

AUTOSAR Diagnostic Extract

The Standard in Practice

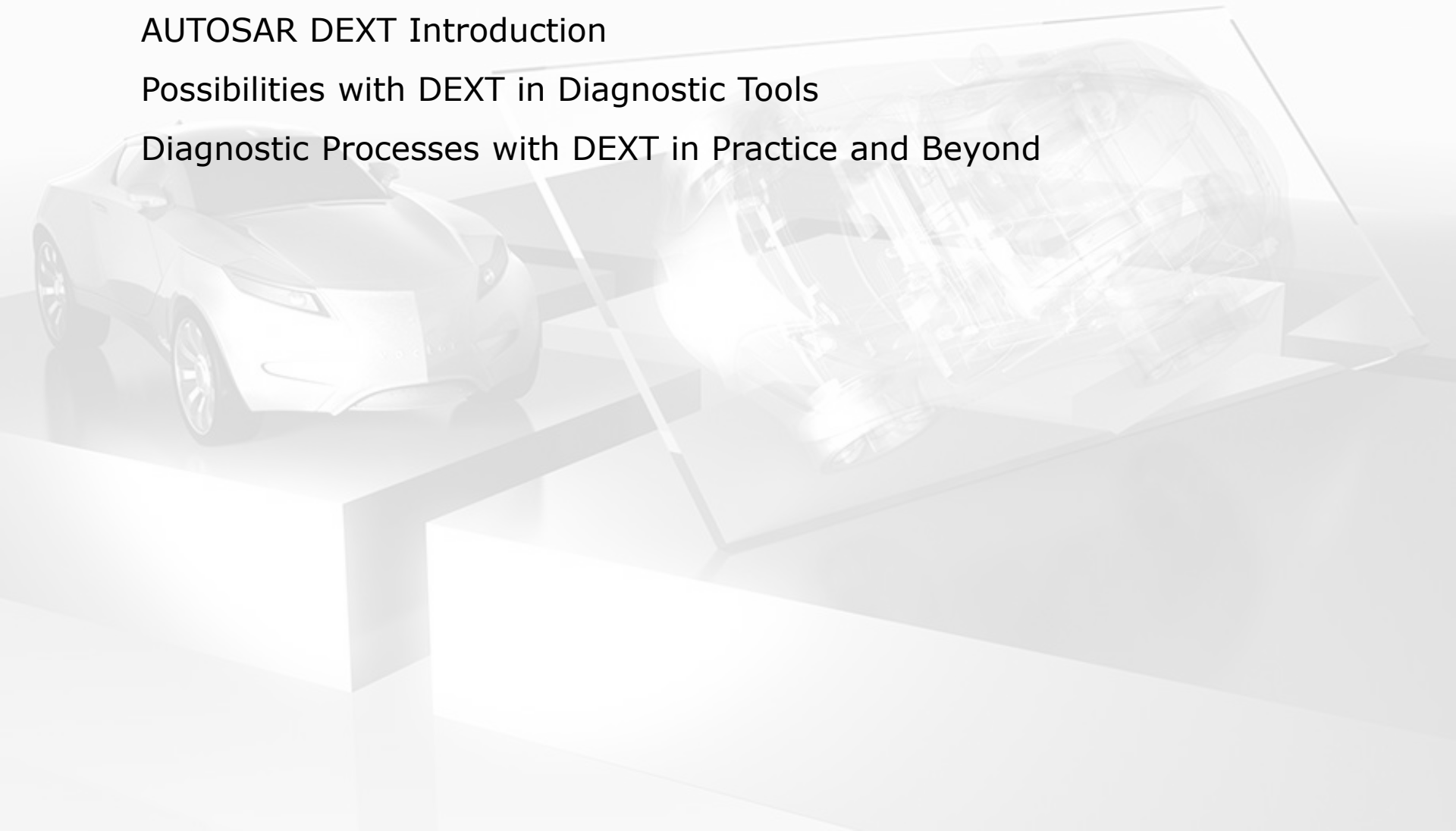
Agenda

▶ **Diagnostic Processes in Place**

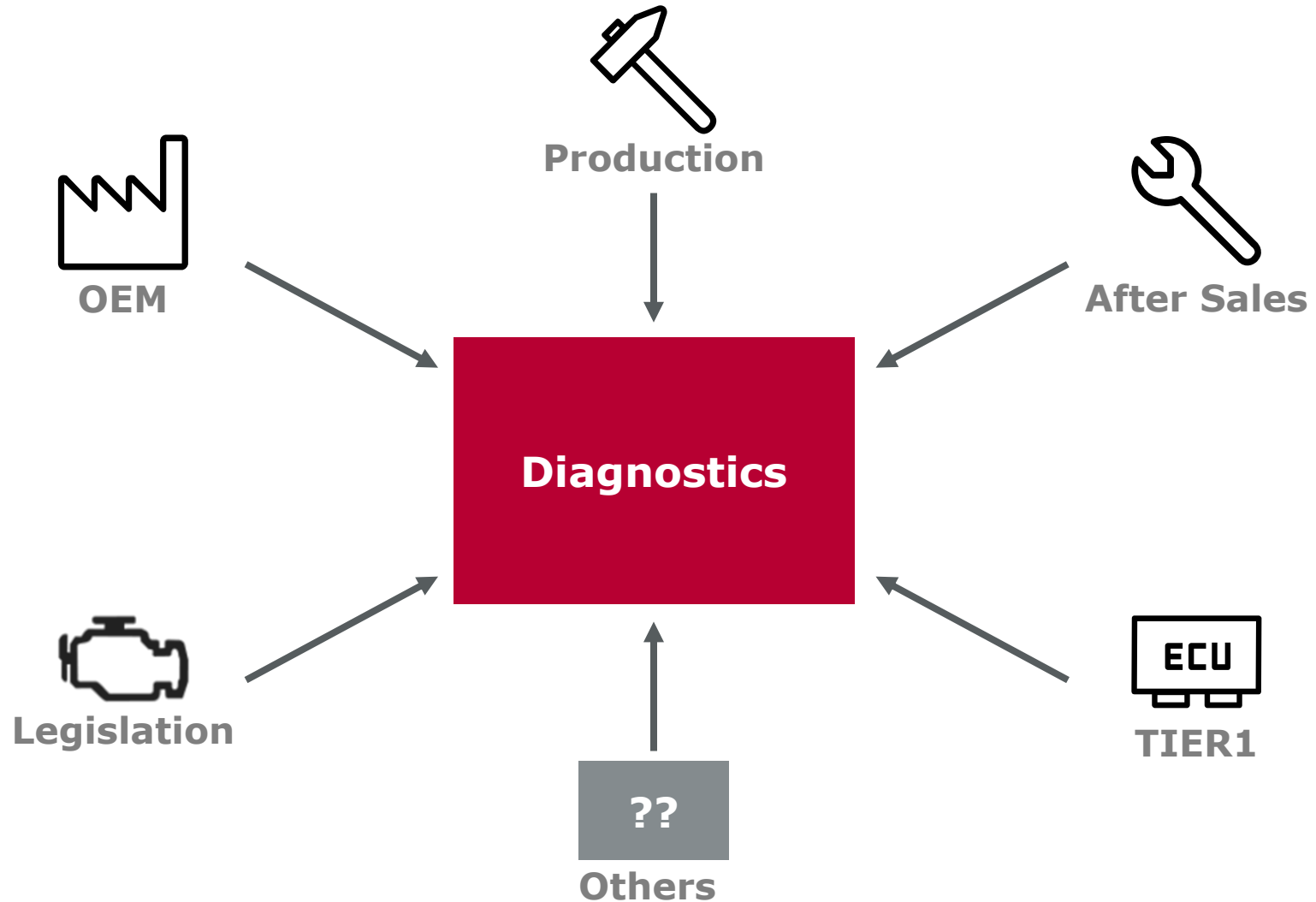
AUTOSAR DEXT Introduction

Possibilities with DEXT in Diagnostic Tools

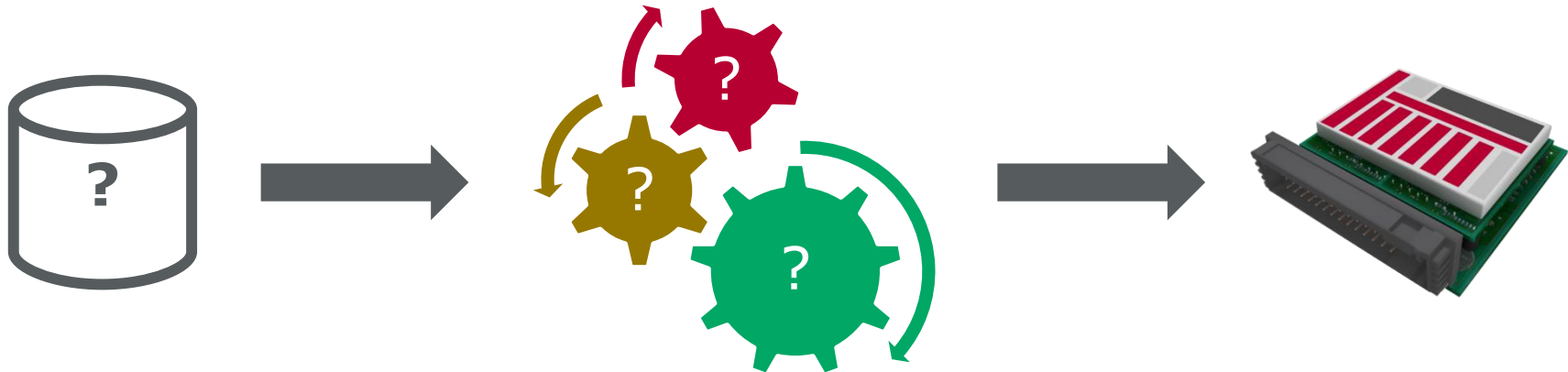
Diagnostic Processes with DEXT in Practice and Beyond



Diagnostic Processes in Place
Diagnostic Requirements



Different Diagnostic Requirement Workflows in Place



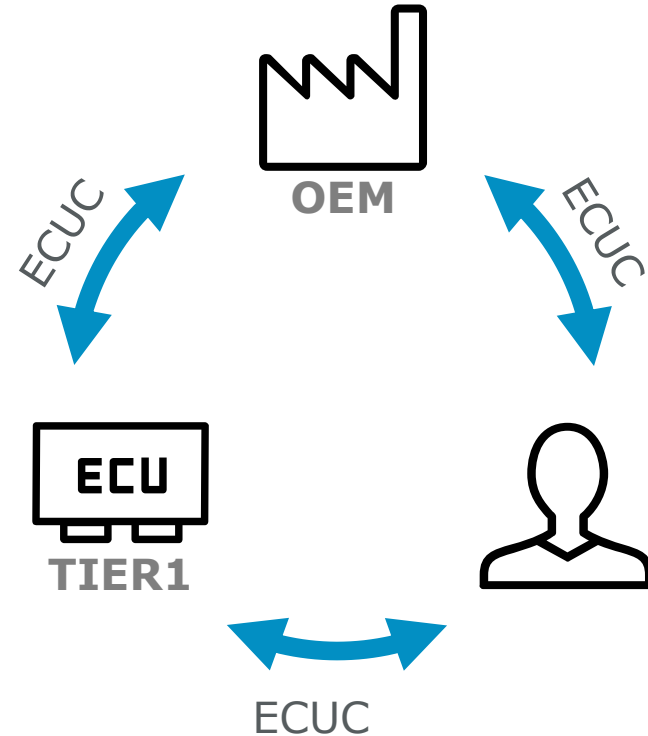
- ▶ No common authoring format
- ▶ Various OEM specific exchange formats
- ▶ Different tooling
- ▶ As many workflows in place as there are OEMs and TIER1
- ▶ For diagnostic testers the ODX format is established as exchange format
- ➔ **We need a diagnostic exchange format**



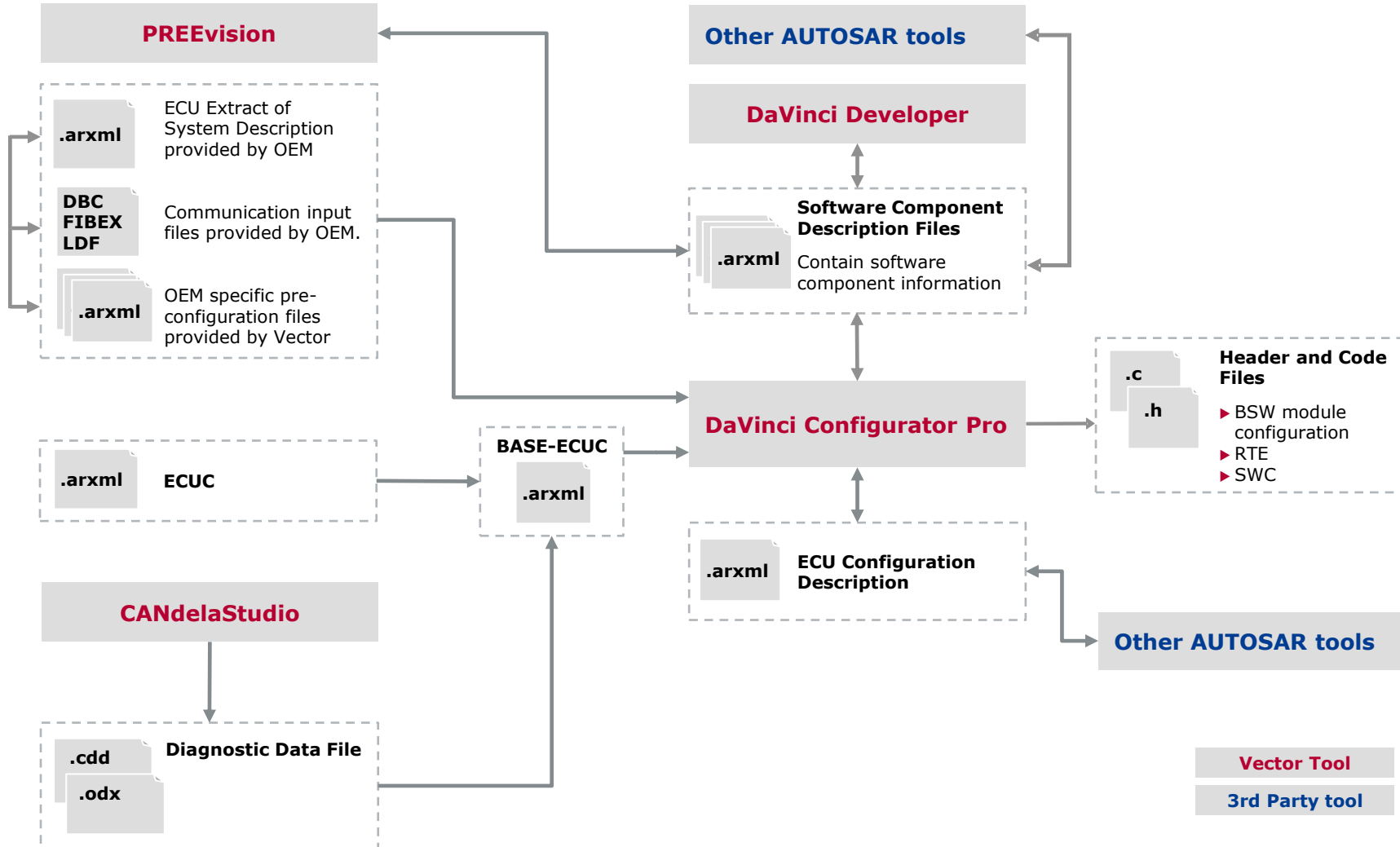
ECUC to Exchange Diagnostic Data

But ECUC is **no** exchange format

- ▶ ECUC is designed to be
 - ▶ input for code generator
 - ▶ extensible for vendor-specific extensions
- ▶ ECUC has incompatible changes between AUTOSAR versions
 - ▶ Tooling cannot be adapted each time.
- ▶ In reality the used format is a mixture between many AUTOSAR versions



Established Vector Diagnostic Workflow



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Diagnostic Processes in Place

▶ **AUTOSAR DEXT Introduction**

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What the Document Describes

- ▶ Use Cases [5 pages]
 - ▶ What's the goal: DCM and DEM configuration
- ▶ Conceptual Background [2 pages]
 - ▶ Why not using ECUC?
- ▶ Common Meta Model Elements [33 pages]
 - ▶ How to achieve "decentralized configuration"
- ▶ Diagnostic Services [76 pages]
 - ▶ How to describe the configuration of the diagnostic services of AUTOSAR
 - ▶ How to map diagnostic services to SWC or BSW ports
- ▶ Diagnostic Event Handling [45 pages]
 - ▶ How to describe the diagnostic events, DTCs, extended data records, snapshot records
 - ▶ How to map event related data and function calls to SWC or BSW ports
- ▶ Upstream Mapping [317 pages]
 - ▶ How to derive ECUC from the DEXT content

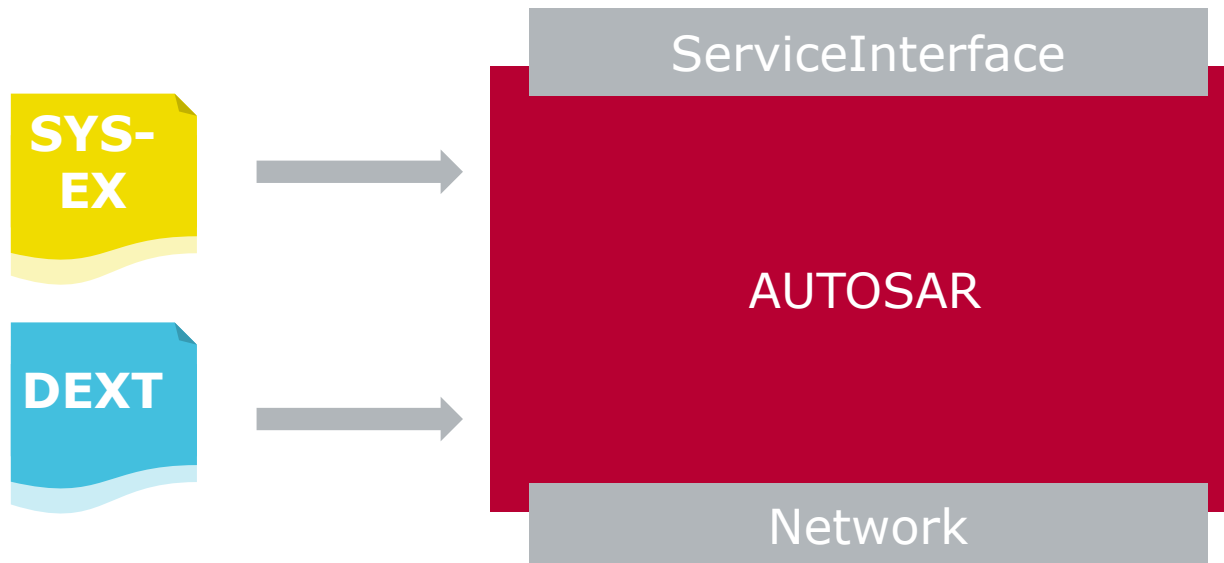


AUTOSAR Diagnostic Extract Template
AUTOSAR Release 4.2.2

| | |
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DEXT and System Extract

- ▶ Diagnostic representation on network
- ▶ For diagnostics the DEXT is like system extract for communication



- ▶ SYS-EX: PDU, Signal
- ▶ DEXT: SID, DID, RID, DTC

Valid Fragmented Contribution

AUTOSAR DEXT

- ▶ Can be incomplete as all AUTOSAR .arxml files
- ▶ Allows to deliver fragments to the diagnostic tool chain



Comparison to ODX

- ▶ ODX schema requires complete files



Stability of DEXT

- ▶ New AUTOSAR Standard
 - ▶ Detailed concept validations, prototypes in practice
 - ▶ Risk of missing features

- ▶ “AUTOSAR-aware” OEMs
 - ▶ Will enforce standard modification for new features
 - ▶ Avoiding SDGs while standard is evolving
 - ▶ OEM specific schema as intermediate solution (“OEM DEXT”)

- ▶ In upcoming release 4.3.0
 - ▶ Integrated feedback from previous releases
 - ▶ OBD, J1939, Fim
 - ▶ Environmental Conditions

Agenda

Diagnostic Processes in Place

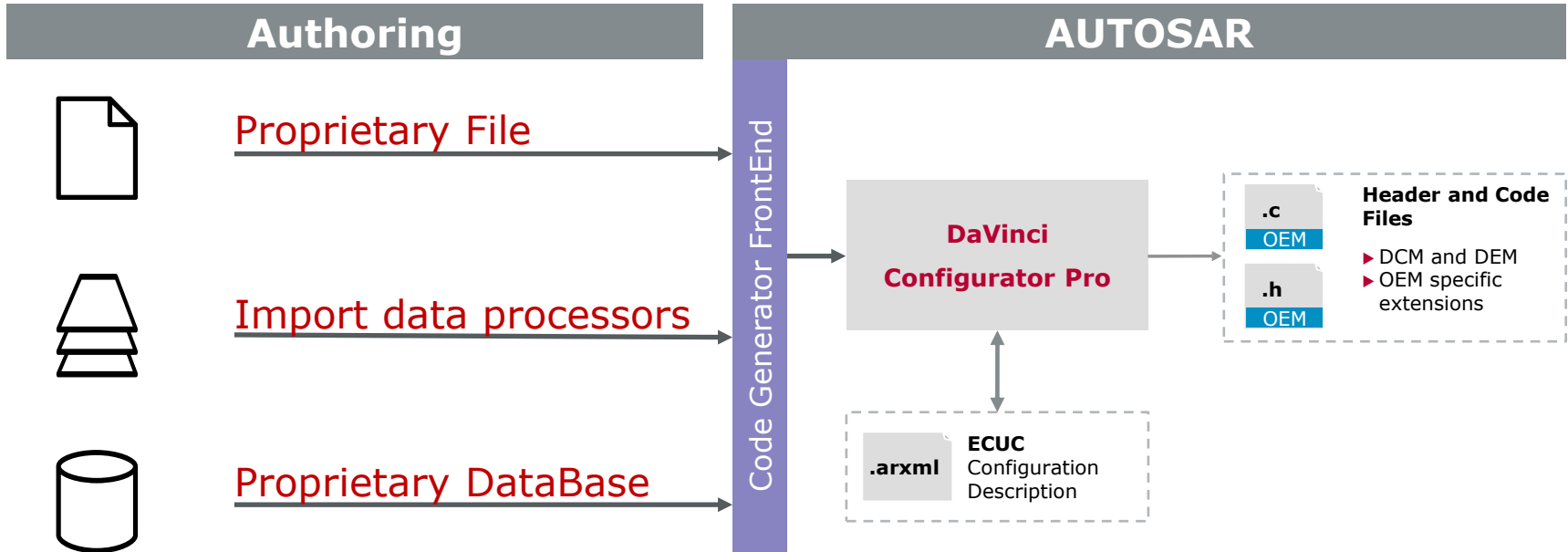
AUTOSAR DEXT Introduction

► **Possibilities with DEXT in Diagnostic Tools**

Diagnostic Processes with DEXT in Practice and Beyond

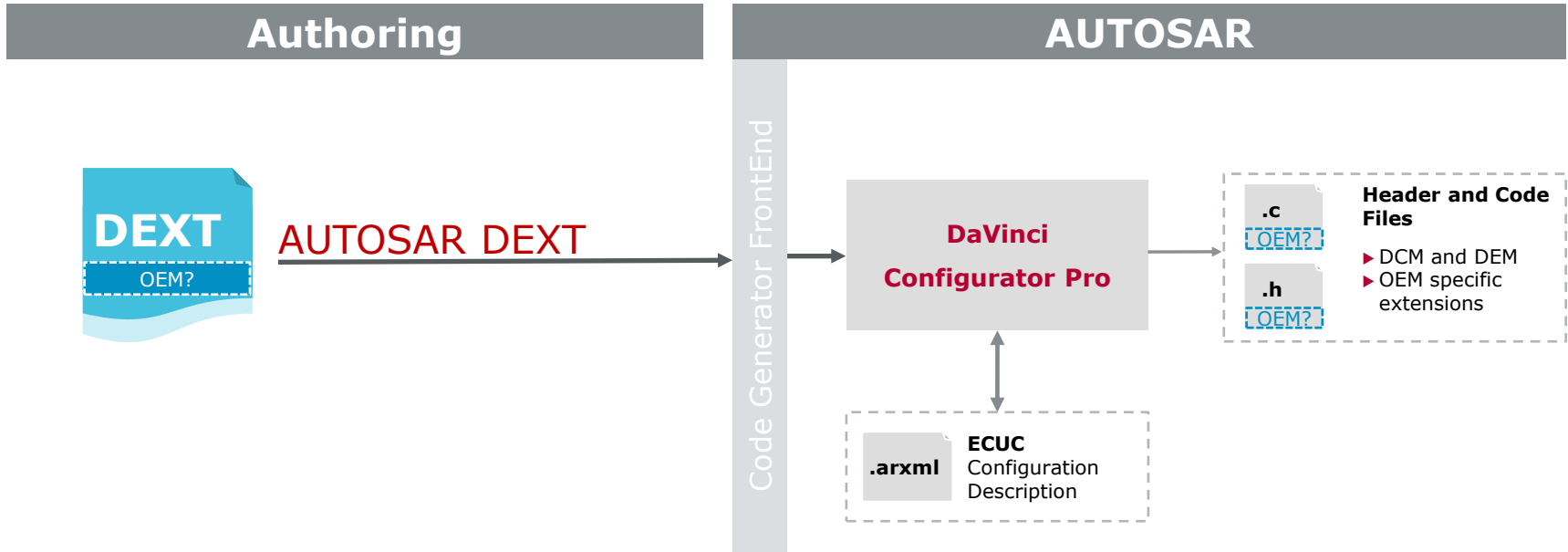


Base ECUC Configuration without DEXT



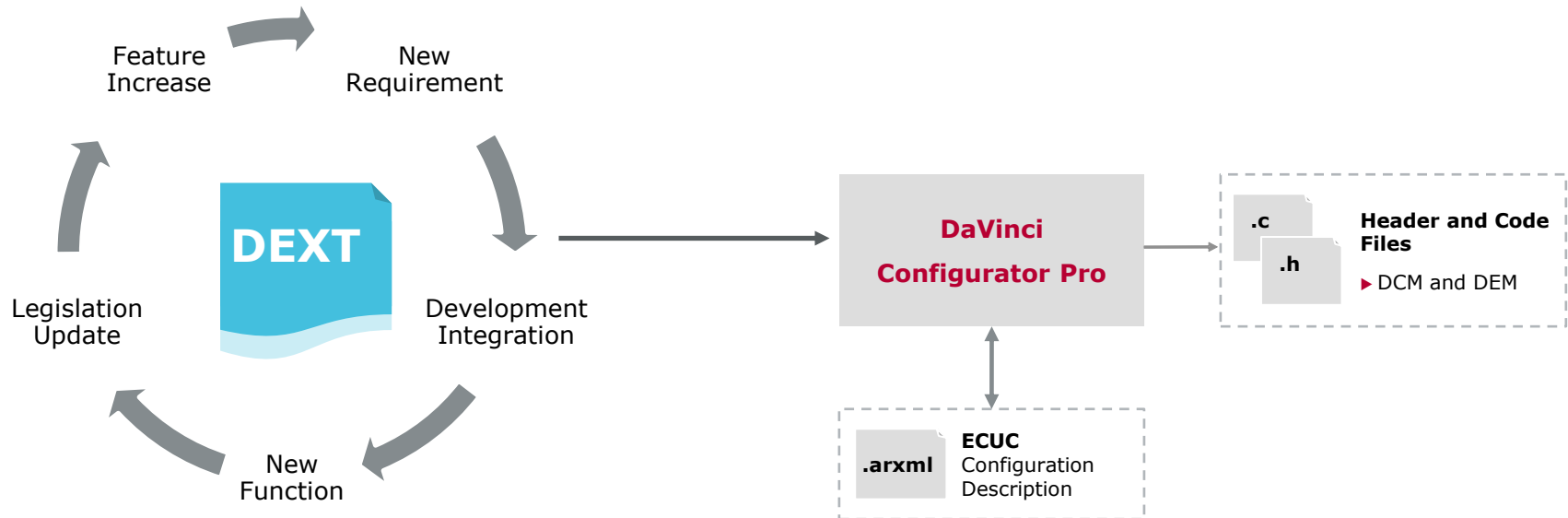
- ▶ Missing standardized authoring format
- ▶ Exchange formats with different quality
- ▶ Dependency to individual tooling
- ▶ Manual adding of individual configurations
- ➔ The OEM specific workflow creates an OEM specific diagnostic solution

Base ECUC Configuration with DEXT



➔ Standardized exchange format

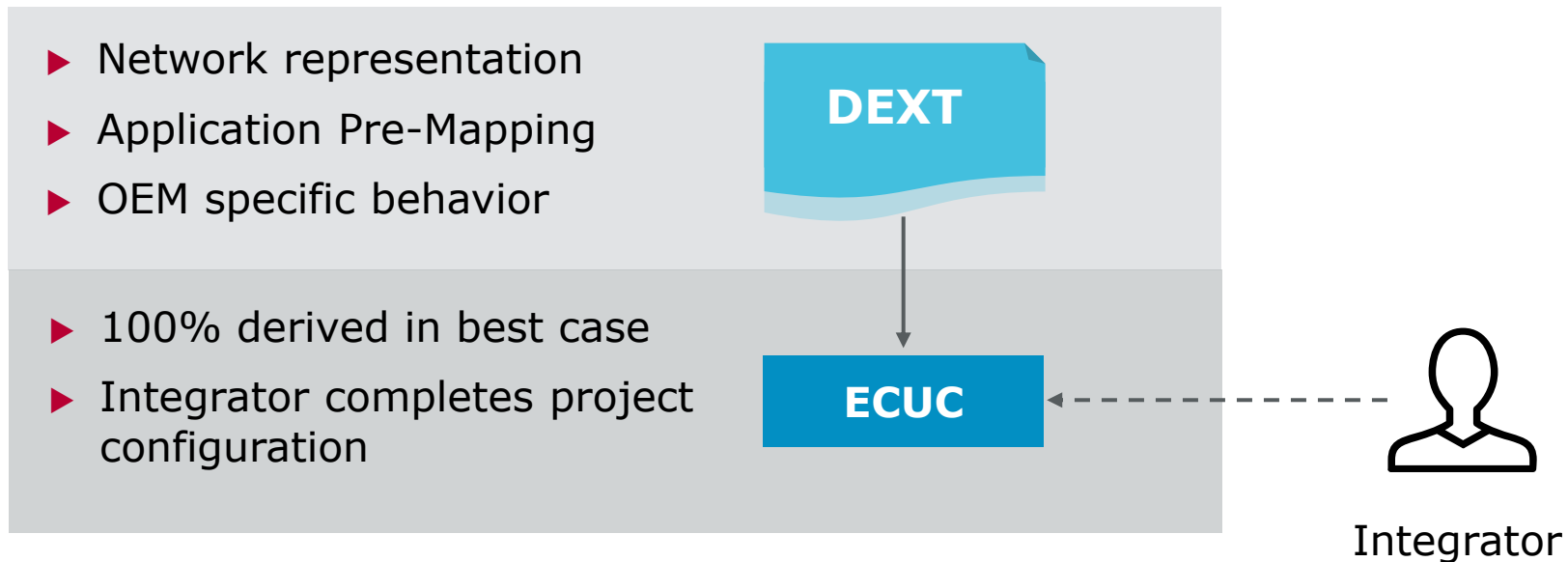
Input Data Update



- ▶ Updating input data is common in diagnostic processes
- ▶ Updating existing ECUC configurations is **challenging**
- ▶ DEXT format facilitates the update procedure
- ▶ Vector DaVinci Configurator Pro provides a smart update functionality, for DEXT and other input data

Reducing Integrator Responsibility

- ▶ DEXT modelling on higher SWC level
 - ▶ More frontloading
 - ▶ Less integrator responsibility



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Diagnostic Processes in Place

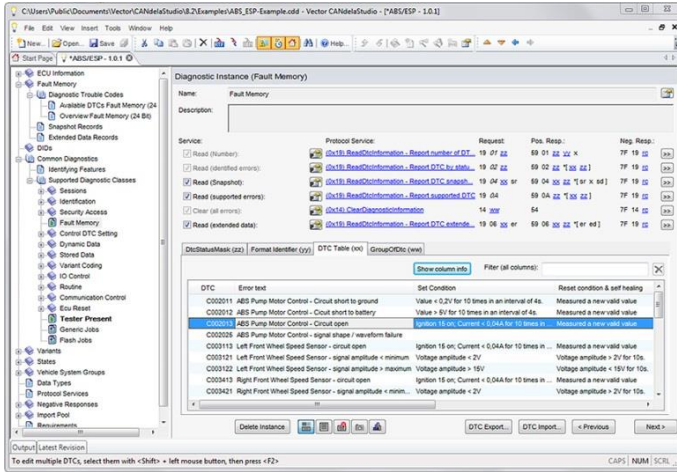
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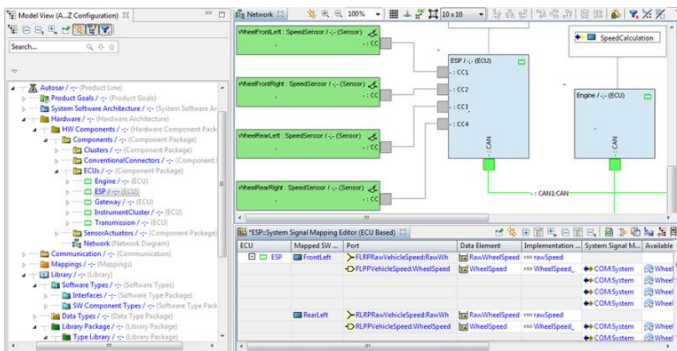
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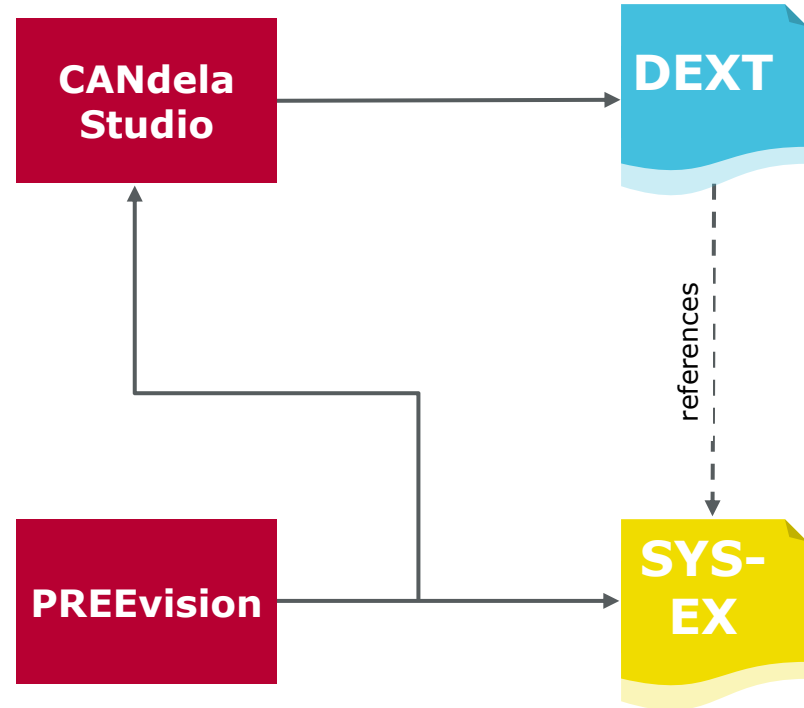
DEXT as Connector to EE Development



Diagnostic Design



System Design



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