IDTA-02035-1 : Digital Battery Passport - Part 2

Handover Documentation 1.0

August 2025

SPECIFICATION

Submodel Template
IDTA approved
- 100% AAS compliant
- Consistent & interoperable
- Released by the AAS experts

Submodel Template of the
Asset Administration Shell

IDTA-02035-1 V1.0

Imprint

1. Publisher

> Industrial Digital Twin Association
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Version history

Date	Version	Comment
August 2025	1.0	First version. Result of the joint Model Expert Group from IDTA, Catena-X and the BatteryPass Consortium.
18.08.2025	1.0	Start of the official review period with IDTA, Catena-X and the BatteryPass Consortium.

Table of Contents

Chapter 1. General

1.1. About this document

2. This document is a part of an overall specification series [4]. Each part specifies the contents of a Submodel Template (SMT). The specifications of the Asset Administration Shell (AAS) are the basis for the Submodel Template specifications, see [3].

3. The target audience of the specification are developers and editors of technical documentation and manufacturer information, which are describing assets by means of the Asset Administration Shell (AAS) and therefore need to create a Submodel instance with a hierarchy of SubmodelElements. This document especially details on the question, which SubmodelElements with which semantic identification shall be used for this purpose.

4. This SMT will only be fully supported as of metamodel V3.1. V3.1 allows to assign idShorts to Elements within a SubmodelElementList (SML).

5. This specification was created following the "semantic-driven workflow" as defined in [5] based on Aspect Models [6]. There is no central dictionary or repository for Aspect Models. In this specification the following sources are used for defining semantics:

   - Aspect Models published at IDTA [7]: https://github.com/admin-shell-io/smt-semantic-models
   - Aspect Models published by the BatteryPass Consortium (closed project) [8]: https://github.com/batterypass/BatteryPassDataModel
   - Aspect Models pubslihed at Tractus-X and used in standards published by Catena-X [9]: https://github.com/eclipse-tractusx/sldt-semantic-modelsl

1.2. Scope of the Submodel

6. This Submodel template aims to define the dynamic data points of a Battery Passport conformant to DIN DKE SPEC 99100 and the corresponding EU regulations.

7. The battery passport consists of the following 7 parts:

```
Digital Battery Passport - Part 1: Digital Nameplate (IDTA-02035-1)
Digital Battery Passport - Part 2: Handover Documentation (IDTA-02035-2)
Digital Battery Passport - Part 3: Product Carbon Footprint (IDTA-02035-3)
Digital Battery Passport - Part 4: Technical Data (IDTA-02035-4)
Digital Battery Passport - Part 5: Product Condition (IDTA-02035-5)
Digital Battery Passport - Part 6: Material Composition (IDTA-02035-6)
Digital Battery Passport - Part 7: Circularity (IDTA-02035-7)
```

8. This specification is Part 2: Handover Documentation 1.0 (IDTA-02035-2).

1.3. Relevant standards for the Submodel template

9. This submodel template fulfills the requirements for dynamic data attributes as defined in DIN DKE SPEC 99100 [1]. DIN DKE 99100 "is based on the European Union and key Member States current regulatory requirements for battery passport information. Mandatory information for the battery passport as stated in the EU Battery Regulation (EU)2023/1542, Article77 and AnnexXIII, as well as the Ecodesign for Sustainable

Products Regulation (ESPR), is supplemented by recommendations to increase sustainability and circularity. [1]"

10. This document is valid for all battery categories. Please be aware that for battery categories that have stronger requirements like industrial batteries with battery management systems etc. some of the data points are specified as optional although mandatory per regulation.

1.4. Explanations on used UML diagrams

11. For clarity and an improved legibility readers suggested to go through this section at first before reading the following chapters.

12. UML diagrams feature box-like elements, called "classes". These classes, typically Submodels, SubmodelElementCollections or SubmodelElementLists, typically feature a set of Properties or further SubmodelElements. These elements can have specific cardinalities.

13. The single classes are hierarchally organized by aggregation relations, these can be seen as "contains" relation.

14. For a further overview on UML diagrams please refer to [6] and [10].

15. Further details about used table formats please refer to Annex A.

Chapter 2. Information set for Submodel “Handover Documentation”

2.1. General

16. The "Handover Documentation 1.0" Submodel Template is part of the specification series for the Battery Passport.

17. The Submodel template is derived from the Submodel template "Handover Documentation 2.0 (IDTA-02004)" where some mandatory elements are not contained or decleard as optional.

18. The submodel instance `Handover Documentation` comprises a set of elementary data elements to make (external) references to documents (e.g., to PDFs) that are relevant for the digital battery passport. Those documents corresponds to the attributes of the DIN SPEC 99100:

    - Information of due diligence report
    - Third party assurances of recognised schemes (optional)
    - Impact of substances on environment, human health, safety, persons
    - Dismantling information: Manuals for the removal and the disassembly of the battery pack
    - Safety measures
    - Information on the role of end-users in contributing to waste prevention
    - Information on the role of end-users in contributing to the separate collection of waste batteries
    - Information on battery collection, preparation for second life and on treatment at end of life
    - Cycle-life reference test
    - C-rate of relevant cycle-life test

19. **Property specification**

20. See clause 3 "Information structures and attributes".

21. [UML_Submodel] shows the UML-diagram defining the relevant properties which need to be set.

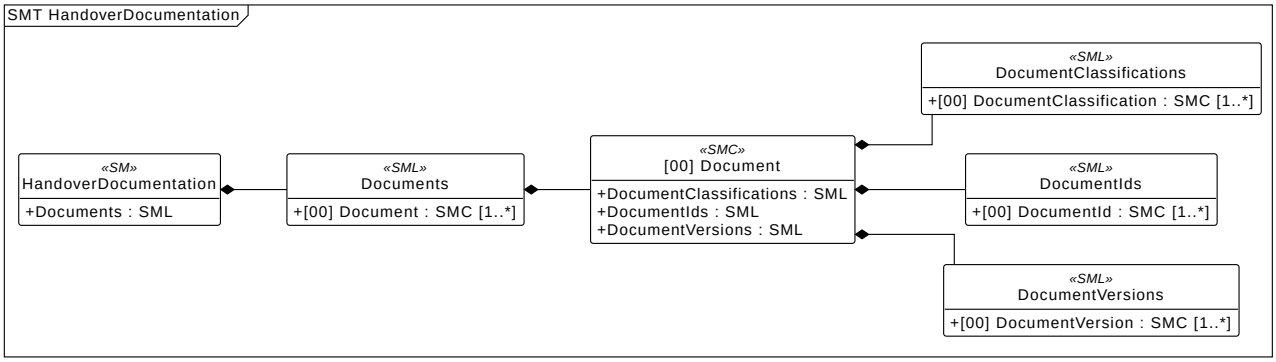

Figure 1. UML-Diagram for Submodel "Handover Documentation" for batteries

2.2. Enumeration: document classification according to DIN SPEC 99100

22. DIN SPEC 99100 defines a basic set of different classes for documents, which allows the operator of the battery equipment to manage and retrieve information efficiently. Following class names can be used:

Table 1. DocumentClassification according to DIN SPEC 99100

ClassID	ClassName (EN)	Semantic ID
01	Product Specifications	tbd
02	Manufacturer Information	tbd
03	User Manuals and Guides	tbd
04	Certifications and Compliance	tbd
05	Product Images and Videos	tbd
06	Warranty Information	tbd
07	Reviews and Ratings	tbd
08	Product Variations	tbd
09	Supply Chain Information	tbd
10	Environmental Impact	tbd
11	Compatibility and Accessories	tbd
12	FAQs and Support	tbd
13	Purchase and Retail Information	tbd
14	Privacy and Data Handling	tbd
15	Third-Party Integrations	tbd
16	Legal Information	tbd
17	Safety Information	tbd
18	Repair and Installation	tbd
19	Waste Generation and Prevention	tbd
20	Specific Voluntary Labels	tbd
21	Product Packaging	tbd
22	Return and Disposal	tbd
23	End of Life	tbd
24	Material and Substance Information	tbd
25	Technical Documentation	tbd
26	Treatment facilities	tbd
27	Other	tbd

2.3. Attributes of the Submodel instance

23. The following attributes need to be set for the Submodel instance. The table convention is explained in Annex A.2.

24. The ECLASS IRDIs referenced in this Submodel are based on ECLASS Release 15. This version of the Submodel with these ECLASS IRDIs is also available in the download area of the ECLASS website: www.eclass.eu in form of the Asset.xml. The Asset.xml (Release 15) is the ECLASS file that contains Submodels. The use of these Submodels is free of charge.

Table 2. Attributes of the Submodel instance

idShort:	**HandoverDocumentation**		
Class:	Submodel		
semanticId:	0173-1#01-AHF578#003		
Parent:	-		
Explanation:	The Submodel defines a set meta data for the handover of documentation from the manufacturer to the operator for industrial equipment		
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[SML] Documents	0173-1#02-ABI500#003 supplementalSemanticId: https://api.eclass-cdp.com/0173-1-02-ABI500-003 Information for a document identity	[] 1 elements	1

Table 3. Attributes of the Submodel instance

idShort:	**Documents**		
Class:	SubmodelElementList		
semanticId:	0173-1#02-ABI500#003		
Parent:	HandoverDocumentation		
Explanation:			
Element details:	orderRelevant=No, semanticIdListElement=[GlobalReference, 0173-1#02-ABI500#003/0173-1#01-AHF579#003], typeValueListElement=SubmodelElementCollection		
[SME type] idShort	semanticId Description@en	[valueType] example	card.

[SMC] Document	0173-1#02-ABI500#003/0173-1#01-AHF579#003 supplementalSemanticId: 0173-1#02-ABI500#003~0/0173-1#01-AHF579#003,https://api.eclass-cdp.com/0173-1-02-ABI500-003/0173-1-01-AHF579-003 Each SubmodelElementCollection describes a document by standard, which is associated to the particular Asset Administration Shell This SubmodelElementCollection holds the information for a VDI 2770 Document entity	[] 3 elements	1..*

2.4. SubmodelElements of DocumentClassification

25. [UML_Submodel] shows the UML-diagram defining the relevant properties which need to be set.

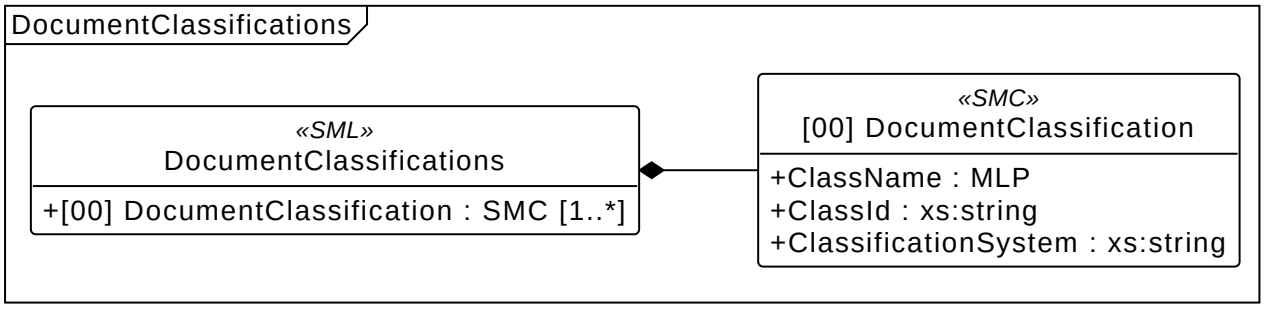

Figure 2. UML-Diagram for Submodel "Handover Documentation" for batteries

26. The SubmodelElementCollection (SMC) “DocumentClassification” contains the information for a classification of a document according to a classification system. A Document might have multiple classifications in multiple systems. The table convention is explained in Annex A.2.

Table 4. SubmodelElements of DocumentClassification

idShort:	**DocumentClassification**		
Class:	SubmodelElementCollection		
semanticId:	0173-1#02-ABI502#003/0173-1#01-AHF581#003		
Parent:	DocumentClassifications		
Explanation:	Set of information for describing the classification of the Document according to a ClassificationSystem		
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[MLP] ClassName	0173-1#02-ABJ219#002 supplementalSemanticId: https://api.eclass-cdp.com/0173-1-02-ABJ219-002 Name of the class in the classification system	[]	1

[Prop] ClassId	0173-1#02-ABH996#003 supplementalSemanticId: https://api.eclass-cdp.com/0173-1-02-ABH996-003 Unique ID of the document class within a classficationsystem	[String]	1
[Prop] ClassificationSystem	0173-1#02-ABH997#003 supplementalSemanticId: https://api.eclass-cdp.com/0173-1-02-ABH997-003 Identification of the classification system Identifikation des Klassifikationssystems	[String]	1

27. The list of the ClassName values are listed in 2.2 Enumeration: document classification according to DIN SPEC 99100 (all in english).

2.5. SubmodelElements of DocumentID

28. The SubmodelElementCollection (SMC) DocumentId identifies the Document in a given Domain. The table convention is explained in Annex A.2.

Table 5. SubmodelElements of DocumentID

idShort:	**DocumentIds**		
Class:	SubmodelElementList		
semanticId:	0173-1#02-ABI501#003		
Parent:	Document		
Explanation:			
Element details:	orderRelevant=No, semanticIdListElement=[GlobalReference, 0173-1#02-ABI501#003/0173-1#01-AHF580#003], typeValueListElement=SubmodelElementCollection		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[SMC] DocumentId	0173-1#02-ABI501#003/0173-1#01-AHF580#003 supplementalSemanticId: 0173-1#02-ABI501#003~0/0173-1#01-AHF580#003,https://api.eclass-cdp.com/0173-1-02-ABI501-003/0173-1-01-AHF580-003 Information about a document identification entity This SubmodelElementCollection holds the information for a VDI 2770 Document entity	[] 3 elements	1..*

2.6. SubmodelElements of DocumentVersion

29. [UML_Submodel] shows the UML-diagram defining the relevant properties which need to be set.

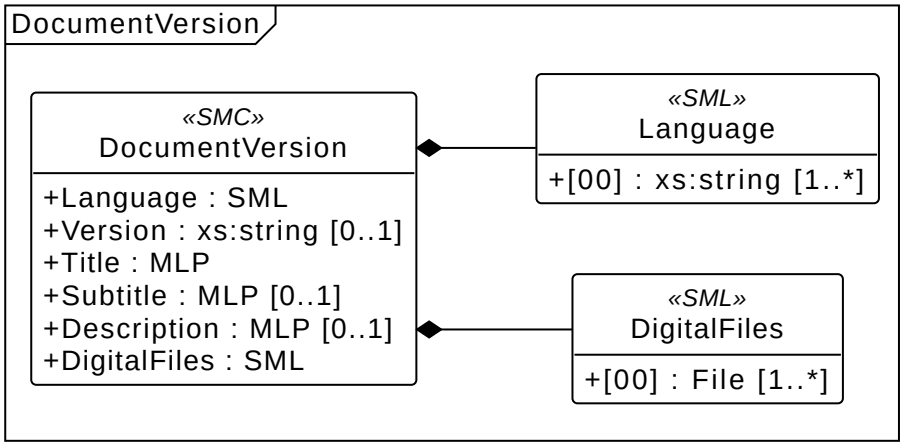

Figure 3. UML-Diagram for SubmodelCollection "DocumentVersion"

30. The SubmodelElementCollection (SMC) DocumentVersion contains the information for a DocumentVersion. The table convention is explained in Annex A.2.

Table 6. SubmodelElements of DocumentVersion

idShort:	**DocumentVersion**		
Class:	SubmodelElementCollection		
semanticId:	0173-1#02-ABI503#003/0173-1#01-AHF582#003		
Parent:	DocumentVersions		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[SML] Language	0173-1#02-AAN468#008 supplementalSemanticId: https://api.eclass-cdp.com/0173-1-02-AAN468-008 Language style of the document	[] 1 elements	1
[Prop] Version	0173-1#02-AAP003#005 supplementalSemanticId: https://api.eclass-cdp.com/0173-1-02-AAP003-005 Design that partly deviates from the previous	[String]	0..1
[MLP] Title	0173-1#02-ABG940#003 supplementalSemanticId: https://api.eclass-cdp.com/0173-1-02-ABG940-003 Name of the document	[]	1

[MLP] Subtitle	0173-1#02-ABH998#003 supplementalSemanticId: https://api.eclass-cdp.com/0173-1-02-ABH998-003 List of language-dependent subtitles of the document	[]	0..1
[MLP] Description	0173-1#02-AAN466#004 supplementalSemanticId: https://api.eclass-cdp.com/0173-1-02-AAN466-004 Plain text characterizing the content of the document	[]	0..1
[SML] DigitalFiles	0173-1#02-ABK126#002 supplementalSemanticId: https://api.eclass-cdp.com/0173-1-02-ABK126-002 MIME-Type, file name and file contents given by the file SubmodelElement	[] 1 elements	1

Table 7. SubmodelElements of DocumentVersion

idShort:	**Language**		
Class:	SubmodelElementList		
semanticId:	0173-1#02-AAN468#008		
Parent:	DocumentVersion		
Explanation:			
Element details:	orderRelevant=No, typeValueListElement=Property, valueTypeListElement=xs:string		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[Prop]	0173-1#02-AAN468#008 Language style of the document	[String] en	1..*

Table 8. SubmodelElements of DocumentVersion

idShort:	**DigitalFiles**
Class:	SubmodelElementList
semanticId:	0173-1#02-ABK126#002
Parent:	DocumentVersion
Explanation:	
Element details:	orderRelevant=No, typeValueListElement=File

[SME type] idShort	semanticId Description@en	[valueType] example	card.
[File]	0173-1#02-ABK126#002 MIME-Type, file name and file contents given by the file SubmodelElement	[]	1..*

Annex A. Explanations on used table formats

1. General

31. The used tables in this document try to outline information as concise as possible. They do not convey all information on Submodels and SubmodelElements. For this purpose, the definitive definitions are given by a separate file in form of an AASX file of the Submodel template and its elements.

2. Tables on Submodels and SubmodelElements

32. For clarity and brevity, a set of rules is used for the tables for describing Submodels and SubmodelElements.

- The tables follow in principle the same conventions as in [5].
- The table heads abbreviate 'cardinality' with 'card'.
- The tables often place two informations in different rows of the same table cell. In this case, the first information is marked out by sharp brackets [] form the second information. A special case are the semanticIds, which are marked out by the format: (type)(local)[idType]value.
- The types of SubmodelElements are abbreviated (see Table 9):

Table 9. Abbreviations for SubmodelElements

SME type	SubmodelElement type
Blob	Blob
Cap	Capability
Ent	Entity
Evt	Event
File	File
MLP	MultiLanguageProperty
Opr	Operation
Prop	Property
Range	Range
Ref	ReferenceElement
Rel	RelationshipElement
RelA	AnnotatedRelationshipElement
SMC	SubmodelElementCollection
SME	SubmodelElement type
SML	SubmodelElementList

- If an idShort ends with '__00__', this indicates a suffix of the respective length (here: 2) of decimal digits, in order to make the idShort unique. A different idShort might be choosen, as long as it is unique in the parent's context.
- The Keys of semanticId in the main section feature only idType and value, such as: https://admin-shell.io/vdi/2770/1/0/DocumentId/Id. The attribute "type" (typically "ConceptDescription" and "(local)" or

"GlobalReference") need to be set accordingly; see [6].

- If a table does not contain a column with "parent" heading, all represented attributes share the same parent. This parent is denoted in the head of the table.
- Multi-language strings are represented by the text value, followed by '@'-character and the ISO 639 language code: example@EN.
- The [valueType] is only given for Properties.

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