IDTA 02036-1-0

Product Change Notifications for industrial product types and items in manufacturing

DRAFT - June 2024

SPECIFICATION

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

Submodel Template of the
Asset Administration Shell

IDTA 02036-1-0

Imprint

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> Industrial Digital Twin Association
> Lyoner Strasse 18
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2022-05-10	0.8	Version 0.8 proposed from VDMA working group Fluidtechnik I4.0.
2024-02-10	1.0	Draft proposed by the Submodel working team. Contact: michael.hoffmeister.hka@gmail.com

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Chapter 1. General

1.1. About this document

2. 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], [2], [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] to [7]. Common terms and abbreviations can be found in [8].

3. The target audience of the specification are developers and editors of technical documentation and manufacturer information, which are describing assets in smart manufacturing 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.

1.2. Scope of the Submodel

4. This Submodel template aims at an **interoperable provision of product change notifications** between suppliers and users of industrial product types and **items**, particularly industrial components. These industrial product types and items are typically provided by **manufacturers** and **suppliers**, including dealers, and used by **industrial users**, e.g. original equipment manufacturers (OEMs), system integrators and producing enterprises (industrial end users). The product types are typically used to provide more than one product instance, however special cases such as mass-customization and engineer-to-order are applicable.

5. Product types have individual life cycles with individual **life-cycle steps** and **milestones**, which are important to know for industrial users to safeguard and continue their business. The aim of this Submodel is to digitialize and interoperably convey sets of minimal required information and to ease the handover of these information sets (records), to make it possible to efficiently filter, monitor and store this information in software systems on industrial user’s side.

6. The **intended use-case** is, that a manufacturer of industrial produces types and items makes respective product change notifications digitally available in a way, that these are interoperable and unambiguously understood by the other market participants, such as industrial users, including OEMs, system integrators or operators of industrial equipment.

7. This Submodel template specifies a basic set of SubmodelElements in order to bring about the necessary information according to this use-case.

1.3. Relevant standards for the Submodel template

8. According to [3], interoperable properties might be defined by standards, consortium specifcations or manufacturer specifications. This Submodel template therefore takes up the developments of other standards (see Table 1):

Table 1. Relevant standards for this Submodel template

Standard	Description
IEC 62890:2020-07 — Industrial-process measurement, control and automation - Life-cycle-management for systems and components	Describes basic concepts of product types and instances and the concepts of a life-cycle mode

Standard	Description
VDMA 24903 — Obsolescence management – Exchange of information regarding change and discontinuance of products and items	Describes important event in the life-cycle of a product type and identifies important information elements to be conveyed
IEC 62402:2019 — Obsolescence management	International standard providing the requirements and guidance for obsolescence management. Taking up the developments from VDMA 24903. IEC 62402:2025 will be formed to a standard series with multiple parts; part 3 will take over the models VDMA 24903.

NOTE This document in this version makes many references to the VDMA 24903. Once all relevant models are taken over to IEC 62402:2025, this document at long last will switch these references to the IEC standard.

9. 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

10. In this document, properties are aimed to be described by ECLASS.

1.4. Explanations on used UML diagrams

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

12. The UML diagrams (see Figure 1) feature box-like elements, called "classes". These classes, typically Submodels, SubmodelElementCollections or SubmodelElementLists feature a set of Properties or further SubmodelElements. These elements can have specific cardinalities, e.g. mandatory [1], optionally [0..1], or zero to many [0..*] or one to many [1..*].

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 [11].

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

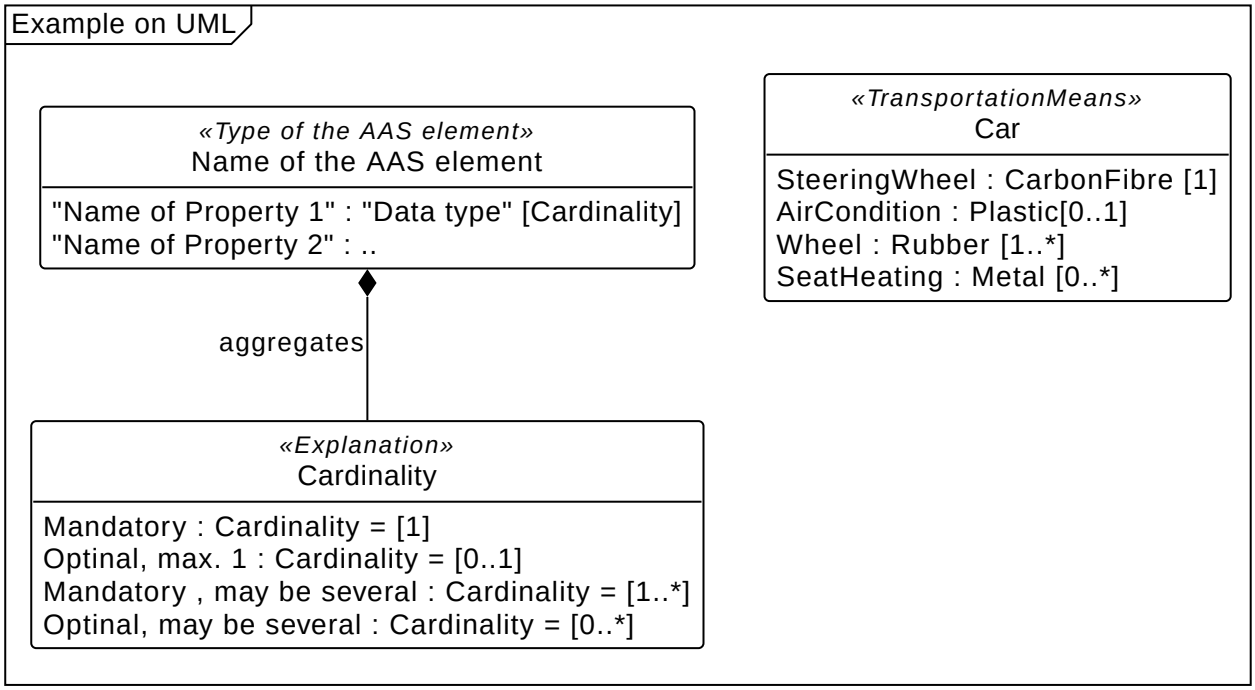

Figure 1. Reading aid and example: UML notation used in this document

Chapter 2. Approaches

2.1. Assets

16. This Submodel concerns about the following assets (see Table 2):

Table 2. Assets concerned by the Submodel

Asset	Description
Product types, such as model series of industrial components, systems	Typical application of this Submodel template. Change notifications from product types to be published.
Product instances, such as sold individual products, industrial components, systems	Viable application of this Submodel template. Changes of a one-of-a-kind component, system or machine to be published.

2.2. Life-cycle models

17. Figure 2 and Figure 3 show the life-cycle models of IEC 62890 and VDMA 24903, which are also compatible with IEC 62890. The life-cycle of a industrial product type or item is basically framed by **SOP** (start of production) and **EOSR** (End Of Service and Repair). Depending on the individual use-case, different time-intervals and life-cycle events are found to be relevant.

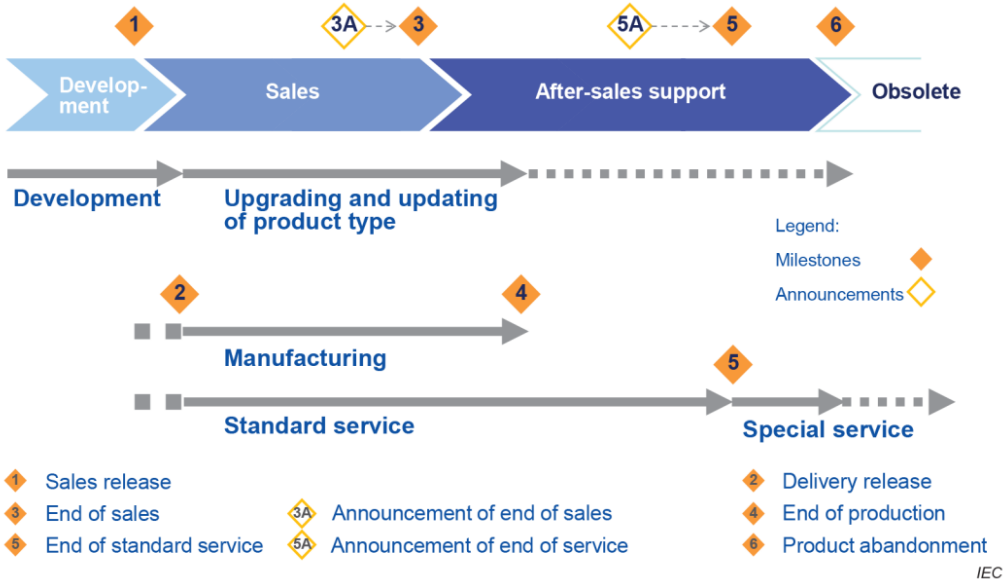

Figure 2. Generic life-cycle model of a product type according IEC 62890

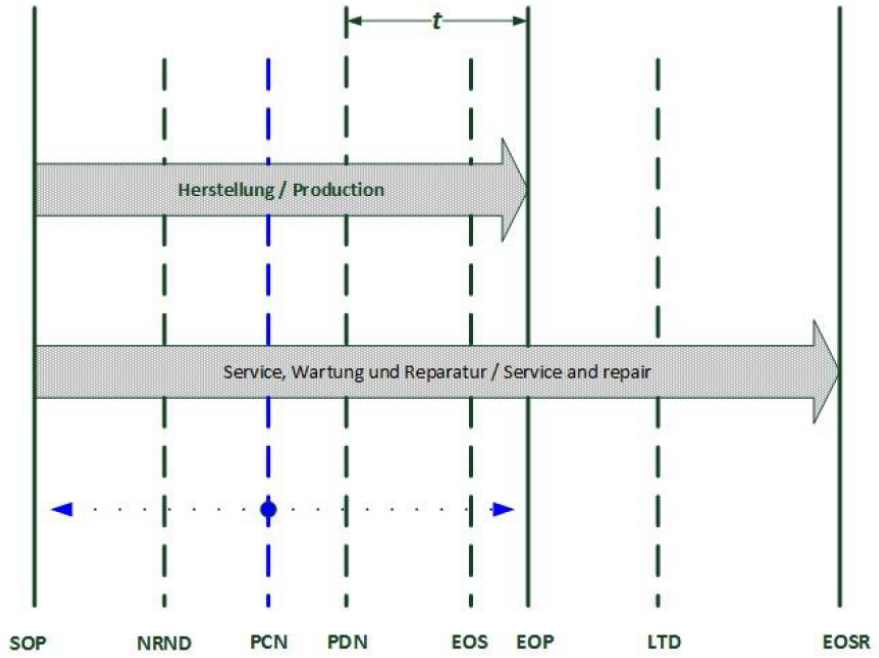

Figure 3. Life-cylce model used by VDMA 24903

18. Relevant milestones for this Submodel template are found to be (see [Table_manual_milestones]):

Table 3. Relevant milestones for this Submodel template

Milestone	Description (EN)	Description (DE)	0173-10029#09-AAN976#001
SOP	Start Of Production	Beginn der Herstellung	0173-10029#07-ABO117#001
NRND	Not Recommended for New Design	Nicht empfohlen für Neukonstruktionen	0173-10029#07-ABO118#001
PCN	Product Change Notice	Produktänderungsmitteilung	0173-10029#07-ABO119#001
PDN	Product Discontinuance Notice for this document: special case of PCN	Produktabkündigungsmitteilung	0173-10029#07-ABO120#001
EOS	End Of Sale	Einstellung des Vertriebs	0173-10029#07-ABO121#001
EOP	End Of Production	Einstellung der Herstellung	0173-10029#07-ABO122#001
LTD	Last Time Delivery	Letztmalige Lieferung	0173-10029#07-ABO123#001
EOSR	End Of Service and Repair	Einstellung von Service, Wartung und Reparatur	0173-10029#07-ABO124#001

NOTE For some of these milestones, typical deadlines for communication from supplier to users are applicable in specific industrial sectors and markets. These deadlines might be described in a later version of this Submodel template.

The term "product change notification" refers to all of the above milestones, especially also the product discontinuance notice.

2.3. Relevant information

20. Various information is expressed in typical product change notification from companies. This includes:

- records of product change notification itself
- details of the change (when, what, why, ..)
- master data of the item provided by the supplier (name, purpose, classification, ..)
- identification of the item, which is subject of the change notification (incl. identification properties, technical properties, logistic information, technical data elements)
- possible subsets of item batches, e.g. range of serial numbers
- identification of item(s), which might be proposed as substitute (incl. identification properties, technical properties, logistic information, technical data elements describing operating ranges)

2.4. Semantic changes of technical data elements

21. The `reason` and `item` identification of VDMA 24903 (see section 4.1, 4.2) provide a rather coarse information, that *something* has changed with respect to these reasons and items.

22. To cope with with, the standard and this Submodel template optionally provide files and documents (`«SML» AdditionalInformation`) that give some human-readable information, *what* has been changed. However, no machine-readable information is given, *what specifically* has been changed with respect to the item.

23. This is where the **technical data changes** of this Submodel template add additional machine-readable information: For each `«SMC» Record` and its `«SMC» ItemOfChange`, a list of `«SMC» TechnicalData_Changes` might be added (see Figure 4). These structures identify the technical data element by its `semanticId` and contain new `value` information. Additionally, a **back-reference** to the particular information in the Submodel for technical data can be given, in cases, where the `semanticId` solely is not specific enough.

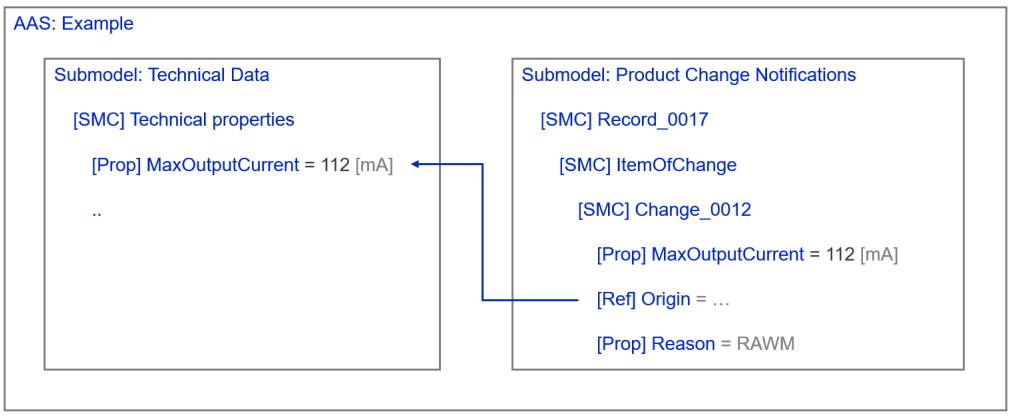

Figure 4. Example scenario of a change record 0017 with changed technical data element MaxOutputCurrent, referring back to the origin with in the Submodel for Technical data

2.5. Substitutions and compatibility towards fit, form, function

24. If the availability of the item of change is going to be limited in the near future, alternative items might be sourced for **product substitution**. In order to pursue this process, the Submodel template allows the promotion of such so called **recommended items**. Each recommended item can potentially be used to substitute the item of change, with a varying degree of suitablility.

25. This suitablility can only be assessed by the industrial user of the item, e.g. the machine integrator or operator. Therefore, the supplier is able and encouraged to promote multiple possible descriptions of recommended items and to explain the potential suitability by the use of technical data up to a level of sufficient information. The industrial user however is in the position to choose such or another item as substitution.

26. The benefit for the supplier is to use this channel to promote the optimal range of products to the industrial users. This allows e.g. the promotion of new products with better production costs, a fine-grained portfolio management or to leverage scale effects. Also, the range of preferred series (a.k.a. customer catalogues) can play an important role.

27. Comparison should follow the well established categories of fit, form, function (see below). The Submodel template allows to provide values for technical data elements (e.g. Properties or Ranges), both for the actually used item of change (`«SMC» TechnicalData_CurrentState`) and for the recommended items (`«SMC» TechnicalData_(Fit|Form|Function|Other)`). That is, for recommended items, the supplier assigns technical data elements to these 3 categories or other.

28. Additionally, an overall percentage (`«Prop» target estimate`) gives a rough indication (see Figure 5). The heuristics for the distinction into fit, form, function and the target estimate lies solely by the supplier of information and is no subject of publication or standardization.

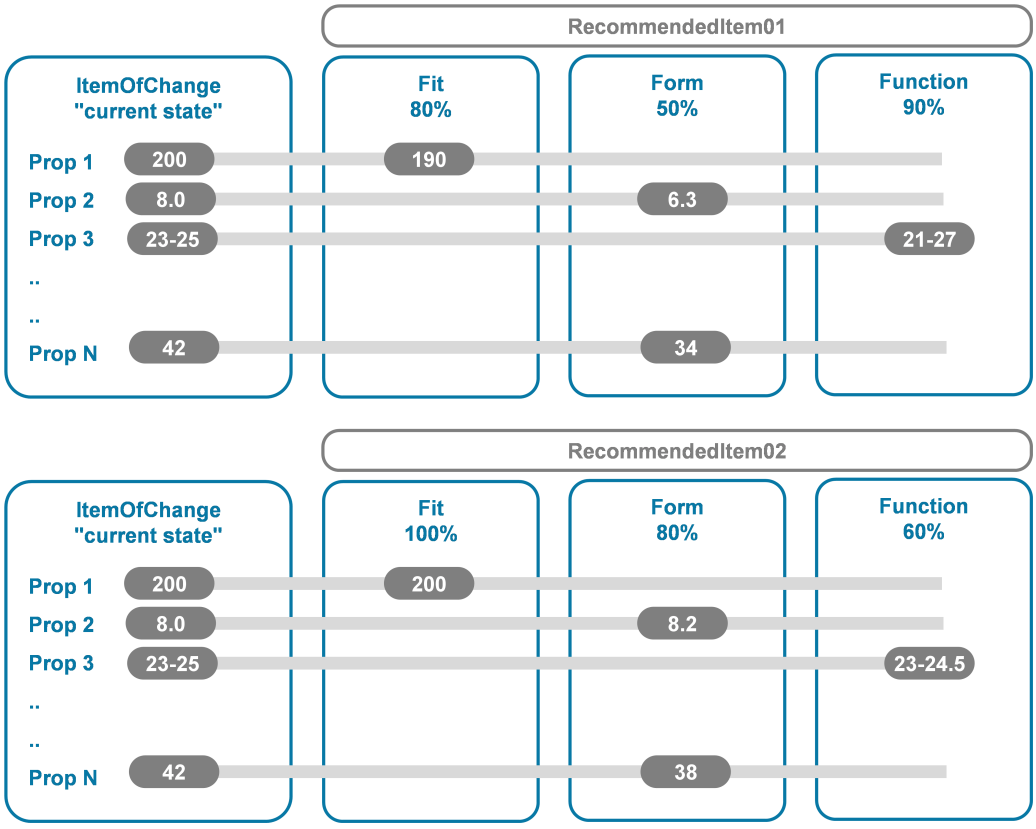

Figure 5. Example of comparability towards fit, form, function for two recommended sustitutions of a product

29. For the distinction of fit, form, function the following statements are given by [9] (see Table 4):

Table 4. Distinction of fit, form, function [9]

Category	Description
Form	The form of a commodity is defined by its configuration (including the geometrically measured configuration), material, and material properties that uniquely characterize it. For software, the form means the design, logic flow, and algorithms.
Fit	The fit of a commodity is defined by its ability to physically interface or connect with or become an integral part of another commodity. For software, the fit is defined by its ability to interface or connect with a defense article.
Function	The function of a commodity is the action or actions it is designed to perform. For software, the function means the action or actions the software performs directly related to a defense article or as a standalone application.

2.6. Overview UML model

30. The SubmodelElements described in section 3 are structured in the following way (see Figure 6):

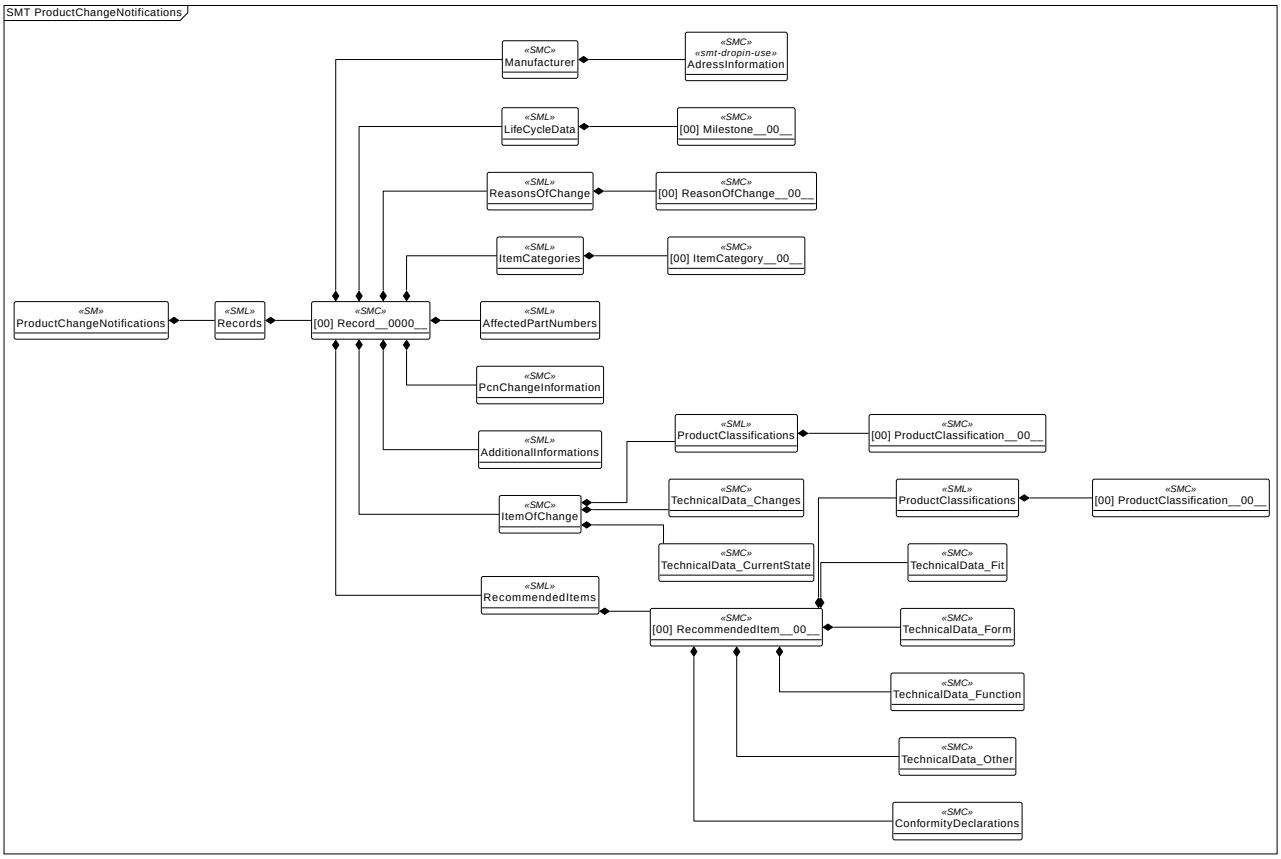

Figure 6. UML overview

31. For the overall Submodel template and its instances, some notes can be given:

- Such Submodel instance consists of multiple records, each of these describing an product change notification (PCN).
- If new notifications occur, records are added to the already existing list `«SML» Records`, typically by adding records with higher numerical index to the list.
- An AAS event element (`«Event» PcnEventsOutgoing`, not shown in overview) serves for emitting AAS events on new PCN records to subscribers.

- Each «SMC» Record might feature multiple reasons, why that change notifications occurs, e.g. change of raw materials (RAWM).
- Each «SMC» Record features a «SMC» ItemOfChange, which describes the (industrial) items for which the notifications occurs.
- Such item of change might describe changes in technical data («SMC» TechnicalData_Changes) or might provide technical data for comparison with the recommended items («SMC» TechnicalData_CurrentState).
- If the supply of the changed items stops and substitutes should be described by the supplier, each «SMC» Record might feature a number of recommendations («SML» RecommendedItems).
- Such «SMC» RecommendedItem__00__ might have another product classification and might describe technical data elements, which differ from the current state of technical data of the item of change. These technical data elements are grouped by fit, form, function or other (not applicable). An example for such group is «SMC» TechnicalData_Fit, holding multiple DataElements (not shown).

Chapter 3. Information structures and attributes

3.1. Submodel template for PCN

32. For the Submodel instance, the SubmodelElements are described as follows. The table convention is explained in Annex A.2.

Table 5. Table for elements of Submodel itself

idShort:	**ProductChangeNotifications**		
Class:	Submodel		
semanticId:	0173-10029#01-XFB001#001		
Parent:	ProductChangeNotifications		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[Evt] PcnEventsOutgoing	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/EventsOutgoing/1/0 Declaration of an AAS event, which is able to publish the extending of this Submodel by incementally adding product change notifications. Note: Industrial users will subscribe to this event by different implementation technologies.	[]	0..1
[SML] Records	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/Record/List/1/0 List of records of single product change informations Note: Newer records shall be added by adding a new highest index to the list.	[] 1 elements	0..1

33. The records in the Submodel template are complex structures (`«SMC» Record__0000__`) which are contained in a SubmodelElementList. This makes fast access by the AAS interfaces possible.

34. The list of records is described as follows. The table convention is explained in Annex A.2.

Table 6. Table for the list of records

idShort:	**Records**
Class:	SubmodelElementList
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/Record/List/1/0

Parent:	Records		
Explanation:	Note: Newer records shall be added by adding a new highest index to the list.		
Element details:	orderRelevant=Yes, semanticIdListElement=[GlobalReference, 0173-10029#01-XFB002#001], typeValueListElement=SubmodelElementCollection		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[SMC] Record*0000*	0173-10029#01-XFB002#001 Individual records of product change notification; provided by the manufacturer; extended over life-time.	[] 12 elements	0..*

3.2. Single PCN record

35. The following UML model shows the structure and attributes of a single PCN record (see Figure 6).

- By «SMC» Manufacturer, the manufacturers legal name and address is given. For the latter, a **SMT dropin** for contact information is used.
- By «SMC» LifeCycleData, an update of one or multiple milestone-specific dates of validity might be communicated, e.g. for EOS = end of sales.
- By «SMC» ReasonOfChange, one or multiple reason of changes for this single records can be set. That is e.g., the record might communicate, that LABEL and SOFTWARE led to this PCN.
- By «SMC» PcnChangeInformation, human readable text information (e.g. title and text body) extends the understanding of the PCN record.
- Optionally, human readable file content can be given by a set of files in «SML» AdditionalInformations.
- Item specific information is described by «SMC» ItemOfChange and by possible «SMC» RecommendedItem__00__.

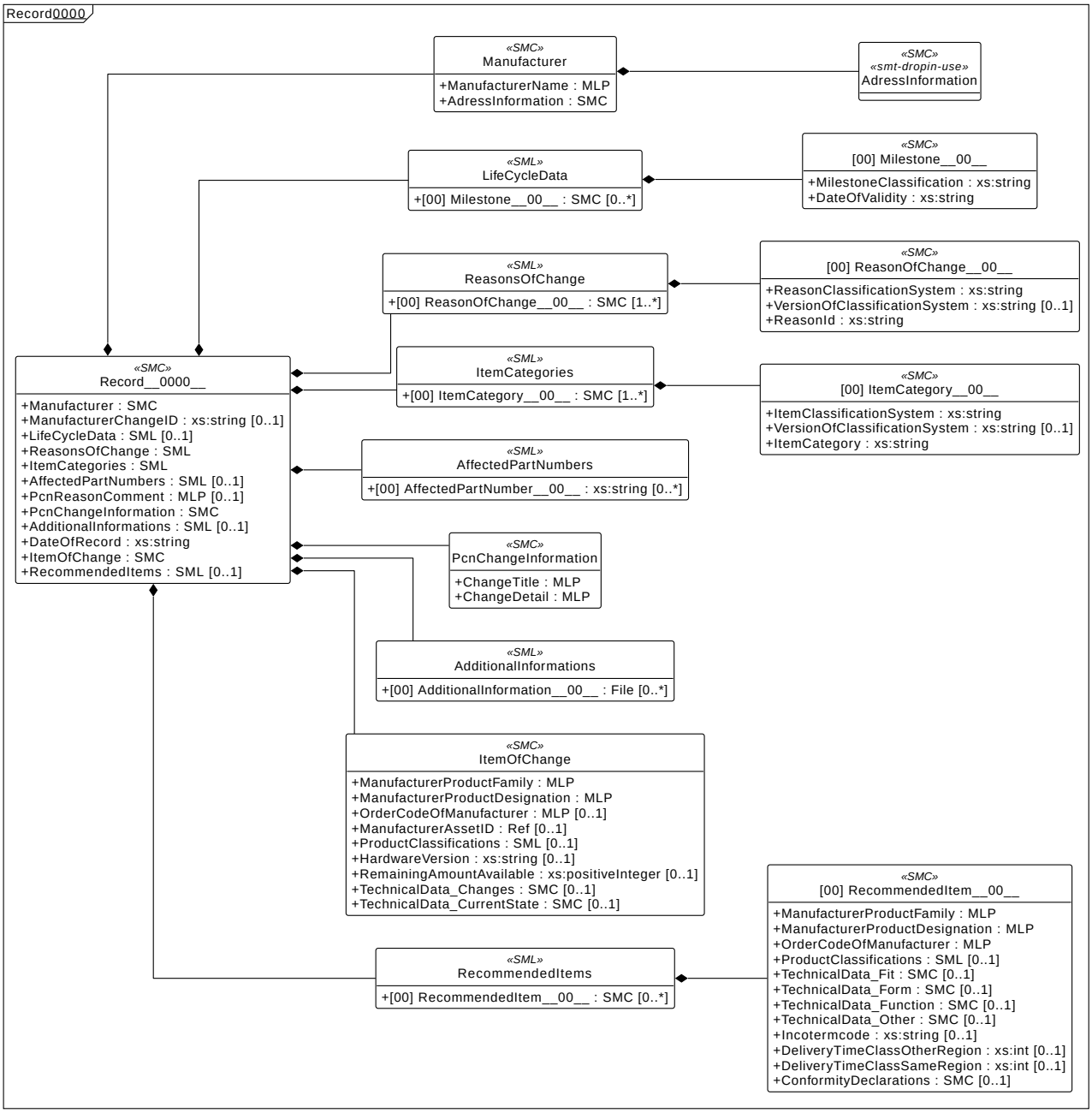

Figure 7. UML for single PCN record (selected classes)

36. For the record itself, the SubmodelElements are described as follows. The table convention is explained in Annex A.2.

Table 7. Table for single PCN record

idShort:	**Record***0000*
Class:	SubmodelElementCollection
semanticId:	0173-10029#01-XFB002#001
Parent:	Record*0000*
Explanation:	
Element details:	-

[SME type] idShort	semanticId Description@en	[valueType] example	card.
[SMC] Manufacturer	0173-10029#01-XFB003#001 Set of information identifying the manufacturer or supplier, which puts the described items on the market.	[] 2 elements	
[Prop] ManufacturerChangeID	0173-10029#02-ABC507#001 Id of change given by and specific to individual namespace of the manufacturer.	[String] CN123456	0..1
[SML] LifeCycleData	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/LifeCycleData/List/1/0 Set of life cycle milestones, which are set with a new validity date	[] 1 elements	0..1
[SML] ReasonsOfChange	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ReasonOfChange/List/1/0 One or more classifications of reason of change. Note: Multiple classification systems might be used. Constraint: At least one reason according VDM24903 shall be given.	[] 1 elements	1
[SML] ItemCategories	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ItemCategory/List/1/0 Categorizations of the item of change either as a whole or affect sub-item according VDMA 24903 and further norms Note: Multiple classification systems might be used. Constraint: At least one item category according VDM24903 shall be given.	[] 1 elements	1
[SML] AffectedPartNumbers	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/AffectedPartNumber/List/1/0 Set of part numbers affected by the present product change notification, if not the whole set for product family and designation Contraint: Affected part numbers shall only be listed, if not the full range of part numbers produced for this item (product family and designation) is affected. Note: Multiple single part numbers with wildcards or ranges of part numbers are listed.	[] 1 elements	0..1

[MLP] PcnReasonComment	0173-1#02-ABF814#002 Comment explaining the reason of change and further circumstances in natural language. To be substituted by PcnChangeInformation ??	[] End of sales and substitution with superior product with IO Link.@en	0..1
[SMC] PcnChangeInformation	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/PcnChangeInformation/1/0 Set of information detailing on the particular changes of a product change notification	[] 2 elements	
[SML] AdditionalInformations	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/AdditionalInformation/List/1/0 Sets of information to provide human readable content, e.g. conventional PCN document Note: Suppliers are encouraged to add the conventional "product change information" documents and further details, e.g. photo-based or geometric change information to the PCN record.	[] 1 elements	0..1
[Prop] DateOfRecord	0173-1#02-ABF816#002 UTC calendar date when the record of change was initially published by the manufacturer Note: Date is in UTC (coordinated universal time).	[String] 2022-07-26T18:27Z	
[SMC] ItemOfChange	0173-10029#01-XFB006#001 Information set which describes an item of change by the manufacturer	[] 9 elements	
[SML] RecommendedItems	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/RecommendedItem/List/1/0 A number of recommened items, which propose substitution of the item of change, if this becomes unavailable Note: The supplier is encoraged to provide recommended items.	[] 1 elements	0..1

3.3. ItemOfChange

37. The following UML model shows the structure and attributes of the item of change. As sub-structures, product classifications, changes to the technical data by this record and the current state of technical data, compared to the recommended items, are found.

38. Note: ItemOfChange and RecommendedItem__00__ use a similar set of SubmodelElements. For the sake of clarity, these structures are described by distinct ConceptDescriptions with clearly identified possibilities and cardinalities.

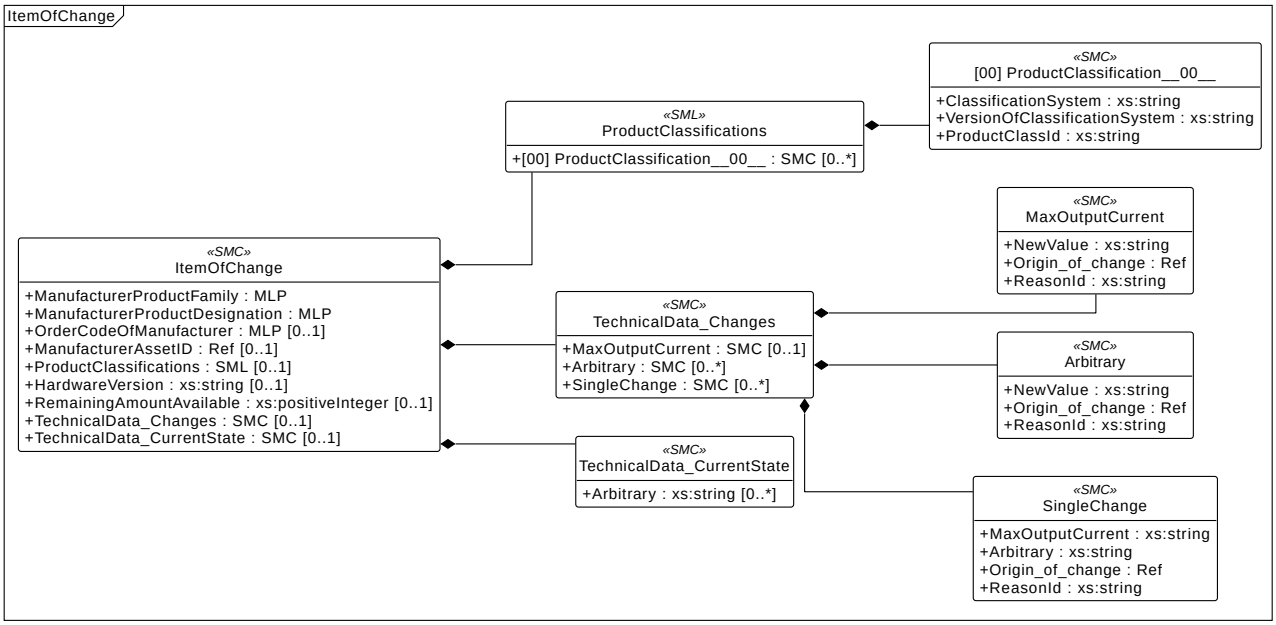

Figure 8. UML for item of change

39. For the item of change, the SubmodelElements are described as follows. The table convention is explained in Annex A.2.

Table 8. Table for item of change

idShort:	**ItemOfChange**		
Class:	SubmodelElementCollection		
semanticId:	0173-10029#01-XFB006#001		
Parent:	ItemOfChange		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[MLP] ManufacturerProductFamily	0173-1#02-AAU731#001 2nd level of a 3 level manufacturer specific product hierarchy Note: mandatory property according to EU Machine Directive 2006/42/EC.	[] Pressure sensor@en	
[MLP] ManufacturerProductDesignation	0173-1#02-AAW338#001 Short description of the product (short text) Note: mandatory property according to EU Machine Directive 2006/42/EC.	[] SDE3-D10Z-B-HQ4-2N-M8@en	
[MLP] OrderCodeOfManufacturer	0173-1#02-AAO227#002 Note: Optional, as it might not exist for long term used items.	[] FMABC1234@en	0..1

[Ref] ManufacturerAssetID	0173-10029#02-ABF978#001 Reference to asset identification of the item in the domain of the manufacturer. Note: This can be used to easily retrieve further information on the described item, such as full technical data, documentation, MCAD or ECAD models and more..	[] 	0..1
[SML] ProductClassifications	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ProductClassification/List/1/0 Set of product classifications Note: It is encouraged to provide the actual product classficiation, e.g. by ECLASS, in order to ease the identification of relevant items by the industrial user.	[] 1 elements	0..1
[Prop] HardwareVersion	0173-1#02-AAN270#002 version of the hardware supplied with the device	[String] 1.1	0..1
[Prop] RemainingAmountAvailable	0173-1#02-BAF551#003 Quantitative statement about the set of products in warehouse / storage Note: This is an indicative figure; the manufacturer/ supplier may use a heuristical model to distribute available stock to a forecasted number of industrial users. Useful for industrial users to assess individual need of products against assumed availability.	[PositiveInteger] 4500	0..1
[SMC] TechnicalData_Changes	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/List/1/0 Information elements provided to describe changes in (existing) technical data of the item in a semantically enabled way	[] 3 elements	0..1
[SMC] TechnicalData_CurrentState	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_CurrentState/List/1/0 Set of technical data elements describing the current state of the item of change compared with other recommended items Note: For the recommended items, the technical data elements are individually grouped in fit, form, function, other. As different alternatives might engange different groupings, the respective technical data elements of the item of change are not grouped, at all. Note: If possible, technical data elements in the recommended items should find its counterparts here (that is: DataElement with identical semanticId).	[] 1 elements	0..1

3.4. RecommendedItem

40. If the availability of the item of change is going to be limited in the near future, an alternative item might be sourced. Recommendations from suppliers side are described by such recommended items. The following UML model shows the structure and attributes of such recommended item. As the structure is complex, multiple sub-classes are shown in the UML model. These sub-classes will be described in later sections.

41. Note: ItemOfChange and RecommendedItem__00__ use a similar set of SubmodelElements. For the sake of clarity, these structures are described by distinct ConceptDescriptions with clearly identified possibilities and cardinalities.

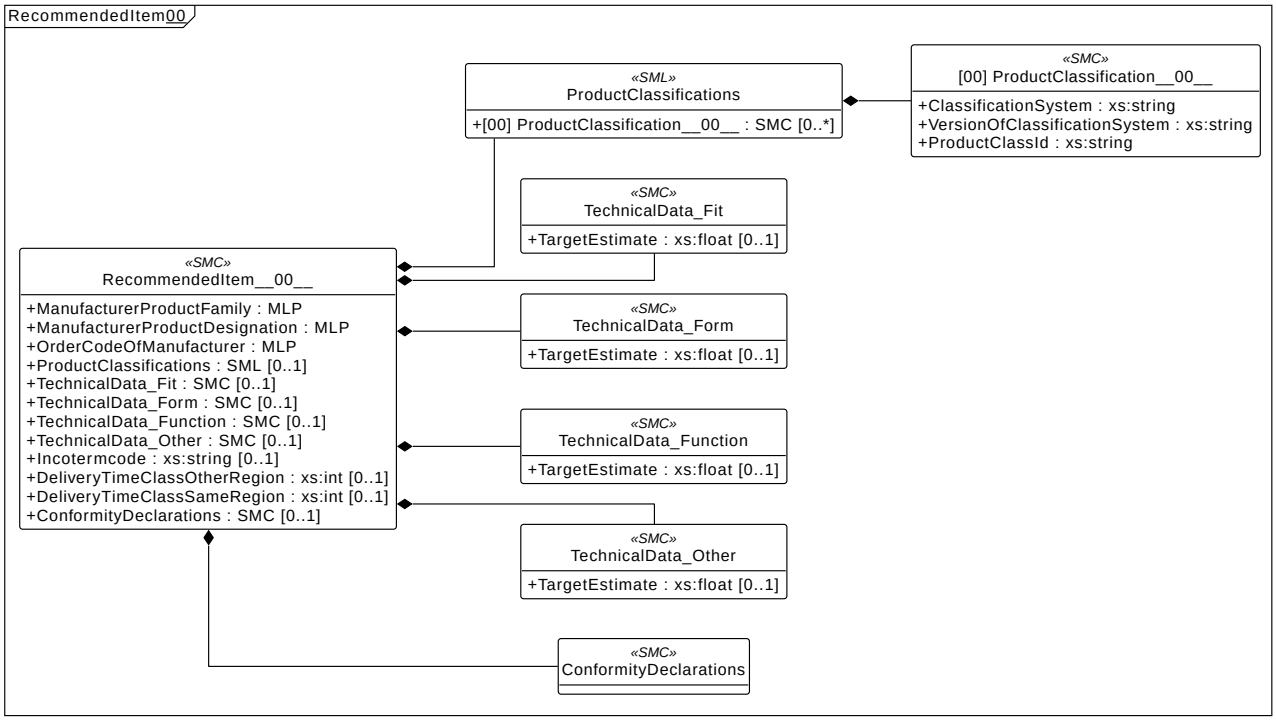

Figure 9. UML for recommended item

42. For the recommended items, the SubmodelElements are described as follows. The table convention is explained in Annex A.2.

Table 9. Table for recommended item

idShort:	**RecommendedItem__00__**		
Class:	SubmodelElementCollection		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/RecommendedItem/1/0		
Parent:	RecommendedItem__00__		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.

[MLP] ManufacturerProductFamily	0173-1#02-AAU731#001 2nd level of a 3 level manufacturer specific product hierarchy Note: mandatory property according to EU Machine Directive 2006/42/EC.	[] Pressure sensor@en	
[MLP] ManufacturerProductDesignation	0173-1#02-AAW338#001 Short description of the product (short text) Note: mandatory property according to EU Machine Directive 2006/42/EC.	[] SDE3-D10Z-B-HQ4-2N-M8@en	
[MLP] OrderCodeOfManufacturer	0173-1#02-AAO227#002 Note: Mandatory, as required to order.	[] FMABC1234@en	
[SML] ProductClassifications	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ProductClassification/List/1/0 Set of product classifications	[] 1 elements	0..1
[SMC] TechnicalData_Fit	0173-10029#01-XFB008#001 Set of SubmodelElements describing technical properties of the item, in particular regarding the fit, form or function of the product. Note: it is recommended that the selected property types for the recommended items are matching to the provided properties if the item of change to allow a one-by-one comparison of items. Note: the manufacturers are recommended to select only those property types, which support a meaningful comparison of the recommendation with the item of change. To many property types are considered to increase the signal/ noise ratio of information.	[] 1 elements	0..1
[SMC] TechnicalData_Form	0173-10029#01-XFB009#001 Set of SubmodelElements describing technical properties of the item, in particular regarding the fit, form or function of the product. Note: it is recommended that the selected property types for the recommended items are matching to the provided properties if the item of change to allow a one-by-one comparison of items. Note: the manufacturers are recommended to select only those property types, which support a meaningful comparison of the recommendation with the item of change. To many property types are considered to increase the signal/ noise ratio of information.	[] 1 elements	0..1

[SMC] TechnicalData_Function	0173-10029#01-XFB010#001 Set of SubmodelElements describing technical properties of the item, in particular regarding the fit, form or function of the product. Note: it is recommended that the selected property types for the recommended items are matching to the provided properties if the item of change to allow a one-by-one comparison of items. Note: the manufacturers are recommended to select only those property types, which support a meaningful comparison of the recommendation with the item of change. To many property types are considered to increase the signal/ noise ratio of information.	[] 1 elements	0..1
[SMC] TechnicalData_Other	0173-10029#01-XFB011#001 Set of SubmodelElements describing technical properties of the item, in particular regarding the fit, form or function of the product. Note: the manufacturers are recommended to select only those property types, which support a meaningful comparison of the recommendation with the item of change. To many property types are considered to increase the signal/ noise ratio of information. Note: the SMC TechnicalData_Other is supposed to comprise meaningful property instances, which do not fit into the categorries fit, form, function.	[] 1 elements	0..1
[Prop] Incotermcode	0173-1#02-AAO280#003 international coding of transport, costs and insurance according to INCOTERMS 2000, UN/ECE, Recommendation No. 5 (ECE/TRADE/259) Note: see https://en.wikipedia.org/wiki/Incoterms	[String] DAT	0..1
[Prop] DeliveryTimeClassOtherRegion	0173-10029#02-ABF982#001 Describes the expected duration in working days of delivery towards representative customers in other regions	[Int] 5	0..1
[Prop] DeliveryTimeClassSameRegion	0173-10029#02-ABF981#001 Describes the expected duration in working days of delivery towards representative customers in the same region	[Int] 2	0..1
[SMC] ConformityDeclarations	0173-10029#01-XFB012#001 Set of information describing conformity declaration, certificate and suitability for different industrial sectors (branches).	[] 0 elements	0..1

3.5. Manufacturer information

43. For the manufacturer information, the legally valid designation of natural or judicial person which is directly responsible for bringing the item to the market shall be given. Also required is an address information. For

this information, a SMT dropin "ContactInformation" from the SMT "Contact Information (IDTA 02002-1-0)" is used.

44. For the SubmodelElementCollection, the SubmodelElements are described as follows. The table convention is explained in Annex A.2.

Table 10. Table for manufacturer information

idShort:	**Manufacturer**		
Class:	SubmodelElementCollection		
semanticId:	0173-10029#01-XFB003#001		
Parent:	Manufacturer		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[MLP] ManufacturerName	0173-1#02-AAO677#003 legally valid designation of the natural or judicial person which is directly responsible for the design, production, packaging and labeling of a product in respect to its being brought into circulation	[] Example company and sons@en	
[SMC] AdressInformation	0173-1#02-AAQ832#005 supplementalSemanticId: https://admin-shell.io/smt-dropin/smt-dropin-use/1/0 Address information of a business partner supplementalSemanticId: https://admin-shell.io/smt-dropin/smt-dropin-use/1/0 Note: this set of information is defined by SMT dropin "Contact Information"	[] 0 elements	

3.6. Life cycle data and milestones

45. When a product change notification record is issued, multiple important milestone dates according section 2.2 might by altered by the supplier. In order to bring about the update of these dates, «SML» `LifeCycleData` can be populated by multiple «SMC» `Milestone` structures. For each of these structures, a milestone classification (see Table 2) and a new date of validity is provided.

46. The date of validity specifies, when the item enters a new life-cycle phase. The record's «Prop» `DateOfRecord` documents, when the change was available for public access.

47. For this information structure, two tables are given. The first describes the list of milestones (life cycle data), the second describes the individual milestone. The table convention is explained in Annex A.2.

Table 11. Table for list of milestones

idShort:	**LifeCycleData**

Class:	SubmodelElementList		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/LifeCycleData/List/1/0		
Parent:	LifeCycleData		
Explanation:			
Element details:	orderRelevant=No, semanticIdListElement=[GlobalReference, http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/LifeCycleData/Milestone/1/0], typeValueListElement=SubmodelElementCollection		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[SMC] Milestone__00__	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/LifeCycleData/Milestone/1/0 Definition of one milestone in the life cycle of a industrial item or product	[] 2 elements	0..*

48. Now the elements of the single entity. The table convention is explained in Annex A.2.

Table 12. Table for single milestone

idShort:	**Milestone__00__**		
Class:	SubmodelElementCollection		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/LifeCycleData/Milestone/1/0		
Parent:	Milestone__00__		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[Prop] MilestoneClassification	0173-10029#02-ABC548#001 Classification of milestone according to VDMA24903 Note: defined point in time with a specific meaning for life-cycle management (IEC 62890:2020). Note: Set valueId with one of these: SOP (0173-10029#07-ABO117#001), NRND (0173-10029#07-ABO118#001), PCN (0173-10029#07-ABO119#001), PDN (0173-10029#07-ABO120#001), EOS (0173-10029#07-ABO121#001), EOP (0173-10029#07-ABO122#001), LTD (0173-10029#07-ABO123#001), EOSR (0173-10029#07-ABO124#001)	[String] EOS	
[Prop] DateOfValidity	0173-1#02-ABF815#002 UTC calendar date when the change will take place Note: Date is in UTC (coordinated universal time).	[String] 2022-08-01T00:00Z	

3.7. Reasons of changes

49. Items might be associated with one or multiple reasons of change, which led to the formulation of a product change notification.

50. For this information structure, two tables are given. The first describes the list of reasons of change, the second describes the attributes of a single reason. The table convention is explained in Annex A.2.

Table 13. Table for list of reasons of change

idShort:	**ReasonsOfChange**		
Class:	SubmodelElementList		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ReasonOfChange/List/1/0		
Parent:	ReasonsOfChange		
Explanation:	Note: Multiple classification systems might be used. Constraint: At least one reason according VDM24903 shall be given.		
Element details:	orderRelevant=No, semanticIdListElement=[GlobalReference, 0173-10029#01-XFB005#001], typeValueListElement=SubmodelElementCollection		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[SMC] ReasonOfChange__00__	0173-10029#01-XFB005#001 Classifications of reason of change.	[] 3 elements	1..*

51. Now the elements of the single entity. The table convention is explained in Annex A.2.

Table 14. Table for single reason of change

idShort:	**ReasonOfChange__00__**		
Class:	SubmodelElementCollection		
semanticId:	0173-10029#01-XFB005#001		
Parent:	ReasonOfChange__00__		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[Prop] ReasonClassificationSystem	0173-1#02-ABF813#002 classification system used for the rough categorization of the reason of change for rule-based processing Note: Examples for common names for classification systems are "VDMA24903" or "ECLASS".	[String] VDMA24903	

[Prop] VersionOfClassificationSystem	0173-1#02-AAR710#002 Referenced state of development of documents and applications Common version identifier of the used classification system, in order to distinguish different version of the property dictionary. Note: Casing is to be ignored. Note: 4 digit year of publication data of classifcation standard can serve as version.	[String] 2017	0..1
[Prop] ReasonId	0173-10029#02-ABC727#001 Class of the reason of a change according VDMA24903 coded as alphanumerical string Note: Ideally, the Property/valueId is used to reference the IRI/ IRDI of the reason id given by ECLASS.	[String] RAWM	

3.8. Item categories

52. Items might be categorized either as a whole or with their affected sub-parts to allow (semi-) automatic assessment of the PCN by the industrial users.

53. Theoretically, multiple classifications of this item categorization can be done. However, at least one categorization according VDMA 24903 shall be given.

54. For this information structure, two tables are given. The first describes the list of item categorizations, the second describes the attributes of a single categorization. The table convention is explained in Annex A.2.

Table 15. Table for list of item categories

idShort:	**ItemCategories**		
Class:	SubmodelElementList		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ItemCategory/List/1/0		
Parent:	ItemCategories		
Explanation:	Note: Multiple classification systems might be used. Constraint: At least one item category according VDM24903 shall be given.		
Element details:	orderRelevant=No, semanticIdListElement=[GlobalReference, http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ItemCategory/1/0], typeValueListElement=SubmodelElementCollection		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[SMC] ItemCategory__00__	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ItemCategory/1/0 Categorization of the item of change either as a whole or affect sub-item according VDMA 24903 and further norms	[] 3 elements	1..*

55. Now the elements of the single categorization. The table convention is explained in Annex A.2.

Table 16. Table for single item category

idShort:	**ItemCategory__00__**		
Class:	SubmodelElementCollection		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ItemCategory/1/0		
Parent:	ItemCategory__00__		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[Prop] ItemClassificationSystem	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ItemCategory/ItemClassificationSystem/1/0 classification system used for the item categorization of the item of change for rule-based processing Note: Examples for common names for classification systems are "VDMA24903".	[String] VDMA24903	
[Prop] VersionOfClassificationSystem	0173-1#02-AAR710#002 Referenced state of development of documents and applications Common version identifier of the used classification system, in order to distinguish different version of the property dictionary. Note: Casing is to be ignored. Note: 4 digit year of publication data of classifcation standard can serve as version.	[String] 2017	0..1
[Prop] ItemCategory	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ItemCategory/ItemCategory/1/0 Class of the item category of a change according VDMA24903 coded as alphanumerical string Note: Ideally, the Property/valueId is used to reference the IRI/ IRDI of the reason id given by ECLASS.	[String] ELME	

3.9. Affected part numbers

56. Even if a specific combination of product family and product designation are given, tens of thousends of manufactured products might be affected by a product change notification. Often, the supplier wants to limit the extent of such PCN further, for example to a certain batch or producing factory.

57. Therefore, the Submodel template allows listing of affected part numbers. This listing is **only required**, if **not all** part numbers specified by product family and product designation are affected.

58. Multiple list elements can be given, each specifying a set of affected part numbers by using wildcard and delimiting characters.

Table 17. Using wildcard and delimiting characters for affected part numbers

List element value	Description (example)
12345	Single 5 digit part number given.
12345;23456;34567	Set of part numbers, coding exactly 3 part numbers, each with 5 digits.
10000-19999	Range of part numbers; all 10000 part number combinations with 5 digits starting with a '1' are affected.
1*8	Asterix wildcard, can be used in single/ set/ range part numbers. Will express all numbers starting with '1' and ending with '8'.
1?3?8	Question mark wildcard, can be used in single/ set/ range part numbers. Will express all numbers all 5 digit numbers starting with '1' and ending with '8' and middle as '3'.

59. For this information structure, the SubmodelElements are described as follows. The table convention is explained in Annex A.2.

Table 18. Table for single entry of affected part number

idShort:	**AffectedPartNumbers**		
Class:	SubmodelElementList		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/AffectedPartNumber/List/1/0		
Parent:	AffectedPartNumbers		
Explanation:	Contraint: Affected part numbers shall only be listed, if not the full range of part numbers produced for this item (product family and designation) is affected. Note: Multiple single part numbers with wildcards or ranges of part numbers are listed.		
Element details:	orderRelevant=No, semanticIdListElement=[GlobalReference, 0173-10029#01-XFB005#001], typeValueListElement=SubmodelElementCollection		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[Prop] AffectedPartNumber__00__	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/AffectedPartNumber/1/0 part numbers affected by the present product change notification Note: This Property codes only part number ("12345"), a set of part numbers ("12345;23456;34567"), a range of part numbers("10000-19999"). For each of these, wildcards like asterix ("1*8", all numbers starting with '1' and ending with '8') or question mark ("1?3?8", all 5 digit numbers starting with '1' and ending with '8' and middle as '5') are allowed.	[String]	0..*

3.10. Text based Change information

60. Human readable text information eases the understanding of the PCN. By this sub-structure, multiple

information elements are organized, which can be used to e.g. display an summary information of PCN.

61. For this information structure, the SubmodelElements are described as follows. The table convention is explained in Annex A.2.

Table 19. Table for text based change information

idShort:	**PcnChangeInformation**		
Class:	SubmodelElementCollection		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/PcnChangeInformation/1/0		
Parent:	PcnChangeInformation		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[MLP] ChangeTitle	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/PcnChangeInformation/ChangeTitle/1/0 Human readable title (summary) of information of particular changes of a product change notification	[] Change of product dimensions because of RoHS@en	
[MLP] ChangeDetail	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/PcnChangeInformation/ChangeDetail/1/0 Human readable body (details) of information of particular changes of a product change notification	[] Because of this and that and that the following features changed: A, B, C..@en	

3.11. Product classifications

62. Items might be associated with one or multiple product classifications of different classification systems, where ECLASS is a prominent example.

63. For this information structure, two tables are given. The first describes the list of product classifications, the second describes the attributes of a single product classification. The table convention is explained in Annex A.2.

Table 20. Table for list of product classifications

idShort:	**ProductClassifications**
Class:	SubmodelElementList
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/ProductClassification/List/1/0
Parent:	ProductClassifications

Explanation:	Note: It is encouraged to provide the actual product classficiation, e.g. by ECLASS, in order to ease the identification of relevant items by the industrial user.		
Element details:	orderRelevant=No, semanticIdListElement=[GlobalReference, 0173-10029#01-XFB007#001], typeValueListElement=SubmodelElementCollection		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[SMC] ProductClassification__00__	0173-10029#01-XFB007#001 Single product classification item by association with product class in a particular classification system or property dictionary.	[] 3 elements	0..*

64. Now the elements of the single entity. The table convention is explained in Annex A.2.

Table 21. Table of a single product classification

idShort:	**ProductClassification__00__**		
Class:	SubmodelElementCollection		
semanticId:	0173-10029#01-XFB007#001		
Parent:	ProductClassification__00__		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[Prop] ClassificationSystem	0173-1#02-AAR709#002 Reference to the scheduled collection of abstract concepts that are used to distinguish and order objects	[String] ECLASS	
[Prop] VersionOfClassificationSystem	0173-1#02-AAR710#002 Referenced state of development of documents and applications Common version identifier of the used classification system, in order to distinguish different version of the property dictionary. Note: Casing is to be ignored. Note: the SMT "Technical Data" refers to this as: [IRI] https://admin-shell.io/ZVEI/TechnicalData/ClassificationSystemVersion/1/1	[String] 14.0 (BASIC)	

[Prop] ProductClassId	0173-10029#02-ABF979#001 Class of the associated product or industrial equipment in the classification system. According to the notation of the system. Note: Ideally, the Property/valueId is used to reference the IRI/ IRDI of the product class. Note: the SMT "Technical Data" refers to this as: [IRI] https://admin-shell.io/ZVEI/TechnicalData/ProductClassId/1/1	[String] 27-27-49-01	

3.12. Changes of technical data (Variant A)

```
The structure of annotating changes of technical data by references is still
discussed.

This is Variant A.
```

65. When a product change notification is given, it might be relevant, which technical data element of the item of change have actually changed and to which reason of change this contributes. This information structure is able to hold this information, including the approach to express the respective semanticId and value of this technical data element. Additionally, an backreference to the respective (updated) element in the Submodel for technical data, where the changes originates, can be provided.

66. For this information structure, two tables are given. The first describes the list of reasons of change, the second describes the attributes of a single reason. The table convention is explained in Annex A.2.

Table 22. Table for list of changes of technical data

idShort:	**TechnicalData_Changes**		
Class:	SubmodelElementCollection		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/List/1/0		
Parent:	TechnicalData_Changes		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[SMC] MaxOutputCurrent	0173-1#02-BAC640#006 Note: Example for discussion. Will be removed later.	[] 3 elements	0..1

[SMC] Arbitrary	https://admin-shell.io/SMT/General/Arbitrary Note: Each SMC represents a change of a technical data element. To bring about the information, both idShort and semanticId can be set to the resepctive {arbitrary} attribute of the corresponding technical data element.	[] 3 elements	0..*
[SMC] SingleChange	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/Change/1/0 Single change element to changes of techncial data containaing semantically enabled information Note: This SMC can be added to annotate changes in DataElements of existing Submodels (e.g. for technical data) and to provide more specific information to reason and items of a VDMA 24903 change.	[] 4 elements	0..*

67. Now the elements of the single entity. The table convention is explained in Annex A.2.

Table 23. Table for single change of technical data

idShort:	**Arbitrary**		
Class:	SubmodelElementCollection		
semanticId:	https://admin-shell.io/SMT/General/Arbitrary		
Parent:	Arbitrary		
Explanation:	Note: Each SMC represents a change of a technical data element. To bring about the information, both idShort and semanticId can be set to the resepctive {arbitrary} attribute of the corresponding technical data element.		
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[Prop] NewValue	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/NewValue/1/0 A value information representing the new value of a technical data element	[String] 112 [mA]	

[Ref] Origin_of_change	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/Origin_of_Change/1/0 back-reference to the respective element in the set of technical data, where the change originates Note: The set of technical data in the definition refers to the Submodel for technical data in the AAS.	[] [Submodel, https://example.com/sm/12345/],[SubmodelElementCollection, TechnicalProperties],[Property, MaxOutputCurrent]	
[Prop] ReasonId	0173-10029#02-ABC727#001 Class of the reason of a change according VDMA24903 coded as alphanumerical string Note: Ideally, the Property/valueId is used to reference the IRI/ IRDI of the reason id given by ECLASS.	[String] RAWM	

3.13. Changes of technical data (Variant B)

```
The structure of annotating changes of technical data by references is still
discussed.

This is Variant B.
```

68. When a product change notification is given, it might be relevant, which technical data element of the item of change have actually changed and to which reason of change this contributes. This information structure is able to hold this information, including the approach to express the respective semanticId and value of this technical data element. Additionally, an backreference to the respective (updated) element in the Submodel for technical data, where the changes originates, can be provided.

69. For this information structure, two tables are given. The first describes the list of reasons of change, the second describes the attributes of a single reason. The table convention is explained in Annex A.2.

Table 24. Table for list of changes of technical data

idShort:	**TechnicalData_Changes**		
Class:	SubmodelElementCollection		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/List/1/0		
Parent:	TechnicalData_Changes		
Explanation:			
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.

[SMC] MaxOutputCurrent	0173-1#02-BAC640#006 Note: Example for discussion. Will be removed later.	[] 3 elements	0..1
[SMC] Arbitrary	https://admin-shell.io/SMT/General/Arbitrary Note: Each SMC represents a change of a technical data element. To bring about the information, both idShort and semanticId can be set to the resepctive {arbitrary} attribute of the corresponding technical data element.	[] 3 elements	0..*
[SMC] SingleChange	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/Change/1/0 Single change element to changes of techncial data containaing semantically enabled information Note: This SMC can be added to annotate changes in DataElements of existing Submodels (e.g. for technical data) and to provide more specific information to reason and items of a VDMA 24903 change.	[] 4 elements	0..*

70. Now the elements of the single entity. The table convention is explained in Annex A.2.

Table 25. Table for single change of technical data

idShort:	**SingleChange**		
Class:	SubmodelElementCollection		
semanticId:	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/Change/1/0		
Parent:	SingleChange		
Explanation:	Note: This SMC can be added to annotate changes in DataElements of existing Submodels (e.g. for technical data) and to provide more specific information to reason and items of a VDMA 24903 change.		
Element details:	-		
[SME type] idShort	semanticId Description@en	[valueType] example	card.
[Prop] MaxOutputCurrent	0173-1#02-BAC640#006 supplementalSemanticId: http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/NewValue/1/0	[String] 100 [mA]	
[Prop] Arbitrary	https://admin-shell.io/SMT/General/Arbitrary supplementalSemanticId: http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/NewValue/1/0	[String] 100 [mA]	

[Ref] Origin_of_change	http://admin-shell.io/VDMA/Fluidics/ProductChangeNotification/TechnicalData_Changes/Origin_of_Change/1/0 back-reference to the respective element in the set of technical data, where the change originates Note: The set of technical data in the definition refers to the Submodel for technical data in the AAS.	[] [Submodel, https://example.com/sm/12345/],[SubmodelElementCollection, TechnicalProperties],[Property, MaxOutputCurrent]	
[Prop] ReasonId	0173-10029#02-ABC727#001 Class of the reason of a change according VDMA24903 coded as alphanumerical string Note: Ideally, the Property/valueId is used to reference the IRI/ IRDI of the reason id given by ECLASS.	[String] RAWM	

Chapter 4. Classifications and Identifiers

4.1. PCN Item according VDMA 24903

71. For the categorization of the unit for rule-based processing of the PCN records, the following items are defined (see Table 26).

72. The occurrence is once per affected unit. The value from the following enumeration is to be used in the corresponding SubmodelElement.

Table 26. Table PCN items according VDMA 24903

Title	Description	Value [String]
Active electronics	Units with active electronics: semiconductors, electronic assemblies	**ACEL**
Data / Certificate	Data media and digital certificates (such as parameter sets, setting values, databases, security certificates, cryptography keys)	**DACE**
Service	Services of all kinds (such as logistics, monitoring, cleaning, maintenance)	**SERV**
Documentation	Documentation (such as data sheets, descriptions, instructions) DOCU	**DOCU**
Electromechanics	Units with electromechanical function (like relays, contactors, switches)	**ELME**
Fluid	Fluids of all kinds (such as oils, fuels, hydraulic oil, gases)	**FLUI**
Auxiliary material	Auxiliary materials of all kinds (such as chemical substances, operating materials, cleaning agents)	**AUXM**
Hydraulics	Units with hydraulic function (such as hoses, pumps, cylinders)	**HYDR**
Mechanics	Units with a purely mechanical function (such as shafts, gears, screws)	**MECH**
Several categories	Not to be assigned to a specific category, affects more than one category, type to be used for the PCN/PDN as a whole when type assignment is specific within the block Item numbers.	**MULT**
Passive electrics / electronics	Units with passive electrics/electronics, assemblies that do not receive active components.	**PAEL**
Pneumatics	Units with pneumatic function (such as hoses, pumps, valves, cylinders)	**PNEU**
Raw material	Raw materials of all types (such as chemical materials, plastic granules, metals, textiles)	**RAWM**
Software / Firmware	Software including firmware	**SWFW**
Other	Other	**OTHR**
Connectors / Cables	Connectors and cables of all kinds, passive connectivity	**CCBL**
Assembly	Assemblies	**ASSY**

4.2. PCN Reason according VDMA 24903

73. For the classification into different categories, which indicate the type of changes as a short form of the changes, the following reasons are defined (see Table 27).

74. Multiple categories may be specified. In addition to the categories listed below, additional categories may also be specified.

Table 27. Table of PCN reasons according VDMA 24903

Definition	Description	Value [String]
Discontinuation	Unit is no longer produced by the original manufacturer according to original specification.	**PDN**
Acquisition	Transfer of a unit, portfolio or production from one production from one manufacturer to another	**MANAQ**
Alarm	The manufacturer warns of changes and restrictions that he has detected in a product. For example, functional limitations on the units themselves, but also descriptions of unexpected behavior under certain conditions and also temporary interruptions in the production of the units.	**ALERT**
Change of the software	Change of the software	**SOFTW**
Labeling	Change the labeling of the unit and or packing	**LABEL**
Characteristics	Characteristics such as attribute values of the unit are omitted, are added or changed. They can be electrical, mechanical, thermal or other characteristics kind	**CHARA**
Documentation	General summary of changes made to the changes made. It does not change characteristics of the units are changed.	**DOCUM**
Restriction of the Recommendation for use	Official recommendation to no longer use the unit for new developments	**NRND**
Fit	Describes a change in the units of fit and fit with respect to other units connected in the units connected in the product.	**FIT**
Shape and Appearance	Describes a change in the outward appearance of the units. This concerns the spatial dimensions and form, but also colors and surface textures.	**FORM**
Function	Changes or effects from operation and performance	**FUNCT**
Insolvency	insolvency of the manufacturer	**INSOL**
Correction	Correction of documentation without change to the unit	**CORR**
Delivery	Change of delivery. e.g. container sizes etc. or delivery routes and times	**SHIP**
Material	Change of the material or substances in the Material declaration	**MATER**
Production start-up	The production of this unit is officially started	**PRODS**
Production process	Production process is changed.	**PPROC**
Production site	The production site is changed.	**PSITE**

Definition	Description	Value [String]
Undo PCN	A certain previous PCN will be undone reversed	**CANCN**
Withdrawal PDN	Production of the unit is resumed. PDN loses validity.	**CANDN**
Recall	The manufacturer recalls the units from the market and explains the reasons and effects on the units themselves. The reasons can be manifold, from technical malfunctions to patent infringements	**RECA**
Test process	Modification of test processes before, during and after production, before delivery	**TESTP**
Test location	Change of the location where the tests are performed are performed	**TESTS**
Type codes	Accompanying numbers next to the identifying number of the unit are changed - not the identifying number itself.	**ORCOD**

4.3. Incoterm classes

75. For an explanation of the Incoterm classes, see: https://en.wikipedia.org/wiki/Incoterms. The following figure gives an overview (see Figure 10).

Code	englisch	Bedeutung	anzugebender Ort
EXW	englisch ***EX** **W**orks*	ab Werk	Standort des Werks oder jeder andere Ort
FCA	englisch ***F**ree **CA**rrier*	frei Frachtführer	Ort des Verkäufers oder Ort des Frachtführers[16]
FAS	englisch ***F**ree **A**longside **S**hip*	frei längsseits Schiff	vereinbarter Verladehafen (ausschließlich zur Schiffsverladung geeignet)
FOB	englisch ***F**ree **O**n **B**oard*	frei an Bord	vereinbarter Verladehafen (ausschließlich zur Schiffsverladung geeignet)
CFR	englisch ***C**ost And **FR**eight*	Kosten und Fracht	vereinbarter Bestimmungshafen (ausschließlich zur Schiffsverladung geeignet)
CIF	englisch ***C**ost **I**nsurance **F**reight*	Kosten, Versicherung und Fracht bis zum Bestimmungshafen	vereinbarter Bestimmungshafen (ausschließlich zur Schiffsverladung geeignet)
DAP	englisch ***D**elivered **A**t **P**lace*	geliefert benannter Ort	vereinbarter Liefer- und Bestimmungsort (meist Bestimmungsterminal oder Ort des Käufers)
DPU	englisch ***D**elivered at **P**lace **U**nloaded*	geliefert benannter Ort entladen	vereinbarter Liefer- und Bestimmungsort (meist Bestimmungsterminal oder Ort des Käufers)
CPT	englisch ***C**arriage **P**aid **T**o*	Fracht bezahlt bis	vereinbarter Bestimmungsort (meist Bestimmungsterminal oder Ort des Käufers)
CIP	englisch ***C**arriage **I**nsurance **P**aid*	Fracht und Versicherung bezahlt	vereinbarter Bestimmungsort (meist Bestimmungsterminal oder Ort des Käufers)
DDP	englisch ***D**elivered **D**uty **P**aid*	geliefert, Zoll & Steuer bezahlt	vereinbarter Liefer- und Bestimmungsort (meist Bestimmungsterminal oder Ort des Käufers)

Figure 10. Example of comparability towards fit, form, function for two recommended sustitutions of a product. Source: Wikipedia

Annex A. Explanations on used table formats

1. General

76. 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

77. 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 type	SubmodelElement 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: 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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