

# Product Order Management

## Business Service Specification

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## PRODUCT ORDER MANAGEMENT

The following document is the specification of the REST API for Product Order Management. It includes the model definition as well as all available operations. Possible actions are creating, updating and retrieving Product Orders.

The Product Ordering API provides a standardized mechanism for placing a product order with all of the necessary order parameters. The API consists of a simple set of operations that interact with CRM/Order Negotiation systems in a consistent manner. A product order is created based on a product offer that is defined in a catalog. The product offer identifies the product or set of products that are available to a customer, and includes characteristics such as pricing, product options and market.

The product order references the product offer and identifies any specific requests made by the customer.

Product Ordering API manages product order resource:

A Product Order is a type of order which can be used to place an order between a customer and a service provider or between a service provider and a partner and vice versa,

Main Product Order attributes are its identifier, state, priority category (mass market, Enterprise, etc.) related dates (start, completion, etc.), related billing account, related parties and order items

Main Order Items (aka order lines) attributes are the ordered offering and product characteristics with the related action to be performed (e.g. add or delete the products), state, location information for delivery.

Product ordering API performs the following operations on Product Order:

- Retrieval of a product order or a collection of product orders depending on filter criteria
- Partial update of a product order (including updating rules)
- Creation of a product order (including default values and creation rules)
- Deletion of product order (for administration purposes)

Notification of events on product order:

- o Order creation
- o Order removal
- o Order state change
- o Order value change used to notify that any data in an order has just changed
- o Order information required used to notify that some data in the order need to be filled / are missing

The following Assumptions were considered in the development of this document :

- The Order Management system has access to the commercial catalog system



Figure 1. Product Order Management



The CreateProductOrder only has the attributes necessary for a create operation.

## Attributes

Name	Type	Multiplicity	Description
category	String	0..1	Used to categorize the order from a business perspective that can be useful for the OM system (e.g. enterprise, residential, ...)
description	String	0..1	
externalId	String	0..1	ID given by the consumer and only understandable by him (to facilitate his searches afterwards)
note	Note	0..*	Extra-information about the order (e.g. useful to add extra delivery information that could be useful for a human process : a digicode access to a building, ...)
notificationContact	String	0..1	Contact attached to the order to send back information regarding this order
orderItem	ProductOrderItem	0..*	List of order items that have to be treated
priority	String	0..1	A way that can be used by consumers to prioritize orders in OM system (from 0 to 4 : 0 is the highest priority, and 4 the lowest)
relatedParty	RelatedPartyRef	0..*	Parties which are involved in this order and the role they are playing
requestedCompletionDate	DateTime	0..1	Requested delivery date from the requestor perspective
requestedStartDate	DateTime	0..1	Order start date wished by the requestor

## Business Rules

Name	Severity	Specification	Message
Create Product With High Priority	error	[self.priority = '0' implies self.requestedStartDate.allowedDaysInFuture(10)]	If the priority is 0 for HIGH, then the startDate must be within 10 days
mandatory attributes		[billingAccount.href note.text relatedParty.href and/or relatedParty.name relatedParty.role orderItem.id, orderItem.action orderItem.product orderItem.product.productCharacteristic if orderItem.action = 'add' orderItem.product.href if orderItem.action = 'modify' orderItem.product.href if orderItem.action = 'delete' orderItem.product.place.role orderItem.product.place.id and/or orderItem.product.place.href orderItem.productOffering (The productOffering may not be useful when doing a 'modify' or 'delete' on an owned product)]	
Max Number Of OrderItems	error	[self.orderItem->size() <= 10]	A maximum of 10 items can be ordered
OrderItems_Q	error	[self.orderItem]	Return order items
Priority Is 0 To 4	error	[self.priority = '0' or self.priority = '1' or self.priority = '2' or self.priority = '3' or self.priority =	The priority must be 0 to 4, 0 for highest, 4 for lowest



		'4']	
Priority_Q	error	[self.priority]	Return priority
RequestedCompletionDate_Q	error	[self.requestedCompletionDate]	Return requested completion date
RequestedStartDate_Q	error	[self.requestedStartDate]	Return requested start date
StartDate Before CompletionDate	error	[self.requestedStartDate.before(self.requestedCompletionDate)]	The requested start date must be before the requested completion date

## BUSINESS ENTITY – PARTIALUPDATEPRODUCTORDER

The PartialUpdateProductOrder only has the attributes necessary for a partial update operation.

### Attributes

Name	Type	Multiplicity	Description
category	String	0..1	Used to categorize the order from a business perspective that can be useful for the OM system (e.g. enterprise, residential, ...)
completionDate	DateTime	0..1	Date when the order was completed
description	String	0..1	
expectedCompletionDate	DateTime	1	Expected delivery date amended by the provider
externalId	String	0..1	ID given by the consumer and only understandable by him (to facilitate his searches afterwards)
note	Note	0..*	Extra-information about the order (e.g. useful to add extra delivery information that could be useful for a human process : a digicode access to a building, ...)
notificationContact	String	0..1	Contact attached to the order to send back information regarding this order
orderDate	DateTime	0..1	Date when the order was created
orderItem	ProductOrderItem	0..*	List of order items that have to be treated
priority	String	0..1	A way that can be used by consumers to prioritize orders in OM system (from 0 to 4 : 0 is the highest priority, and 4 the lowest)
relatedParty	RelatedPartyRef	0..*	Parties which are involved in this order and the role they are playing
requestedCompletionDate	DateTime	0..1	Requested delivery date from the requestor perspective
requestedStartDate	DateTime	0..1	Order start date wished by the requestor
status	String	0..1	Status of the productOrder - submitted, rejected, acknowledged, in progress (pending), in progress (held), cancelled, completed.
subStatus	String	0..1	SubStatus of the productOrder - pending, held.

### Business Rules

Name	Severity	Specification	Message
mandatory attributes		[priority category requestedStartDate if status = 'acknowledged' requestedCompletionDate if status = 'acknowledged' notificationContact note relatedParty if status =	

		'acknowledged' orderItem.status - submitted, rejected, acknowledged, in progress (pending), in progress (held), cancelled, completed. orderItem.subStatus - pending, held orderItem.appointment if status = 'acknowledged' orderItem.billingAccount if status = 'acknowledged' orderItem.productOffering if status = 'acknowledged' orderItem.product if status = 'acknowledged' orderItem.product.place if status = 'acknowledged']	
state patches		[When patching an order state to : - "Pending" / "Held" : all "InProgress" order items SHOULD be set to "Pending" / "Held" - "InProgress" : o all "Acknowledged" order items MUST be set to "InProgress" o all "Pending"/"Held" order items MAY be set to "InProgress"  When patching an order item state to : - "Pending" / "Held" : the order state itself SHOULD be set to "Pending" / "Held"]	

## BUSINESS ENTITY – PRODUCTCHARACTERISTIC

Characteristics of the product to instantiate or to modify.

### Attributes

Name	Type	Multiplicity	Description
name	String	1	
value	String	1	

## BUSINESS ENTITY – PRODUCTOFFERINGREF

Ordered offering (pricing, default values, etc. are fetched by the OM directly from the catalogue). May be a bundle ProductOffering, in this case, it will contain the list of bundled offers that are ordered.

### Attributes

Name	Type	Multiplicity	Description
bundledProductOffering	BundledProductOffering	0..*	Bundles that make up the bundled product offering.
href	String	1	Reference of the product offering.

## BUSINESS ENTITY – PRODUCTORDER

A type of order which can be used to place an order between a customer and a service provider or between a service provider and a partner and vice versa.

## Attributes

Name	Type	Multiplicity	Description
category	String	0..1	Used to categorize the order from a business perspective that can be useful for the OM system (e.g. enterprise, residential, ...)
completionDate	DateTime	0..1	Date when the order was completed
description	String	0..1	
expectedCompletionDate	DateTime	1	Expected delivery date amended by the provider
externalId	String	0..1	ID given by the consumer and only understandable by him (to facilitate his searches afterwards)
href	String	1	Hyperlink to access the order.
id	String	1	ID created on repository side (OM system).
note	Note	0..*	Extra-information about the order (e.g. useful to add extra delivery information that could be useful for a human process : a digicode access to a building, ...)
notificationContact	String	0..1	Contact attached to the order to send back information regarding this order
orderDate	DateTime	0..1	Date when the order was created
orderItem	ProductOrderItem	0..*	List of order items that have to be treated
priority	String	0..1	A way that can be used by consumers to prioritize orders in OM system (from 0 to 4 : 0 is the highest priority, and 4 the lowest)
relatedParty	RelatedPartyRef	0..*	Parties which are involved in this order and the role they are playing
requestedCompletionDate	DateTime	0..1	Requested delivery date from the requestor perspective
requestedStartDate	DateTime	0..1	Order start date wished by the requestor
status	String	0..1	Status of the productOrder - submitted, rejected, acknowledged, in progress (pending), in progress (held), cancelled, completed.
subStatus	String	0..1	SubStatus of the productOrder - pending, held.

## Business Rules

Name	Severity	Specification	Message
mandatory attributes		[These are the mandatory attributes]	

## BUSINESS ENTITY – PRODUCTORDERITEM

List of order items that have to be treated.

## Attributes

Name	Type	Multiplicity	Description
action	String	1	Can be: add, modify, no_change, delete
appointment	String	0..1	Used to precise that an appointment was set up with a related party for this order item.
billingAccount	BillingAccountRef	1..*	BillingAccount to use to bill the ordered products.
id	String	1	Identifier of the line item (generally it is a sequence number 01, 02, 03, ...)

product	ProductRef	1	Configure the product characteristics (only configurable characteristics and necessary only if a non default value is selected) and/or identify the product that needs to be modified/deleted. May be a bundle product instantiation, in this case, it will contain the list of bundled product to instantiate. Note : Each product to instantiate corresponds to a purchased productOffering. In case of bundles, the order of the list in the productOffering bundle must match the order of the list in the product instance bundle to deliver.
productOffering	ProductOfferingRef	0..1	Ordered offering (pricing, default values, etc. are fetched by the OM directly from the catalogue). May be a bundle ProductOffering, in this case, it will contain the list of bundled offers that are ordered.
state	String	0..1	State of the order item: described in the state machine diagram.

## Business Rules

Name	Severity	Specification	Message
BillingAccount_Q	error	[self.billingAccount]	Return billing account
CVC Id Format Rule	error	[self.id = 'AVCD' and self.product.productCharacteristic ->exists (d   d.name = 'Access Loop Identification') implies self.product.productCharacteristic ->exists (d   d.value.matches('CVC[0-9]{12}'))]	The format of Access Loop Identification must be CVC followed by 12 digits (CVC[0-9]{12})
PortId For Univ Range Rule	error	[self.id = 'UNIV' implies self.product.productCharacteristic ->forall (d   d.name = 'Port Id' implies d.value.toInteger() >= 0 and d.value.toInteger() <=1)]	The Port Id for voice resources (UNIV) must be 0 or 1
Product Order Billing Acct	error	[self.billingAccount->size() >= 1]	BillingAccountRefs must exist and contain a href value for all orders
ProductCharacteristi cALIName_Q	error	[self.product.productCharacteristi c->select(d   d.name = 'Access Loop Identification').name]	Return name of the access loop identification characteristic
ProductCharacteristi cALIValue_Q	error	[self.product.productCharacteristi c->select(d   d.name = 'Access Loop Identification').value]	Return value of the Access Loop Identification characteristic
ProductCharacteristi cPortName_Q	error	[self.product.productCharacteristi c->select(d   d.name = 'Port Id').name]	Return name of the Port Id characteristic
ProductCharacteristi cPortValue_Q	error	[self.product.productCharacteristi c->select(d   d.name = 'Port Id').value]	Return value of the Port Id characteristic
ProductId_Q	error	[self.id]	Return product id

## BUSINESS ENTITY – PRODUCTREF

Configure the product characteristics (only configurable characteristics and necessary only if a non default value is selected) and/or identify the product that needs to be modified/deleted. May be a bundle product instantiation, in this case, it will contain the list of bundled product to instantiate. Note: Each product to instantiate corresponds to a purchased productOffering. In case of bundles, the order of the list in the productOffering bundle must match the order of the list in the product instance bundle to deliver.

## Attributes

Name	Type	Multiplicity	Description
href	String	1	Reference to the owned product (useful for delete or modify command).
place	PlaceRef	0..1	Used to defined a place useful for the order item (for example a delivery geographical place).
productCharacteristic	ProductCharacteristic	0..*	Characteristics of the product to instantiate or to modify.
productRelationship	ProductRelationship	0..*	Linked products to the one instantiated : it can be bundled ones if the product is a bundle, or supportedBy ones if the product needs another already owned product to rely on.
relatedParty	RelatedPartyRef	0..*	Party linked at the product level (it may be a User for example).
status	String	0..1	Product status may be present, mainly in notification messages to inform about the delivery of each bundle component product.

## BUSINESS ENTITY – PRODUCTRELATIONSHIP

Linked products to the one instantiated : it can be bundled ones if the product is a bundle, or supportedBy ones if the product needs another already owned product to rely on.

### Attributes

Name	Type	Multiplicity	Description
product	ProductRef	0..1	Configure the product characteristics (only configurable characteristics and necessary only if a non default value is selected) and/or identify the product that needs to be modified/deleted. May be a bundle product instantiation, in this case, it will contain the list of bundled product to instantiate. Note : Each product to instantiate corresponds to a purchased productOffering. In case of bundles, the order of the list in the productOffering bundle must match the order of the list in the product instance bundle to deliver.
type	String	1	Type of the product relationship. It can be: 1) bundled - if the product is a bundle and you want to describe the bundled products inside this bundle. 2) reliesOn - if the product needs another already owned product to rely on (e.g. an option on an already owned mobile access product). 3) targets or isTargeted - (depending on the way of expressing the link) for any other kind of links that may be useful.

## 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.

Notification of events on product order:

- o Order creation
- o Order removal
- o Order state change
- o Order value change used to notify that any data in an order has just changed
- o Order information required used to notify that some data in the order need to be filled / are missing

The Event is published to the registered listener

REST Example:

POST client/listener

**PRODUCTORDER**

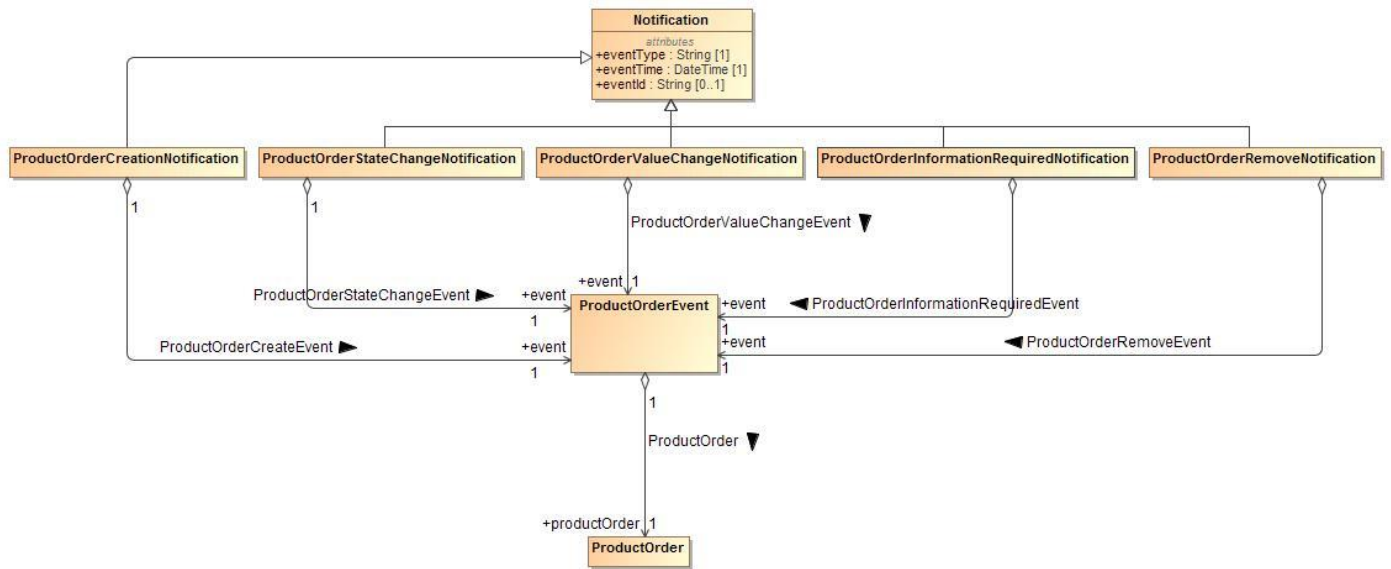


Figure 3. ProductOrder Notification

**BUSINESS ENTITY – PRODUCTORDERCREATIONNOTIFICATION**

Attributes

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

**BUSINESS ENTITY – PRODUCTORDEREVENT**

Attributes

Name	Type	Multiplicity	Description
productOrder	ProductOrder	1	

**BUSINESS ENTITY – PRODUCTORDERINFORMATIONREQUIREDNOTIFICATION**

Attributes

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

**BUSINESS ENTITY – PRODUCTORDERREMOVENOTIFICATION**

## Attributes

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

**BUSINESS ENTITY – PRODUCTORDERSTATECHANGENOTIFICATION**

## Attributes

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

**BUSINESS ENTITY – PRODUCTORDERVALUECHANGENOTIFICATION**

## Attributes

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

**NOTIFICATION COMMON****BUSINESS ENTITY – NOTIFICATION**

## Attributes

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

STATE MACHINE

ProductOrderSM

A productOrder represents a request to purchase for good and/or services.

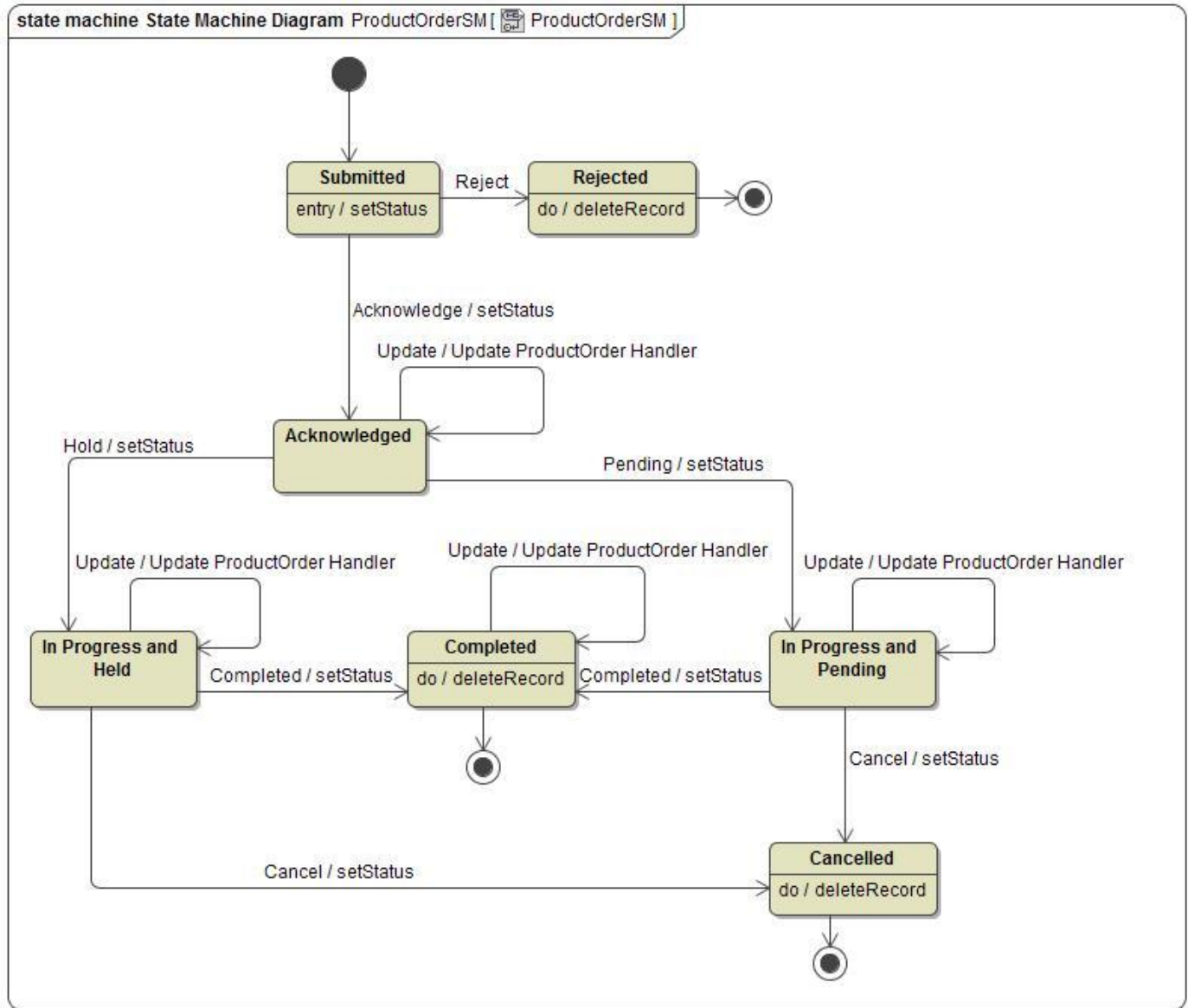


Figure 4. ProductOrderSM

Name	Description
<b>Acknowledged</b>	The Acknowledged state is where an order has been received and has passed message and basic business validations.
<b>Cancelled</b>	The Cancelled state is where an In-Flight Order has been successfully cancelled.
<b>Completed</b>	
<b>In Progress and Held</b>	The In Progress state is where an order has passed the Order Feasibility check successfully and service delivery has started.  The Held state is used when an order cannot be progressed due to an issue. SP has

	temporarily delayed completing an order to resolve an infrastructure shortfall to facilitate supply of order. Upon resolution of the issue, the order will continue to progress.
<b>In Progress and Pending</b>	<p>The In Progress state is where an order has passed the Order Feasibility check successfully and service delivery has started.</p> <p>The Pending state is used when an order is currently in a waiting stage for an action/activity to be completed before the order can progress further, pending order amend or cancel assessment. In situations where Access Seeker action is required, an "information required" notification will be issued on transition into this state.</p> <p>A pending stage can lead into auto cancellation of an order, if no action is taken within the defined timeframes to be described under the Agreement.</p>
<b>Rejected</b>	<p>The Rejected state is where:</p> <ul style="list-style-type: none"> <li>- An order failed the Order Feasibility check</li> <li>- Invalid information is provided through the order request</li> <li>- The order request fails to meet business rules for ordering</li> </ul>
<b>Submitted</b>	The newly created order has been submitted for processing.

**PRODUCT ORDER MANAGEMENT BUSINESS SERVICES**

**BUSINESS SERVICE – PRODUCT ORDER REST SERVICE**



Figure 5. Product Order Business Service

**OPERATION – POSTPRODUCTORDER**

**Description**

This operation creates a productOrder. A product order is created based on a product offering that is defined in a product catalog. The product offering identifies the product or set of products that are available to a customer for purchase, and includes characteristics such as pricing, product options and marketing information.

**Business Rules**

Name	Severity	Specification	Message
mandatory attributes		[billingAccount.href note.text relatedParty.href and/or relatedParty.name relatedParty.role orderItem.id, orderItem.action orderItem.product orderItem.product.productCharacteristic if orderItem.action = 'add' orderItem.product.href if orderItem.action = 'modify' orderItem.product.href if orderItem.action = 'delete' orderItem.product.place.role orderItem.product.place.id and/or orderItem.product.place.href orderItem.productOffering (The productOffering may not be useful when doing a "modify" or "delete" on an owned product)]	

**OPERATION – GETPRODUCTORDER**

**Description**

This operation retrieves a productOrder

**Business Rules**

Name	Severity	Specification	Message
mandatory attributes		[id]	



**OPERATION – GETPRODUCTORDERS****Description**

This operation retrieves all productOrders

**OPERATION – PUTPRODUCTORDER****Description**

This operation fully updates a productOrder

**Business Rules**

Name	Severity	Specification	Message
mandatory attributes		[id]	

**OPERATION – PATCHPRODUCTORDER****Description**

This operation partially updates a productOrder

**Business Rules**

Name	Severity	Specification	Message
can be updated		[state - to manage the order delivery process : InProgress (start process), Held / Pending (suspend process), Influence the orderItem states) priority category requestedStartDate - only when order is in "Acknowledged" state (delivery process not started) requestedCompletionDate - only when order is in "Acknowledged" state (delivery process not started) expectedCompletionDate notificationContact note billingAccount - only when order is in "Acknowledged" state (delivery process not started) relatedParty - only when order is in "Acknowledged" state (delivery process not started) orderItem.state - to manage the order item delivery process : InProgress (start sub process), Held / Pending (suspend sub process), Influence the order states orderItem.productOffering - only when order is in "Acknowledged" state (delivery process not started) orderItem.product - only when order item is in "Acknowledged" or "Pending" state (delivery process not started or suspended) orderItem.place - only when order item is in "Acknowledged" or "Pending" state (delivery process not started or suspended) orderItem.appointment - only when order item is in "Acknowledged" or "Pending" state (delivery process not started or suspended)]	
mandatory attributes		[priority]	

		<p>category                  requestedStartDate if status = 'acknowledged'                  requestedCompletionDate if status = 'acknowledged'                  notificationContact                  note                  relatedParty if status = 'acknowledged'                  orderItem.status - submitted, rejected, acknowledged, in progress (pending), in progress (held), cancelled, completed.                  orderItem.subStatus - pending, held                  orderItem.appointment if status = 'acknowledged'                  orderItem.billingAccount if status = 'acknowledged'                  orderItem.productOffering if status = 'acknowledged'                  orderItem.product if status = 'acknowledged'                  orderItem.product.place if status = 'acknowledged']</p>	
state patches		<p>[When patching an order state to :                  - "Pending" / "Held" : all "InProgress" order items SHOULD be set to "Pending" / "Held"                  - "InProgress" :                    o all "Acknowledged" order items MUST be set to "InProgress"                    o all "Pending"/"Held" order items MAY be set to "InProgress"</p> <p>When patching an order item state to :                  - "Pending" / "Held" : the order state itself SHOULD be set to "Pending" / "Held"]</p>	

**OPERATION – DELETEPRODUCTORDER**

**Description**

This operation deletes a productOrder. Warning : it should only be used for administration matters.

**Business Rules**

Name	Severity	Specification	Message
mandatory attributes		[id]	

## HUB BUSINESS SERVICE

The notification events supported by Product Order Management are:

- o Order creation
- o Order removal
- o Order state change
- o Order value change used to notify that any data in an order has just changed
- o Order information required used to notify that some data in the order need to be filled / are missing

The Event is published to the registered listener

REST Example:

POST client/listener

## BUSINESS SERVICE – PRODUCTORDER HUB REST SERVICE

### OPERATION – REGISTERPRODUCTORDERLISTENER

#### Description

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

#### Business Rules

Name	Severity	Specification	Message
mandatory attributes		[description severity type]	

### OPERATION – UNREGISTERPRODUCTORDERLISTENER

#### Description

This operation is used to unregister a ProductOrder listener

#### Business Rules

Name	Severity	Specification	Message
mandatory attributes		[description severity type]	