



prostep ivip VDA Recommendation

Harness Description List (KBL)
Version 2.5



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1 General

1.1 Preamble

Innovations in automotive industry like adaptive cruise control or multimedia passenger entertainment systems nowadays define themselves by electric and electronic components. As the electrical wiring system builds the essential infrastructure for automobile electronics, the wire harness becomes increasingly complex. This need for increased complexity comes along with the minimizing of design time and shortening of lead times.

Therefore, the collaboration of car manufacturers and harness suppliers is a challenge. The traditional way that a supplier receives harness design data from the car manufacturer has to change. Instead of various drawings and lists in proprietary formats he needs a specification, which describes the wire harness in its entirety so that the manufacturer can plan the manufacturing and build the harness, based on the data he receives. Such a specification should be based on standards to fulfil the requirements for open development partnerships.

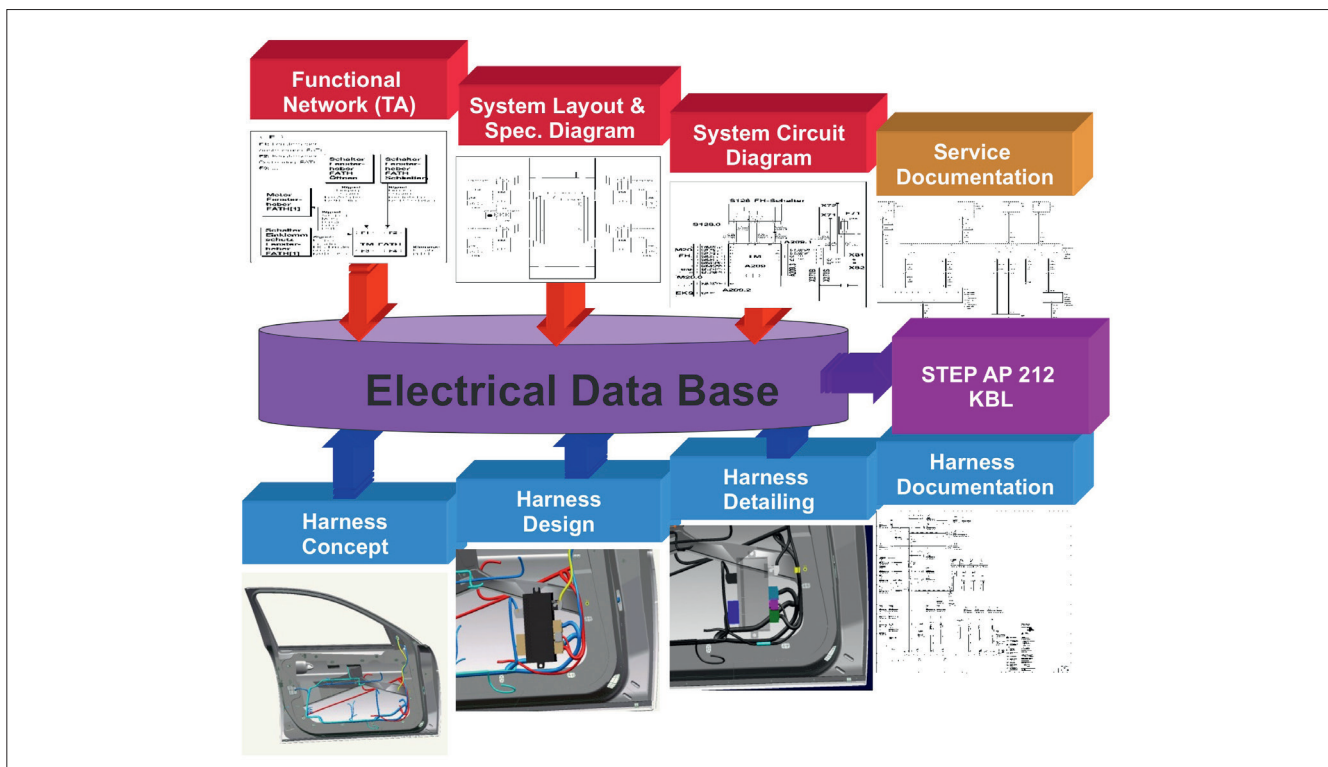


Figure 1: Harness Design Process

Source: © BMW AG

The objectives of the prostep ivip / VDA Working Group “Product Data Model for Vehicle Electric Systems (PDM4VES)” are the harmonization of requirements and the development of recommendations for the exchange of product data in the area of car electrical systems. This recommendation is a result of the working group and has been developed with the participation of major OEMs and harness suppliers: The “Harness Description List”. This specification is also known under the name “KBL”, which stands for “Kabelbaumliste”, the German translation for “Harness Description List”.

The recommendation defines how harness design data coming from various sources like 3D CAD systems or CAE system can be represented in an aggregated view.

This version of the recommendation, also called KBL 2.5, is a bridge release. Its objective is to enable a smooth migration from KBL to VEC:

- Lower the implementation hurdle for VEC, especially for the supplier interface
- Define the migration path to VEC
- Harmonize and eliminate existing KBL dialects
- Extensions to KBL 2.4 to enable the interoperability with VEC modeling
- All new KBL concepts are addressed by VEC, too
- Keep KBL scope (physical harness)

1.2 Objectives of the recommendation

The goal of this recommendation is to specify the information that an OEM should make available on harness design for suppliers or other downstream processes like EMC (Electro-magnetic compatibility).

The specification abstracts from OEM specific processes. By that it provides the basis for

- Reference standards for data quality
- Standardized viewing solutions
- Independency of harness data from proprietary software tools
- Simple comparability of development status and variants
- Standardized data exchange processes

It further avoids thereby the repeated development of engineering data.

1.3 Scope and responsibilities

The typical harness development process starts with the system design where the functionality of the new developed system will be described. The top-level view gives the overview of all items needed. With wiring diagrams engineers start to define the parts needed to fulfil the expected functions. Components are selected according to the required specification and are documented in part lists. Connections are defined to combine the components logically. The first harness concept takes place, the position of the components and paths for wires are planned and described in wire lists and harness layouts. The netlist (connection list) can be used to start the harness routing.

This recommendation defines how electrical/logical data coming from CAE systems (usages of components, connections, etc.) and topological data coming from 3D CAD systems (routing of cables and bundles) should be represented in an integrated way:

- Part identification including versioning, references to car projects or supplier information
- Harness, variants and options
- Modules to support modular design
- Harness components like connectors, wires, fixings, grommets or accessories
- Connectivity lists
- Part usage lists
- Topology and routing
- References to drawings or manufacturing documents

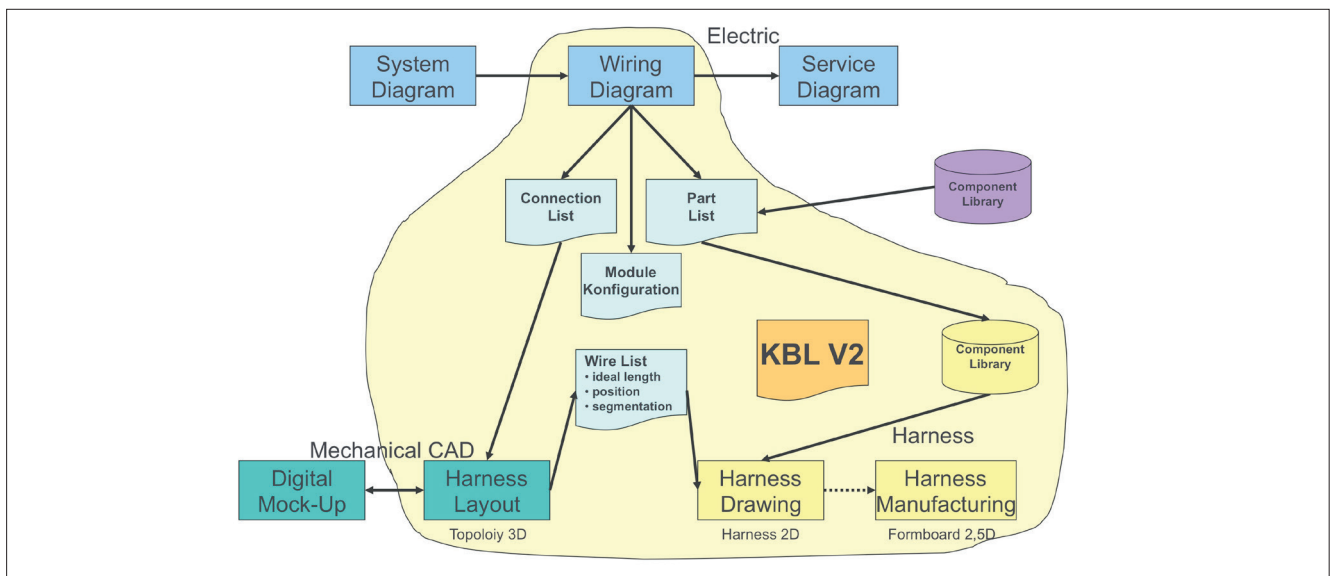


Figure 2: Scope of the KBL within the harness design process

This recommendation is directed to the harness design and IT departments of the OEMs and to the harness suppliers. The target auditoriums are the persons responsible for data exchange, IT systems and implementers of interfaces.

1.4 Changes to preceding versions

The following section lists the main subjects that have been changed, improved or added. A complete and detailed change history is available in the related issue tracking system.

Version	Change
2.5	New chapter 2. General Requirements added
2.5	New chapter 2.1 Handling of Identifiers added (KBLFRM-782)
2.5	New chapter 2.2 Contacting added (KBLFRM-758)
2.5	New chapter 2.3 Spot Tapes added (KBLFRM-743)
2.5	New chapter 2.4 Segments with Variant Dependent Length (KBLFRM-737)
2.5	New chapter 2.5 Twisted Wires added (KBLFRM-741)
2.5	Introduction of Open- & ClosedEnumerations (KBLFRM-827)
2.5	Handling of NULL segments (KBLFRM-764)
2.5	Reuse of assembly components (KBLFRM-769)
2.5	Various classifications and value lists added (KBLFRM-702, KBLFRM-667, KBLFRM-802, KBLFRM-806, KBLFRM-807, KBLFRM-823, KBLFRM-835)
2.5	Improvement of the documentation

1.5 Compatibility to preceding versions

KBL version 2.5 is a scope extension of version 2.4. That means all the information, which was in the scope of version 2.4 is still supported by version 2.5. The XML schema is downward compatible.

1.6 Document structure

This document is structured in the following chapters:

- General requirements
- Overview meta model of the KBL data format
- Glossary of terms
- Detailed meta model specification with a definition of all classes, attributes and relationships in alphabetical arrangement
- XML representation of the Harness Description List: The KBL Schema

1.7 Abbreviations, terms and definitions

See Chapter 4 for a list of relevant abbreviations, terms and definitions.

1.8 Reference

Further information about this recommendation and related documents and specifications (e.g. the KBL25.xsd) are available from prostep ivip and VDA, respectively their project groups PDM4VES and ECAD-IF:

- see <http://ecad-wiki.prostep.org>
- see <https://www.vda.de/de/services/Publikationen.html>