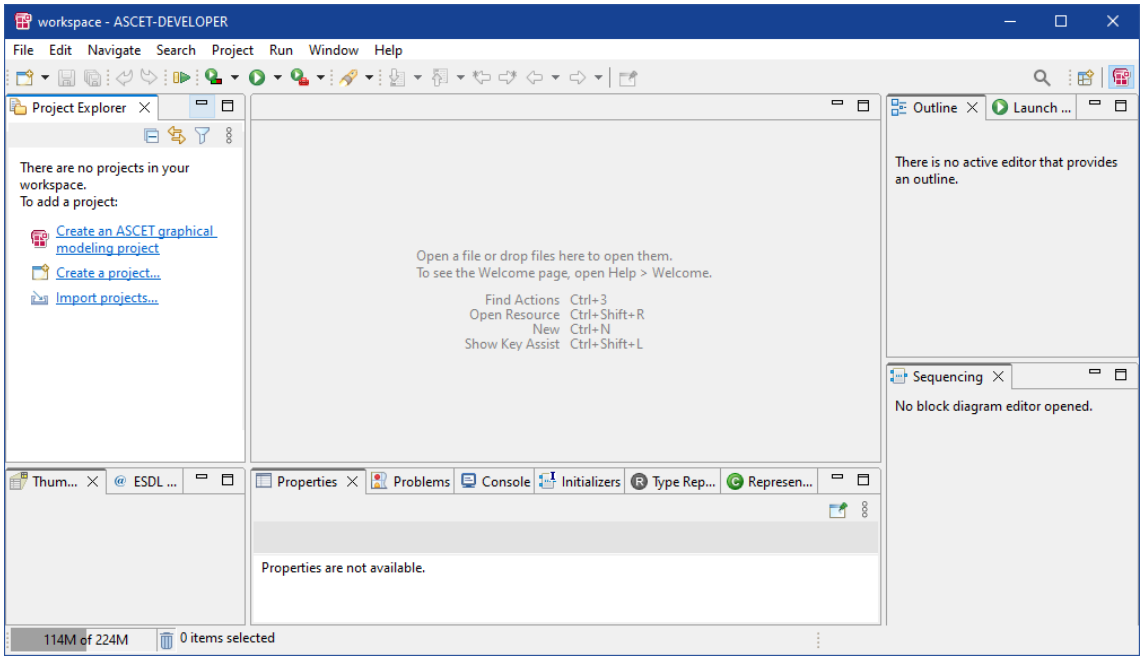


Figure 15. ASCET-DEVELOPER window, showing an empty workspace

You can return to the "Welcome" page at any time using the menu item **Help > Welcome**.

4.2. Installing the Examples

The best place to start is with the example applications. ASCET-DEVELOPER ships with a number of examples that are extensively commented to show you the important features of the language.

To install an example

1. Select **File > New > Example**.

   The "New Example" window opens.

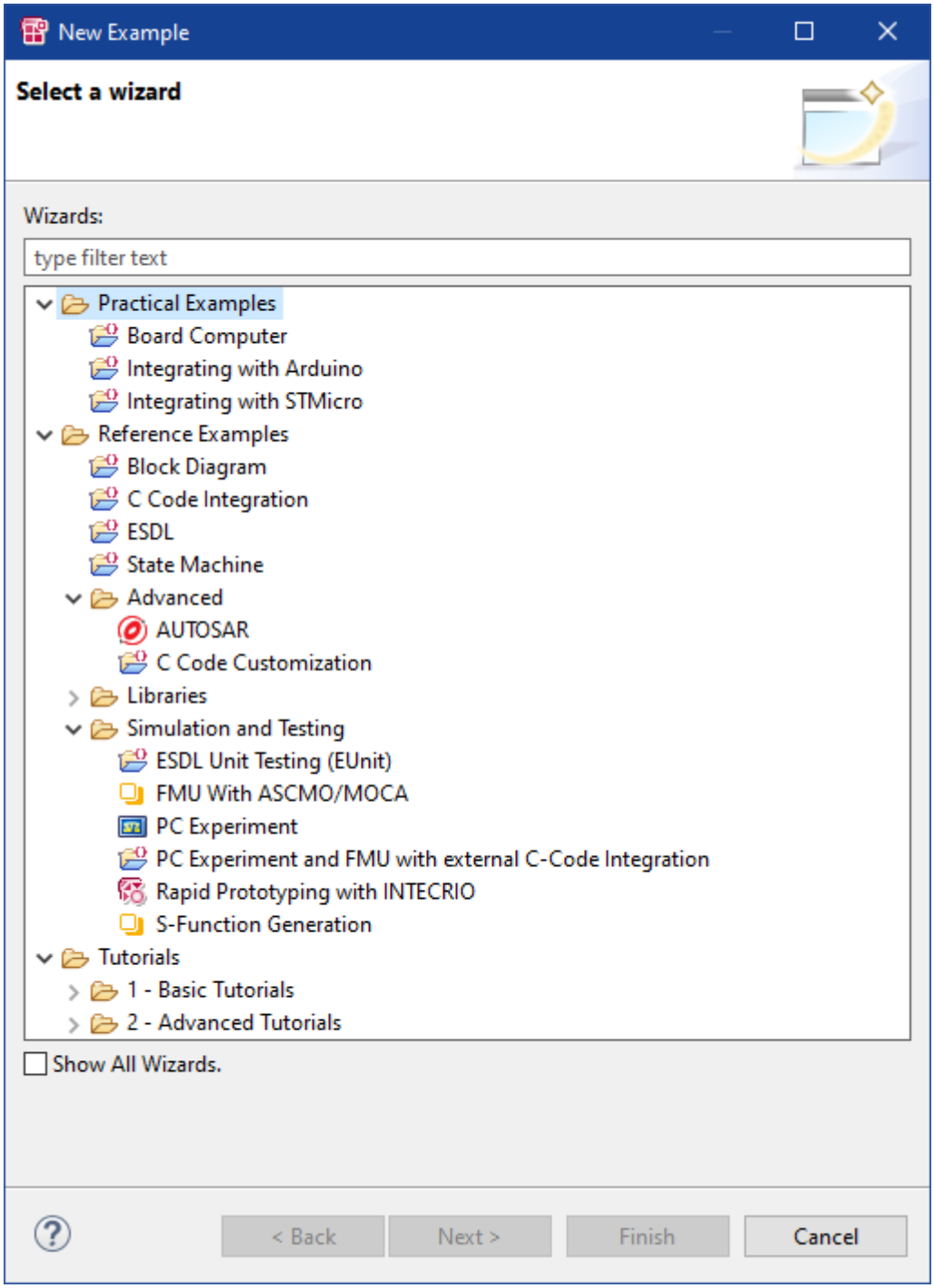


Figure 16. "New Example" window

2. Select an example (e.g., `Block Diagrams`) from the list.
3. Click **Next**.

   The second page of the "New Example" window opens. It lists the example projects that will be created.
4. Click **Finish**.

The example you selected will be installed in the workspace, and you are ready to go.

Each example project is installed into its own Eclipse project (the root folder) and the source

code in a subfolder. All ASCET-DEVELOPER block diagram files use the extension `.bd`, all ESDL source files use the extension `.esdl`.

The ASCET-DEVELOPER editor provides context-sensitive editing features that you expect to find in Eclipse. If you do not know what to type, try pressing Ctrl + Space to get suggestions. If you have typed something that is wrong, but cannot work out how to fix it, try pressing Ctrl + 1; you may find a quick fix to help you.

4.3. Tutorials

Basic and an advanced product tutorials are provides in the ASCET-DEVELOPER online help. To access them, proceed as follows:

1. After starting ASCET-DEVELOPER and opening a workspace, select the **Help > Help Contents** menu option.
2. Go to the ASCET-DEVELOPER User Guide and open the "Getting Started" chapter.
3. If you do not want to read the entire "Getting Started" chapter, go directly to section "Basic Tutorials" or "Advanced Tutorials".

5. Finding Out More

ASCET-DEVELOPER ships with extensive online help. To view the help, select **Help > Help Contents** from the menu.

- **ASCET-DEVELOPER User Guide**

  This describes how to develop software in ASCET-DEVELOPER.

- **ESDL User Guide**

  This describes how to develop software ESDL and provides the ESDL Language Reference.

- **ASCET-DEVELOPER Javadoc**

  This describes the ASCET-DEVELOPER API.

In addition, ASCET-DEVELOPER includes the standard documentation for the Eclipse platform & plugins shipped as part of the ASCET-DEVELOPERonline help:

- **Workbench User Guide**

  This explains how to use the standard Eclipse workbench.

- **C/C++ Development User Guide**

  This explains how to use the Eclipse C/C++ development tooling.

- **Eclipse Marketplace User Guide**

  This describes how to use the Eclipse Marketplace to search and install plugins.

There is extensive documentation on the internet about using Eclipse, and a good starting point is www.eclipse.org/.

6. Contact Information

Technical Support

For details of your local sales office as well as your local technical support team and product hotlines, take a look at the ETAS website:

www.etas.com/hotlines

ETAS Headquarters

ETAS GmbH		
Borsigstraße 24	Phone:	+49 711 3423-0
70469 Stuttgart	Fax:	+49 711 3423-2106
Germany	Internet:	www.etas.com

Glossary

This section lists terms and abbreviations relevant for ASCET-DEVELOPER.

API

Application **p**rogramming **i**nterface

ESDL

Embedded **S**oftware **D**evelopment **L**anguage; a high-level programming language for writing real-time, deeply embedded software.

GCC

GNU **c**ompiler **c**ollection

Host PC

The PC where you are running ASCET-DEVELOPER.

IDE

integrated **d**evelopment **e**nvironment

MISRA

Motor **I**ndustry **S**oftware **R**eliability **A**ssociation

SDK

software **d**evelopment **k**it

Target hardware

The hardware for which you compile the C code you generated with ASCET-DEVELOPER.

VP

Virtual **p**rototyping

VP Platform

ETAS Virtual Prototyping Platform

List of Figures

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