SPECIFICATION

Submodel Digital Standard Datasheet

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Version history

202A-Month-Day	D Version	Release of the Submodel template

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Foreword

This is a submodel for the Asset Administration Shell. It concerns the informational description of a digital standard. This submodel was developed as part of the “Digital Standards Datasheet” working Group. The working group consisted of representatives from information and communications companies, industry, and standards organizations.

1 General

1.1 About this document

This document is a part of a specification series. Each part specifies the contents of a Submodel template for the Asset Administration Shell (AAS). The AAS is described in [1-3] and [6]. First exemplary Submodel contents were described in [4], while the actual format of this document was derived by the "Administration Shell in Practice" [5]. The format aims to be very concise, giving only minimal necessary information for applying a Submodel template, while leaving deeper descriptions and specification of concepts, structures and mapping to the respective documents [1-6].

The target audience of the specification are standards organizations as well as distributors and acquirers of standards that use the Asset Administration Shell (AAS) to provide or capture the metadata of a digital standard. In particular, this document addresses the question of which submodel elements with which semantic identification should be used for this purpose.

1.2 Scope of the Submodel

This sub-model template aims at the interoperable provision of information describing the nameplate of a digital standard in relation to the asset of the respective asset management shell. The central element is the provision of properties [7] that are ideally interoperable with dictionaries such as ECLASS and IEC CDD (Common Data Dictionary) or the intelligent information Request and Delivery Standard (iiRDS). The purpose of this document is to provide selected specifications of submodels in such a way that information about assets can be exchanged in a meaningful way between partners in a value network. In this regard, this submodel addresses the information metadata layer.

The intended use case is the provision of a standardized property structure for a digital nameplate for standards. The nameplate enables applications to retrieve the required information about the standard in an interoperable manner.

This concept can serve as a basis for standardizing the respective submodel. The concept is based on existing norms, studies of common practices at enterprises, directives and standards so that a far-reaching acceptance can be achieved.

In addition to a standardized submodel, this template also introduces standardized SubmodelElementCollections (SMC) in order to improve the interoperability while modelling aspects of the digital standard datasheet within other submodels.

1.3 Relevant standards and sources of concepts for the Submodel template

According to [3], interoperable properties might be defined by standards, consortium specifications or manufacturer specifications. Useful standards providing sources of concepts are:

Table 1: List of examplary standards defining interoperable properties

No.	***Reference***	***Originator/ organization***	***Link***
1	iiRDS	iiRDS	[iiRDS 1.1]
2	IDIS	DKE	IDIS

So called property dictionaries are used to identify information elements (see Terms and Definitions of [6]). Such property dictionaries include:

- ECLASS, see: https://www.eclasscontent.com/
- IEC CDD, see: https://cdd.iec.ch/cdd/iec61987/iec61987.nsf and https://cdd.iec.ch/cdd/iec62683/cdddev.nsf

The submodel describes the characteristics and properties of a digital standard at the meta level. These characteristics are information metadata. ECLASS, on the other hand, primarily describes product metadata. The identified features are not currently found in ECLASS or CDD.

However, most of these features and characteristics are specified and standardized in iiRDS. The submodel therefore uses the publicly available IRIs (Internationalized Resource Identifiers) assigned in the iiRDS standard.

Missing IRIs are provided with placeholders by DKE(IDIS) and shall be made freely available as soon as possible following this project.

2 Information set for Submodel Contact Information

When defining submodels, the following three aspects must be considered, as suggested in [5]:

Usage and Economic Relevance:

The Digital Standards Datsheet submodel is intended to provide information and meta-information at the document level of a standard in an interoperable manner so that standards can be acquired, exchanged and applied in an interoperable manner.

Potential functions and interactions.

Have not been part of the project.

Specification of properties

Since this submodel considers information metadata, the iiRDS standard and relevant information from the iiRDS specification were used (see submodel iiRDS handover documentation).The actual structure of the Digital Datasheet is described under the SubmodelElementCollection "Document".

3 Submodel and Collections

3.1 Properties of the Submodel “Digital Standards Datasheet”

The figure below shows the UMLdiagram defining the relevant properties which need to be set. Table 3 describes the details of the submodel structure combined with examples.

Figure 1: UMLdiagram for submodel "DigitalStandardsDatasheet”

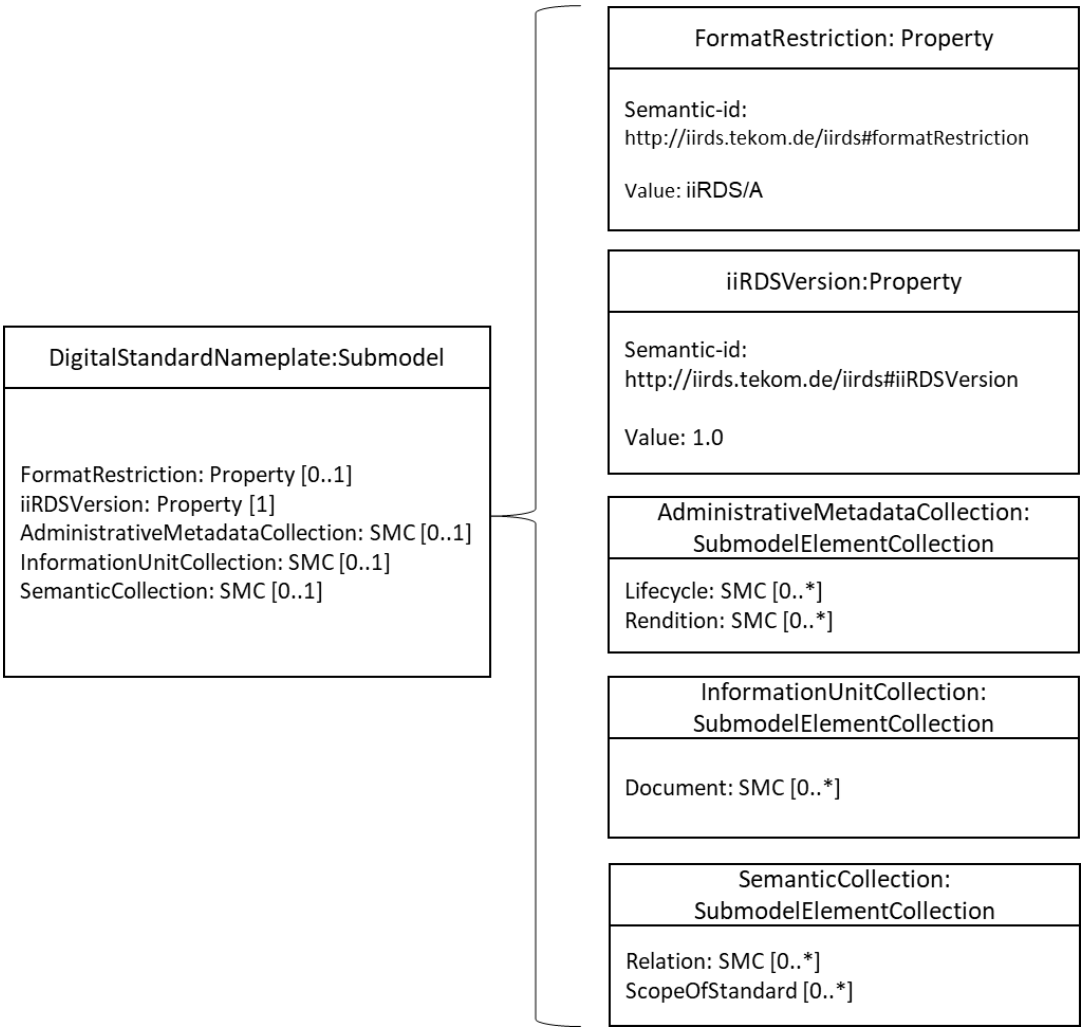

Table 2: Properties of submodel “DigitalStandardsDatasheet"

idShort	DigitalStandardsDatasheetNameplate		
Class	Submodel		
semanticId	https://example.com/ids/sm/1154_0130_2032_3996		
Explanation	The Submodel contains information about the standard		
[SME type]	**semanticId = [idType]value**	**[valueType]**	**card.**
idShort	**Description@en**	**example**	
AdministrativeMetadataCollection (SMC)	AdministrativeMetadataCollection (idShort) Collection of instances of the subclasses of iirds:AdministrativeMetadata	n.A.	0..1
FormatRestriction (Property)	http://iirds.tekom.de/iirds#formatRestriction restriction of media formats allowed in an iiRDS package	[String]	0..1
iiRDS Version (Property)	http://iirds.tekom.de/iirds#iiRDSVersion iiRDS version with which the iiRDS package complies iiRDS-Version, die das iiRDS-Paket erfüllt.	[String] 1.0	1
InformationUnitCollection (SMC)	InformationUnitCollection (idShort) collection of instances of iirds:topic, iirds:document and iirds:fragment, which are subclasses of iirds:informationunit	n.A.	0..1
SemanticCollection	SemanticCollection (idShot)		0..1

3.2 Properties of SMC "AdministrativeMetdataCollection”

The figure below shows the UMLdiagram defining the relevant properties which need to be set. Table 3 describes the details of the submodel structure combined with examples.

Figure 2: UMLdiagram for SMC "AdministrativeMetdataCollection”

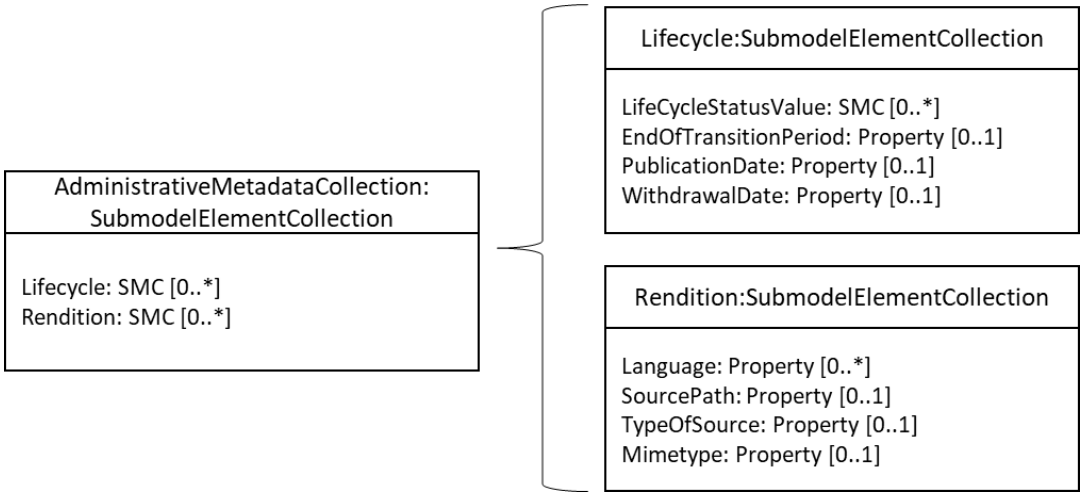

Table 3: Properties of SMC AdministrativeMetdataCollection "

idShort	AdministrativeMetdataCollection		
Class	Submodel		
semanticId	http://admin-shell.io/DataSpecificationTemplates/DataSpecificationIEC61360/2/0		
Explanation	Collection of instances of the subclasses of iirds:AdministrativeMetadata		
[SME type]	**semanticId = [idType]value**	**[valueType]**	**card.**
idShort	**Description@en**	**example**	
LifeCyle (SMC)	http://iirds.tekom.de/iirds#ContentLifeCycleStatus Status assigned by a standardizing body to a standard project for the period of time between first expression of an idea and publication of the standard	n.A.	0..*
Rendition (SMC)	http://iirds.tekom.de/iirds#Rendition Content of an information unit in a specific format	n.A.	0..*

3.3 Properties of the SMC “InformationUnitCollection”

Figure 3: UML-Diagram for SMC “InformationUnitCollection”shows the UML-diagram defining the relevant properties which need to be set. The following table describes the details of the SMC structure combined with examples.

Figure 3: UML-Diagram for SMC “InformationUnitCollection”

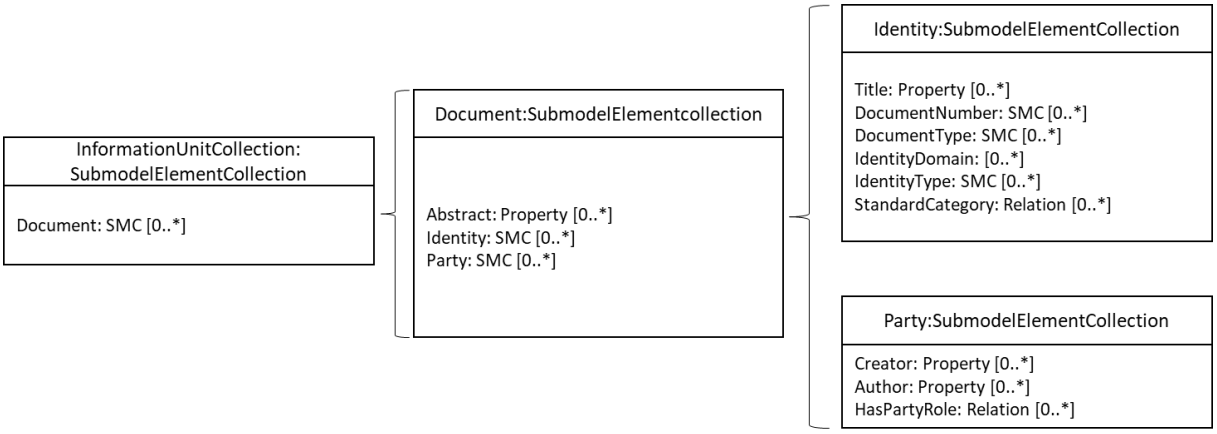

Table 4: Properties of SMC “InformationUnitCollection”

idShort	InformationUnitCollection		
Class	SubmodelElementCollection		
semanticId	http://admin-shell.io/DataSpecificationTemplates/DataSpecificationIEC61360/2/0		
Parent	Submodell		
Explanation	Collection of instances of iirds:topic, iirds:document and iirds:fragment, which are subclasses of iirds:informationunit		
[SME type]	**semanticity = [idType]value**	**[valueType]**	**card.**
idShort	**Description@en**	**example**	
Document	http://iirds.tekom.de/iirds#Document information unit consisting of an ordered set of information intended by the sender to be regarded as an entity	n.A.	0..*
Identity	http://iirds.tekom.de/iirds#Identity Complex identifiers may be assigned to information objects, information units, product variants, and components. Typically, identities are used to provide IDs from other systems.	n.A.	0..*
Party	http://iirds.tekom.de/iirds#Party person, organization or system	n.A.	0..*
Abstract	http://iirds.tekom.de/iirds#has-abstract summary of the resource	“…TEXT…”	0..*

3.4 Properties of the SMC “SemanticCollection”

Figure 4: UML-Diagram for SMC “SemanticCollection” shows the UML-diagram defining the relevant properties which need to be set. The following table describes the details of the SMC structure combined with examples.

Figure 4: UML-Diagram for SMC “SemanticCollection”

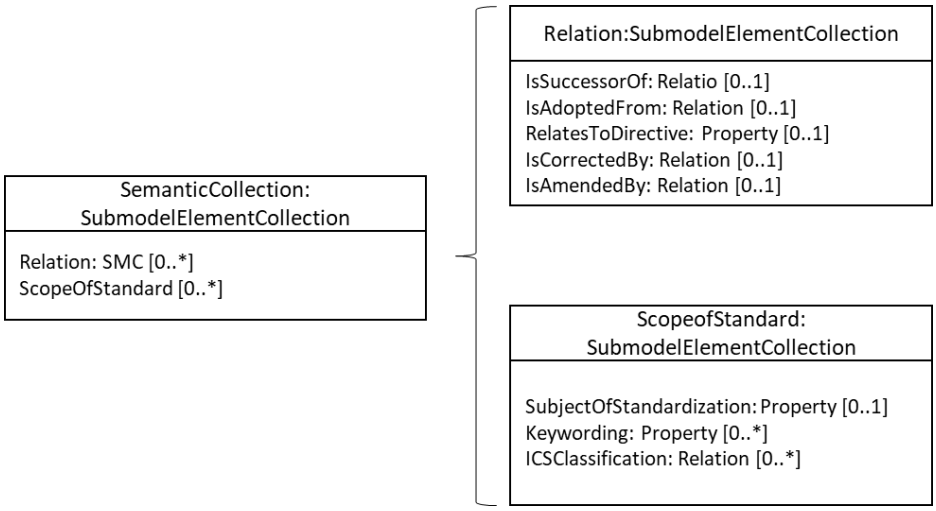

Table 5: Properties of SMC "SemanticCollection"

idShort	SemanticCollection		
Class	Submodell		
semanticId	http://admin-shell.io/DataSpecificationTemplates/DataSpecificationIEC61360/2/0		
Parent	Submodell		
Explanation	Collection of attributes that describes the meaning or the scope (what is the standard about) of the standard or part of it.		
[SME type]	**semanticity = [idType]value**	**[valueType]**	**card.**
idShort	**Description@en**	**example**	
Relation	http://iirds.tekom.de/iirds#iirdsRelationConcept Base class for all relations in iiRDS.	n.A.	0..*
ScopeOfStandard	https://www.dke.de/idis#ScopeOfStandard Describes the scope of the standard	n.A.	0..*

3.5 Properties of the SMC “Lifecycle”

Figure 5: UML-Diagram for SMC “Lifecycle” shows the UML-diagram defining the relevant properties which need to be set. The following table describes the details of the SMC structure combined with examples.

Figure 5: UML-Diagram for SMC “Lifecycle”

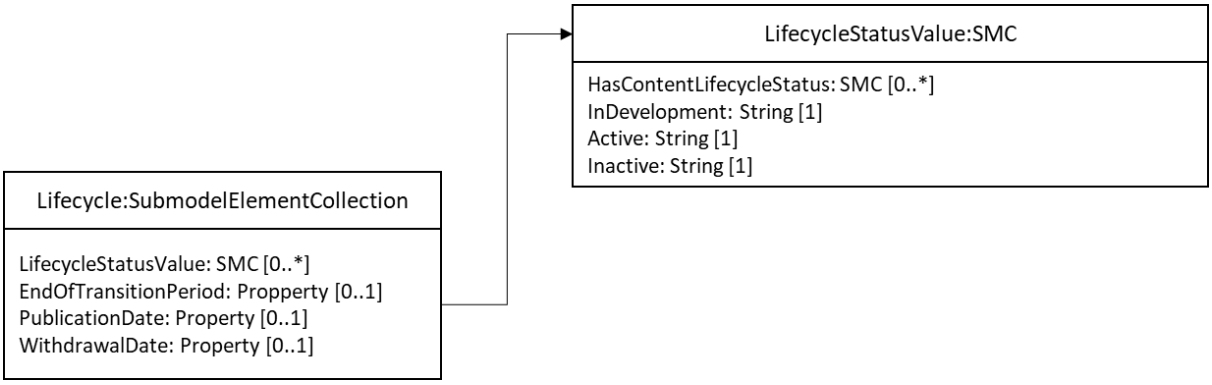

Table 6: Properties of SMC "Lifecycle"

idShort	Lifecycle		
Class	SubmodelElementCollection		
semanticId	http://iirds.tekom.de/iirds#ContentLifeCycleStatus		
Parent	Document		
Explanation	defined period in the evolution of a product from the conceptual idea to its ultimate disposal		
[SME type]	**semanticity = [idType]value**	**[valueType]**	**card.**
idShort	**Description@en**	**example**	
LifeCycleStatusValue	http://iirds.tekom.de/iirds#ContentLifeCycleStatusValue Value of an information unit's lifecycle status. The value is set by involved parties, such as the manufacturer or supplier.	n.A.	0..*
EndOfTransitionPeriod (Property)	https://www.dke.de/idis#EndOfTransitionPeriod If a document that has already been replaced remains valid for a transitional period, this information will be recorded here.	[Date]	0..1
PublicationDate (Property)	https://www.dke.de/idis#dateOfPublication Date of initial publication or date of entry	[Date] 2020-10-26	0..1
WithdrawalDate (Property)	https://www.dke.de/idis#dateOfWithdrawal Date of standard's expiration or withdrawal.	[Date]	0..1

3.6 Properties of the SMC “Rendition”

Figure 6: UML-Diagram for SMC “Rendition” shows the UML-diagram defining the relevant properties which need to be set. The following table describes the details of the SMC structure combined with examples.

Figure 6: UML-Diagram for SMC “Rendition”

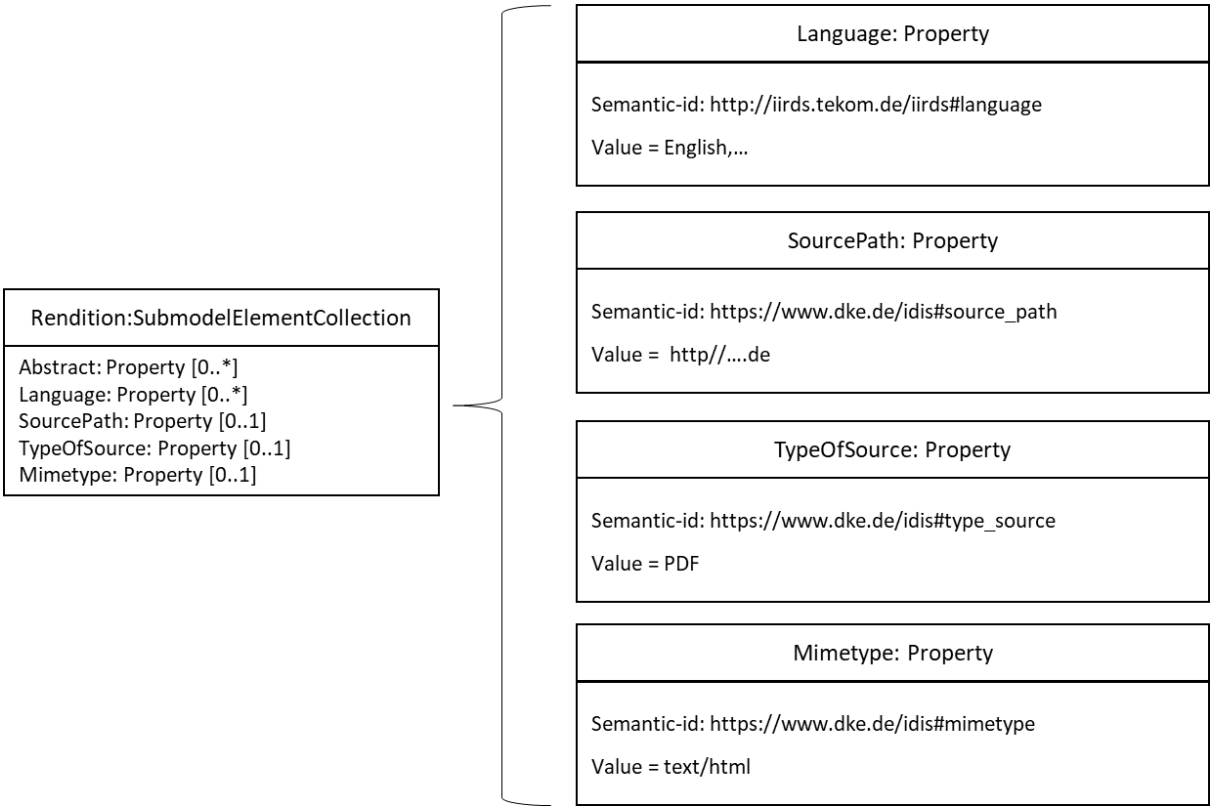

Table 7: Properties of SMC "Rendition"

idShort	Rendition		
Class	SubmodelElementCollection		
semanticId	http://iirds.tekom.de/iirds#Rendition		
Parent	Document		
Explanation	Content of an information unit in a specific format		
[SME type]	**semanticity = [idType]value**	**[valueType]**	**card.**
idShort	**Description@en**	**example**	
Language (Property)	http://iirds.tekom.de/iirds#language Relates to a literal or information unit that provides an abstract/summary for the information unit	[String] English	0..*
SourcePath (Property)	https://www.dke.de/idis#source_path Relates to a literal or information unit that provides an abstract/summary for the information unit	[String] http//.....de	0..1

TypeOfSource (Property)	https://www.dke.de/idis#type_source Relates to a literal or information unit that provides an abstract/summary for the information unit	[String] PDF	0..1
Mimetype (Property)	https://www.dke.de/idis#mimetype Relates to a literal or information unit that provides an abstract/summary for the information unit	[String] text/html	0..1

3.7 Properties of the SMC “Identity”

Figure 7: UML-Diagram for SMC “Identity”shows the UML-diagram defining the relevant properties which need to be set. The following table describes the details of the SMC structure combined with examples.

Figure 7: UML-Diagram for SMC “Identity”

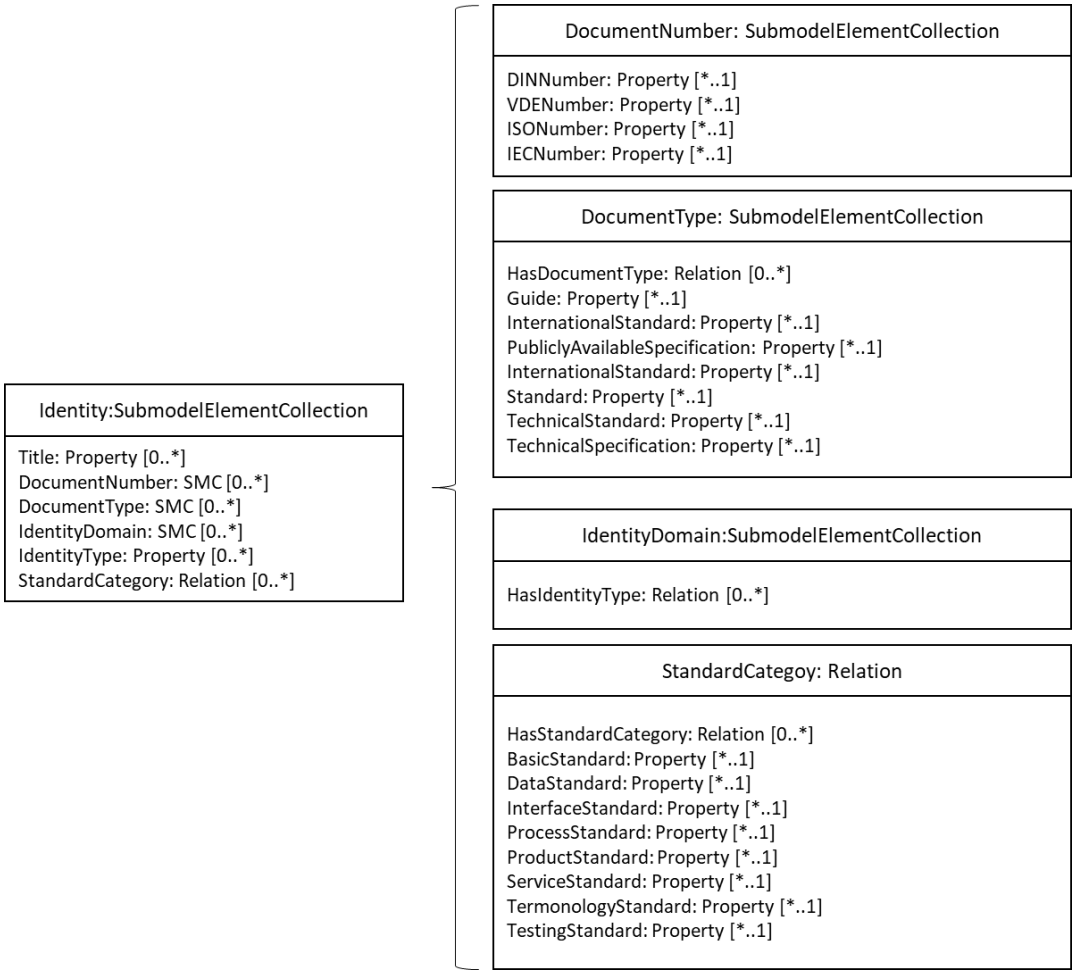

Table 8: Properties of SMC "Identity"

idShort	Identity		
Class	SubmodelElementCollection		
semanticId	http://iirds.tekom.de/iirds#Identity		
Parent	Document		
Explanation	Complex identifiers may be assigned to information objects, information units, product variants, and components. Typically, identities are used to provide IDs from other systems.		
[SME type]	**semanticity = [idType]value**	**[valueType]**	**card.**
idShort	**Description@en**	**example**	
Title (Property)	http://iirds.tekom.de/iirds#title name of the information unit	[String] Electrical equipment for measurement, control and laboratory use – EMC requirements - Part 1: General requirements DIN EN IEC 61326-1 VDE 0843-20-1:2022-11	0..*
DocumentNumber (SMC)	http://iirds.tekom.de/iirds#has-identity-domain References the domain that an identifier is valid for.	n.A.	0..*
DINNumber (Property)	https://www.dke.de/idis#DINNo Number of DIN Document	n.A.	0..1
VDENumber (Property)	https://www.dke.de/idis#VDENo Number of VDE Document	n.A.	0..1
ISONumber (Property)	https://www.dke.de/idis#ISONo Number of ISO Document	n.A.	0..1
IECNumber (Property)	https://www.dke.de/idis#IECNo Number of ISO Document	n.A.	0..1
DocumentType (SMC)	http://iirds.tekom.de/iirds#Document Type type of information arranged in a document defined with respect to its specified purpose, function, and form of presentation	n.A.	0..*
Standard (Property)	https://www.dke.de/idis#Standard Document, established by consensus and approved by a recognized body, that provides, for common and	0 or 1	0..1

	repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context Note 1 to entry: Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits.		
InternationalStandard (Property)	https://www.dke.de/idis#InternationalStandard Standard that is adopted by an international standardizing/standards organization and made available to the public e.g. by ISO / IEC	0 or 1	0..1
PubliclyAvailableSpecification (Property)	https://www.dke.de/idis#PubliclyAvailableSpecification Document published by ISO or IEC to respond to an urgent market need, representing either a) a consensus in an organization external to ISO or IEC, or b) a consensus of the experts within a working group	0 or 1	0..1
TechnicalReport (Property)	https://www.dke.de/idis#TechnicalReport Document published by ISO or IEC containing collected data of a different kind from that normally published as an International Standard or Technical Specification	0 or 1	0..1
TechnicalSpecification (Property)	https://www.dke.de/idis#TechnicalSpecification Document published by ISO or IEC for which there is the future possibility of agreement on an International Standard, but for which at present — the required support for approval as an International Standard cannot be obtained, — there is doubt on whether consensus has been achieved, — the subject matter is still under technical development, or — there is another reason precluding	0 or 1	0..1

	immediate publication as an International Standard		
Guide (Property)	https://www.dke.de/idis#Guide Document published by ISO or IEC giving rules, orientation, advice or recommendations relating to international standardization	0 or 1	0..1
HasDocumentType (Rel)	http://iirds.tekom.de/iirds#has-document-type The type of a document	n.A.	0..*
StandardCategory (Property)	https://www.dke.de/idis#StandardCategory Classification of standard documents, categorized according to the type of primary content of the standard (testing, interface, product, etc.).	n.A.	0..*
BasicStandard (Property)	https://www.dke.de/idis#BasicStandard "Standard that has a wide-ranging coverage or contains general provisions for one particular field	0 or 1	0..1
DataStandard (Property)	https://www.dke.de/idis#DataStandard NOTE A basic standard may function as a standard for direct application or as a basis for other standards."	0 or 1	0..1
InterfaceStandard (Property)	https://www.dke.de/idis#InterfaceStandard standard that specifies requirements concerned with the compatibility of products or systems at their points of interconnection	0 or 1	0..1
ProcessStandard (Propoerty)	https://www.dke.de/idis#ProcessStandard NOTE Some standards, typically, provide for data to be stated by suppliers, others by purchasers."	0 or 1	0..1
ProductStandard (Property)	https://www.dke.de/idis#ProductStandard Standard that specifies requirements concerned with the compatibility of products or systems at their points of interconnection	0 or 1	0..1
ServiceStandard (Property)	https://www.dke.de/idis#ServiceStandard	0 or 1	0..1

	Standard that specifies requirements to be fulfilled by a process, to establish its fitness for purpose		
TerminologyStandard (Property)	https://www.dke.de/idis#TermonologyStandard "Standard that specifies requirements to be fulfilled by a product or a group of products, to establish its fitness for purpose	0 or 1	0..1
Testing Standard (Property)	https://www.dke.de/idis#TestStandard Standard that is concerned with test methods, sometimes supplemented with other provisions related to testing, such as sampling, use of statistical methods, sequence of tests	0 or 1	0..1
IdentityDomain (SMC)	http://iirds.tekom.de/iirds#IdentityDomain organizational origin of an identifier that is assigned to an iiRDS identity	n.A.	0..*
HasIdentityType (Rel)	http://iirds.tekom.de/iirds#IdentityType Distinguished set of identifiers that are assigned to an iiRDS identity	n.A.	0..*
IdentityType (Property)	http://iirds.tekom.de/iirds#IdentityType The type of identity contained by the domain.	[String]	0..*
StandardCategory (Rel)	https://www.dke.de/idis#has-standardCategory Classification of standard documents, categorized according to the type of primary content of the standard (testing, interface, product, etc.).	n.A.	0..*

3.8 Properties of the SMC “Party”

Figure 8: UML-Diagram for SMC “Party” shows the UML-diagram defining the relevant properties which need to be set. The following table describes the details of the SMC structure combined with examples.

Figure 8: UML-Diagram for SMC “Party”

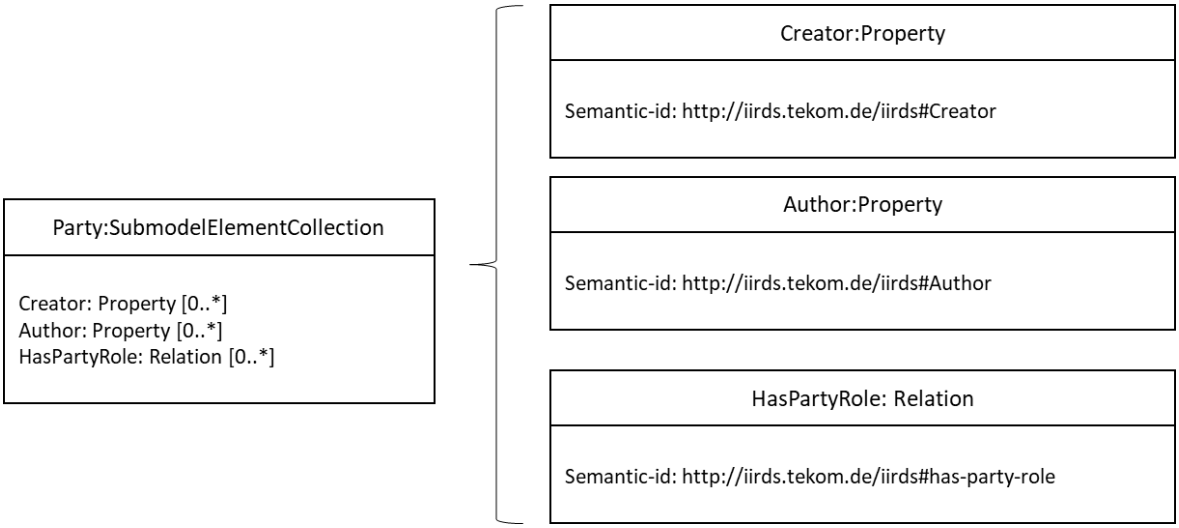

Table 9: Properties of SMC "Party"

idShort	Party		
Class	SubmodelElementCollection		
semanticId	http://iirds.tekom.de/iirds#Party		
Parent	Document		
Explanation	person, organization or system		
[SME type]	**semanticity = [idType]value**	**[valueType]**	**card.**
idShort	**Description@en**	**example**	
Creator (Property)	http://iirds.tekom.de/iirds#Creator Instance of the PartyRole class describing the role of an actor related to an iiRDS domain entity.	[String] Beuth publishing house	0..*
Author (Property)	http://iirds.tekom.de/iirds#Author Instance of the PartyRole class describing the role of an actor related to an iiRDS domain entity.	[String] Standards organizations, e.g. CEN/CENELEC, ISO/IEC, DIN	0..*
HasPartyRole (Relation)	http://iirds.tekom.de/iirds#has-party-role party's property referencing its role	n.A.	0..*

3.9 Properties of the SMC “Relation”

Figure 9: UML-Diagram for SMC “Relation” shows the UML-diagram defining the relevant properties which need to be set. The following table describes the details of the SMC structure combined with examples.

Figure 9: UML-Diagram for SMC “Relation”

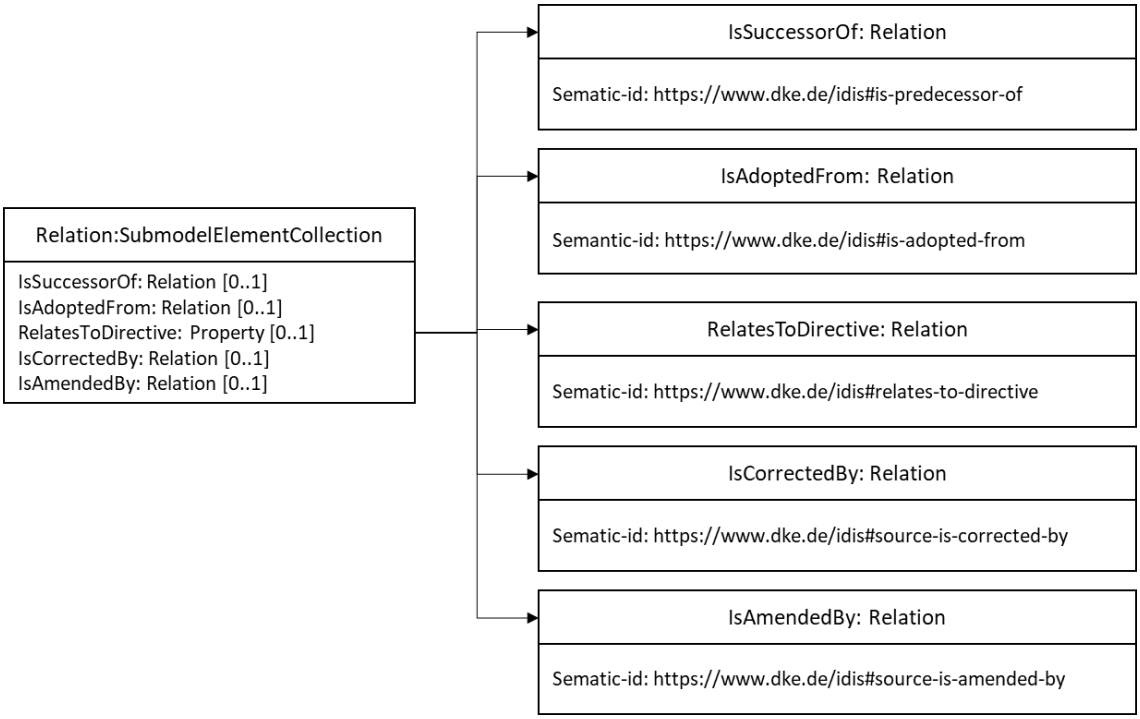

Table 10: Properties of SMC "Relation"

idShort	Relation		
Class	SubmodelElementCollection		
semanticId	http://iirds.tekom.de/iirds#iirdsRelationConcept/		
Parent	Document		
Explanation	Base class for all relations in iiRDS		
[SME type]	**semanticity = [idType]value**	**[valueType]**	**card.**
idShort	**Description@en**	**example**	
IsSuccessorOf (Rel)	https://www.dke.de/idis#is-predecessor-of The documents that have been replaced by this document.	[String]	0..1
IsAdoptedFrom (Rel)	https://www.dke.de/idis#is-adopted-from	[String]	0..1

	Compliance of a standard with corresponding documents from European, international, or other national regulatory bodies.		
RelatesToDirective (Property)	https://www.dke.de/idis#relates-to-directive Legal references of technical rules, such as EU directives for mandated and harmonized standards, as well as the regulatory introduction of technical rules for construction, and legal references related to the national implementation of EU directives.	[String] 2014/30/EUMitt 2016-08 (2016-08-12)<T>	0..1
IsCorrectedBy (Rel)	https://www.dke.de/idis#source-is-corrected-by Reference to corrections made	n.A.	0..1
IsAmendedBy (Rel)	https://www.dke.de/idis#source-is-amended-by Reference to amendments	n.A.	0..1

3.10 Properties of the SMC “ScopeOfStandard”

Figure 10: UML-Diagram for SMC “ScopeOfStandard” shows the UML-diagram defining the relevant properties which need to be set. The following table describes the details of the SMC structure combined with examples.

Figure 10: UML-Diagram for SMC “ScopeOfStandard”

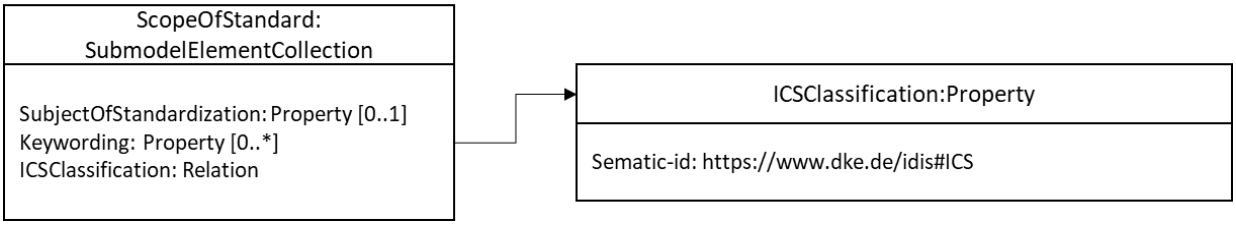

Table 11: Properties of SMC "ScopeofStandard"

idShort	ScopeOfStandard
Class	SubmodelElementCollection
semanticId	http://iirds.tekom.de/iirds#ScopeOfDelivery

Parent	StandardNameplate		
Explanation	Information subject. Specifies the scope of the delivery.		
[SME type]	**semanticity = [idType]value**	**[valueType]**	**card.**
idShort	**Description@en**	**example**	
SubjectOfStandardization (Property)	https://www.dke.de/idis#subject_of_standardization Content/topic of the standard	[String] Electrical safety	0..1
Keywording (Property)	https://www.dke.de/idis#source_keywording Assignment of words to describe the content of the standard	[String] Definition, Emission, Industry	0..*
ICSClassification (Rel)	https://www.dke.de/idis#ICS International classification system that captures economic sectors and activities where technical standards are applied.	n.A.	0..*

Annex A: Explanations on used table formats

General
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.

Tables on Submodels and SubmodelElements
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: SME

SME type Submodel	**Element type**
Property	Property
MLP	MultiLanguageProperty
Range	Range
File	File
Blob	Blob
Ref	ReferenceElement
Rel	RelationshipElement
SMC	SubmodelElementCollection

- 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: [IRI]https://admin-shell.io/vdi/2770/1/0/DocumentId/Id. The attributes "type" and "local" (typically "ConceptDescription" and "(local)" or "GlobalReference" and (no-local)") 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@de.
- The [valueType] is only given for Properties.

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