



IDTA 02010-1-0 Service Request Notification

October 2023

SPECIFICATION

Submodel Template of the
Asset Administration Shell



Submodel Template

IDTA approved

- 100% AAS compliant
- Consistent & interoperable
- Released by the AAS experts

Imprint

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1 General

1.1 About this document

This document is a part of a specification series. Each part specifies 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 partly 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 [6].

The target audience of this specification are service manager, software developer and ingenieurs which want to standardize and automate the Service Request Notification process. The core objective is that an asset can request a specific service by himself.

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

This Submodel template aims to standardize the description of a Service Request Notification that can be used to create a Service Request Notification for industrial assets, or the asset creates it via his Asset Administration Shell (AAS). These industrial assets, such as production lines, modules, infrastructure elements, and subsystems, are provided by value chain partners such as suppliers, equipment manufacturers, and system integrators. They are utilized in specific applications by industrial operators and end users.

A Service Request Notification is a request for a service to be performed, such as a maintenance, an inspection, or a return. The notification entry can be made by Asset Administration Shell (AAS), via a service dashboard, service portal or even through the customer service department by phone.

The Service Request Notification can be considered as a "call for help", which, if the business partner responds to it, triggers the further service process.

The objective of the Submodel template is to define and standardize the Service Request Notification, including its content (properties, operations, etc.) and structure. Additionally, service types are defined.

The objective of this Submodel is to enable the interoperable exchange of these notifications between Asset Administration Shells, and the IT systems of various value creation partners.

1.3 Relevant standards for the Submodel template

The list of service types relies on the VDMA Einheitsblatt: DIN 31051: 2003-06, 4.1.3 Inspektion , EN 13306: 2001-08, 7.1 Präventive Instandhaltung

Further Standards were spotted:

- IEC 60300-3-10: "Ed. 2: Dependability management - Part 3-10: Application guide - Maintainability and supportability"
- IEC 60706-2: "Maintainability of equipment - Part 2: Maintainability requirements and studies during the design and development phase"
- IEC 60706-3: "Maintainability of equipment - Part 3: Verification and collection, analysis and presentation of data"
- IEC 60706-5: "Maintainability of equipment - Part 5: Testability and diagnostic testing"

1.4 Use cases, requirements and design decisions

The leading idea of the Submodel “Service Request Notification” is, that a service request contains all relevant information to be able to initiate follow-up processes. This notification can be triggered by a human or any software service. Since the Submodel standardizes the message content, it can be used in a variety of ways and can also be used in complex business relationships between the actors, but also in the service process within a company.

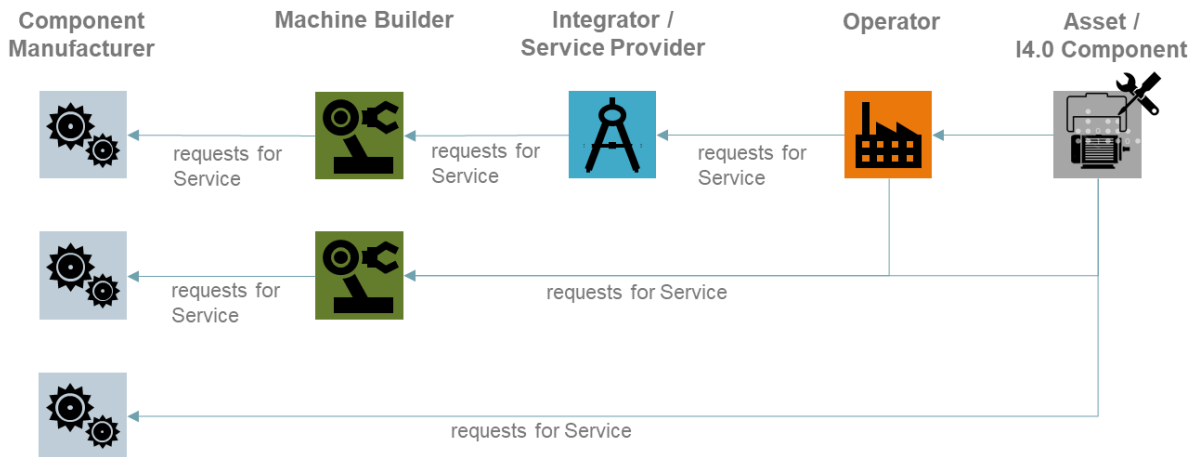


Figure 1: Business view on service management and involved parties

The service process can take place in several ways:

- One way could be that the AAS requests directly the needed service directly from a defined external service partner. This could be the component manufacturer itself, the integrator, or an independent service provider.
- A second way is that the AAS communicates with an internal Asset Management System / ERP System and does not communicate directly to external parties. The idea here is that an internal service department fulfils the service, or the ERP System controls the communication with external service companies, manufacturers, or other parties. This way could be senseful to also perform the other process steps of a complete service request process like the service request response, the notification of the fulfilment or the payment for the service. These other process steps are not part of this Submodel.

To realize this idea, it is essential to have standardized communication of the asset with any other party e.g., an internal asset management system, otherwise the service request creation process works only between a specific asset and a specific asset management system. With the standardization of the communication between these two players (e.g., asset and asset management system) integration efforts and the related costs are minimized. Asset and Asset Management Systems can communicate out of the box, the communication is not limited to a single installed point to point communication. Even n:m communication should be possible if all players support this Submodel.

The Submodel “Service Request Notification” should be independent of the “service type”, that is requested. The Submodel contains more likely the meta data of the service request.

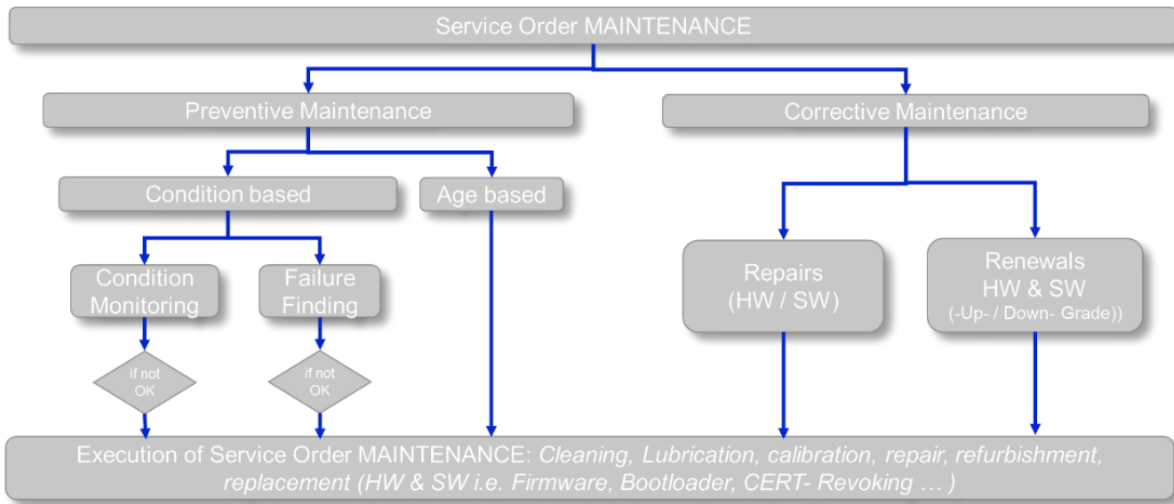


Figure 2: Types of Maintenance Tasks - Categorisation; © IEC

A list of Service Types is also part of the Submodel, examples are Maintenance, Inspection, Firmware Update, Predictive Maintenance and Spare Parts. The details of each Service Type are not part of this work. Later in this document you find a list of Service Types.

The Submodel “Service Request Notification” is supporting the life cycle phase: Operate.

2 Service Request Notification

2.1 Approach

In addition to the mentioned standards, the working group also reviewed interface descriptions of enterprise IT systems and the service forms on manufactures websites. Examples of these can be found in the appendix.

The Submodel has the SMC "ServiceRequestNotification" as the top node, to be able to contain, for example, multiple issues or assets.

Multiple references are made within the Submodel to the Submodel template "Contact Information", or content is taken from it, to avoid having already standardized content again.

The SMC "ServiceRequestNotification" contains the relevant "header" information for classifying a Service Request Notification and routing it accordingly. The SMC "DetailedInformation" can be considered as the "body" and contains detailed information and attached media. The SMC "AttachedMedia" makes it possible to transport further information, that will not be standardized within this Submodel.

All ECLASS IRDIs are created via the ECLASS Fast Track Process and are part of ECLASS Release14.

2.2 Data Model of Service Request Notification SMT

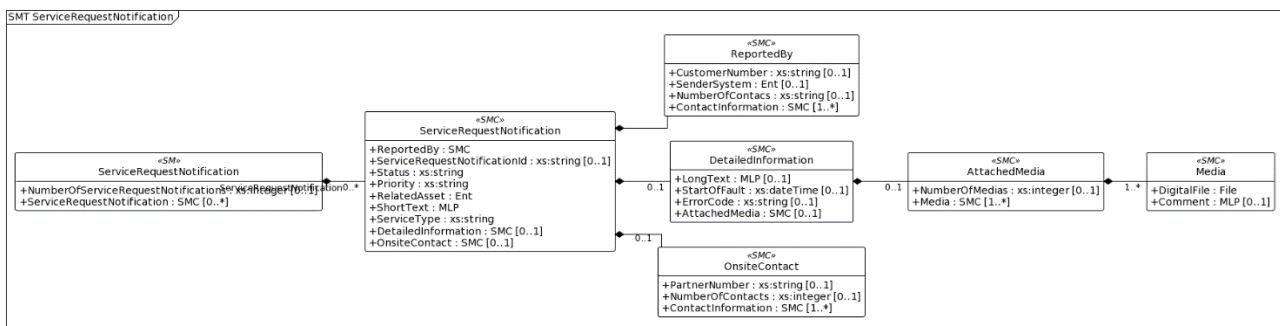


Figure 3: UML for Submodel Service Request Notification

2.3 Value List: Service Types

In the following table different Service Types are defined that can be assigned to the Service Request Notification. At least one of these types must be assigned.

There are three different categories defined:

- Services directly to the asset
- Service or support activities
- Material delivery

The value list (enumeration) for the Service Types has the following semantic ID (IRDI): 0173-1#09-AAR670#001

Table 1: Service Types

IRDI	Service Type Category	Service Type	Description
[IRDI] 0173-1#07-AAAY785#002	Services directly to Asset	Inner Inspection	Measures to determine and assess the actual condition of a unit under consideration, including determining the causes of abrasion and deriving the necessary consequences for future use. (DIN 31051 : 2003-06, 4.1.3)
[IRDI] 0173-1#07-AAR832#002	Services directly to Asset	Maintenance	Measures to delay the depletion of the existing abrasion stock. (DIN 31051 : 2003-06, 4.3.1.1)
[IRDI] 0173-1#07-ABU493#002	Services directly to Asset	Repair	Physical actions performed to restore the required function of a faulty unit. (EN 13306 : 2001-09, 8.8)
[IRDI] 0173-1#07-ACA029#001	Services directly to Asset	Preventive Maintenance	Maintenance, carried out at specified intervals or according to prescribed criteria. (EN 13306 : 2001-08, 7.1)
[IRDI] 0173-1#07-ACA030#001	Services directly to Asset	Overhauling	Action taken after disassembling a unit and repairing or replacing components that are nearing the end of their useful life and/or should be systematically replaced.(EN 13306 : 2001-08, 8.7)
[IRDI] 0173-1#07-ACA031#001	Services directly to Asset	Software/Firmware and Parameter Update	Software is any software on controllers and PC based systems such as HMI, operating system, antivirus, PLC program, ... as well as update of parameterizations of asset parts.
[IRDI]0173-1#07-ACA032#001	Services directly to Asset	Other Services	Service Types that are not mentioned in this table.
[IRDI] 0173-1#07-ACA033#001	Services directly to Asset	Retrofit measures (also conversion or modernization)	Measures to increase/expand the productivity and/or scope of machines or equipment/parts.
[IRDI] 0173-1#07-ACA034#001	Services or Support activities	24 hours emergency parts service or delivery	Service parts issuing within 24 hours after receipt of order. Additional services are to be agreed with the customer in this context.
[IRDI] 0173-1#07-ACA035#001	Services or Support activities	Application technology services	Technological/production engineering consulting to increase/optimize the productivity/product quality or safety of a machine or plant component.
[IRDI] 0173-1#07-ACA036#001	Services or Support activities	Service Hotline Support	Service support via hotline via telefon, video, mail or chat.
[IRDI] 0173-1#07-ACA037#001	Services or Support activities	Other support	Support that is not described in this table.

[IRDI] 0173-1#07- ABU493#002	Materials	Spare parts	Requisition of a spare part to replace a corresponding unit in order to perform the originally required function of the unit. (EN 13306 : 2001-08, 3.6)
[IRDI] 0173-1#07- ACA038#001	Materials	Wear part	Requisition of a unit that is used at points where operational wear occurs for economic reasons, thereby protecting other viewing units from wear, and which is designed to be replaced. (DIN 31051 : 2003-06, 4.6.3)
[IRDI] 0173- 1#07- AAR847#002	Materials	Accessoires delivery	Parts or groups of parts (components) which enable extended use of the original operating condition.

2.4 Submodel Elements of the Submodel template “ServiceRequestNotification”

Table 2: Submodel elements “Service Request Notification” template

idShort:	ServiceRequestNotification Note: a different idShort might be used, as long as it is unique in the Submodel.		
Class:	Submodel (SM)		
semanticId:	[IRDI] 0173-1#01-AHX443#001		
Parent:	Asset Administration Shell which is representing an asset, which is an industrial equipment		
Explanation:	This Submodel template aims to standardize the description of a Service Request Notification that can be used to create a Service Request Notification for industrial assets or the asset creates it by itself.		
[SME type]	semanticId = [idType]value	[valueType]	card.
idShort	Description@en	example	
[Property] NumberOfServiceRequestNotifications	[IRDI] 0173-1#02-ABI761#001 preferredName@de: Anzahl Servicebedarfsmeldungen preferredName@en: Number Service Request Notification	[Integer (count)] 2	0..1
[SMC] ServiceRequestNotification{00}	[IRDI PATH] 0173-1#02-ABI788#001/0173-1#01-AHX444#001 preferredName@de: Servicebedarfsmeldung preferredName@en: Service request notification definition@en: Collection of information with which notifications are recorded and managed in the service and customer service area definition@de: Sammlung von Informationen mit denen im Service- und Kundendienstbereich Meldungen erfasst und verwaltet werden	n/a	1..*

2.5 Submodel Elements of “ServiceRequestNotification”

Table 3: Submodel elements of “Service Request Notification” SMC

idShort:	ServiceRequestNotification{00}		
	Note: a different idShort might be used, as long as it is unique in the Submodel.		
Class:	SubmodelElementCollection (SMC)		
semanticId:	[IRDI PATH] 0173-1#02-ABI788#001/0173-1#01-AHX444#001		
Parent:	Submodel with idShort = ServiceRequestNotification		
Explanation:	Collection of information with which notifications are recorded and managed in the service and customer service area.		
[SME type]	semanticId = [idType]value	[valueType]	card.
idShort	Description @en	example	
[SMC]	[IRDI PATH] 0173-1#02-ABI792#00/0173-1#01-AHX448#001	n/a	1
ReportedBy	preferredName@de: Gemeldet von preferredName@en: Reported by definition@en: Collection of one or more natural persons or assets that creates or publicizes the message definition@de: Sammlung von einer oder mehreren natürlichen Personen oder einem Asset, welches die Meldung erstellt oder bekannt macht		
[Property] ServiceRequest NotificationId	[IRDI] 0173-1#02-ABI772#001 preferredName@de: ID der Bedarfsmeldung preferredName@en: ID of Service Request Notification definition@en: Number assigned by an entity to the notification in order to uniquely identify and reference it in the further process flow definition@de: Nummer, die von einer Stelle der Meldung zugewiesen wird, um sie im weiteren Prozessablauf eindeutig zu identifizieren und zu referenzieren.	[String] 200013454	0..1
[Property] Priority	[IRDI] 0173-1#02-ABI773#001 preferredName@de: Priorität der Meldung preferredName@en: Priority of notification definition@en: Rating of the primacy of the message, which results from the urgency or importance definition@de: Bewertung des Vorrangs der Meldung, welcher sich aufgrund der Dringlichkeit oder Wichtigkeit ergibt Value List: Low [IRDI] 0173-1#07-ACA025#001 Medium [IRDI] 0173-1#07-ACA026#001 High [IRDI] 0173-1#07-ACA027#001 Very high [IRDI] 0173-1#07-ACA028#001	[String] High	1

[Property] Status	[IRDI] 0173-1#02-ABH938#002 preferredName@de: Status der Meldung preferredName@en: Status of notification definition@en: Current processing status of the notification within the workflow definition@de: Aktueller Bearbeitungszustand der Meldung innerhalb des Arbeitsablaufs Value List: sent Message was sent by issuer [IRDI] 0173-1#07-ACA040#001 received Message was viewed by recipient [IRDI] 0173-1#07-ACA039#001 in progress Message is in progress [IRDI] 0173-1#07-ABZ567#002 completed Message is completed [IRDI] 0173-1#07-ABZ565#002 stopped Message was cancelled, rejected or aborted [IRDI] 0173-1#07-ABZ568#002	[String] sent	1
[Entity] RelatedAsset	[IRDI] 0173-1#02-ABI774#001 preferredName@de: Betroffenes Asset preferredName@en: Related Asset definition@en: The object affected by the notification activity definition@de: Das von der Meldungsaktivität betroffene Objekt	https://example.com/ids/asset/2143	1..*
[MLP] ShortText	[IRDI] 0173-1#02-ABI762#001 preferredName@de: Kurztext zur Servicebedarfsmeldung preferredName@en: Short text of Service Request Notification definition@en: Brief textual description of the subject matter definition@de: Textuelle Kurzbeschreibung des Sachverhalts	[LangString] Operating noise @en Laufgeräusch @de	1
[Property] ServiceType	[IRDI] 0173-1#02-ABI763#001 preferredName@de: Typ des notwendigen Service preferredName@en: Type of requested service definition@en: Predefined classification of a requested service definition@de: Vordefinierte Klassifizierung einer angefragten Service-Dienstleistung Note: see ServiceType value list in "2.3 Enumeration: Service Types"	[String] Inspection	1
[SMC] DetailedInformation	[IRDI PATH] 0173-1#02-ABI789#001/0173-1#01-AHX445#001 preferredName@de: Detailinformationen zum Servicebedarf preferredName@en: Detailed information of service need definition@en: Collection of in-depth information describing the situation concerned in the service and customer support area definition@de: Sammlung von ausführlich Informationen mit denen der vorliegende Sachverhalt im Service- und Kundendienstbereich beschrieben wird	n/a	1

[SMC] OnsiteContact	[IRDI PATH] 0173-1#02-ABI793#001/0173-1#01-AHX449#001 preferredName@de: Ansprechpartner vor Ort preferredName@en: Onsite contact definition@en: Collection of one or more natural persons located in the same or close locality to the asset definition@de: Sammlung von einer oder mehreren natürlichen Personen die sich in der gleichen oder nahen Lokalität zu dem Assets befinden	n/a	1
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2.6 SubmodelElements of "ReportedBy"

Table 4: Submodel elements of SMC "Reported By"

idShort:	ReportedBy		
Class:	SubmodelElementCollection (SMC)		
semanticId:	[IRDI Path] 0173-1#02-ABI792#00/0173-1#01-AHX448#001		
Parent:	Submodel with idShort = ServiceRequestNotification		
Explanation:	Collection of one or more natural persons or assets that creates or publicizes the message.		
[SME type]	semanticId = [idType]value	[valueType]	card.
idShort	Description@en	example	
[Property] CustomerNumber	[IRDI] 0173-1#02-ABI769#001 preferredName@de: Kundennummer preferredName@en: Customer number definition@en: An alphanumeric key that identifies a customer definition@de: Ein alphanumerischer Schlüssel, der einen Kunden identifiziert	[String] 1000111	0..1
[Entity] SenderSystem	[IRDI] 0173-1#02-ABI770#001 preferredName@de: Sendendes System preferredName@en: Sender system definition@en: System, that creates or makes known the notification definition@de: System, welches die Meldung erstellt oder bekannt macht	https://example.com/ids/asset/2143	0..1
[Property] NumberOfContacts	[IRDI] 0173-1#02-AAO203#004 preferredName@de: Anzahl der Kontakte preferredName@en: Number of contacts	[Integer (count)] 1	0..1
[SMC]	[IRDI PATH] 0173-1#02-AAQ837#007/0173-1#01-ADR448#007	n/a	1..n

ContactInformation	The SMC "ContactInformation" contains information on how to contact the manufacturer or an authorised service provider, e.g. when a maintenance service is required		
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2.7 SubmodelElements of DetailedInformation"

Table 5: Submodel elements of SMC "Detailed Information"

idShort:	DetailedInformation		
Class:	SubmodelElementCollection (SMC)		
semanticId:	[IRDI PATH] 0173-1#02-ABI789#001/0173-1#01-AHX445#001		
Parent:	Submodel with idShort = ServiceRequestNotification		
Explanation:	Collection of in-depth information describing the situation concerned in the service and customer support area.		
[SME type]	semanticId = [idType]value	[valueType]	card.
idShort	Description @en	example	
[MLP] LongText	[IRDI] 0173-1#02-ABI764#001 preferredName@de: Langtext zur Servicebedarfsmeldung preferredName@en: Long text of Service Request Notification definition@en: Textual detailed description of the subject matter definition@de: Textuelle ausführliche Beschreibung des Sachverhalts	[LangString] Operating noise from the inner of the pump @en Laufgeräusch aus dem inneren der Pumpe @de	0..1
[Property] StartOfFault	[IRDI] 0173-1#02-ABI765#001 preferredName@de: Beginn der Störung preferredName@en: Start of fault definition@en: Point in time at which the regarded situation happened or started definition@de: Zeitpunkt, zu dem die betrachtete Situation eingetreten oder entstanden ist	[DateTime]	0..1
[Property] ErrorCode	[IRDI] 0173-1#02-ABI766#001 preferredName@de: Fehlercode preferredName@en: Error code definition@en: technical key of the manufacturer for malfunction description definition@de: technischer Schlüssel des Herstellers zur Störungsbeschreibung	[String] E x 23c3	0..1
[SMC] AttachedMedia	[IRDI PATH] 0173-1#02-ABI790#001/0173-1#01-AHX446#001	n/a	0..1

preferredName@de: Angehängte Dateien preferredName@en: Attached media definition@en: Collection of file attachments that complement the notification and present additional information for processing the notification definition@de: Sammlung von Dateianhängen, welche die Meldung ergänzen und Zusatzinformationen zur effizienten Bearbeitung der Meldung darstellen		
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2.8 Submodel Elements of “OnsiteContact”

Table 6: Submodel elements of SMC "On Site Contact"

idShort:	OnsiteContact		
Class:	SubmodelElementCollection (SMC)		
semanticId:	[IRDI PATH] 0173-1#02-ABI793#001/0173-1#01-AHX449#001		
Parent:	Submodel with idShort = ServiceRequestNotification		
Explanation:	Collection of one or more natural persons located in the same or close locality to the asset.		
[SME type]	semanticId = [idType]value	[valueType]	card.
idShort	Description@en	example	
[Property] PartnerNumber	[IRDI] 0173-1#02-ABI771#001 preferredName@de: Partnernummer preferredName@en: Partner number definition@en: An alphanumeric key that identifies a business partner definition@de: Ein alphanumerischer Schlüssel, der einen Geschäftspartner identifiziert	[String] 1000111	0..1
[Property] NumberOfContacts	[IRDI] 0173-1#02-AAO203#004 preferredName@de: Anzahl der Kontakte preferredName@en: Number of contacts	[Integer (count)] 1	0..1
[SMC] ContactInformation	[IRDI PATH] 0173-1#02-AAQ837#007/0173-1#01-ADR448#007 The SMC “ContactInformation” contains information on how to contact the manufacturer or an authorised service provider, e.g. when a maintenance service is required	n/a	1..n

2.9 SubmodelElements of “AttachedMedia”

Table 7: Submodel elements of SMC "Attached Media"

idShort:	AttachedMedia		
Class:	SubmodelElementCollection (SMC)		
semanticId:	[[IRDI PATH] 0173-1#02-ABI790#001/0173-1#01-AHX446#001		
Parent:	Submodel with idShort = DetailedInformation		
Explanation:	Collection of file attachments that complement the Service Request Notification and present additional information for processing the Service Request Notification.		
[SME type]	semanticId = [idType]value	[valueType]	card.
idShort	Description@en	example	
[Property] NumberOfMedia	[[IRDI] 0173-1#02-ABI767#001 preferredName@de: Anzahl der Anhänge preferredName@en: Number of Media	[Integer (count)] 2	0..1
[SMC] Media{00}	[[IRDI PATH] 0173-1#02-ABI791#001/0173-1#01-AHX447#001 preferredName@de: Anhang preferredName@en: Media definition@en: File attached to the notification definition@de: Datei, die als Beilage an die Meldung gefügt ist	n/a	1..n

2.10 SubmodelElements of "Media"

Table 8: Submodel elements of SMC "Media"

idShort:	Media{00}		
Class:	SubmodelElementCollection (SMC)		
semanticId:	[IRDI PATH] 0173-1#02-ABI791#001/0173-1#01-AHX447#001		
Parent:	Submodel with idShort = AttachedMedia		
Explanation:	File attached to the Service Request Notification.		
[SME type]	semanticId = [idType]value	[valueType]	card.
idShort	Description@en	example	
[File] DigitalFile	[IRDI] 0173-1#02-ABK126#001 preferredName@de: Digitale Datei preferredName@en: Digital File definition@en: computer resource for recording data in a computer storage device, primarily identified by its file name definition@de: Computerressource zur Aufzeichnung von Daten in einem Computerspeichergerät, die in erster Linie durch ihren Dateinamen identifiziert wird	[File] Photo.jpeg	1
[MultiLanguageProperty] Comment	[IRDI] 0173-1#02-ABI768#001 preferredName@de: Anmerkung zur Datei preferredName@en: Comment to File definition@en: Explanations that refer to the attached file and relate to its use or origin definition@de: Erläuterungen die sich auf die Angehängte Datei beziehen und sich auf deren Verwendung oder Ursprung beziehen	[LangString] Picture of the pump nameplate	0..1

Annex A. Explanations on used table formats

1. 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.

2. 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 header abbreviates 'cardinality' with 'card'. The cardinality is defined with
 - 0...1: optional
 - 1: mandatory 1 entry
 - 1...n: mandatory 1 to many entries
 - 0...n: optional to many entries
- The tables often place two information's 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 chosen, 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@EN.
- The [valueType] is only given for Properties.

Annex B. Use Cases

1. WITTENSTEIN Service Portal

The web-based WITTENSTEIN Service Portal supports users throughout the entire lifecycle of a WITTENSTEIN product - from installation and commissioning to servicing or replacing the drive. Here, users can obtain the latest information relevant to the product, explanations, technical data, tutorial videos for installation & commissioning, documentation, firmware files and the contact details of their contacts. The WITTENSTEIN Service Portal also makes it quick and easy to request replacement products and register returns for inspection or repair.

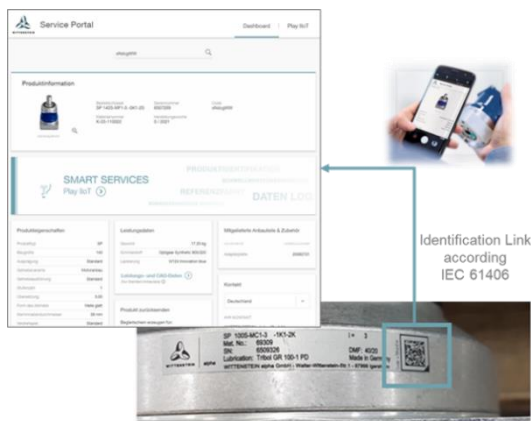


Figure 4: Linking Wittenstein products to their Service Portal by Data-Matrix-Code

The Service Portal presents the user with a simple user interface. In a first step, the form can also write the user input back to the AAS to build up a service history and allows other actors (such as the machine builder or external service providers) to access requests in an interoperable way.

WITTENSTEIN Service Portal Return Form

Register return

Product(s)

Product: RG 130X-MF1-N0024-Q00-K01 / SN: 8666110

Reason for return? Inspection Standard
(incl. Check of warranty, report & cost other)

Damage description? Operating noise

+ Add product

Your message

The product is louder than usual, please have it checked

Sender

Country: Germany

First name: Max

Last name: Muster

Email: max.muster@example.com

Phone number: +000000000

Company: Example SE

Street, No.: Muster Street 1

Zip code: 87000

City: Musterstadt

Contractor is different

Asset Administration Shell of the Product

```

AAS "aas_xdflGeBr" [URL: https://wgrp.biz/aas/xdflGeBr] of [URL: https://wgrp.biz/xdflGeBr, Instance]
├─ SM "Nameplate" V1.0 [URL: https://wgrp.biz/sm/ab459ac8849445d42448ba55369388192881c22d4d4]
├─ SM "TechnicalData" [URL: https://wgrp.biz/sm/ac2789330950934598309634859812735]
├─ SM "HandoverDocumentation" V1.0 [URL: https://wgrp.biz/sm/0b4ea564ed754e086ac57a35d846f910]
├─ SM "ContactInformations" V1.0 [URL: https://wgrp.biz/sm/a9a3daeed64c4912b4ff6819f743a893]
├─ SM "ServiceNotifications" V1.0 [URL: https://wgrp.biz/sms/48baac8150_5022_4941]
├─ SMC "ServiceNotification1" (11 elements)
│   └─ SMC "ReportedBy" (2 elements)
│       └─ Ent "SenderSystem" = Sender System = Entity of WITTENSTEIN Service Portal
│           └─ SMC "ContactInformation1" (8 elements)
│               └─ Prop "RoleOfContactPerson" = technical contact
│                   └─ MLP "NationalCode" -> DE
│                       └─ MLP "CityTown" -> Musterstadt
│                           └─ MLP "Company" -> Example SE
│                               └─ SMC "Phone" (3 elements)
│                                   └─ SMC "Email" (1 element)
│                                       └─ MLP "Street" -> Muster Street 1
│                                           └─ MLP "Zipcode" -> 97999
│   └─ Prop "CustomerNumber" = will be filled in later in the process
│       └─ Prop "ServiceNotificationNumber" = will be assigned by the WITTENSTEIN ERP system
│           └─ Prop "Status" = New
│               └─ Prop "Priority" = standard
│                   └─ Ref "RelatedAsset" -> [Asset, Local, IRI: https://wgrp.biz/xdflGeBr]
│                       └─ MLP "ShortText" -> DE.ExampleSE.InspectionStandard.6666110
│                           └─ Prop "ServiceType" = Inspection
│                               └─ Mapped to WITTENSTEIN Value List
├─ SMC "DetailedInformation" (5 elements)
│   └─ MLP "LongText" -> The product is louder than usual, please have it checked
│       └─ Prop "StartOfFault" = Freetext
│           └─ Prop "ErrorCode" = 0100-0002
│               └─ Filled out by WITTENSTEIN Service Portal
├─ SMC "AdditionalInformation" (3 elements)
│   └─ Prop "damageDescription" = Operating noise
│       └─ Filled out by WITTENSTEIN Service Portal
│       └─ Prop "serialNumber" = 6666110
│           └─ Filled out by WITTENSTEIN Service Portal
│       └─ Prop "mountingPart" = 200012345
│           └─ Filled out by WITTENSTEIN Service Portal
    
```

Figure 5: Mapping Wittenstein Portal to Submodel

The WITTENSTEIN Service Portal is only one of many ways to create a Service Request Notification. It would be conceivable to generate service requests directly from the smart product or another IT-System.

2. SAP BAPI and ODATA Mapping

In the following tables you find a first mapping to relevant Interfaces of an SAP ERP System. These mapping tables are envisioned to support you integrating your AAS, service solution or webportal based on this Submodel into a SAP ERP and creating a SAP Service Request.

There is a mapping for:

the BAPI: BAPI_SERVNOT_CREATE

and for ODATA API: Service Request (A2X)API

(https://api.sap.com/api/OP_API_SERVICE_REQUEST_SRV_0001/overview).

In these table you find in the first columns the data elements of the Submodel and in the last four columns the corresponding SAP element.

Table 9: Mapping Submodel to BAPI_SERVNOT_CREATE

Preferred Name (1.level)	SME Type	Preferred Name (2.level)	SME Type	Preferred Name (3.level)	SME Type	Preferred Name (4.level)	SME Type	Comment	Parameter Name	Data Type	Comment
Reportedby	SMC										
		Sender System	Property								
		Contact Information	SMC					Name of the reporter or partner number of the reporter	NOTIFPARTNR-REPORTEDBY	CHAR 12	
		Customer Number	Property					Customer number in the system of the service request recipient.	NOTIFPARTNR-REFOBJECTKEY NOTIFPARTNR-PARTN_ROLE NOTIFPARTNR-PARTNER	CHAR 70 CHAR 2 CHAR 12	REFOBJECTKEY = space (initial during creation) PARTN_ROLE = SP (Sold-To Party) PARTNER = Customer Number
ServiceNotificationNum	Property							i. d. R. leergelassen. Wird vom Serviceprovider generiert	PURCH_NO_C	CHAR35	
Status	Property										
Priority	Property							1 = Very High, 2 = High, 3 = Medium, 4 = Low	NOTIFHEADER-PRIORITY	CHAR 1	
RelatedAsset	Reference							an asset ID is expected here, which must be and equipmanted number in the backend or must be mapped to an equipment number in the backend	NOTIFHEADER-EQUIPMENT NOTIFHEADER-FUNCT_LOC NOTIFHEADER-SERIALNO	CHAR 18 CHAR 30 CHAR 18	If a manufacturer serial number is passed, it must be mapped to internal equipment ID or serial number
ShortText	MLP								NOTIFHEADER-SHORT_TEXT	CHAR 30	
ServiceType	Property							Mapping to the request type of the backend system required	NOTIFHEADER-NOTIF_TYPE	CHAR2	
DetailedInformation	SMC										
		LongText	MLP						LONGTEXTS-OBITYPE LONGTEXTS-OBKEY LONGTEXTS-FORMAT_COL LONGTEXTS-TEXT_LINE	CHAR 10 NUMC 8 CHAR 2 CHAR 132	The text must be mapped to the TEXT_LINE. The other fields must be set for header text with OBITYPE = QMEL (Notification Header) OBKEY = blank (blank because of Header) FORMAT_COL = * (can be * or blank) This BAPI has not language key for the text. Language will be defaulted SAP-internal.
		StartOfFault	DateTime						NOTIFHEADER-STRMLEDATE NOTIFHEADER-STRMLETIME	DATS YYYYMMDD TIMS HHMMSS	
		ErrorCode	Property						NOTIFHEADER-CODE_GROUP NOTIFHEADER-CODING	CHAR8 CHAR4	Mapping Required from the external Code to the correct internal code combination. Depends on setup in backend system.
		AttachedMedia	SMC								
				Media	SMC						
						File	File				
						Comment	MLP				
OnSiteContact	SMC										
		ContactInformation	SMC								
		PartnerNumber	Property					Partner number of the onsite contact at the service request recipient.	NOTIFPARTNR-REFOBJECTKEY NOTIFPARTNR-PARTN_ROLE NOTIFPARTNR-PARTNER	CHAR 70 CHAR 2 CHAR 12	REFOBJECTKEY = space (initial during creation) PARTN_ROLE = CP (Contact Person) PARTNER = Partner Number of Contact Person which is related to Sold-To Party

Table 10: Mapping Submodel to Service Request (A2X)API

Teilmodell Service Request Notification										DDATA API: Service Request (AZK)		https://api.sap.com/japi/OP_API_SERVICE_REQUEST_SRV_0007/overview
Service Request Notification												
Preferred Name (1.level)	SME Type	Preferred Name (2.level)	SME Type	Preferred Name (3.level)	SME Type	Preferred Name (4.level)	SME Type	Comment	Parameter Name	Data Type	Comment	
Reportedby	SMC	Sender System	Property									
		Contact Information	SMC					Name of the reporter or partner number of the reporter	ServiceRequestReporter	String (max Length 10)	Business Partner number in backend system required	
		Customer Number	Property					Customer number in the system of the service request recipient. i. d. R. leergelassen. Wird vom Serviceprovider generiert	CustomerIdParty	String (max Length 10)	Business Partner number in backend system required	
ServiceNotificationNo	Property								PurchaseOrderByCustomer	String (max Length 35)		
Status	Property											
Priority	Property							1 = Very High, 2 = High, 3 = Medium, 4 = Low	ServiceDocumentPriority	String (max Length 1)		
RelatedAsset	Reference							an asset ID is expected here, which must be and equipped number in the backend or must be mapped to an equipment number in the backend	to_ReferenceObject-ServiceReferenceEquipment to_ReferenceObject-ServiceRefFunctionalLocation	String (Max Length 18) String (Max Length 40)	Serialno not supported by Standard We will get a serial number for which the internal equipment ID must be determined.	
ShortText	MLP								ServiceRequestDescription	String (max Length 40)		
ServiceType	Property							Mapping to the request type of the backend system required	ServiceRequestType	String (max Length 4)		
DetailedInformation	SMC	LongText	MLP									
		StartOffFault	DateTime									
		ErrorCode	Property						SvcDocTypeDefectCodeProfile SvcDocDefectSequence SvcDocTypeDefectCodeProfile SvcDocDefectCodeCatalog SvcDocDefectCodeGroup SvcDocDefectCode SvcDocDefectSchema SvcDocDefectCategory	String (max Length 2) i115 String (max Length 9) String (max Length 2) String (max Length 8) String (max Length 4) String (max Length 40) String (max Length 40)	Mapping Required from the external Code to the correct internal code combination. Depends on setup in backend system.	
		AttachedMedia	SMC									
			Media	SMC								
					File	File						
					Comment	MLP						
OnSiteContact	SMC											
		ContactInformation	SMC									
		PartnerNumber	Property					Partner number of the onsite contact at the service request recipient.			If the OnSite contract is different to ServiceRequestReporter an additional partner role must be setup in the system and the interface must be enhanced.	

3. Application of the Submodel by Hegla GmbH & Co.KG

The information, which is supplied by the Submodel Service Request Notification, is used by the Shopfloor-Assistance App from Hegla to notify the operator of a machine. The notification includes updates from the AAS, alarms and failures from the machine and service requests to maintain it. The properties and values provided by the Submodel are displayed in a simple form within the App. The reason for this is that the user can get access to the information without knowledge about the AAS or the Submodel itself.

AAS to convey Machine problems

Use the AAS (Submodel Service Request Notification) integrate Maschine in Problem solving workflow

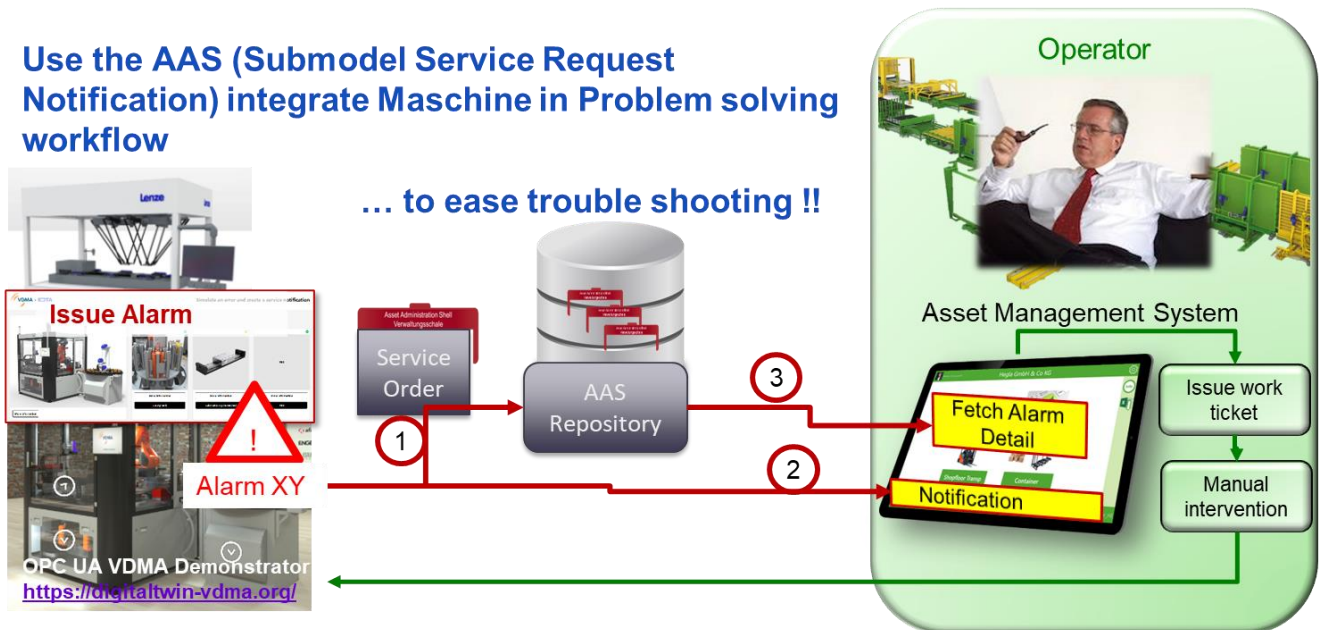


Figure 6: Issuing Service Request Notification (HMI 2022 VDMA Demonstrator)

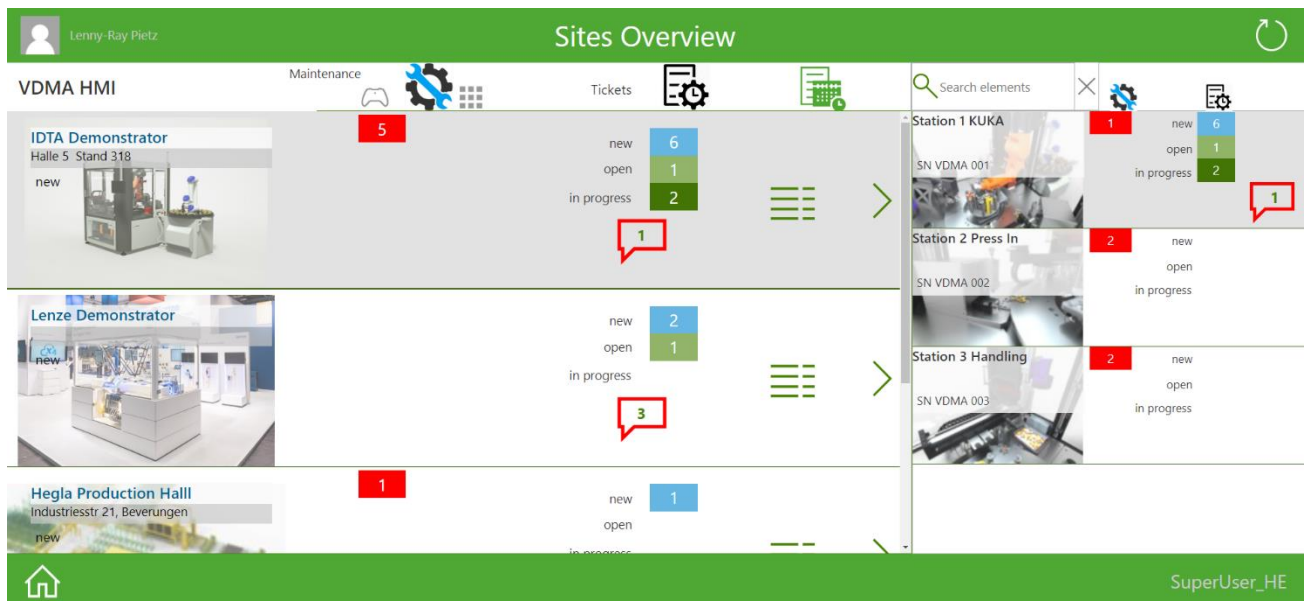


Figure 7: Site overview from HMI 2022 VDMA Demonstrator

The base information from the Submodel is displayed on the left side of the detailed screen. On the right side of the panel the files from the collection "attached media" will be displayed. In this manner the user gets direct access to the detailed information from the actual service request.

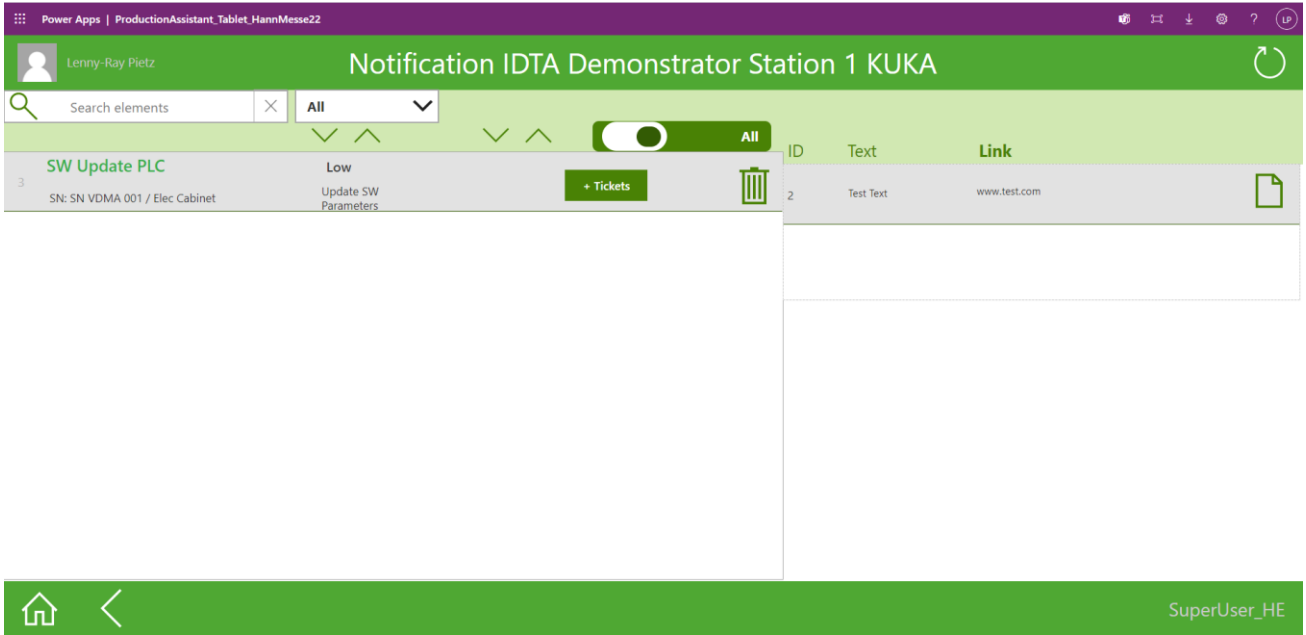


Figure 8: Notification overview for a specific machine (HMI 2022 VDMA Demonstrator)

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