Data Model for the Exchange of Harness Components

Version 1.0

VDA AK CAD/CAM
WG Car Electric
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Main Use Cases

• Import component descriptions into component databases
• Data source for KBL master data
• Data source for automatic terminal, seal and plug determination
• Search for harness parts (e.g. connectors, fixings, wire protections, …)
• Data source for various harness analysis options (e.g. copper weight)
Application Context

Search for wires

Information about electrical system

Automatic terminal determination

Usage validation

Management of and search for reusable parts

Search for connectors, fixings and wire protection components

Information about part usage

Harness Supplier

Component Supplier

Other Data users

Establishing Leadership in IT-Based Engineering
Focus of KOMP 1.0

- Search for wires
- Information about electrical system
- Automatic terminal determination
- Usage validation
- Management of and search for reusable parts
- Search for connectors, fixings and wire protection components
- Information about part usage

OEM

ELOG

GEO

KBL

KOMP

Harvest Supplier

Component Supplier

Information about electrical system

Usage validation

Management of and search for reusable parts

Search for connectors, fixings and wire protection components

Information about part usage

Establishing Leadership in IT-Based Engineering
General information

- Only parts are considered which may be part of a harness
  - Only attributes are considered which are relevant for harness engineering
  - Exception: Interfaces to EE-Components
- No part usage specific information is exchanged
- One exchange file may contain only one version of a part
- A part may be specified differently by different application roles (e.g., OEM, harness supplier, component supplier). The differences may concern
  - The part identification (i.e., a part can only be identified by company name, part number, and version)
  - The bill of material (i.e., the assembly structure)
  - Attribute values (i.e., technical specifications)
- Every part may be an accessory part to any other part.
- The model information must facilitate automatic terminal determination
- Descriptions may be exchanged multi-lingual
Common part master data

- Robustness specification
  - Robustness class
  - Robustness class reference system
  - Robustness class key

- Norm code
  - Norm system

- Color
  - Color key

- Material
  - Material key

- Processing instruction
  - Instruction type
  - Instruction value

- Mass information
  - Determination type

- Change
  - Id

- External reference
  - Document type
  - Document number

- Part identification
  - Role
  - Company name

- Part
  - Predecessor part number

- Approval
  - Name
  - Department

- Creation
  - Name
  - Department

- Value determination
  - Calculated
  - Measured
  - Estimated

- Role
  - OEM
  - Manufacturer
  - Supplier
Part identification

One part may be described differently by different companies

Example:

Id: 1
Company_name: BMW
Part_number: ABC
Version: 1.0
Abbreviation: XYZ
Description: Blabla
Degree_of_maturity: 1
Copyright_note: Mass_information: 5g
Temperature_class: A
Resistance_class: Oil

Alias_Part_number: DEF
Company_name: Tyco
Role: Manufacturer

Id: 5
Company_name: Tyco
Part_number: DEF
Version: 1.4
Abbreviation: XYZ
Description: Blabla
Degree_of_maturity: 2
Copyright_note: Tyco
Mass_information: 5g
Temperature_class: B
Resistance_class: Oil

One part may be described differently by different companies.
Common data types

- **Numerical_value**: Double
- **Value_component**: Double
- **Minimum**: Double
- **Maximum**: Double
- **SI_unit_name**: metre, kilogram, second, ampere, kelvin, hertz, newton, pascal, coulomb, volt, farad, ohm, piece
- **SI_unit_prefix**: milli, centi, micro, kilo, mega, giga, nano
- **SI_unit_dimension**: square, cubic
Assemblies and accessory parts
kann auch für Beilaufdraht verwendet werden.
Leitung und Kabel

- Mehradiges Kabel
  - Position 1
    - Schirmung
    - Einadige Leitung
    - Adet

Legend

- Special_wire (multi-core wire)
- Shield
- Single_core_wire with Core
Special_wire (multi-core wire)

Legend
- Special_wire (multi-core wire)
- Shield
- Single_core_wire with Core
Multi-core wires

Complete current data model see Wires!
Structure of multi-core wires
Complete current data model see Wires!
Example: coax terminal
Example: double-contact terminal

The specification is the same for both Terminal_receptions.
Example: terminal bridge

Wire_reception_specification

Wire_reception

Terminal_reception_specification

Cavity_terminal

Terminal_reception

Terminal_reception

Terminal_reception
User-defined properties

<<PropertyAware>>
Part
(from 1_Parts)
- Predecessor_part_number [0..1] : String
- Abbreviation [0..*] : Localized_string
- Description [0..*] : Localized_string
- Degree_of_maturity [0..1] : String
- Copyright_note [0..*] : Localized_string
- Temperature_range [0..1] : Value_range

<<PropertyAware>>
Specification
(from 1_Parts)
- Specification_number [0..1] : String
- Abbreviation [0..*] : Localized_string
- Description [0..*] : Localized_string

<<PropertyAware>>
External_diameter [0..1] : Numerical_value
Minimum_bend_radius [0..1] : Numerical_value

<<PropertyAware>>
Wire_reception
(from 1_Parts)
- Id : String
- Gender [0..1] : Gender

<<PropertyAware>>
Terminal_reception
(from 1_Parts)
- Id : String

<<PropertyAware>>
Custom_property
(from 6_Foundation)
- Name : String
- Value : String

<<PropertyAware>>
Core
(from 1_Parts)
- Cross_section_area : Numerical_value
- Resistance_per_metre : Numerical_value
- Mass_information_per_metre : Numerical_value

<<PropertyAware>>
Wire_specification
(from 1_Parts)
- Specification_number [0..1] : String
- Abbreviation [0..*] : Localized_string
- Description [0..*] : Localized_string

<<PropertyAware>>
Related_part 0..1

<<PropertyAware>>
Related_wire_specification 0..1

<<PropertyAware>>
Related_core 0..1

<<PropertyAware>>
Related_wire_reception 0..1

<<PropertyAware>>
Related_terminal_reception 0..1

<<PropertyAware>>
Related_specification 0..1