

ODX Authoring Guidelines (ODX-RS Companion Standard V1.0.0)

Overview of Companion Standard

ASAM Project P05-08 (Subitem of ODX 2.2 Maintenance)



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Introduction

- ODX standard was developed as exchange data format for diagnostic data of ECUs
- It is applied for several different use cases: diagnostic data description, documentation, specification, diagnostic communication between tester and ECUs, software development, kernel development
- Current ODX versions:
 - Used: V 2.0.1 and V 2.1.0
 - To be used: V 2.2.0 (ISO 22901-1)

Situation

- One major scenario for ODX is the **exchange of diagnostic data** in common OEM Projects
- ODX was designed as a flexible format to describe various common used diagnostic protocols
- ODX allows to describe diagnostic content in several ways (e.g. services via diagnostic services or via ODX tables or via muxes)
- Diagnostic data has to be aligned to the authoring guidelines of each OEM with every new step of data exchange
- Off-the-shelf authoring tools need to cover the whole variety of ODX

Objective

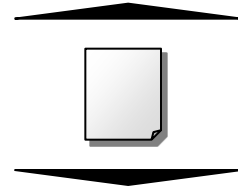
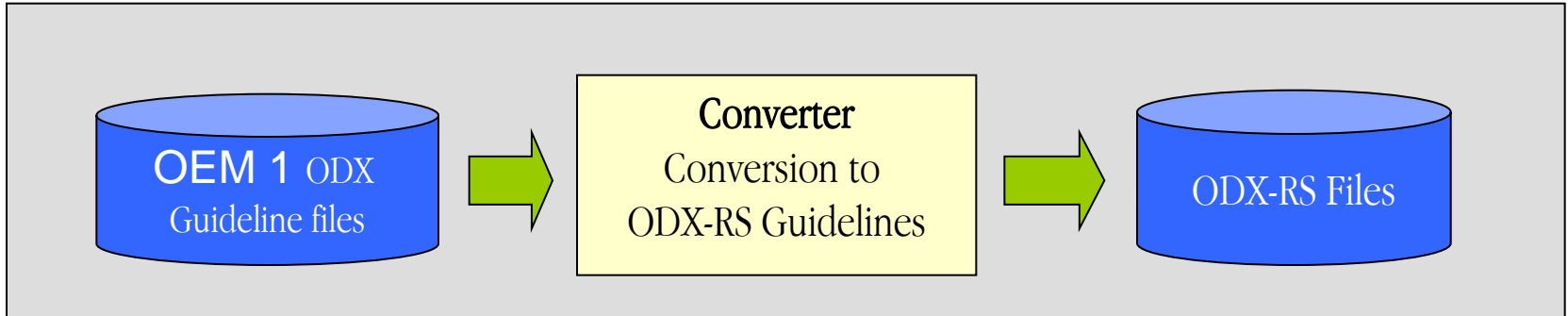
- Development of common authoring guidelines for the exchange of ODX data
- Driven by the OEMs and major suppliers of the ODX Core Group
- Starting at the existing OEM-specific authoring guidelines
- Including the experiences of the ECU projects based on ODX format of the last few years
- Providing common guidelines for OEMs, suppliers and toolsuppliers

Motivation and Benefits

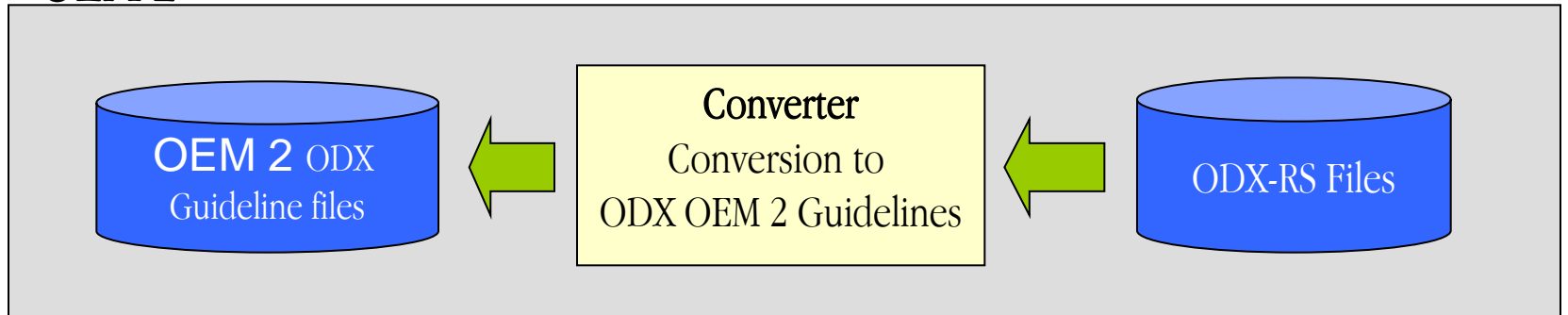
- Less effort in adapting ODX data for OEMs and suppliers in common ECU projects
- Easier data exchange process between project partners according to precise application rules
- Higher quality of ODX authoring tools and D-server because of common application of ODX data model
- Lower tool expenses due to wide application areas
- Long term benefits:
 - Providing a better basis for content-based unification of diagnostics: usage of diagnostic services, OBD diagnostics, legal requirements, diagnostic kits
 - Clearing up the standard regarding missing or unused aspects revealed by the common guidelines

Intended data exchange process

OEM 1

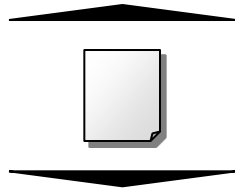
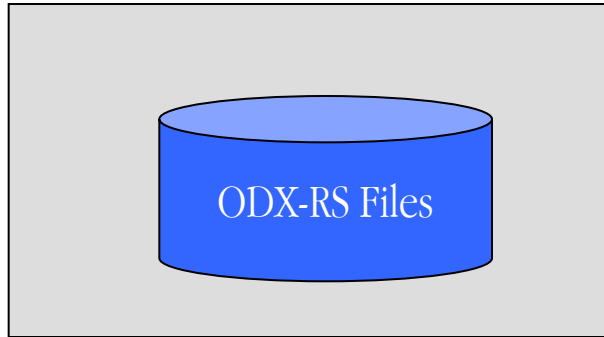


OEM 2

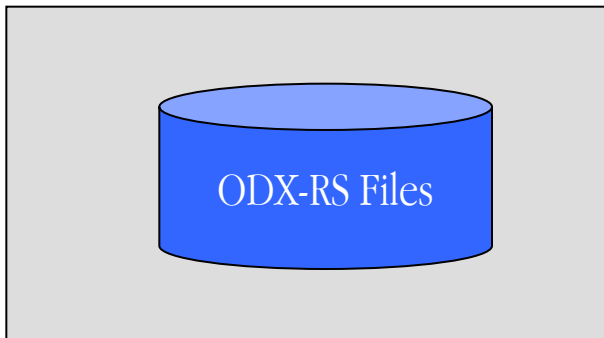


Vision

OEM 1



OEM 2



All OEMs and suppliers
adopt the common
authoring guidelines

Guidelines

- The common authoring guidelines are applicable for all ODX versions 2.0.1, 2.1.0 and 2.2.0
- The main focus is the UDS diagnostic protocol but the general recommendations are applicable for other diagnostic protocols too
- The authoring guidelines cover in addition to ODX some miscellaneous subjects like process data
- ODX data which obey the common authoring guidelines (**ODX-RS Companion Standard**) are called ODX-RS conform or ODX-RS compliant
- ODX-RS compliant data are fully compliant to the ODX standard

Main Topics (1)

- General Conventions for naming and build-up of LONG-NAMES, SHORT-NAMES, IDs, OIDs, DESCs, ODX-Links, file names, DATA-OBJECT-PROPs
- General recommendations for DIAG-LAYERs, FUNCTIONAL-GROUPs and FUNCTIONAL-CLASSes
- General recommendations for the use of special data groups (SDGs)
- General recommendations for the description of diagnostic services: conventions for LONG-NAMES, use of SEMANTICs, Service-Ids, nesting depth, negative response codes and constraints
- Recommendations for the description of diagnostic trouble codes (DTCs)

Main Topics (2)

- Recommendations for the description of DataIdentifier and RoutineIdentifier related data
- Recommendations for the function oriented diagnostics
- Recommendations for ODX packaging (PDX)
- Definition of ODX-RS standardized objects:
 - Physical units
 - Global negative response codes
 - DATA-OBJECT-PROPerties
- Recommendations for the data exchange process

Use of ODX Tables

- The largest part of diagnostic data description is covered by dataidentifiers and routineidentifiers (UDS protocol)
- The guidelines define some ODX TABLEs for the description of these data
- The flexibility of ODX format is reduced substantially by these definitions

Special Data Groups

- Special data groups (SDGs) within ODX are a method to enhance the data description by a well-formed but flexible method for specific purposes
- All OEMs use the application of SDGs
- The authoring guidelines include an XML schema to define SDGs in a structured and common way
- Use of the SDG-Config schema provides an easy and common way to define, check and publish SDGs
- Authoring tools may support that definition directly (that has already happened)

Process annotation

- The ODX standard keeps itself aside from process specific information
- The authoring guidelines provide an XML schema to describe process information along with ODX data
- Process annotation includes information about the maturity and requirement status of the diagnostic data described by ODX
- Process annotation helps to facilitate the development process of ECUs

ODX-RS Standardized Objects

- ODX-RS standardized objects are ODX objects which are normally frequently used by everybody who creates ODX data
- ODX-RS standardized objects are specific pieces of ODX data completely described and ready to use in any diagnostic data
- The descriptions of the following objects are standardized by ODX-RS:
 - Most frequently used physical units
 - Global negative responses for UDS protocol
 - Frequently used DATA-OBJECT-PROPERTIES

Examples

- A set of examples show the use of the ODX-RS companion standard
- Examples of diagnostic services embedded in DIAG-LAYERS:
 - ReadDataByIdentifier
 - InputOutputControl
 - RoutineControl
- Example for process annotation data connected to ODX data
- Example for definition of some kinds of SDGs using an SDG-config conform XML file

Deliverables of ODX-RS V 1.0.0

Title	File
Authoring guidelines document	ODX_AG_Subgroup_Recommendations.doc
Library with physical units	ODX_RS_UNIT_LIB.odx-d
Collection of global negative response	ODX_RS_GLOBAL_NEG_RESPONSES.odx-d
Library with a collection of data object properties	ODX_RS_DOP_LIB.odx-d
XML schema for the definitions of SDGs at ODX objects	SDG-Config_1_0_0.xsd
XML schema for the definitions of process annotation information at ODX objects	Annotation-xsd, odx-xhtml.xsd
Examples for DIAG-SERVICES with TABLEs	EXAMPLE_ODX_RS.pdx
Example for SDG-Config	Example-SDG-Config.xml
Example for process annotation data	Example-PAF-SDG.pdx

Conclusion

ODX-RS V 1.0.0

Companion Standard

ready for release