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

Diagnostics

OEM

Production

Legislation

After Sales

TIER1

Others

??
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
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

**PREEvision**
- .arxml
- DBC
- FIBEX
- LDF
- .arxml

**DaVinci Developer**
- Software Component Description Files
  - .arxml
  - Contain software component information

**DaVinci Configurator Pro**
- BASE-ECUC
- .arxml
- .arxml
- ECU Configuration Description

**CANdelaStudio**
- .cdd
- .odx

**Other AUTOSAR tools**
- CANdelaStudio
- BASE-ECUC
- ECU Configuration
- .c
- .h
- Header and Code Files
  - BSW module configuration
  - RTE
  - SWC

**Other AUTOSAR tools**
- Vector Tool
- 3rd Party tool
Agenda

Diagnostic Processes in Place

- **AUTOSAR DEXT Introduction**
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AUTOSAR DEXT Introduction

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 DEXT Introduction

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
AUTOSAR DEXT Introduction

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
Possibilities with DEXT in Diagnostic Tools

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
Possibilities with DEXT in Diagnostic Tools

Base ECUC Configuration with DEXT

- **Authoring**
  - DEXT
  - AUTOSAR DEXT

- **AUTOSAR**
  - Code Generator FrontEnd
  - DaVinci Configurator Pro
  - Header and Code Files
    - DCM and DEM
    - OEM specific extensions
  - .c
  - .h
  - .arxml
  - ECUC Configuration Description

- **Standardized exchange format**
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.
Possibilities with DEXT in Diagnostic Tools

Reducing Integrator Responsibility

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

- Network representation
- Application Pre-Mapping
- OEM specific behavior

- 100% derived in best case
- Integrator completes project configuration

Integrator
Agenda

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Diagnostic Processes with DEXT in Practice and Beyond
Diagnostic Processes with DEXT in Practice and Beyond

DEXT as Connector to EE Development

Diagnostic Design

System Design

references

CANdela Studio

DEXT

PREEvision

SYS-EX
For more information about Vector and our products please visit

www.vector.com

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