

Product Inventory Management

Business Service Specification

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PRODUCT INVENTORY MANAGEMENT



Figure 1. Product Inventory Management

PRODUCT INVENTORY MANAGEMENT BUSINESS ENTITIES

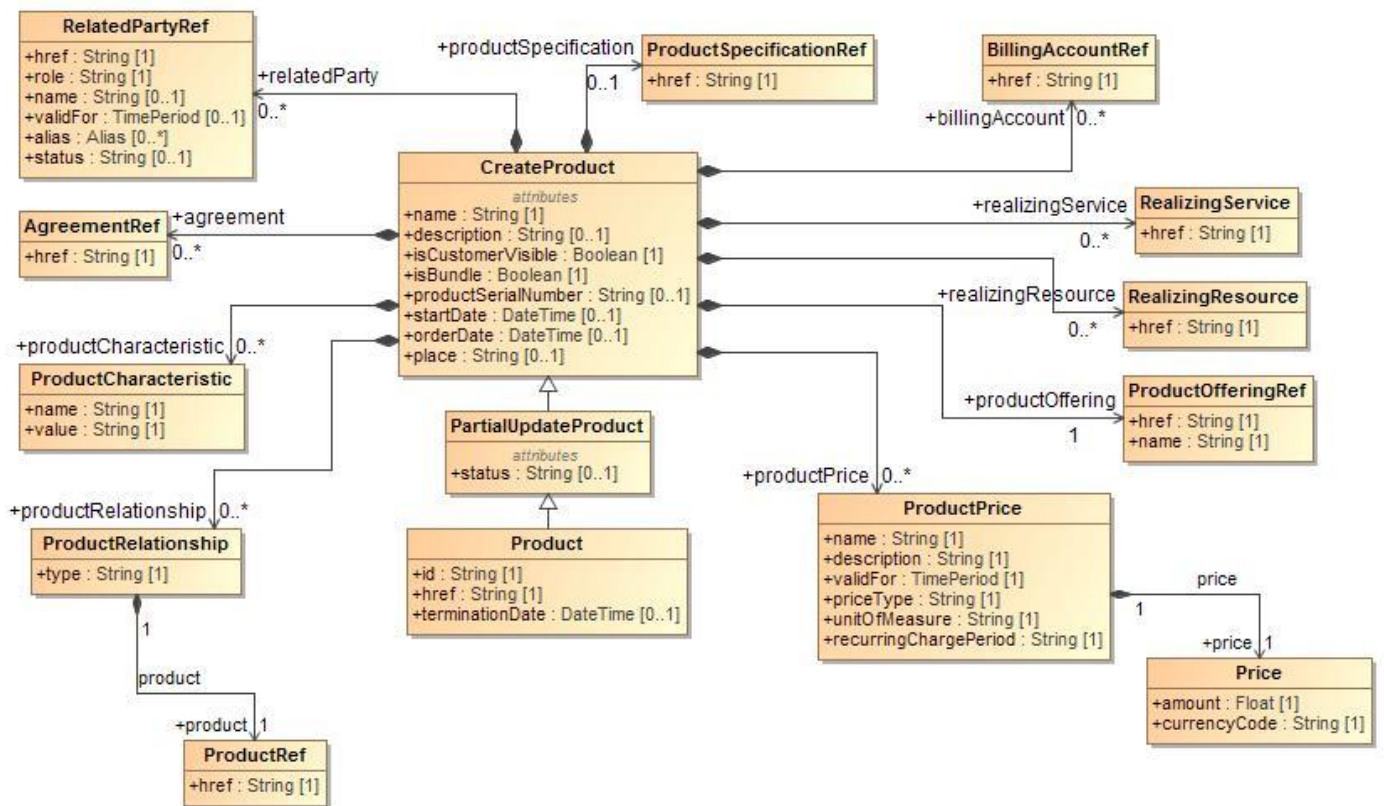


Figure 2. Product

BUSINESS ENTITY – AGREEMENTREF

Attributes

Name	Type	Multiplicity	Description
href	String	1	Reference to the agreement

BUSINESS ENTITY – CREATEPRODUCT

Represents an instance of a product offering subscribed to by a party, such as a customer, the place where the product is in use, as well as configuration characteristics, such as assigned telephone numbers and internet addresses.

Attributes

Name	Type	Multiplicity	Description
agreement	AgreementRef	0..*	Agreement item for the product. Agreement item will contain the terms and conditions for the product including the product term.
billingAccount	BillingAccountRef	0..*	Link to the billing account on which the product is billed. This is optional because in some cases the parent is billed and not all the children.
description	String	0..1	Description of the product. It could be copied

			from the description of the Product Offering.
isBundle	Boolean	1	
isCustomerVisible	Boolean	1	
name	String	1	Name of the product. It could be the same as the name of the Product Offering.
orderDate	DateTime	0..1	Date when the product was ordered.
place	String	0..1	Link to the place where the product is provided.
productCharacteristic	ProductCharacteristic	0..*	List of name value pairs to list the various relevant characteristics of the instantiated product.
productOffering	ProductOfferingRef	1	Link to the product offering.
productPrice	ProductPrice	0..*	Collection of all applicable prices for the product, it's an override of the default one specified in the ProductOffering.
productRelationship	ProductRelationship	0..*	Collection of a number of types of relationships between the product e.g bundle. The value of the type attribute should describe the direction of the relationship. E.g. isContainedIn.
productSerialNumber	String	0..1	Serial number for the product. This is typically applicable to tangible products e.g. Broadband Router.
productSpecification	ProductSpecification Ref	0..1	Link to the product specification. It may be useful to manage links directly to the ProductSpec, when the product is a non-bundle one you may not manage the ProductOffering link with this Product.
realizingResource	RealizingResource	0..*	Link to the resource that realizes the product.
realizingService	RealizingService	0..*	Link to the service that realizes the product.
relatedParty	RelatedPartyRef	0..*	Link to collection of parties. Each party will contain a role and a link.
startDate	DateTime	0..1	Date from which the product starts.

Business Rules

Name	Severity	Specification	Message
mandatory attributes		[tradingName characteristic.name characteristic.value organizationIdentification.type organizationIdentification.identificationId externalReference.referenceType externalReference.reference relatedParty.role relatedParty.ref relatedParty.validFor.startDateTime (not mandatory is set to sysdate by default)]	

BUSINESS ENTITY – PARTIALUPDATEPRODUCT

Represents an instance of a product offering subscribed to by a party, such as a customer, the place where the product is in use, as well as configuration characteristics, such as assigned telephone numbers and internet addresses.

Attributes

Name	Type	Multiplicity	Description
agreement	AgreementRef	0..*	Agreement item for the product. Agreement

			item will contain the terms and conditions for the product including the product term.
billingAccount	BillingAccountRef	0..*	Link to the billing account on which the product is billed. This is optional because in some cases the parent is billed and not all the children.
description	String	0..1	Description of the product. It could be copied from the description of the Product Offering.
isBundle	Boolean	1	
isCustomerVisible	Boolean	1	
name	String	1	Name of the product. It could be the same as the name of the Product Offering.
orderDate	DateTime	0..1	Date when the product was ordered.
place	String	0..1	Link to the place where the product is provided.
productCharacteristic	ProductCharacteristic	0..*	List of name value pairs to list the various relevant characteristics of the instantiated product.
productOffering	ProductOfferingRef	1	Link to the product offering.
productPrice	ProductPrice	0..*	Collection of all applicable prices for the product, it's an override of the default one specified in the ProductOffering.
productRelationship	ProductRelationship	0..*	Collection of a number of types of relationships between the product e.g bundle. The value of the type attribute should describe the direction of the relationship. E.g. isContainedIn.
productSerialNumber	String	0..1	Serial number for the product. This is typically applicable to tangible products e.g. Broadband Router.
productSpecification	ProductSpecification Ref	0..1	Link to the product specification. It may be useful to manage links directly to the ProductSpec, when the product is a non-bundle one you may not manage the ProductOffering link with this Product.
realizingResource	RealizingResource	0..*	Link to the resource that realizes the product.
realizingService	RealizingService	0..*	Link to the service that realizes the product.
relatedParty	RelatedPartyRef	0..*	Link to collection of parties. Each party will contain a role and a link.
startDate	DateTime	0..1	Date from which the product starts.
status	String	0..1	Lifecycle status of the product - created, pending active, aborted, cancelled, active, suspended, pending terminate, terminated.

Business Rules

Name	Severity	Specification	Message
can be updated		[status - created, pending active, aborted, cancelled, active, suspended, pending terminate, terminated description productSerialNumber orderDate place]	

BUSINESS ENTITY – PRICE

Attributes

Name	Type	Multiplicity	Description
amount	Float	1	
currencyCode	String	1	

BUSINESS ENTITY – PRODUCT

Represents an instance of a product offering subscribed to by a party, such as a customer, the place where the product is in use, as well as configuration characteristics, such as assigned telephone numbers and internet addresses.

Attributes

Name	Type	Multiplicity	Description
agreement	AgreementRef	0..*	Agreement item for the product. Agreement item will contain the terms and conditions for the product including the product term.
billingAccount	BillingAccountRef	0..*	Link to the billing account on which the product is billed. This is optional because in some cases the parent is billed and not all the children.
description	String	0..1	Description of the product. It could be copied from the description of the Product Offering.
href	String	1	Reference to the product.
id	String	1	ID created for the product.
isBundle	Boolean	1	
isCustomerVisible	Boolean	1	
name	String	1	Name of the product. It could be the same as the name of the Product Offering.
orderDate	DateTime	0..1	Date when the product was ordered.
place	String	0..1	Link to the place where the product is provided.
productCharacteristic	ProductCharacteristic	0..*	List of name value pairs to list the various relevant characteristics of the instantiated product.
productOffering	ProductOfferingRef	1	Link to the product offering.
productPrice	ProductPrice	0..*	Collection of all applicable prices for the product, it's an override of the default one specified in the ProductOffering.
productRelationship	ProductRelationship	0..*	Collection of a number of types of relationships between the product e.g bundle. The value of the type attribute should describe the direction of the relationship. E.g. isContainedIn.
productSerialNumber	String	0..1	Serial number for the product. This is typically applicable to tangible products e.g. Broadband Router.
productSpecification	ProductSpecification Ref	0..1	Link to the product specification. It may be useful to manage links directly to the ProductSpec, when the product is a non-bundle one you may not manage the ProductOffering link with this Product.
realizingResource	RealizingResource	0..*	Link to the resource that realizes the product.
realizingService	RealizingService	0..*	Link to the service that realizes the product.
relatedParty	RelatedPartyRef	0..*	Link to collection of parties. Each party will contain a role and a link.
startDate	DateTime	0..1	Date from which the product starts.
status	String	0..1	Lifecycle status of the product - created, pending active, aborted, cancelled, active, suspended, pending terminate, terminated.
terminationDate	DateTime	0..1	Date when the product was terminated. Not

			applicable to active products.
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BUSINESS ENTITY – PRODUCTCHARACTERISTIC

Attributes

Name	Type	Multiplicity	Description
name	String	1	
value	String	1	

BUSINESS ENTITY – PRODUCTOFFERINGREF

Attributes

Name	Type	Multiplicity	Description
href	String	1	Reference to the product offering
name	String	1	

BUSINESS ENTITY – PRODUCTPRICE

Attributes

Name	Type	Multiplicity	Description
description	String	1	
name	String	1	
price	Price	1	
priceType	String	1	
recurringChargePeriod	String	1	
unitOfMeasure	String	1	
validFor	TimePeriod	1	

BUSINESS ENTITY – PRODUCTREF

Attributes

Name	Type	Multiplicity	Description
href	String	1	Reference to the product

BUSINESS ENTITY – PRODUCTRELATIONSHIP

Attributes

Name	Type	Multiplicity	Description
product	ProductRef	1	
type	String	1	

BUSINESS ENTITY – PRODUCTSPECIFICATIONREF

Attributes

Name	Type	Multiplicity	Description
href	String	1	Reference to the product specification

BUSINESS ENTITY – REALIZINGRESOURCE

Attributes

Name	Type	Multiplicity	Description
href	String	1	Reference to the realizing resource

BUSINESS ENTITY – REALIZINGSERVICE

Attributes

Name	Type	Multiplicity	Description
href	String	1	Reference to the realizing service

COMMON BUSINESS ENTITIES

BUSINESS ENTITY – ALIAS

Attributes

Name	Type	Multiplicity	Description
type	String		
value	String		

BUSINESS ENTITY – ARRAYUPDATE

Used to partially update an array

Attributes

Name	Type	Multiplicity	Description
op	String		Operation to be performed on the array - test, remove, add, replace, move, copy
path	String		The reference to the array to be modified
value	String		

BUSINESS ENTITY – BILLINGACCOUNTREF

BillingAccount to use to bill the ordered products.

Attributes

Name	Type	Multiplicity	Description
href	String	1	Reference of the billing account.

BUSINESS ENTITY – CHARACTERISTIC

Describes the characteristics of the individual or the organization such as individual hobbies, center of interests.

Attributes

Name	Type	Multiplicity	Description
name	String	1	Name of the characteristic.
value	String	0..1	Value of the characteristic.

BUSINESS ENTITY – CONTACTMEDIUM

Describes the contact mediums that could be used to contact the customer (Email, TelephoneNumber, PostalAddress).

Attributes

Name	Type	Multiplicity	Description
isPreferred	Boolean	0..1	If true, indicates that is the preferred contact medium.
medium	Medium	0..1	Describes the contact medium that can be

			used to contact the customer.
type	String	1	Email address, telephone number, postal address, etc.
validFor	TimePeriod	0..1	The time period that the contact medium is valid for.

BUSINESS ENTITY – CREATELISTENER

Attributes

Name	Type	Multiplicity	Description
callback	String		Callback address of the listener
query	String		

BUSINESS ENTITY – CREDENTIAL

Attributes

Name	Type	Multiplicity	Description
login	String		
password	String		
updateType	String		

BUSINESS ENTITY – HEADER

Attributes

Name	Type	Multiplicity	Description
key	String		URL Parameter Key e.g., Content-Type
value	String		Value e.g., application/json, application/xml

BUSINESS ENTITY – LISTENER

Attributes

Name	Type	Multiplicity	Description
callback	String		Callback address of the listener
href	String	1	Reference to the listener
id	String	1	
query	String		

BUSINESS ENTITY – MEDIUM

Describes the contact medium that can be used to contact the customer.

Attributes

Name	Type	Multiplicity	Description
city	String	0..1	
country	String	0..1	
emailAddress	String	0..1	Full e-mail address in standard format (e.g., fred.bloggs@thing.com)

number	String	0..1	Phone number
postcode	String	0..1	Postcode
stateOrProvince	String	0..1	State or province
street1	String	0..1	Describes the street
street2	String	0..1	Complementary street description
type	String	0..1	Type of medium (fax, mobile phone...)

BUSINESS ENTITY – MONEY

A base / value business entity used to represent money

Attributes

Name	Type	Multiplicity	Description
amount	Float	1	A positive floating point number.
currencyCode	String	1	Currency. Notes: refer to [ISO 4217]
digits	Integer	0..1	Number of digits to the right of the decimal point

BUSINESS ENTITY – NOTE

Extra-information about an entity (e.g. useful to add extra delivery information that could be useful for a human process : a digicode access to a building, ...).

Attributes

Name	Type	Multiplicity	Description
author	String	0..1	Author of the note
date	DateTime	0..1	Date of the note
text	String	1	Text of the note

BUSINESS ENTITY – PAYMENTMEANREF

Attributes

Name	Type	Multiplicity	Description
href	String	1	Reference of the payment means
name	String	0..1	Name of the payment means

BUSINESS ENTITY – PERIOD

defines the period of a recurring charge

Attributes

Name	Type	Multiplicity	Description
endPeriod	DateTime	0..1	End date of the period
startPeriod	DateTime	1	Start date of the period

Business Rules

Name	Severity	Specification	Message
StartPeriod Before EndPeriod	error	[startPeriod.before(endPeriod) or startPeriod = endPeriod]	The start period must be on or before the end period.

BUSINESS ENTITY – PLACEREF

Used to defined a place useful for the entity (for example a delivery geographical place).

Attributes

Name	Type	Multiplicity	Description
href	String	1	Reference of a place (for instance in Google map).
role	String	1	Role of the place (for instance delivery geographical place).

BUSINESS ENTITY – RELATEDPARTYREF

Defines party or partyRole linked to a specific entity. Used to represent an association between a resource and a party or role object playing a role regarding that object.

Attributes

Name	Type	Multiplicity	Description
alias	Alias	0..*	
href	String	1	Reference to the related party.
name	String	0..1	Name of the related party.
role	String	1	Role of the related party.
status	String	0..1	The status of the relationship between the party and the related entity.
validFor	TimePeriod	0..1	The period for which the related party is valid.

BUSINESS ENTITY – TIMEPERIOD

Attributes

Name	Type	Multiplicity	Description
endTime	DateTime	0..1	
startTime	DateTime	1	

Business Rules

Name	Severity	Specification	Message
Start DateTime Before End DateTime	error	[startTime.before(endDateTi me) or startTime = endTime]	The start period must be on or before the end period.

NOTIFICATION EVENT

Refer to Common Management Spec for details on how to Register and Unregister a Listener.

The notification events supported by Product Inventory Management are:

- o Product create
- o Product state change
- o Product value change
- o Product delete

The Event is published to the registered listener

REST Example:

POST client/listener

PRODUCTINVENTORY

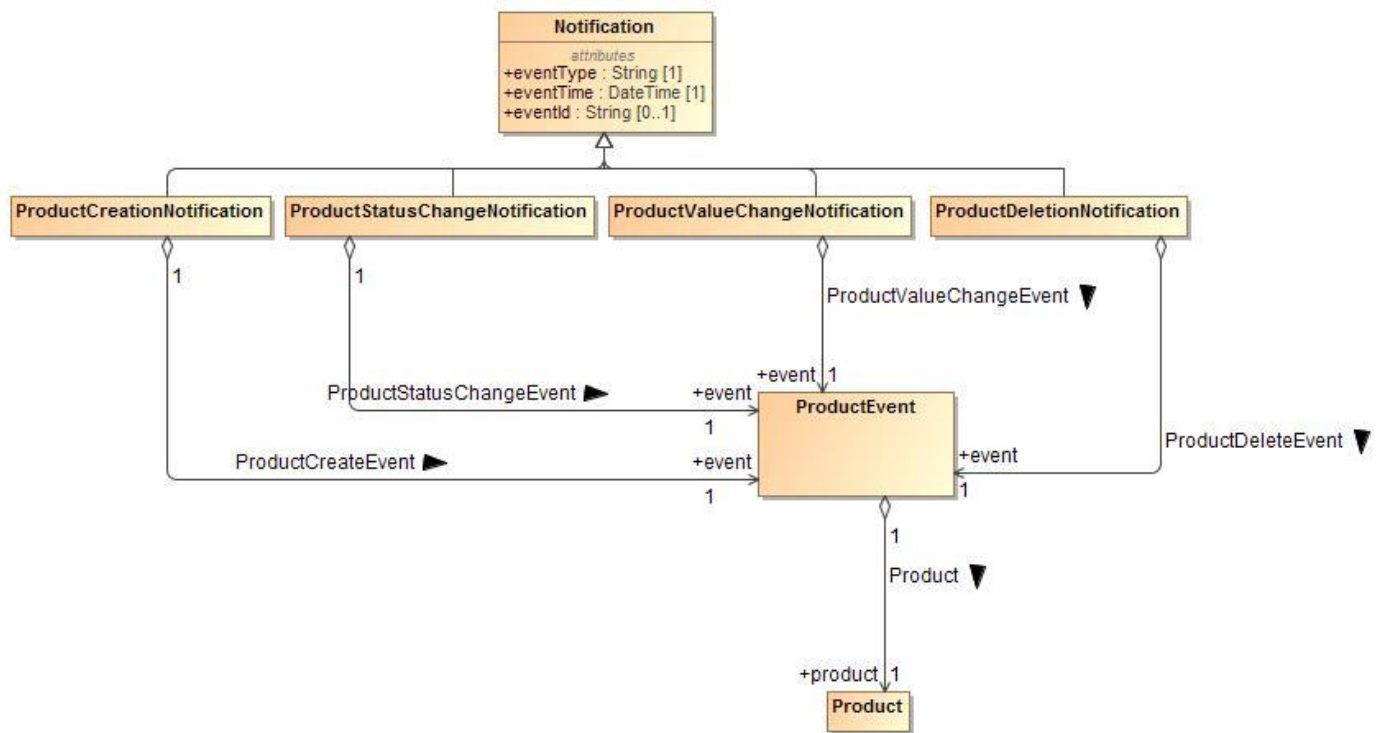


Figure 3. Product Notification

BUSINESS ENTITY – PRODUCTCREATIONNOTIFICATION

Attributes

Name	Type	Multiplicity	Description
event	ProductEvent	1	
eventId	String	0..1	Unique identifier of the event
eventTime	DateTime	1	
eventType	String	1	

BUSINESS ENTITY – PRODUCTDELETIONNOTIFICATION

Attributes

Name	Type	Multiplicity	Description
event	ProductEvent	1	
eventId	String	0..1	Unique identifier of the event
eventTime	DateTime	1	
eventType	String	1	

BUSINESS ENTITY – PRODUCTEVENT

Attributes

Name	Type	Multiplicity	Description
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product	Product	1	
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BUSINESS ENTITY – PRODUCTSTATUSCHANGENOTIFICATION

Attributes

Name	Type	Multiplicity	Description
event	ProductEvent	1	
eventId	String	0..1	Unique identifier of the event
eventTime	DateTime	1	
eventType	String	1	

BUSINESS ENTITY – PRODUCTVALUECHANGENOTIFICATION

Attributes

Name	Type	Multiplicity	Description
event	ProductEvent	1	
eventId	String	0..1	Unique identifier of the event
eventTime	DateTime	1	
eventType	String	1	

NOTIFICATION COMMON**BUSINESS ENTITY – NOTIFICATION**

Attributes

Name	Type	Multiplicity	Description
eventId	String	0..1	Unique identifier of the event
eventTime	DateTime	1	
eventType	String	1	

STATE MACHINE

ProductSM

Represents an instance of a product offering subscribed to by a party, such as a customer, the place where the product is in use, as well as configuration characteristics, such as assigned telephone numbers and internet addresses.

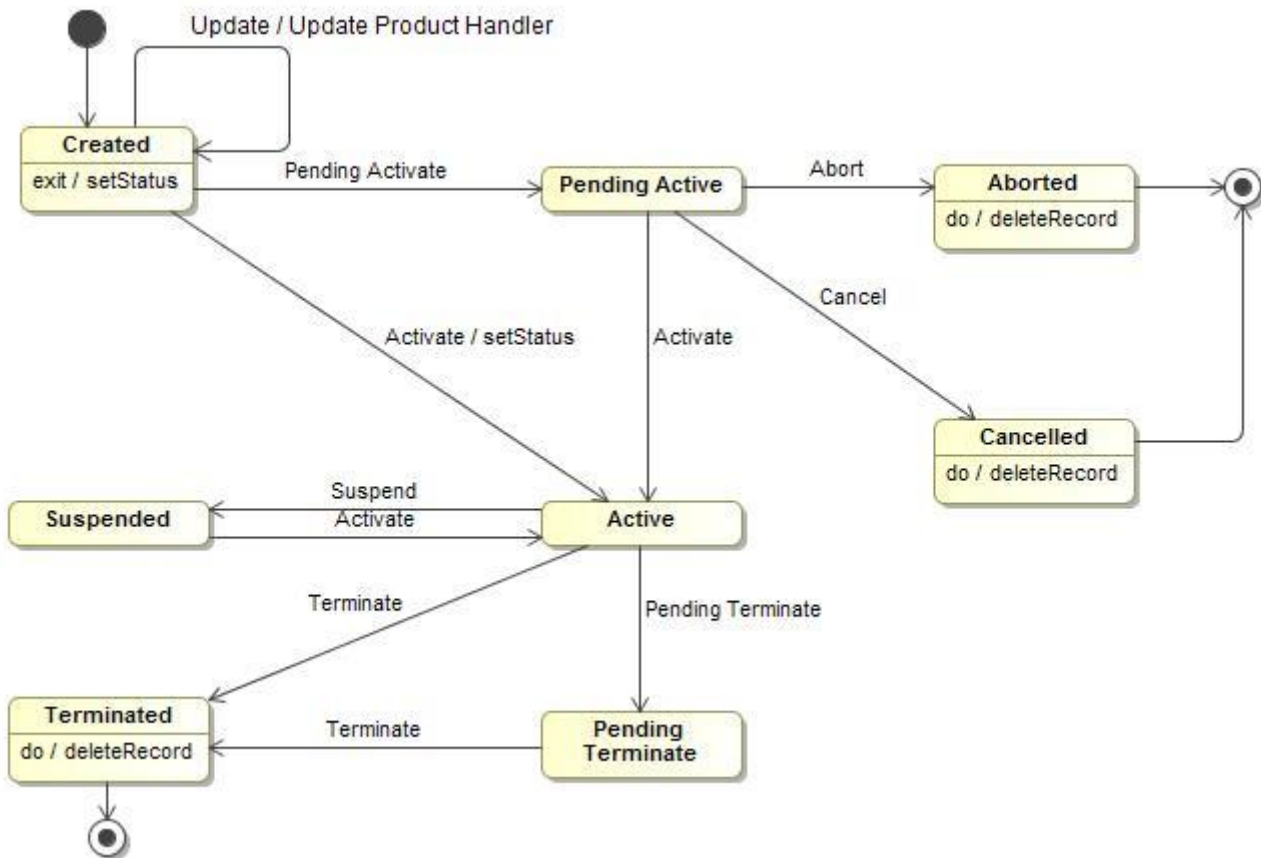


Figure 4. ProductSM

Name	Description
Aborted	Activation aborted for technical / internal reasons
Active	Active for customer use of product
Cancelled	Activation aborted by customer / legal request
Created	No identified status yet - newly injected into the target system
Pending Active	Prepared, but not active for customer yet
Pending Terminate	To be terminated, but still in use
Suspended	Temporary suspension, not usable for customer, typically because of barring caused by payment / dunning issues or customer request.
Terminated	No longer active for customer. From this status on, the ratedProductUsage collection will have a values

PRODUCT INVENTORY MANAGEMENT BUSINESS SERVICES

BUSINESS SERVICE – PRODUCT INVENTORY REST SERVICE



Figure 5. Product Inventory Business Service

OPERATION – POSTPRODUCT

Description

This operation is used to create a product.

Business Rules

Name	Severity	Specification	Message
mandatory attributes		[tradingName characteristic.name characteristic.value organizationIdentification.type organizationIdentification.identificationId externalReference.referenceType externalReference.reference relatedParty.role relatedParty.ref relatedParty.validFor.startDateTime (not mandatory is set to sysdate by default)]	

OPERATION – GETPRODUCT

Description

This operation retrieves a product.

Business Rules

Name	Severity	Specification	Message
mandatory attributes		[id]	

OPERATION – GETPRODUCTS

Description

This operation retrieves a collection of products.

OPERATION – PUTPRODUCT**Description**

This operation is used to completely update the representation of a product.

Business Rules

Name	Severity	Specification	Message
mandatory attributes		[id]	

OPERATION – PATCHPRODUCT**Description**

This operation is used to partially update the representation of a product.

Business Rules

Name	Severity	Specification	Message
can be updated		[status - created, pending active, aborted, cancelled, active, suspended, pending terminate, terminated description productSerialNumber orderDate place]	
mandatory attributes		[id]	

OPERATION – DELETEPRODUCT**Description**

This operation is used to delete a product.

Business Rules

Name	Severity	Specification	Message
mandatory attributes		[id]	

HUB BUSINESS SERVICE

The notification events supported by Product Inventory Management are:

- o Product create
- o Product state change
- o Product value change
- o Product delete

The Event is published to the registered listener

REST Example:

POST client/listener

BUSINESS SERVICE – PRODUCTINVENTORY HUB REST SERVICE

OPERATION – REGISTERPRODUCTLISTENER

Description

This operation is used to register a listener to be notified of the following events: Individual create, Individual update and Individual delete.

Business Rules

Name	Severity	Specification	Message
mandatory attributes		[description severity type]	

OPERATION – UNREGISTERPRODUCTLISTENER

Description

This operation is used to unregister a listener.

Business Rules

Name	Severity	Specification	Message
mandatory attributes		[description severity type]	