

CANdelaStudio

Authoring Tool for Diagnostic Data

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Topics:

- ▶ Diagnostic Projects
- ▶ Software Development
- ▶ Trainings
 - ▶ Diagnostics
 - ▶ CANdelaStudio
 - ▶ ODX

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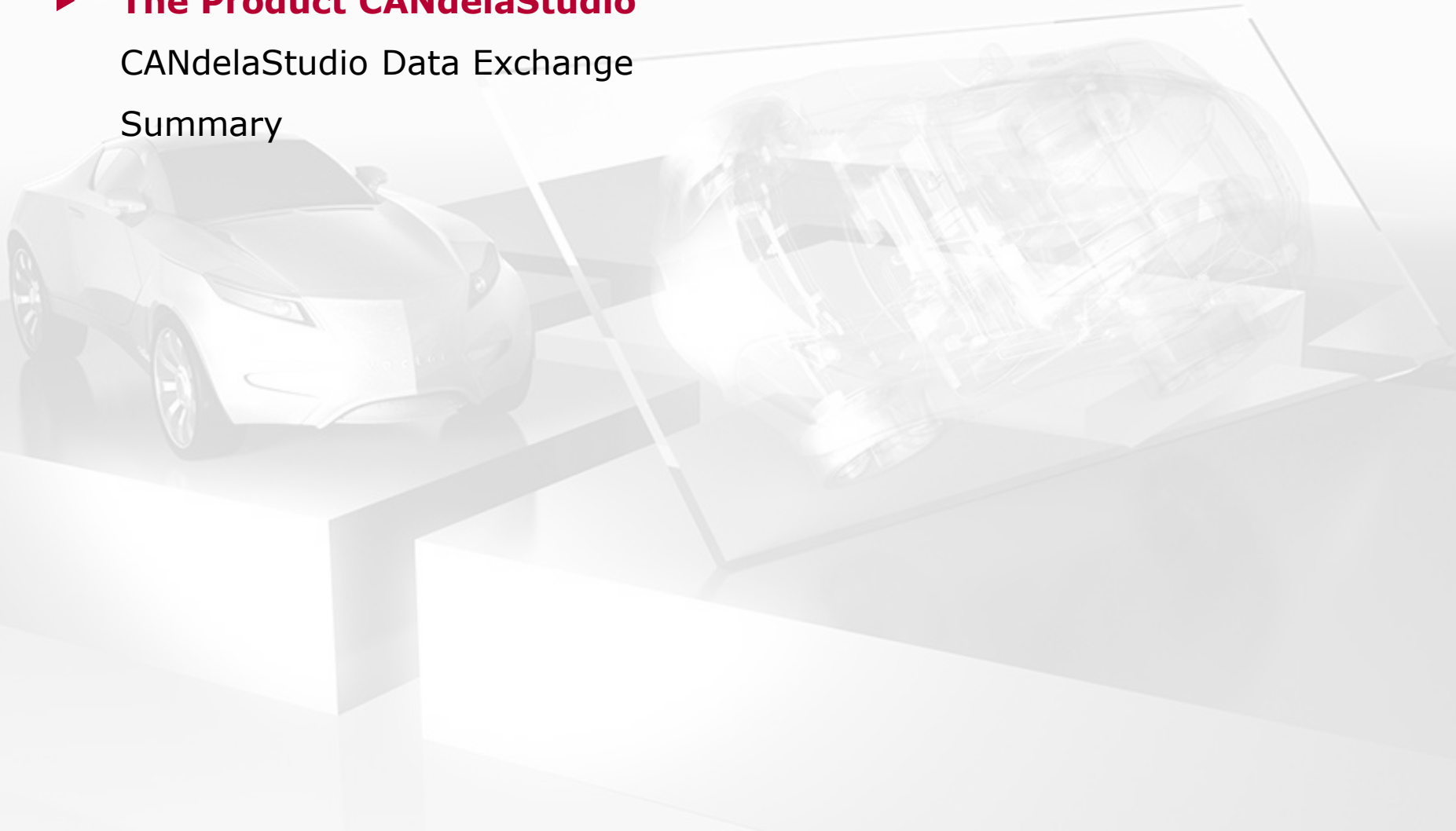
Agenda

Information

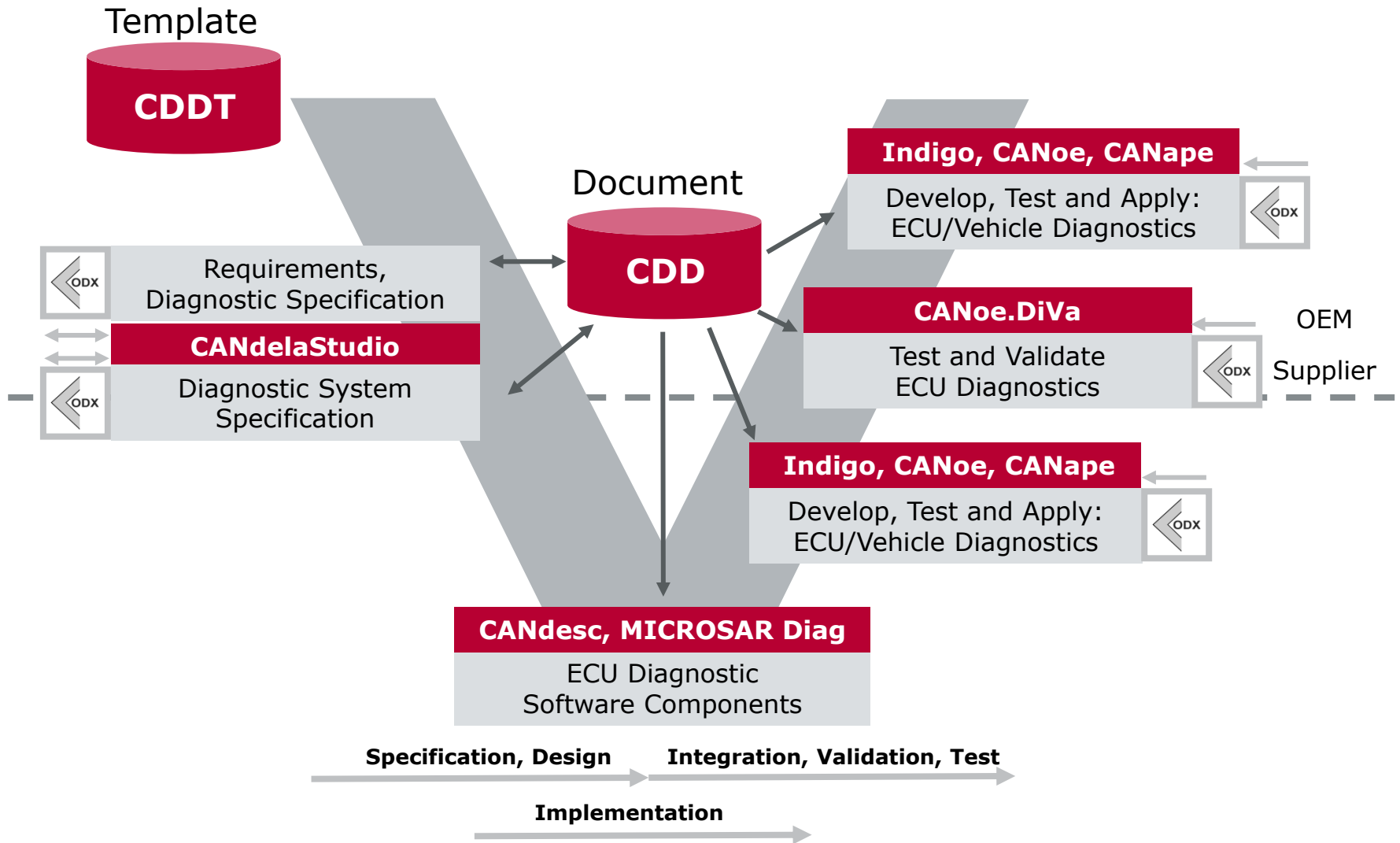
▶ **The Product CANdelaStudio**

CANdelaStudio Data Exchange

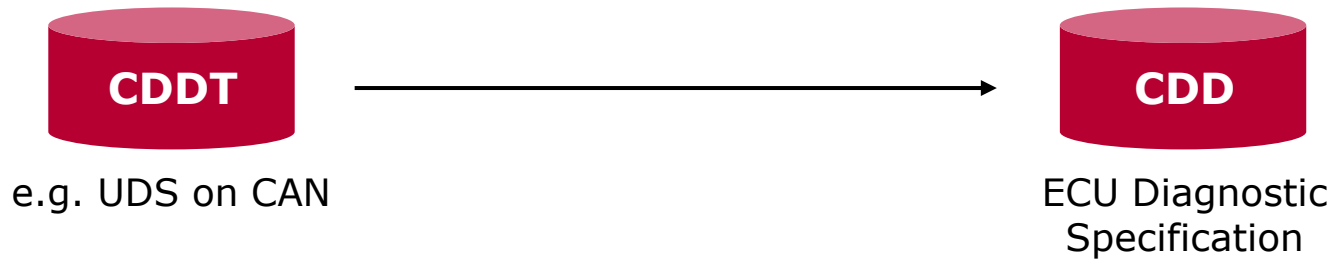
Summary



Authoring Tool for CANdela Process

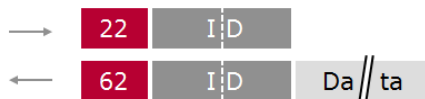


CANdelaStudio Templates and Documents



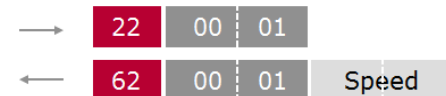
- ▶ Communication Parameters

- ▶ Service list and structure according to OEM specification



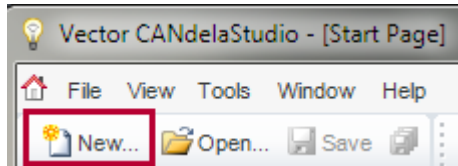
- ▶ Fixed list of containers for use cases (Diagnostic Classes)
- ▶ General data according to OEM specification (Sessions, Security, DIDs,...)

- ▶ specific values for communication Parameters
- ▶ Services with all its parameters



- ▶ ECU specific data (Sessions, Security, DIDs, DTCs, Snapshots, ...)

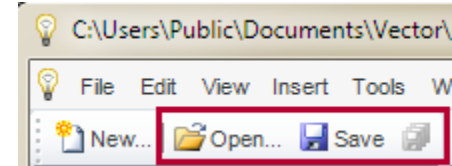
CANdelaStudio Templates and Documents



CANdelaStudio
Template



e.g. UDS on CAN



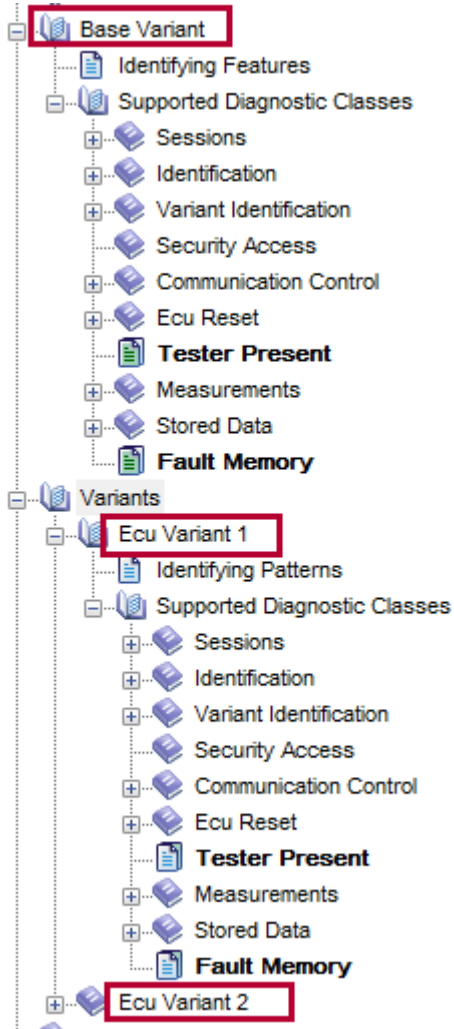
CANdelaStudio
Document



ECU Diagnostic
Specification

- ▶ Most OEMs do provide CANdelaStudio Templates.
- ▶ It is **essential to use the Template which is intended** for the project.

Variants



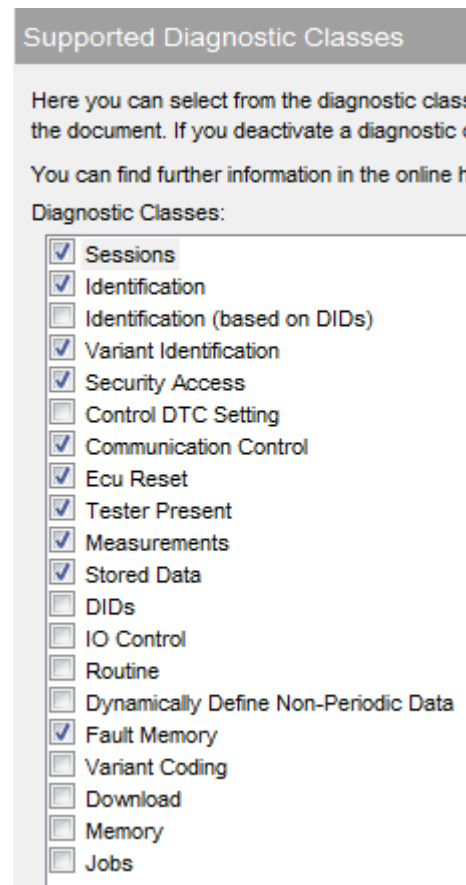
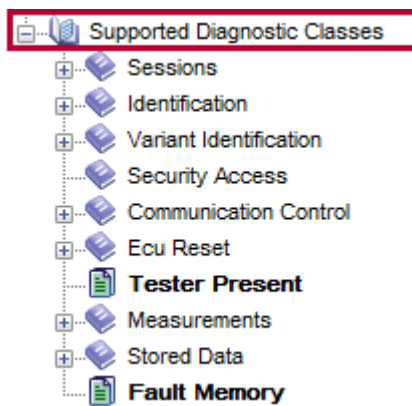
- ▶ Data is contained in Variants.
- ▶ A Variant is describes diagnostic data for an implementation snaphshot.
- ▶ Template has just a Base Variant.

⋮

Diagnostic Classes

- ▶ Each Variant provides the same fixed list of containers called **Diagnostic Classes**.

In Variant currently enabled
Diagnostic Classes:



- ▶ More Diagnostic Classes are provided
- ▶ Diagnostic Classes are defined in the Template.
- ▶ The core of Diagnostic Class Templates is the list and detailed structure of provided services.

Example: Diagnostic Instance Session

- ▶ Diagnostic Classes contain data definition page(s) called **Diagnostic Instance(s)**.

The screenshot shows the 'Diagnostic Instance (Sessions)' configuration window. On the left, a tree view under 'Sessions' highlights '01 Default Session'. The main window displays the following configuration:

- Name:** Default Session (indicated by an arrow from the text 'name of the use case (data page)')
- Type:** 0x01 (indicated by an arrow from the text 'subfunction value')
- Service:** Start (indicated by an arrow from the text 'service')
- Protocol Service:** (\$10) DiagnosticSessionControl
- Request:** 10 01
- Pos. Resp.:** 50 01 zz (indicated by an arrow from the text 'response parameter (data objects)')
- Neg. Resp.:** 7F 10 rc

Below the service configuration, a table titled 'Parameter (zz)' is shown:

| Byt... | B... | Name | Data Type | Default | Constant | Description |
|--------|------|------|-----------|---------|----------|-------------|
| 0 | | P3 | P3 | | | |
| 2 | | P3Ex | P3Ex | | | |

Example: Diagnostic Instance Identification

name of the use case (data page)

Identification

- F150 Hardware Version
- F151 Software Version
- F154 Hardware Supplier
- F155 Software Supplier
- F18C ECU Serial Number
- F190 VIN**

Diagnostic Instance (Identification)

Name: VIN

Description:

Identifier: 0xF190

Service:

| Service | Protocol Service | Request | Pos. Resp.: | Neg. Resp. |
|--|--|-----------------------------|-----------------------------|--------------------------|
| <input checked="" type="checkbox"/> Read: | (\$22) ReadDataByIdentifier | 22 F1 90 | 62 F1 90 zz | 7F 22 rc |
| <input checked="" type="checkbox"/> Write: | (\$2E) WriteDataByIdentifier | 2E F1 90 zz | 6E F1 90 | 7F 2E rc |

Data (zz)

| Byt... | B... | Name | Data Type | Default | Constant | Description |
|--------|------|------|-----------------|---------|----------|-------------|
| 0 | | VIN | VIN (17 Byte) | | | |

ID value

read and write service

Editions

CANdelaStudio ViewX

- ▶ Application area: Users of test systems and service engineers

CANdelaStudio Standard

- ▶ Application area: All active participants in the diagnostic process

CANdelaStudio Pro

- ▶ Application area: International projects if multilingual diagnostic specifications are required or helpful

CANdelaStudio Admin

- ▶ Application area: Users who are responsible for the global diagnostic concept of a group of electronic control units or vehicle model series



Agenda

Information

The Product CANdelaStudio

▶ **CANdelaStudio Data Exchange**

Summary

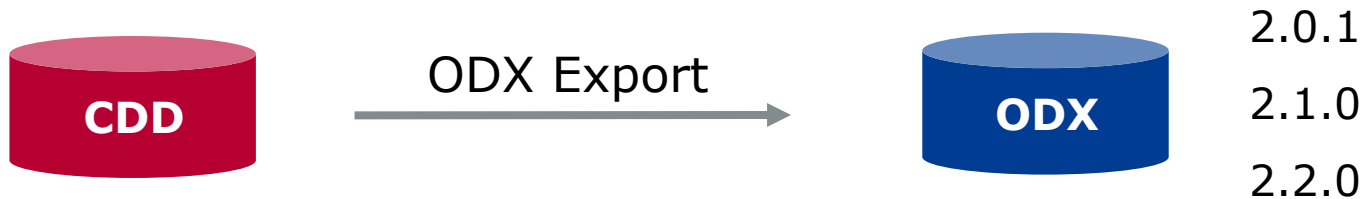


ODX



- ▶ The **Open Diagnostic eXchange** format (ODX) is an XML-based ASAM/ISO standard for describing diagnostic ECU data
- ▶ **Vector supports ODX** in all diagnostic-related products, providing a simple and effective way to handle ODX diagnostic data
- ▶ CANdelaStudio enables the user in **generating diagnostic data** without special ODX knowledge
- ▶ CANdelaStudio supports **import and export** of diagnostic data **from/to ODX**.

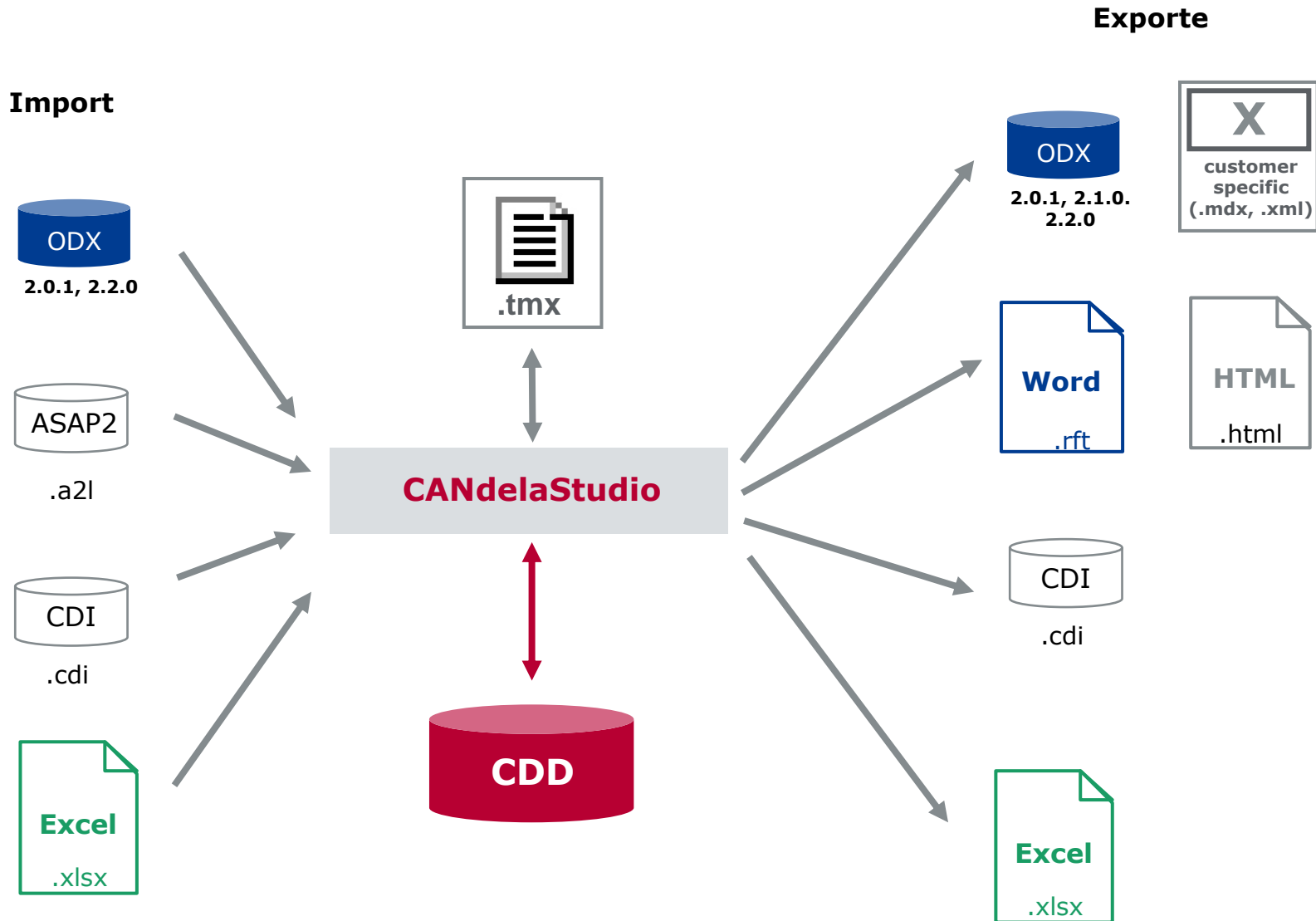
ODX Data Compliant to the Template



| ODX Export Control Options | |
|----------------------------|-------------------------|
| Document Data | CANdelaStudio Template |
| | CANdelaStudio Attribute |
| CANdelaStudio | ODX Export Options |
| | ODX Export Dialog |
| | ODX Export DLL |

CANdelaStudio ensures conformity of imported/exported data to OEM specification

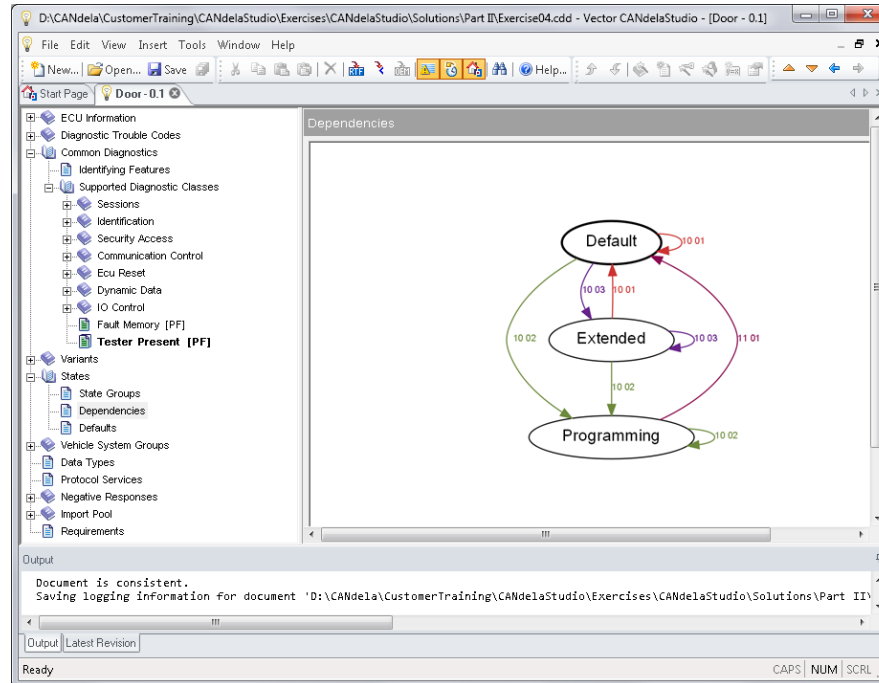
Import / Export Functions



CANdelaStudio Main Features

- ▶ CANdelaStudio is an **authoring tool** specifying the diagnostic data of an ECU.
- ▶ The **Template concept** guides the input and guarantees the **conformity** to the **OEM** specific **requirements**.
- ▶ Powerful data **exchange features** allow to reuse existing data in other formats
- ▶ The GUI is **user-friendly**, the start-up period is short.

CANdelaStudio Is Used World-Wide



Proven in many car projects world-wide, e.g.

- PSA
- Porsche
- CLAAS
- Daimler
- Fiat
- GM
- Toyota
- Denso
- BOSCH
- Continental

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