Draft Standard
MEF 57.2 Draft (R1)

Product Order Management
Requirements and Use Cases

November 2020

This draft represents MEF work in progress and is subject to change.

This draft document represents MEF work in progress, has not achieved full MEF standardization and is subject to change. There are known unresolved issues that are likely to result in changes before this becomes a fully endorsed MEF Standard. The reader is strongly encouraged to review the Release Notes when making a decision on adoption. Additionally, because this document has not been adopted as a Final Specification in accordance with MEF's Bylaws, Members are not obligated to license patent claims that are essential to implementation of this document under MEF's Bylaws.

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1   List of Contributing Members

The following members of the MEF participated in the development of this document and have requested to be included in this list.

Editor Note 1:   This list will be finalized before Letter Ballot. Any member that comments in at least one CfC is eligible to be included by opting in before the Letter Ballot is initiated. Note it is the MEF member that is listed here (typically a company or organization), not their individual representatives.

- ABC Networks
- XYZ Communications

2   Abstract

This specification identifies the common Order Use Cases and attributes needed to support inter-carrier Order management. It supports the requirements defined in the MEF Lifecycle Service Orchestration (LSO) Reference Architecture and Framework (MEF 55 [5], "LSO RA") requirements for Order Management over the Sonata interface (Service Provider <-> Partner interactions). Requirements and Use Cases contained within this specification will be utilized by both Buyer and Seller order systems for the development of APIs.

3   Release Notes

A Call for Comments (CfC) completed on this document in September 2020.   Resolution of comments on all sections of the document is not complete. Once all comments have been resolved, another CfC is planned.

The sections with comment resolution completed and the sections with comment resolution not completed are shown below:

- Sections with all comments resolved and updates complete
    - Section 2
    - Section 4
    - Section 5
    - Section 8
    - Section 9, 9.1, 9.1.1, 9.1.2, 9.1.3, 9.1.3.1, 9.1.3.2, 9.1.3.3, 9.1.6, 9.1.6.1, 9.1.6.2
    - Section 10, 10.1, 10.2, 10.3, 10.7, 10.8, 10.9, 10.10, 10.11, 10.12, 10.13, 10.14, 10.15, 10.18, 10.19. 10.21, 10.22, 10.23
    - Section 11, 11.1, 11.1.1, 11.1.2, 11.1.3, 11.1.4, 11.1.5, 11.1.6, 11.1.7, 11.1.8, 11.1.9, 11.1.10, 11.1.12, 11.1.13, 11.1.14, 11.1.15, 11.5, 11.5.1, 11.5.2, 11.6, 11.6.1, 11.6.2.1, 11.13, 11.13.1, 11.13.2, 11.14, 11.15
    - Section 12, 12.1, 12.2
    - Section 13
    - Appendix A, A.1, A.2, A.3
- Sections with comments unresolved are
    - Section 9.1.4, 9.1.4.1, 9.1.4.2, 9.1.4.3, 9.1.4.4, 9.1.5, 9.1.5.1, 9.1.5.2, 9.1.5.3, 9.1.5.4
    - Section 9.2, 9.2.1, 9.2.2, 9.2.3, 9.2.4
    - Section 10.4, 10.5, 10.6, 10.16, 10.17
    - Section 11.2, 11.2.1, 11.2.2
    - Section 11.3, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.5, 11.3.6, 11.3.7, 11.3.8, 11.3.9, 11.3.10, 11.3.11, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.20
    - Section 11.7, 11.7.1, 11.7.2
    - Section 11.8, 11.8.1, 11.8.2
    - Section 11.9, 11.9.1, 11.9.2
    - Section 11.10, 11.10.1, 11.10.2
    - Section 11.11, 11.11.1, 11.11.2
    - Section 11.12, 11.12.1, 11.12.2
    - Section 11.13, 11.13.1, 11.13.2
    - Section 12.3
    - Section 12.4
    - Section 12.5, 12.5.1, 12.5.2

It should be noted that the Use Cases, Attributes, Requirements, and Process Flows for Amend In-flight Order, Cancel In-flight Order, and the Charge Process have been discussed previously but are still subject to revision as comments in these areas are resolved.

4   Terminology and Abbreviations

This section defines the terms used in this document. In many cases, the normative definitions to terms are found in other documents. In these cases, the third column is used to provide the reference that is controlling, in other MEF or external documents.

In addition, terms defined in the standards referenced below are included in this document by reference and are not repeated in the table below:

- MEF 50.1
- MEF 51.1
- MEF 55
- MEF 79

Term	Definition	Reference
Confirmation_And_Engineering_ Design	A notification that identifies that the Confirmation and Engineering Design is available. The exchange of the design information is beyond the scope of this document. Create Product Order	This document
Confirmation_Only	A response to a Create Product Order request that confirms the Seller has received the Order Request.	This document
Connection Charge	A one-off charge set by the Seller to connect a Product Order Item to the Seller's network.	This document
Construction Charge	A one-off charge set by the Seller resulting from special construction required to provide a Buyer requested Product Order Item.	This document
Disconnect Charge	A one-off charge set by the Seller that results from a request by the Buyer to disconnect a Product.	This document
Duration	A period of time specified in seconds, minutes, hours, business hours, business days, or calendar days.	MEF 80 [10]
Expedite Charge	A one-off charge set by the Seller resulting from a request by the Buyer to expedite the Product Order Item.	This document
Identifier	An attribute type that contains no more than 45 characters and no spaces.	This document

Term	Definition	Reference
In-Flight	An Order Item that the Seller is still actively working on or intends to start or continue to work on. A Product Order is considered In-Flight when at least one of the Order Item it contains is In-Flight. An In-Flight Product Order may be amended.	This document
In-Flight Cancellation Charge	A charge set by the Seller that results from the cancellation of a Product Order that is In-Flight.	This document
Monthly Recurring Charge	A charge set by the Seller for the Product that occurs each month.	This document
MRC	Monthly Recurring Charge	This document
Point of No Return	A point in the fulfilment of an Order Item past which a Seller is unable or unwilling to accept an amendment or cancellation request on it. A Product Order is considered past the Point of No Return when all of its Order Items have reached their Point of No Return, and typically in addition results in the Seller preventing it from being amended to add Order Items to it.	This document
Telecommunication Service Priority	A US centric term used to assign a priority for restoration of a Product in the event of a natural or other disaster impacting multiple Products.	This document

Table 1 – Terminology and Abbreviations

5 Scope

This specification defines the process for MEF Order Management between a Seller and Buyer. At this time this specification uses Access E-Line services as defined in MEF 51.1 [5] as an example. This specification is limited to the business process requirements depicted as Use Cases and Attribute definitions needed for Order Management.

6   Compliance Levels

The key words **"MUST"**, **"MUST NOT"**, **"REQUIRED"**, **"SHALL"**, **"SHALL NOT"**, **"SHOULD"**, **"SHOULD NOT"**, **"RECOMMENDED"**, **"NOT RECOMMENDED"**, **"MAY"**, and **"OPTIONAL"** in this document are to be interpreted as described in BCP 14 (RFC 2119 [1], RFC 8174 [3]) when, and only when, they appear in all capitals, as shown here. All key words must be in bold text.

Items that are **REQUIRED** (contain the words **MUST** or **MUST NOT**) are labeled as **[Rx]** for required. Items that are **RECOMMENDED** (contain the words **SHOULD** or **SHOULD NOT**) are labeled as **[Dx]** for desirable. Items that are **OPTIONAL** (contain the words **MAY** or **OPTIONAL**) are labeled as **[Ox]** for optional**.**

Editor Note 2:   *The following paragraph will be deleted if no conditional requirements are used in the document.*

A paragraph preceded by **[CRa]<** specifies a conditional mandatory requirement that **MUST** be followed if the condition(s) following the "<" have been met. For example, "**[CR1]<**[D38]" indicates that Conditional Mandatory Requirement 1 must be followed if Desirable Requirement 38 has been met. A paragraph preceded by **[CDb]<** specifies a Conditional Desirable Requirement that **SHOULD** be followed if the condition(s) following the "<" have been met. A paragraph preceded by **[COc]<** specifies a Conditional Optional Requirement that **MAY** be followed if the condition(s) following the "<" have been met.

7   Numerical Prefix Conventions

Editor Note 3:   *This section will be deleted if no numerical prefixes are used in the document.*

This document uses the prefix notation to indicate multiplier values as shown in Table 2.

Decimal		Binary	
Symbol	**Value**	**Symbol**	**Value**
k	10^3	Ki	2^{10}
M	10^6	Mi	2^{20}
G	10^9	Gi	2^{30}
T	10^{12}	Ti	2^{40}
P	10^{15}	Pi	2^{50}
E	10^{18}	Ei	2^{60}
Z	10^{21}	Zi	2^{70}
Y	10^{24}	Yi	2^{80}

Table 2 – Numerical Prefix Conventions

8   Introduction

This specification defines the business requirements and process-related guidelines for the Ordering process over the Sonata interface. The Sonata interface is defined in MEF 55 [6] and MEF 55.0.1 [7] as the Management Interface Reference Point supporting the management and operations interactions (e.g., ordering, billing, trouble management, etc.) between two network providers (Service Provider Domain and Partner Domain). The scope of this document is limited to interactions between these parties; within this document, they are referred to as the "Buyer" and the "Seller".

The Buyer submits an order request containing one or more order items. The Buyer may place an order for an installation (Install) of a new service, Change to an existing service, or a Disconnect of an existing service. Orders that are in-progress (In-Flight) may be amended or cancelled by the Buyer. Order status may be queried by the Buyer. The Seller processes the order and provides notifications to the Buyer of order status at several milestones in the process. When the order has been processed the Seller notifies the Buyer that the order is complete.

To fully define the business interactions associated with inter-carrier ordering, this document is focused on the following key areas: section 9 defines the Use Cases and Order Management Scenarios, section 10 defines the specific ordering attributes associated with the product Orders supported in this document, and section 12 provides the State Diagrams for Product Ordering.
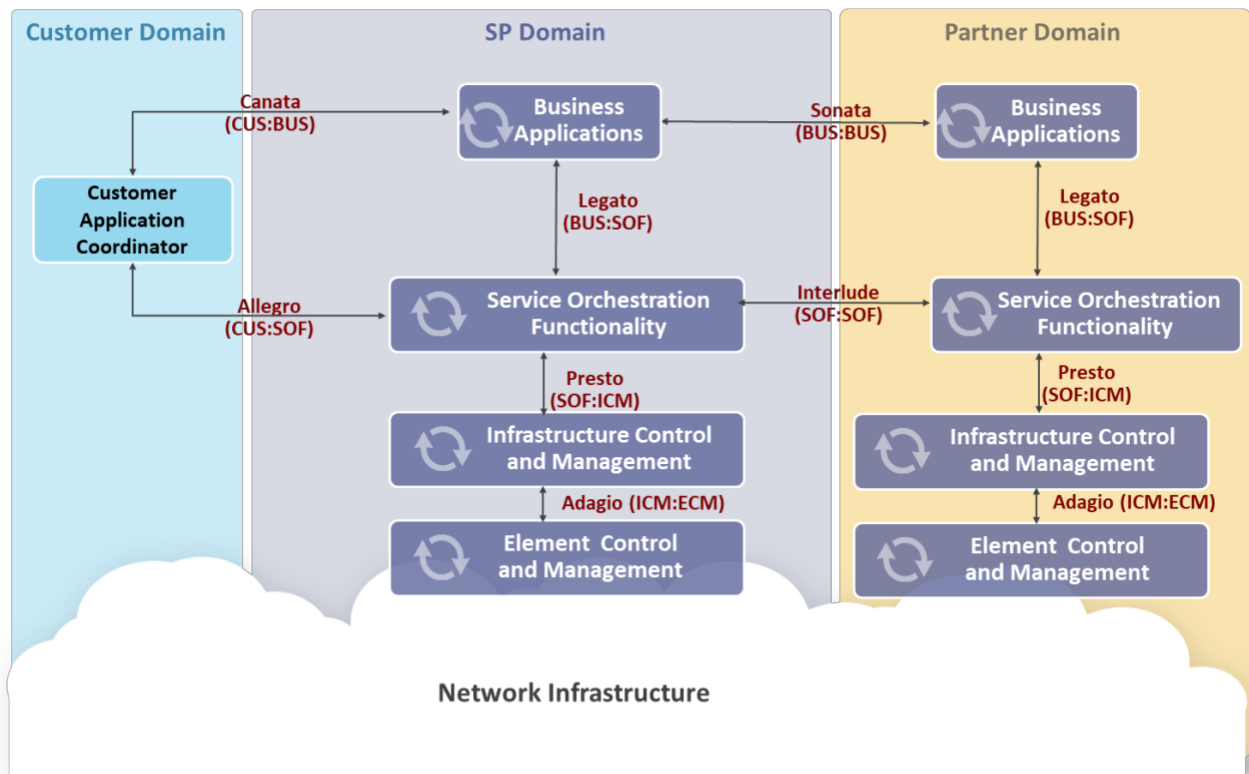
Figure 1 - LSO Reference Architecture Diagram

Figure 1 depicts the LSO Reference Architecture, per MEF 55 [5]. This document addresses the interactions between the business applications of the Service Provider ("Buyer") and Partner domains ("Seller") required to support the buying and selling of MEF defined services. Various supporting business functions may be utilized prior to initiation of the ordering process. Such functions are outside the scope of this document.

It is important to note that specifications related to Service Provider-Partner interactions outside the submission of a Product Order are also not in the scope of this document.

8.1 Product Specific Attributes

This document provides the use cases and requirements for a product agnostic interface. It does not include, except when used in examples, specific products or product attributes. Product specific attribute documents or models address these, and they are referred to as Product Specific Attributes within this document.

These attributes include not just variables for the product but also items like milestones that are included in notifications sent from Seller to Buyer.

9 Ordering Use Cases and Business Process Definitions

9.1 High Level Use Cases

This section provides the complete set of Use Cases needed to support the ordering of services and expands on the ordering process defined in MEF 50.1 [4]. These Use Cases are based on business process standards of interactivity between ordering entities and suppliers. Each use case drives the need for specific ordering information, and administrative process tracking objects. The specific attributes associated with each Use Case are defined in section 10. Prior arrangements for Buyer authentication, security verification, and system interface requirements are not addressed within these use cases. All onboarding requirements must be defined and negotiated between the Buyer and Seller prior to the submission of any requests or responses including what Product Orders a Buyer may retrieve information about.

It is expected that a catalog will be utilized to identify all products and services available for each Buyer. The requirements for how a catalog is used within the ordering process are outside the scope of this document.

9.1.1 Product Ordering Management Use Cases

This section defines the use cases that support the end-to-end lifecycle of Product Order Management of Services. The term "service" within this document pertains to the deployed Service realized as a result of a Product Order.
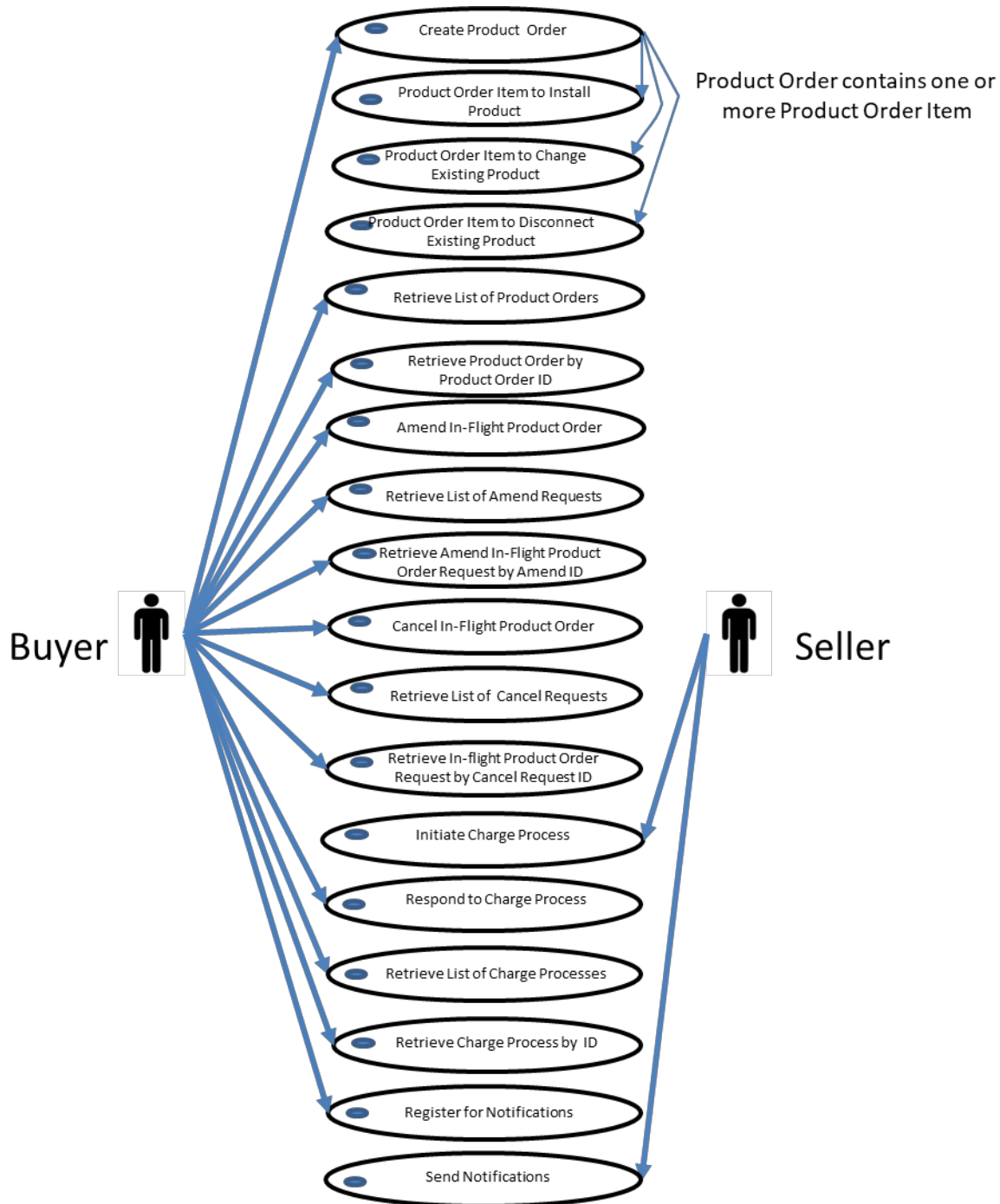
Figure 2 - Order Use Cases

Figure 2 indicates which party may initiate the process defined in the Use Case.

Use Case #	Use Case Name	Use Case Description
1	Create Product Order	A request initiated by the Buyer to order a new product or service component(s). A Product Order

Use Case #	Use Case Name	Use Case Description
		must contain at least one Product Order Item (Use Case # 1-a, 1-b, or 1-c) as shown below. A Product Order may contain more than one Product Order Item and Product Order Items within a Product Order are not required to have relationships between them.
1-a	Product Order Item to Install Product	Product Order Item installs a new Product.
1-b	Product Order Item to Change Existing Product	Product Order Item changes attributes of a specific active Product.
1-c	Product Order Item to Disconnect Existing Product	Product Order Item disconnects an active Product.
2	Retrieve List of Product Orders	A request initiated by the Buyer to retrieve a list of Orders that match the provided filter criteria
3	Retrieve Product Order by Order Identifier	A request initiated by the Buyer to retrieve the details associated with a specific Product Order with the given Order Identifier.
4	Amend In-Flight Product Order	A request initiated by the Buyer to modify/amend an In-Flight Product Order.
5	Retrieve List of Amend Requests	A request initiated by the Buyer to retrieve a list of Amend Requests that match the provided filter criteria
6	Retrieve Amend In-Flight Product Order Request by Amend Identifier	A request initiated by the Buyer to retrieve the details associated with a specific Amend Request with the given Amend Request Identifier.
7	Cancel In-Flight Product Order	A request initiated by the Buyer to cancel an In-Flight Product Order.
8	Retrieve List of Cancel Requests	A request initiated by the Buyer to retrieve a list of Cancel Requests that match the provided filter criteria
9	Retrieve Cancel of In-Flight Product Order Request by Cancel Request Identifier	A request initiated by the Buyer to retrieve the details associated with a specific Cancel Request with the given Cancel Request Identifier.
10	Initiate Charge Process	Process to communicate charges from the Seller to Buyer

Use Case #	Use Case Name	Use Case Description
11	Respond to Charge Process	Process to communicate if the Buyer accepts or rejects the charges.
12	Retrieve List of Charge Processes	A request initiated by the Buyer to retrieve a list of Charge Processes that match the provided filter criteria
13	Retrieve Charge Process by Identifier	A request initiated by the Buyer to retrieve the details associated with a specific Charge Process with the given Charge Process Identifier.
14	Register for Notifications	The Buyer requests to subscribe to notifications.
15	Send Notification	A notification initiated by the Seller to the Buyer providing subsequent status information on Order, Amend Requests, Cancel Requests, and Charge Processes.

Table 3 – MEF Product Order Use Case Summary

Note: In some cases, a Seller may initiate a Cancel or Disconnect Order within their order system They do not use the API between Buyer and Seller to initiate these orders and therefore this is not addressed within the scope of this document. If a Seller Cancels a Product Order the Seller sends a notification to the Buyer.

9.1.2 Order Operation Use Cases

This section defines the details for each of the Order Management Use Cases. The following assumptions are made for these Use Cases:

- The electronic method for sending the Order will be the same as the electronic method for sending the responses.

- The Buyer has determined the target Seller (Partner/Access Provider). Partner selection is out-of-scope.

- The Buyer and the Seller have established a partnership agreement (which might include interconnection inventory).

9.1.3 Create Product Order Use Cases

The following Use Cases are contained in this section:

- Create New Order

o   Order Item to Install Product

o   Order Item to Change Existing Product

o   Order Item to Disconnect Existing Product

- Retrieve Order List

- Retrieve Order by Order Identifier

9.1.3.1 *Create Product Order Use Case*

The Create Product Order Use Case and sub-Use Cases are detailed in this section.

Field	Description
Use Case #	1
Use Case Name	Create Product Order
Description	A request initiated by the Buyer to create a Product Order
Actors	Buyer, Seller
Pre-Conditions	1. The Buyer must be authorized to purchase products from the Seller (Buyer on-boarded). 2. The Buyer may have completed pre-order inquiries/serviceability request. 3. The Buyer may have completed a quoting process to obtain pricing information.
Process Steps	1. The Buyer initiates and submits a Create Product Order request that contains at least one Product Order Item as described in Use Cases 1-a, 1-b, or 1-c. See those use cases for Process Steps for each Product Order Item. 2. The Seller validates the Create Order request and each Product Order Item it contains as per Use Cases 1-a, 1-b, and 1-c. 3. If a POQ reference is provided for the Product Order Item, the Seller may verify that the attributes in the Product Order Item match the attributes in the Create POQ response. The value of some attributes may not be validated until the fulfillment process. 4. If a Quote reference is provided for the Product Order Item, the Seller may verify that the attributes in the Product Order Item match the attributes in the Create Quote response. The value of some attributes may not be validated until the fulfillment process. 5. The Seller accepts the Create Product Order Request and provides a response with an assigned Product Order Identifier.

	6. The state of the Order is set to "ACKNOWLEDGED" by the Seller.
Post-Conditions	1. The "ACKNOWLEDGED" order is ready for processing including additional business rule validation. 2. Seller initiates order processing. 3. If the Seller supports notifications and the Buyer has registered for notifications, the Seller notifies the Buyer of commitment to provide the requested product by a specific date.
Alternative Paths	1. The Seller returns an error message if an error is encountered while processing that prevents the Seller from acknowledging the Order.

Table 4 – Create New Order Request Use Case

Note: The maximum number of Product Order Items in a Create New Order request is agreed to by the Buyer and Seller.

An Create New Order request contains one or more Product Order Items. Each Product Order Item has an Order Item Product Action that defines if the Order Item is an Install of a Product, a Change to an existing Product, or a Disconnect of a Product. Changes allowed to an existing Product are agreed to by the Seller and Buyer. These actions are detailed in Use Cases 1-a, 1-b, and 1-c.

In some cases, the actions of related Product Order Items need to be coordinated as agreed to by the Buyer and Seller. The Product Actions may be the same or different actions. A Buyer includes these Product Order Items in a Create Product Order request and defines the relationships between the Product Order Items using the attribute that indicate these relationships.

Field	Description
Sub-Use Case #	1-a
Sub-Use Case Name	Product Order Item to Install Product
Description	Describes the sub-Use Case that includes a Product Order Item that has a Product Action of INSTALL
Process Steps	1. A Product Order Item with the Order Item Action of INSTALL and including the Product Offering Identifier for the product being ordered is included in a Create New Order request. 2. The Seller validates the Product Order Item. 3. The state of the Product Order Item is set to "ACKNOWLEDGED" by the Seller.

Table 5 – Product Order Item for New Product

Field	Description
Sub-Use Case #	1-b
Sub-Use Case Name	Product Order Item to Change Existing Product
Description	Describes the sub-Use Case that includes a Product Order Item with an Order Item Action of CHANGE.
Process Steps	1. The Buyer submits a Create New Order Request with a Product Order Item with the Order Item Action of CHANGE and the Product to be changed. 2. The Seller validates the Product Order Items. 3. The Seller accepts the Create New Order Request and provides a response with an assigned Product Order Identifier. The state of the Product Order is set to "ACKNOWLEDGED" by the Seller.

Table 6 – Product Order Item to Change Existing Product

Note: if the Seller is unable to support the request to change an existing Product, they return an error.

Field	Description
Sub-Use Case #	1-c
Sub Use Case Name	Product Order Item to Disconnect Existing Product
Description	Describes the sub-Use Case that includes a Product Order Item with an Order Item Action of DISCONNECT.
Process Steps	1. The Buyer submits a Create New Order request with a Product Order Item with the Order Item Action of DISCONNECT and the Product to be disconnected. 2. The Seller validates the Create New Order request and Product Order Items. 3. The Seller accepts the Create New Order request and provides a response with an assigned Product Order Identifier. The state of the Product Order is set to "ACKNOWLEDGED" by the Seller.

Table 7 – Product Order Item to Disconnect Existing Product

9.1.3.2   *Retrieve Order List*

The Retrieve Order List Use Case is detailed in this section.

Field	Description
Use Case #	2
Use Case Name	Retrieve List of Product Orders
Description	A request initiated by the Buyer to retrieve a list of Product Orders that match the provided filter criteria.
Actors	Buyer, Seller
Pre-Conditions	1. The Buyer must be authorized to perform the query.
Process Steps	1. The Buyer submits a Retrieve List of Product Order request as shown in section 11.5.1 including filter criteria the Seller should apply. 2. The Seller receives the request and validates the request. 3. The Seller determines if any Product Orders that match the filter criteria in the request. 4. The Seller returns a list of summarized Product Order instances as specified in section 11.5.2
Post-Conditions	1. The Buyer receives a list of all Product Orders that match the Buyer's selection criteria. 2. The Buyer may initiate Use Case 3 to obtain detailed information for a specific Product Order Identifier.
Alternative Paths	1. If errors are encountered, the Seller returns all identified errors in a reject response. 2. If the quantity of records exceeds a Seller's policy, the Seller must choose to respond with either: • an empty list and message that indicates the result set is too large and submit a new more specific query or • a response that indicates the result is too large and includes a subset of the matching Product Orders. 3. If the query does not find any matching records, then the Seller responds with an indication of this result.

Table 8 – Retrieve List of Product Orders Use Case

Note: The maximum number of records to be returned will be determined by the Seller.

9.1.3.3   Retrieve Product Order by Order Identifier Use Case

The Retrieve Product Order by Order Identifier Use Case is detailed in this section.

Field	Description
Use Case #	3
Use Case Name	Retrieve Product Order by Order Identifier
Description	A request initiated by the Buyer to retrieve the details of a Product Order with the given Product Order Identifier. This includes all Product Order and Product Order Item attributes.
Actors	Buyer, Seller
Pre-Conditions	1. The Buyer knows the Product Order Identifier they want to retrieve details on. 2. A Product Order Identifier exists in the Seller's system and the Product Order is available for online retrieval. Note: Any Product Order submitted by the Buyer that exists in the Seller's system must be able to be retrieved via the API
Process Steps	1. The Buyer initiates a Retrieve Product Order by Order Identifier request to the Seller using the Seller Order Identifier. 2. The Seller responds to the Retrieve Product Order by Order Identifier request with the up to date view of the Product Order and its associated Product Order Items as specified in Table 22, Table 23, and Table 24 and the Charge Process Identifier and state as specified in Table 38.
Post-Conditions	1. The Buyer has detailed information on the Product Order with the given Seller Order Identifier.
Alternative Paths	1. If errors are encountered, the Seller returns all identified errors in a reject response and the Buyer may submit a new query. 2. If the Product Order is not found, the Buyer must receive a response indicating this. 3. If the Buyer is not authorized to retrieve the Product Order, the Buyer must receive a response indicating this. 4. If the Seller has archived a Product Order after reaching a final state, the Seller may return an error because it is no longer possible to retrieve the Product Order.

Table 9 – Retrieve Product Order by Order Identifier Use Case

Note: The timeframe that a Product Order in the final state remains able to be retrieved is agreed to by the Buyer and Seller.

9.1.4   Amend In-Flight Product Order

The following Use Cases are contained in this section:

- Create Amend In-Flight Order Request

- Retrieve Amend In-Flight Order Request List

- Retrieve Amend Request by Amend In-Flight Order Request Identifier

9.1.4.1 Amend In-Flight Order Use Case

The ability of a Buyer to amend an In-Flight Product Order request is required. An In-Flight Product Order request could have some attributes amended (i.e. request an expedite on a Product Order Item, change the Requested Delivery Date) from the initial Create Product Order Request. There may be some attributes that the Seller is unable to amend. These are agreed to by the Buyer and the Seller during on-boarding. See Table 10 for details on what type of response the Seller provides the Buyer for a requested amendment.

Seller Response	Product Order Past the Point of No Return	Minor Changes – No Commercial Impact	Minor Changes – Commercial Impact	Major Changes – including or excluding Commercial Impact
Reject	X			
Accept		X		
Request Confirmation of updated charges (including amend changes) via Charge Process. If the Buyer accepts all Blocking charges, Seller accepts.			X	
Reject with advice to cancel the Product Order Items and go through POQ, Quote, Order for the new versions of them.				X

Table 10 Amend In-Flight Product Order Description

Field	Description

Use Case #	4
Use Case Name	Amend In-Flight Order
Description	A request initiated by the Buyer to modify/amend an In-Flight Product Order. This Use Case is only applicable after initiation of Use Case 1, with at least one Product Order Item as specified in sub-Use Cases 1-a, 1-b, or 1-c.
Actors	Buyer, Seller
Pre-Conditions	1. An In-Flight Product Order exists in the Seller's system. 2. The Buyer can amend the Product Order. Buyers may only amend Product Orders that they initiated.
Process Steps	1. The Buyer initiates an Amend In-Flight Product Order request. 2. The Seller validates the Amend In-Flight Product Order request. 3. The Seller provides a response with the assigned Seller Amend Identifier. The state of the Amend Request is set to "ACKNOWLEDGED" by the Seller. The associated Product Order moves to the ASSESSING_AMEND state and any associated Product Order Items move to the ASSESSING_CHANGE state.
Post-Conditions	1. The "ACKNOWLEDGED" Amend Request is ready for processing including additional business rule validation. 2. Seller initiates the Amend process and notifies the Buyer of acceptance or rejection of the Amend In-Flight Product Order request. The associated Product Order and Product Order Items return to the IN_PROGRESS state when the Amend In-Flight Product Order request reaches a terminal state.
Alternative Paths	1. The Seller returns an error message if an error is encountered while processing that prevents the Seller from completing the request. 2. The Seller may determine that the In-Flight Product Order cannot be amended and may reject the request (e.g., past the "point of no return", cannot amend the requested attribute). ").

Table 11 – Amend In-Flight Product Order Use Case

9.1.4.2 Retrieve List of Amend Requests Use Case

The Retrieve List of Amend Requests Use Case is detailed in this section.

Field	Description
Use Case #	5
Use Case Name	Retrieve List of Amend Request

Description	A request initiated by the Buyer to request a list of Amend Requests that match the provided filter criteria.
Actors	Buyer, Seller
Pre-Conditions	1. The Buyer must be authorized to perform the query.
Process Steps	1. The Buyer submits a Retrieve List of Amend Requests as shown in section 11.7.1 based on the filter criteria options. 2. The Seller receives the request and validates the request. 3. The Seller determines if there are any Amend Requests that match the filter criteria in the request. 4. The Seller returns a list of summarized amend instances as specified in section 11.7.2.
Post-Conditions	1. The Buyer receives the appropriate response. 2. The Buyer may initiate Use Case 6 to obtain detailed information on a Seller Amend Identifier.
Alternative Paths	1. If errors are encountered, the Seller returns all identified errors in a reject response and the Buyer may submit a new query. 2. If the quantity of records exceeds a Seller's policy, the Seller must choose to respond with either: • an empty list and message that indicates the result set is too large and submit a new more specific query or • a response that indicates the result is too large and includes a subset of the matching Product Orders. 3. If the query does not find any matching records, then the Seller will respond with an indication of this result.

Table 12 – Retrieve List of Amend Requests Use Case

9.1.4.3 *Retrieve Amend In-Flight Order Request by Amend Request Identifier Use Case*

The Retrieve Amend Request by Amend Request Identifier Use Case is detailed within this section.

Field	Description
Use Case #	6
Use Case Name	Retrieve Amend In-Flight Product Order Request by Amend Request Identifier
Description	A request initiated by the Buyer to retrieve the details associated with a specific Amend Identifier. This includes all Amend and Amend Item attributes.

Actors	Buyer, Seller
Pre-Conditions	1. The Buyer must be authorized to perform the query. 2. The Buyer knows the Seller Amend Identifier they want to retrieve details on. 3. An Amend Identifier exists in the Seller's system and the Order is available for online retrieval. Note: Any Amend Request submitted by the Buyer that exists in the Seller's system must be able to be retrieved via the API
Process Steps	1. The Buyer initiates a Retrieve Amend In-Flight Product Order by Amend Identifier request to the Seller using the Seller Amend Identifier. 2. The Seller responds to the Retrieve Amend In-Flight Product Order by Amend Identifier request as specified in section 11.8.2.
Post-Conditions	1. The Buyer has detailed information on the specified Seller Amend Identifier.
Alternative Paths	1. If errors are encountered, the Seller returns all identified errors in a reject response and the Buyer may submit a new query. 2. If the Seller Amend Identifier is not found, the Buyer must receive a reject response. 3. If the Seller has archived an Amend Request after reaching a final state, the Seller may return an error since the Amend Request is no longer able to be retrieved.

Table 13 – Retrieve Amend In-Flight Order Request by Amend Identifier Request Use Case

Field	Description
Use Case #	8
Use Case Name	Retrieve List of Cancel In-Flight Product Order Request
Description	A request initiated by the Buyer to retrieve a list of Cancel Requests that match the provided filter criteria.
Actors	Buyer, Seller
Pre-Conditions	1. The Buyer must be authorized to perform the query.
Process Steps	1. The Buyer submits a Retrieve List of Cancel In-Flight Product Order request as shown in section 11.9.1 based on the filter criteria options. 2. The Seller receives the request and validates the request.

	3. The Seller determines if there are any Cancel Requests that match the filter criteria in the request.
	4. The Seller returns a list of summarized cancel instances as specified in section 11.5.2
Post-Conditions	1. The Buyer receives the appropriate response.
	2. The Buyer may initiate Use Case 9 to obtain detailed information on a Seller Cancel Request Identifier.
Alternative Paths	1. If errors are encountered, the Seller returns all identified errors in a reject response and the Buyer may submit a new query.
	2. If the quantity of records exceeds a Seller's policy, the Seller must choose to respond with either:
	• an empty list and message that indicates the result set is too large and submit a new more specific query or
	• a response that indicates the result is too large and includes a subset of the matching Product Orders.
	3. If the query does not find any matching records, then the Seller will respond with an indication of this result.

Table 14 – Retrieve List of Cancel In-Flight Product Order Requests Use Case

9.1.4.4 Retrieve Cancel In-Flight Product Order Request by Cancel Request Identifier

The Retrieve Cancel In-Flight Product Order Request by Cancel Request Identifier Use Case is detailed in this section.

Field	Description
Use Case #	9
Use Case Name	Retrieve Cancel In-Flight Product Order Request by Cancel Request ID
Description	A request initiated by the Buyer to retrieve a Cancel Request by Identifier
Actors	Buyer, Seller
Pre-Conditions	1. The Buyer must be authorized to perform the query.
Process Steps	1. The Buyer initiates a Retrieve Cancel In-Flight Product Order Request by Cancel Identifier request to the Seller using the Seller Cancel Request ID.
	2. The Seller responds to the Retrieve Cancel In-Flight Product Order Request by Cancel Identifier request with the up to date view of the Cancel Request as specified in 11.10.2.

Post-Conditions	1. The Buyer has detailed information on the specified Cancel Request Identifier.
Alternative Paths	1. If errors are encountered, the Seller returns all identified errors in a reject response and the Buyer may submit a new query. 2. If the Seller Cancel Request Identifier is not found, the Buyer must receive a reject response. 3. If the Seller has archived a Cancel Request after reaching a final state, the Seller may return an error since the Cancel Request is no longer able to be retrieved.

Table 15 – Retrieve Cancel In-Flight Product Order Request by Cancel Request Identifier Use Case

9.1.5 Charge Process

The following Use Cases are contained in this section:

- Initiate Charge Process

- Respond to Charge Process

- Retrieve List of Charge Processes

- Retrieve Charge Process by Charge Process Identifier

9.1.5.1 Initiate Charge Process Use Case

The Initiate Charge Process Use Case is detailed in this section.

Field	Description
Use Case #	10
Use Case Name	Initiate Charge Process
Description	A process that is initiated by the Seller for a Product Order Item. The Seller identifies one or more charges associated with the Product Order Item.
Actors	Buyer, Seller
Pre-Conditions	A Product Order must be IN_PROGRESS.
Process Steps	1. The Seller identifies one or more charges as specified in section 10.16 associated with a Product Order Item. A Charge Process notification is sent by the Seller and a Charge Process is initiated by the Seller. The referenced

	Product Order Item moves to the HELD state until a response is received from the Buyer or the request for information expires.
	2. The Buyer receives the Charge Process notification or queries the Product Order Identifier and receives any Charge Process IDs associated with each Product Order Item contained within the Order.
	3. The Buyer accepts each Charge Identifier contained within the Charge Process.
	4. The Seller changes the state of the Charge Process to COMPLETE, updates the Product Order Item with the accepted charges and changes the referenced Product Order Item state to IN_PROGRESS.
Post-Conditions	The Buyer and Seller have agreed to the charges that will be accepted, that will be rejected, and the Order Request state can be updated.
Alternative Paths	1. The Buyer or Seller returns an error message if an error is encountered while processing that prevents the Buyer or Seller from completing the request.
	2. If the Seller identifies additional charges for a Product Order Item, they withdraw the Charge Process and notify the Buyer. A new Charge Process notification is generated by the Seller including the updated charges.
	3. If the Buyer rejects a Charge Identifier that is not identified as a Blocking charge, the Seller changes the state of the Charge Process to COMPLETE and changes the referenced Product Order Item state to IN_PROGRESS.
	4. If the Buyer rejects a Charge Identifier that is identified as a Blocking charge, the Seller changes the state of the Charge Process to COMPLETE, changes the referenced Product Order Item state to FAILED, and changes any Product Order Items related to the referenced Product Order Item to FAILED.

Table 16 – Initiate Charge Process Use Case

9.1.5.2 *Respond to Charge Process Use Case*

The Respond to Charge Process Use Case is detailed in this section.

Field	Description
Use Case #	11
Use Case Name	Respond to Charge Process
Description	A process that is initiated by the Buyer in response to a Charge Process being initiated by the Seller. The Buyer may respond with either an ACCEPT or REJECT for each charge.
Actors	Buyer, Seller
Pre-Conditions	A Charge Process

Process Steps	1. The Buyer responds to the Charge Process with either an ACCEPT or REJECT for each and every Charge Identifier included in the Charge Process. 2. If the Buyer accepts the charges, the Seller changes the state of the Charge Process to COMPLETE, updates the Product Order Item with the accepted charges, and changes the referenced Product Order Item state to IN_PROGRESS.
Post-Conditions	The Buyer and Seller have agreed to the charges that will be accepted, that will be rejected, and the Order Request state can be updated.
Alternative Paths	1. The Buyer or Seller returns an error message if an error is encountered while processing that prevents the Buyer or Seller from completing the request. 2. If the Buyer rejects a Charge Identifier that is not identified as a Blocking charge, the Seller changes the state of the Charge Process to COMPLETE and changes the referenced Product Order Item state to IN_PROGRESS. 3. If the Buyer rejects a Charge Identifier that is identified as a Blocking charge, the Seller changes the state of the Charge Process to COMPLETE, changes the referenced Product Order Item state to FAILED, and changes any Product Order Items related to the referenced Product Order Item to FAILED. If the Buyer rejects a Blocking charge, the Seller may refuse to complete the delivery of the Product Order Item related to the Blocking charge and may assess additional charges that are not included in the Charge Process. This may or may not impact other Product Order Items associated to the Order. 4. If they Buyer rejects a Blocking charge but accepts additional charges related to the Product Order Item, the Seller returns an error.

Table 17 – Respond to Charge Process Use Case

9.1.5.3 *Retrieve List of Charge Processes Use Case*

The Retrieve List of Charge Processes Use Case is detailed in this section.

Field	Description
Use Case #	12
Use Case Name	Retrieve List of Charge Processes
Description	A request initiated by the Buyer to retrieve a list of Charge Processes that match the provided filter criteria.
Actors	Buyer, Seller
Pre-Conditions	1. The Buyer must be authorized to perform the query.

Process Steps	1. The Buyer submits a Retrieve List of Charge Processes request as shown in section 11.11.1 based on the filter criteria options. 2. The Seller receives the request and validates the request. 3. The Seller determines if there are any Charge Processes that match the filter criteria in the request. 4. The Seller returns a list of summarized Charge Process instances as specified in section 11.11.2.
Post-Conditions	1. The Buyer receives the appropriate response. 2. The Buyer may initiate Use Case 13 to obtain detailed information on a Charge Process Identifier.
Alternative Paths	1. If errors are encountered, the Seller returns all identified errors in a reject response and the Buyer may submit a new query. 2. If the quantity of records exceeds a Seller's policy, the Seller must choose to respond with either: • an empty list and message that indicates the result set is too large and submit a new more specific query or • a response that indicates the result is too large and includes a subset of the matching Charge Processes. 3. If the query does not find any matching records, then the Seller will respond with an indication of this result.

Table 18 – Retrieve List of Charge Processes Use Case

9.1.5.4 *Retrieve Charge Process by Charge Process Identifier Use Case*

The Retrieve Charge Process by Charge Process Identifier Use Case is detailed in this section.

Field	Description
Use Case #	13
Use Case Name	Retrieve Charge Process by Charge Process Identifier
Description	A request initiated by the Buyer to request a Charge Process by Identifier
Actors	Buyer, Seller
Pre-Conditions	1. The Buyer must be authorized to perform the query.
Process Steps	1. The Buyer initiates a Query Charge Process Identifier Request to the Seller using the Seller Charge Process Identifier. 2. The Seller responds to the Query Charge Process Identifier Request with the latest view of the Charge Process as shown in Table 38.

Post-Conditions	1. The Buyer has detailed information on the specified Seller Charge Process Identifier.
Alternative Paths	1. If errors are encountered, the Seller returns all identified errors in a reject response and the Buyer may submit a new query. 2. If the Seller Charge Process Identifier is not found, the Buyer must receive a reject response.

Table 19 – Retrieve Charge Process by Charge Process Identifier Use Case

9.1.6   Notification Use Cases

The following Use Cases are contained in this section:

- Register for Notifications

- Send Notification

9.1.6.1   Register for Notifications Use Case

The Register for Notifications Use Case is detailed within this section.

Field	Description
Use Case #	14
Use Case Name	Register for Notifications
Description	A request initiated by the Buyer to instruct the Seller to send notifications when any of the following occur: • Product Order state change • Amend In-Flight Product Order Request state change • Cancel In-Flight Product Order Request state change • Charge Process state change • When a milestone is reached • When a Charge Process is initiated.
Actors	Buyer, Seller
Pre-Conditions	The Seller supports notifications.
Process Steps	1. The Buyer sends the Register for Notifications request as shown in section 11.13.1 to the Seller specifying where to send notifications and which Notification Types to include in notifications. 2. The Seller receives the Register for Notifications Request. 3. The Seller records which notifications to send, where to send such notifications for this Buyer.

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	4. The Seller returns an acknowledgement to the Buyer as shown in section 11.13.2
Post-Conditions	The Seller is aware of where to send notifications of state changes or when specific milestones are reached as described in Use Case 9 in Table 21.
Alternative Paths	The Seller returns an error message if an error is encountered while processing that prevents the Seller from completing the request.

Table 20 – Register for Notifications Use Case

9.1.6.2 Send Notification Use Case

The Send Notification Use Case is detailed in this section.

Field	Description
Use Case #	15
Use Case Name	Send Notification
Description	A notification initiated by the Seller to the Buyer providing subsequent status information when any of the follow occurs: • Product Order state change • Amend In-Flight Product Order Request state change • Cancel In-Flight Product Order Request state change • Charge Process state change • When a milestone is reached • When a Charge Process is initiated
Actors	Buyer, Seller
Pre-Conditions	1. The Seller supports notifications. 2. The Buyer has subscribed to Notifications. 3. An In-Flight Order exists in the Seller's system, and the Seller has initiated the validation process.
Process Steps	1. The Seller sends the notifications to the location(s) registered by the Buyer as shown in section 11.14.
Post-Conditions	1. The Seller has sent related notification.
Alternative Paths	

Table 21 – Send Notification Use Case

If the Buyer endpoint is unreachable an error is returned to the Seller. The Seller may, at the Seller's discretion, continue to try to send notifications to the endpoint or may mark that endpoint as failed and stop sending notifications to that endpoint.

9.2 Seller and Buyer Interaction for Non-Recurring or Updated Recurring Charges

Within the Order process (Create Product Order , Amend In-flight Order, and in the Seller's response to the Buyer's request) interactions between the Buyer and Seller may be required. This section explains these interactions.

9.2.1 Charge Process

When non-recurring or updated recurring charges are identified by the Seller during their processing of an Order, the Seller must communicate these charges to the Buyer and the Buyer must respond to the Seller informing the Seller if they accept or reject each charge. The Seller indicates for each charge, if the charge is Blocking or non-Blocking. If the Buyer rejects a Blocking Charge, the Seller will cancel that Product Order Item and any related Product Order Items. If the Buyer rejects a non-Blocking Charge, the Seller may proceed with fulfillment of the Product Order Item.

9.2.2 Expedite Requested

When the Buyer requests that a Product Order Item be expedited Create Product Ordering an Amend In-flight Order by setting the Order Item Expedite Indicator attribute to TRUE.

The Seller determines if they will accept the expedite and what the charges are to expedite the Product Order Item. If the Seller is willing to accept the expedite request, they include any charges associated with expediting the Product Order Item in a Charge Process.

The Buyer reviews the Seller's Charge Process and if they accept the Seller's specified charges associated with expediting the Product Order Item, the Seller indicates that they will accept the expedite using the Order Item Expedite Accepted Indicator attribute.

It is expected that the Seller will place the Product Order Item in a HELD state while awaiting confirmation on acceptance from the Buyer.

9.2.3 Construction Charges

If during the order process the Seller determines that there are Non-Recurring Charges associated with construction to provide a requested Product Order Item, the Seller communicates these charges to the Buyer using the Order Item Charges attributes, specifying that the Charge Type is Construction and the Charge Value.

The Buyer reviews the Seller's response and if they are in agreement with the Seller's specified charges associated with construction for the Product Order Item, they indicate this agreement by setting the Charge Acceptance Indicator to TRUE.

It is expected that the Seller will place the Product Order Item in a HELD state while awaiting confirmation on acceptance from the Buyer.

9.2.4   Connection Charges

If during the order process the Seller determines that there are Non-Recurring Charges associated with the connection of a requested Product Order Item, the Seller communicates these charges to the Buyer using the Order Item Charges attributes, specifying that the Charge Type is Connection and the Charge Value.

The Buyer reviews the Seller's response and if they are in agreement with the Seller's specified charges associated with connection of the Product Order Item, they indicate this agreement by setting the Charge Acceptance Indicator to TRUE.

It is expected that the Seller will place the Product Order Item in a HELD state while awaiting confirmation on acceptance from the Buyer.

10 Order Operation Attributes

This section identifies the attributes needed for each of the Order Management Use Cases defined previously. It is important to note that this section defines the superset of all MEF-defined attributes needed to support Order Management for the Use Cases defined in this document.

The columns in the tables are as follows:

Attribute   The name of the attribute
Description A short description of the attribute
Type   Specified data type for the attribute such as string, integer, enumerations, durations, date/time, or reference to another entry in the table
Max Length The maximum length of the attribute
Comments   Comments about the attribute

This section identifies the attributes needed for each of the ordering Use Cases defined above.

It is important to note that this section defines the superset of all attributes needed to support Product Ordering for the Use Cases defined in this document. It is possible that individual Sellers may require additional attributes for their unique product offerings and the ability to extend the technical implementation of these requirements to allow for Buyer-Seller specific attributes should be accommodated but not mandated by the implementation design.

10.1 Buyer and Seller Attributes

Table 22 shows the Buyer and Seller attributes.

Attribute	Description	Type	Comments
Buyer	The unique name of the organization that is acting as the customer in this transaction.	String	See section 11.15 for rules on use of Buyer
Seller	The unique name of the organization that is acting as the supplier in this transaction.	String	See section 11.15 for rules on use of Seller
Seller Response Code	A response identifier, indicating if the Seller was able to successfully fulfill the request.	String	Set by the Seller

Table 22 – Buyer and Seller Attributes

[R1]   The Seller Response Code **MUST** be included in all Seller responses.

10.2 Product Order Attributes

The attributes associated with the Create New Order Request (Use Case 1), Create Change Order Request (Use Case 2), Create Disconnect Order Request (Use Case 3), Amend In-Flight Order Request (Use Case 6), and Cancel In-Flight Order Request (Use Case 7) for a Product Order are shown in Table 23.

Attribute	Description	Type	Comments
Product Order Identifier	Unique identifier for the order that is generated by the Seller when the order is initially accepted via an API.	Identifier	Provided by the Seller
Product Order Version	The version of the Product Order Identifier	String	Set by the Seller.
Buyer Product Order Identifier	An identifier for this order within the Buyer's enterprise.	Identifier	Assigned by Buyer. Retained by Seller
Product Order Create Date	Date when the order was created in the Seller's system	dateTime	Set by the Seller
Project Identifier	An identifier that is used to group Orders that represent a unit of functionality that is important to a Buyer. A Project can be used to relate multiple Orders together.	Identifier	This value may be set by the Buyer to identify a project the order is associated with. This is retained by the Seller.
Order Cancellation Date	Identifies the date the Seller cancelled the Order.	dateTime	Set by Seller when the Order is moved to the CANCELLED state.
Cancellation Reason	An optional free-form text field for the Seller to provide additional information regarding the reason for the cancellation.	String	Set by the Seller. If the Seller cancels the Order, the Seller provides the reason. If the Buyer requests the cancellation, the Seller copies the reason provided by the Buyer from the Cancel Request.
Note	Free form text to clarify or explain the order	List of Note (Table 36)	
Order Item	Items contained in the order.	List of Order Item (Table 24)	An Order contains at least one Product Order Item.

Attribute	Description	Type	Comments
Order State	The states as defined by TMF622 [11] and extended to meet MEF requirements. These states are used to convey the Order status during the lifecycle of the Order.	One of the following • ACKNOWLE DGED • ASSESSING_ AMEND • ASSESSING_ CANCELLATI ON • ASSESSING_ CHARGE • CANCELLED • CANCELLIN G • COMPLETE • FAILED • IN_PROGRES S • PARTIAL • REJECTED	Set by the Seller
Order Final State Date	Identifies the date that all Product Order Items within the Order have reached a terminal state	dateTime	Set by Seller when all Product Order Items have reached a terminal state. No further action is permitted on the Product Order after this notification.
Order Contact Information	Identifies the name of the person or office that is responsible for the Order within the Buyer's organization.	Contact (Table 28)	
Seller Contact Information	Identifies the name of the person or office that is selling the product.	Contact (Table 28)	Set by Seller

Table 23 – Product Order Attributes

Note: All Product Order Items contained within a Product Order must use the same Project Identifier.

10.3 Product Order Item Attributes

Product Order Item attributes are shown in Table 24.

Attribute	Description	Type	Comments
Order Item Reference Identifier	A Buyer provided identifier to identify Product Order Items and to be able to relate them to one another.	Identifier	This is set by the Buyer and is unique within the Product Order.
Seller Order Item Identifier	A Seller provided identifier to identify the Product Order Items within a Product Order.	Identifier	This is only used when required for discussion between the Buyer and Seller.
Order Item Product Action	Action to be applied to this portion of the Order to the product referred by this Order Item	One of the following • INSTALL • CHANGE • DISCONNECT	Set by the Buyer Product refers to either a Product Specification or an existing Product as applicable
Order Item Product Identifier	The Buyer's existing Product for which the Product Order is being requested	Identifier	Set by the Buyer if the Product Action is CHANGE or DISCONNECT.
Order Item Product Offering Identifier	The Product Offering associated to the product for a new service.	Identifier	Set by the Buyer if the Product Action is INSTALL.
Order Item Product Specific Attributes	The technical attributes for the Product that would be delivered to fulfill this Product Order Item. This specifies the values for attributes defined in the Product Specification.		Set by the Buyer
Place Relationship	The relationships between this Product Order Item and one or more Places as defined in the Product Specification	List of Place Relationship (Table 35)	Set by the Buyer Defined in the Product Specification
Order Item End Customer Name	The name of the End Customer, either a business name or an individual name	string	Set by the Buyer

Attribute	Description	Type	Comments
	depending on the end customer.		
Order Item Relationship	The relationship between Product Order Items in the Product Order	List of Order Item Relationships (Table 30)	
Order Item Coordinated Action	The interval after the completion of one or more related Product Order Items that this Product Order Item can be started or completed.	List of Order Item Coordinated Action (Table 31)	
Product Relationship	The relationship between an Order Item and one or more existing Products.	List of Product Relationship (Table 32)	
Order Item Note	A set of unstructured notes associated to the Product Order Item. This can be empty.	List of Note (Table 36)	
Order Item Requested Completion Date	Identifies the Buyer's desired due date (requested delivery date)	dateTime	Set by the Buyer.
Order Item Expedite Indicator	Indicates that expedited treatment is requested.	Boolean	Set by the Buyer. Default Value = FALSE. If this is set to TRUE, the Buyer sets the Requested Completion Date to the expedited date. See section 9.2 for a description of the interaction between the Buyer and Seller.
Order Item Expedite Accepted Indicator	Indicates if the Seller has accepted the Buyer's Expedite request.	Boolean	See section 9.2 for a description of the interaction between the Buyer and Seller. Set by the Seller. Default Value = FALSE. If this is set to TRUE, the Seller

Attribute	Description	Type	Comments
			provides the costs to expedite the Order in the Expedite Charge Value attribute.
Order Item Charges	Both NRC and MRC charges associated with this Product Order Item	List of Charges (Table 37)	See section 9.2 for a description of the interaction between the Buyer and Seller.
Order Item Telecommunication Service Priority/ Restoration Priority	Within the United States, indicates the provisioning and restoration priority as defined under the TSP Service Vendor Handbook.	String	The valid values are defined in ATIS OBF document: ATIS-0404001
Buyer Order Item Contact	Identifies the name of the person or office that is buying the product.	Contact (Table 28)	
Buyer Implementation Contact	Identifies the name of the person or office that is the implementation contact for the Product Order Item.	Contact (Table 28)	
Buyer Technical Contact	Identifies the name of the person or office that is the technical contact for the Product Order Item.	Contact (Table 28)	
Order Item Failed Date	Identifies the date on which the Seller determined the Product Order Item could not be processed	dateTime	Set by Seller if Order Item State = FAILED. No further action is permitted on the Product Order Item after this notification.
Order Item Expected Completion Date	Identifies the date the Seller expects to complete the Product Order Item.	dateTime	Set by the Seller
Order Item Completion Date	Identifies the date the Seller completed the Product Order Item.	dateTime	Set by the Seller when Order Item State = COMPLETED.

Attribute	Description	Type	Comments
Order Item POQ Attributes Identifier	The POQ and POQ Item associated to this Product Order Item.	Reference to a POQ Attributes (see Table 41)	Set by the Buyer. The POQ attributes may be required by the Seller. In that case, this is a mandatory field. If the Seller does not require the POQ, then this is an optional attribute.
Order Item State	The state of the Product Order Item	One of • ACKNOWL EDGED • ASSESSING _CANCELA TION • ASSESSING _CHANGE • CANCELLE D • CANCELLI NG • COMPLETE D • FAILED • HELD • IN_PROGRE SS • PENDING • REJECTED • VALIDATE D	Set by the Seller.
Order Item Quote Attributes	The Quote and Quote Item associated to this Product Order Item.	Quote Attributes (Table 42)	Set by the Buyer. The Quote attributes may be required by the Seller. In that case, this is a mandatory field. If the Seller does not require the Quote, then this is an optional attribute.
Charge Process Identifier	Charges not included in the Quote Response	List of Charge Process (Table 37)	

Attribute	Description	Type	Comments
	and associated with the Product Order Item		
Order Item Term	Term of the Product Order Item	Term (Table 40)	
Related Buyer Purchase Order Number	Identifies the Buyer Purchase Order Number that is related to this order.	String	Set by the Buyer and retained by the Seller.
Buyer Billing Information	Buyer billing information	Buyer Billing (Table 29)	
Appointment	A scheduled appointment involving the Product Order Item	list of Appointment (section 10.20)	

Table 24 – Product Order Item Attributes

Note: Examples of Order Item Reference Identifier could be 1, 2, 3 or A, B, C. The Order Item Reference Identifier can be reused in multiple Product Orders to identify a Product Order Item within that Product Order.

10.4 Amend Request Attributes

The Amend Request attributes are detailed in Table 25.

Attribute	Description	Type	Comments
Seller Amend Identifier	Unique identifier for the Amend Request that is generated by the Seller when the Amend Request is initially accepted via an API.	Identifier	Provided by the Seller
Product Order Identifier	Unique identifier for the Product Order that is generated by the Seller when the Product Order is initially accepted via an API.	Identifier	Set by the Buyer to indicate the referenced Product Order
Product Order Version	The version of the Product Order Identifier	String	
Buyer Product Order Identifier	An identifier for this order within the Buyer's enterprise.	Identifier	
Buyer Order Version	The version number that the Buyer uses to refer	String	Assigned by Buyer. Retained by Seller

Attribute	Description	Type	Comments
	to this version of the order.		
Buyer Request Date	Date when the Amend Request was submitted by the Buyer to the Seller	dateTime	Set by the Buyer
Project Identifier	An identifier that is used to group Orders that represent a unit of functionality that is important to a Buyer. A Project can be used to relate multiple Orders together.	Identifier	This value may be set by the Buyer/Seller to identify a project the order is associated with.
Related Buyer Purchase Order Number	Identifies the Buyer Purchase Order Number that is related to this order.	String	
Priority Value	An integer that specifies the priority of the order.	Integer	Set by the Buyer. This field is ignored by the Seller.
Note	Free form text to clarify or explain the order	List of Note (Table 36)	
Quote Identifier	Value that associates this order with a previously assigned Quote response	Identifier	
Amend Request Item	Items contained in the Amend Request.	List of Amend Request Item (Table 26)	An Amend Request contains at least one Amend Request Item. Each Product Order Item in the Product Order must be included as Amend Request Items.
Amend Request State	The states as defined by TMF622 [11] and extended to meet MEF requirements. These states are used to convey the Order status during the lifecycle of the Order.	One of the following • ACCEPTED • ACKNOWLE DGED • IN_PROGRES S • REJECTED	Set by the Seller

Attribute	Description	Type	Comments
Amend Request Closed Date	Identifies the date that all Amend Request Items within the Amend Request have reached a terminal state	dateTime	Set by Seller when all Product Order Items have reached a terminal state. No further action is permitted on the Order after this notification.
Amend Request Expected Completion Date	Identifies the date of the Amend Request Item contained within the Amend Request with the Expected Completion Date that is furthest out in the future.	dateTime	Set by the Seller
Amend Request Contact	Identifies the name of the person or office that is responsible for the Amend Request within the Buyer's organization.	Contact (Table 28)	
Seller Contact	Identifies the name of the person or office that is selling the product.	Contact (Table 28)	Set by Seller

Table 25 – Amend Request Attributes

10.5 Amend Request Item Attributes

Amend Request Item attributes are shown in . Product Order Item Attribute values that are not being Amended must match the values in the initial Product Order Request or Response.

Attribute	Description	Type	Comments
Order Item Reference Number	A Buyer provided identifier to identify Product Order Items and to be able to relate them to one another.	String	This is set by the Buyer and is matches the Order Item Reference Number in the Order Request
Order Item Product Action	Action to be applied to this portion of the Order	One of the following • INSTALL • CHANGE • DISCONNECT	Set by the Buyer.

Attribute	Description	Type	Comments
Amend Request Order Item Action		One of the following: • AMEND • CANCEL • ADD • NO_CHANGE	Set by the Buyer. If there are no changes to the Product Order Item, the NO_CHANGE Order Item Action is used.
Order Item Product Identifier	The Buyer's existing product for which the order is being requested	Identifier	Set by the Buyer if the Order Item Action is CHANGE or DISCONNECT.
Order Item Product Offering Identifier	The Product Offering associated to the product for a new service.	Identifier	Set by the Buyer if the Order Item Action is INSTALL .
Order Item Product Specific Attributes	The technical attributes for the Product that would be delivered to fulfill this Product Order Item. This essentially specifies the values for attributes defined in the Product Specification. The detail of the Product Specification is for further study.		For further study.

Attribute	Description	Type	Comments
Order Item Location Type	The method used to describe the location at which this Product Order Item is installed or is to be installed.	String that is one of: • SERVICE_SITE _IDENTIFIER • FIELDED_ADD RESS • FORMATTED_ ADDRESS • GEOGRAPHIC _POINT • GLOBAL_AD DRESS_REFE RENCE	The Buyer is encouraged to use the Seller's SERVICE_SITE_IDENT IFIER if one exists. If one does not exist, then the Buyer may use any other Order Item Location Type.
Order Item Location	The detailed location at which this Product Order Item is installed or is to be installed if this Product Order Item is to be installed at a location.	Reference to one of the following from MEF 79 [8]: • Service Site (see MEF 79 sec 8.10) • Fielded Address (see MEF 79 sec 8.9.2) • Formatted Address (see MEF 79 sec 8.9.3) • Global Address Reference (see MEF 79 sec 8.9.4) • Geographic Point (see MEF 79 sec 8.9.5)	
Order Item Location Contact	The person to call to get access to this Service Site in case such access is required to complete the evaluation of this Product Order Item.	Contact (Table 28)	
Order Item End Customer Name	The name of the End Customer, either a business name or an individual name depending on the end customer.	string	Set by the Buyer

Attribute	Description	Type	Comments
Order Item Relationship	The relationship between two Product Order Items.	List of Order Item Relationship (Table 30)	
Product Relationship	The relationship between a Product Order Item and an existing Product.	List of Product Relationship (Table 32)	
Note	A set of unstructured notes associated to the Product Order Item. This can be empty.	List of Note (Table 36)	The notes may be defined by the Buyer or Seller
Order Item Requested Completion Date	Identifies the Buyer's desired due date (requested delivery date)	dateTime	Set by the Buyer.
Order Item Expedite Indicator	Indicates that expedited treatment is requested.	Boolean	Set by the Buyer. Default Value = FALSE. If this is set to TRUE, the Buyer sets the Requested Completion Date to the expedited date. See section 9.2 for a description of the interaction between the Buyer and Seller.
Order Item Telecommunication Service Priority/ Restoration Priority	Within the United States, indicates the provisioning and restoration priority as defined under the TSP Service Vendor Handbook.	String	The valid values are defined in ATIS OBF document: ATIS-0404001
Buyer Order Item Contact	Identifies the name of the person or office that is buying the product.	Contact (Table 28)	
Buyer Implementation Contact	Identifies the name of the person or office that is the implementation contact for the Product Order Item.	Contact (Table 28)	

Attribute	Description	Type	Comments
Buyer Technical Contact	Identifies the name of the person or office that is the technical contact for the Product Order Item.	Contact (Table 28)	
Order Item POQ Identifier	The Product Offering Qualification associated to this Product.	Identifier	The POQ may be required by the Seller. In that case this is a mandatory field. If the Seller does not require the POQ, then this is an optional attribute
Buyer Billing Information	Buyer billing information	Buyer Billing (Table 29)	
Appointment	A scheduled appointment involving the Product	Appointment (section 10.20)	

Table 26 – Amend Request Item Attributes

10.6 Cancel Request Attributes

The Cancel Request attributes are detailed in Table 27..

Attribute	Description	Type	Comments
Seller Cancel Identifier	Unique identifier for the Cancel Request that is generated by the Seller when the Amend Request is initially accepted via an API.	Identifier	Provided by the Seller
Product Order Identifier	Unique identifier for the Product Order that is generated by the Seller when the Product Order is initially accepted via an API.	Identifier	Set by the Buyer for the referenced Order
Product Order Version	The version of the Product Order Identifier	String	
Buyer Product Order Identifier	An identifier for this order within the Buyer's enterprise.	Identifier	
Buyer Order Version	The version number that the Buyer uses to refer to this version of the order.	String	Assigned by the Buyer. Retained by Seller

Attribute	Description	Type	Comments
Buyer Request Date	Date when the Amend Request was submitted by the Buyer to the Seller	dateTime	Set by the Buyer
Project Identifier	An identifier that is used to group Orders that represent a unit of functionality that is important to a Buyer. A Project can be used to relate multiple Orders together.	Identifier	This value may be set by the Buyer/Seller to identify a project the order is associated with.
Related Buyer Purchase Order Number	Identifies the Buyer Purchase Order Number that is related to this order.	String	
Priority Value	An integer that specifies the priority of the order.	Integer	Set by the Buyer. This field is ignored by the Seller.
Note	Free form text to clarify or explain the order	List of Note (Table 36)	
Quote Identifier	Value that associates this order with a previously assigned Quote response	Identifier	
Cancel Request State	The states as defined by TMF622 [11] and extended to meet MEF requirements. These states are used to convey the Order status during the lifecycle of the Order.	One of the following • ACCEPTED • ACKNOWLEDGED • IN_PROGRESS • REJECTED	Set by the Seller
Cancel Request Closed Date	Identifies the date that all Amend Request Items within the Amend Request have reached a terminal state	dateTime	Set by Seller when all Product s have reached a terminal state. No further action is permitted on the Order after this notification.

Attribute	Description	Type	Comments
Cancel Request Expected Completion Date	Identifies the date of the Amend Request Item contained within the Amend Request with the Expected Completion Date that is furthest out in the future.	dateTime	Set by the Seller
Cancel Request Contact	Identifies the name of the person or office that is responsible for the Amend Request within the Buyer's organization.	Contact (Table 28)	
Seller Contact	Identifies the name of the person or office that is selling the product.	Contact (Table 28)	Set by Seller
Cancellation Reason	Set by the Buyer	String	Set by the Buyer. This is an optional field in the Cancel Request.

Table 27 – Cancel Request Attributes

10.7 Contact Attributes

Table 28 contains the Contact attributes.

Attribute	Description	Type	Comments
Contact Name	Identifies the name of the person or office that is the Contact.	String	
Contact Telephone Number	Identifies the telephone number (excluding extension) of the Contact.	String	
Contact Telephone Number Extension	Identifies the telephone number extension of the Contact	String	
Contact Email Address	Identifies the Email address of the Contact when a profile does not already exist.	String	
Contact Postal Address	Identifies the postal address of the person or office to be contacted.	Postal address that includes all attributes of the	

Attribute	Description	Type	Comments
		Fielded Address (see MEF 79 [8] section 8.9.2)	
Contact Organization	The organization or company that the contact belongs to	String	

Table 28 – Contact Attributes

10.8 Buyer Billing Attributes

The below table defines the attributes associated with the Buyer Billing information. This information is provided per Product Order Item. The Seller may require that the Buyer Billing information be the same for each Product Order Item in an Order.

Attribute	Description	Type	Comments
Billing Account	Identifies the billing account to which the recurring and non-recurring charges for this request will be billed.	String	Required if the Buyer has more than one Billing Account with the Seller and for all new Product Orders.
Billing Contact	The Buyer contact for Billing.	Contact (Table 28)	
Agreement Name	The name of the Agreement which is referenced for the Product Order Item.	String	

Table 29 – Buyer Billing Attributes

10.9 Product Order Item Relationship Attributes

Table 30 shows Product Order Item Relationship attributes.

Attribute	Description	Type	Comments
Identifier Related Order Item Reference Identifier	Order Item Reference Identifier of the related Product Order Item (must be in the same Order).	String	Set by the Buyer

Order Item Relationship Nature	Specifies the nature of the relationship to the related Product Order Items.	String that is one of the relationship types specified in the Product Specification.	Set by the Buyer

Table 30 - Product **Order Item Relationship Attributes**

Note: The nature of required relationships varies for Products of different types. For example, a UNI or ENNI Product may not have any relationships, but an Access E-Line may have two mandatory relationships (related to the UNI on one end and the ENNI on the other). More complex Products such as multipoint IP or Firewall Products may have more complex relationships. As a result, the allowed and mandatory Relationship Nature values are defined in the Product Specification.

10.10 Product Order Item Coordinated Action

Table 31 shows Coordinated Action attributes.

Attribute	Description	Type	Comments
Order Item Reference Identifier	Specifies one or more Order Items that are to be coordinated with this Order Item.	List of Order Item Reference Identifiers	Set by the Buyer
Order Item Coordination Dependency	A dependency between the Product Order Item and a related Product Order Item	One of: • START_TO_START • START_TO_FINISH • FINISH_TO_START • FINISH_TO_FINISH	Set by the Buyer to define the type of Coordination Dependency.
Coordinated Action Delay	The period of time for which the coordinated action is delayed.	Duration	Set by Buyer

Table 31 - Product **Order Item Coordination Action Attributes**

10.11 Product Relationship Attributes

Table 32 shows Product Relationship attributes.

Attribute	Description	Type	Comments
Related Product Identifier	A list of one or more IDs of the related Products in the Product Inventory.	List of Product IDs	Set by the Buyer
Product Relationship Nature	Specifies the nature of relationship to the related Product. The nature of required relationships vary for Products of different types.	String that is one of the relationship types specified in the Product Specification.	Set by the Buyer

Table 32 - Product Relationship Attributes

Note: The nature of required relationships varies for Products of different types. For example, a UNI or ENNI Product may not have any relationships, but an Access E-Line may have two mandatory relationships (related to the UNI on one end and the ENNI on the other). More complex Products such as multipoint IP or Firewall Products may have more complex relationships. As a result, the allowed and mandatory Relationship Nature values are defined in the Product Specification.

10.12 Notification Registration Attributes

Table 33 shows the Notification Registration attributes.

Attribute	Description	Type	Comments
Return Address Information	The detailed information on the mechanism and address specifying where the Seller is to send any Order Notifications. There can be multiple locations for one Buyer.		For Further Study

| List of Notification Types | The types of notifications that the Buyer wishes to receive. | List of one or more of:
• CREATE_ORDER
• CREATE_AMEND
• CREATE_CANCEL
• ORDER_STATE_CHANGE
• AMEND_STATE_CHANGE
• CANCEL_STATE_CHANGE
• ORDER_ITEM_STATE CHANGE
• PRODUCT_SPECIFIC_ORDER_MILESTONE
• PRODUCT_SPECIFIC_ORDER_ITEM_MILESTONE
• CHARGE_PROCESS_STATE_CHANGE
• CHARGE_PROCESS_STATE_CHANGE
• CHARGE_PROCESS_TIMEOUT
• ORDER_EXPECTED_COMPLETION_DATE_SET
• ORDER_ITEM_EXPECTED_COMPLETION_DATE_SET
• ORDER_ITEM_APPOINTMENT | |
| Action | Specification to Start Notifications or Stop Notifications. | One of:
• START
• STOP | |

Table 33 - Register for Notifications Buyer Attributes

10.13 Notification Attributes

Table 34 shows Notification attributes.

Attribute	Description	Type	Comments
Seller Object Identifier	Unique identifier that is generated by the Seller when the Seller Object Identifier Type is initially accepted or created via an API.	Identifier	Provided by the

Item Reference Identifier			Provided by the when a Notifica for an Item
Seller Object Identifier Type	The type of Seller Object Identifier.	One of: • ORDER • AMEND • CANCEL • CHARGE_PROCESS	If the type is CHARGE_PR the Charge Proc initiated by the All other types initiated by the
Notification Type	The type of notification.	One of: • CREATE_ORDER • CREATE_AMEND • CREATE_CANCEL • ORDER_STATE_CHANGE • AMEND_STATE_CHANGE • CANCEL_STATE_CHANGE • ORDER_ITEM_STATE CHANGE • PRODUCT_SPECIFIC_ORDER_MILESTONE • PRODUCT_SPECIFIC_ORDER_ITEM_MILESTONE • CHARGE_PROCESS_STATE_CHANGE • CHARGE_PROCESS_STATE_CHANGE • CHARGE_PROCESS_TIMEOUT • ORDER_EXPECTED_COMPLETION_DATE_SET • ORDER_ITEM_EXPECTED_COMPLETION_DATE_SET • ORDER_ITEM_APPOINTMENT •	

Table 34 - Seller Notification

10.14 Place Relationship Attributes

Table 35 shows Place Relationship Attributes.

Attribute	Description	Type	Comments
Role	The role of the place as specified in the Product Specification	String	Set by the Buyer as defined by the Seller in the Product Specification
Order Item Location Type	The attribute used to describe the location at which this Product Order Item is installed or is to be installed if needed per the Product Specification.	String that is one of: • SERVICE_ SITE_IDE NTIFIER • FIELDED_ ADDRESS	The Buyer is encouraged to use the Seller's SERVICE_SITE_IDENT IFIER as the Order Item Location Type if one exists. If one does not exist, then the Buyer may

		• FORMATT ED_ADDR ESS • GEOGRAP HIC_POIN T • ADDRESS _REFERE NCE	use any other Quote Item Location Type. MEF 79.0.2 [9] Appendix A contains a description of the Address Validation process.

Order Item Location	The detailed location at which this Product Order Item is installed or is to be installed if this Product Order Item is to be installed at a particular location.	Reference to one of the below: • Service Site (see MEF 79 [8] section 8.10) • Fielded Address (see MEF 79 [8] section 8.9.2) • Formatted Address (see MEF 79 [8] section 8.9.3) • Global Address Reference (see MEF 79 [8] section 8.9.4) • Geographic Point (see MEF 79 [8] section 8.9.6)	
Order Item Service Site Contact	The person to contact to get access to this Service Site	Contact (Table 28)	Set by the Buyer The term Service Site is used to refer to the end point of the Product. A Service Site Identifier may not have been assigned at the time the Buyer submits the request."

Table 35 – Place Relationship Attributes

10.15 Note Attributes

Table 36 shows Note attributes.

Attribute	Description	Type	Comments
Note Date	The date of the note.	dateTime	Set by the Buyer or Seller. The Buyer creates a note when requesting the quote. The Seller may add notes.
Note Author	The author of the note.	String	
Note Source	Indicates if the note is from Buyer or Seller	One of: • BUYER • SELLER	Set by the Buyer or Seller
Note Text	The text of the note.	String	

Table 36 - Note Attributes

Editor Note 4: *The mechanism used for the Buyer to add a note after the request has been submitted is for further study and not included within the scope of this revision of the document. It is believed that this process will look much like the Cancel In-Flight Order process described in this document and that the Buyer will only be able to add new notes, not to modify or delete an existing note.*

10.16 Charge Process Attributes

Table 37 Shows the Charge Process Attributes

Attribute	Description	Type	Comments
Charge Process Identifier	A unique identifier of the Charge Process	Identifier	Set by the Seller
Product Order Identifier	Unique identifier for the order that is generated by the Seller when the order is initially accepted via an API.	Identifier	Provided by the Seller
Order Item Reference Number	A Buyer provided identifier to identify Product Order Items and to be able to relate them to one another.	String	This is set by the Buyer and is matches the Order Item Reference Number in the Order Request
Charge Identifier	A list of Charge IDs associated with the Charge Process	List of Charge IDs	Set by the Seller

Response Due Date	The date that the Buyer must respond to the Seller's Charge Process. If there is no response received by the Due Date the Seller may cancel the Product Order Item or Order.	datetime	Set by the Seller
Charge Process State	The state of the Charge Process	One of the following: • INITATED • ACCEPTED • REJECTED • COMPLETE	State is set by the Seller

Table 37 – Charge Process Attributes

10.17 Charges Attributes

Table 38 shows the Charges attributes.

Attribute	Description	Type	Comments
Charge Identifier	A unique identifier of the charge	Identifier	Set by the Seller
Charge Type	The type of charge.	One of the following" • MRC • Expedite • Construction • Connection • In-Flight Cancellation • Disconnect	Set by the Seller. If the Charge Type is MRC or Connection the Charge Value musts specify the new value and not the incremental value from the Quote Response or Agreement.
Blocking	Indicates if rejecting the charge will cause the Seller to cease work on the Product Order Item	Boolean	
Charge Value	The value associated with the charge	Price (Table 39)	Set by the Seller

Charge Acceptance Indicator	Indicates if the Buyer has accepted the specified charge	One of the following: • Accept • Reject	Set by the Buyer.

Table 38 – Charge Attributes

10.18 Price Attributes

Table 39 shows the Price attributes.

Attribute	Description	Type	Comments
Price Tax Rate	The tax rate applied.		This is an optional attribute set by the Seller
Price Tax Included Amount	All taxes included amount (expressed in the given currency).	Money • Currency • Value	This is an optional attribute set by the Seller
Price Duty Free Amount	All taxes excluded amount (expressed in the given currency).	Money • Currency • Value	

Table 39 - Price Attributes

10.19 Term Attributes

Table 40 shows the Term attributes.

Attribute	Description	Type	Comments
Order Item Term Duration	Duration of the term	Duration	Set by the Buyer. If not set by the Buyer, this is set by the Seller.

Seller End of Term Action	The action the Seller will take once the term expires. Applicable actions are defined in Product Offering.	Indicator with following allowed values: • Roll • Auto-disconnect • Auto-renew	Set by the Buyer. If not set by the Buyer, then this is set by the Seller. Roll indicates that the Product's contract will continue on a rolling basis for the duration of the Roll Interval at the end of the Term. Auto-disconnect indicates that the Product will be disconnected at the end of the Term. Auto-renew indicates that the Product's contract will be automatically renewed for the Term Duration at the end of the Term.
Roll Interval	The recurring period that the Buyer must pay to the end of upon disconnecting the Product after the original term has expired.	Duration	Set by Seller if Seller End of Term Action is Roll

Table 40 – Term Attributes

10.20 Appointment Attributes

This section is a placeholder for Appointment attributes that are being defined in the Sonata Trouble Ticketing Project. Once defined there, this section will be updated.

10.21 POQ Attributes

Table 41 shows the POQ Attributes

Attribute	Description	Type	Comments
POQ Identifier	Identifier of the Product Offering Qualification	String	Reference to a POQ. Provided by the Buyer from the Seller's response to a Create POQ Request as specified in MEF 79 [8]. The Seller can make this field mandatory or optional. If mandatory, the Buyer must include the POQ Identifier.
POQ Item Identifier	Identifier of the Product Offering Qualification Item	String	A unique identifier of the POQ item. Provided by the Buyer from the Seller's response to a Create POQ Request as specified in MEF 79 [8]. Seller can make this field mandatory or optional.
Alternate Product Proposal Identifier	A unique identifier for this Alternate Product Proposal assigned by the Seller.	String	If the Buyer has performed a POQ and desires to select one and only one of the Alternate Product Proposals per Quote Item they identify the alternate proposal using the Alternate Product Proposal Identifier from the POQ response as specified in MEF 79 [8].

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Table 41 – POQ Attributes

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10.22 Quote Attributes

Table 42 shows the Quote Attributes

Attribute	Description	Type	Comments
Quote Identifier	Identifier of the Quote	Identifier	Reference to a Quote. Provided by the Buyer from the Seller's response to a Create Quote Request as specified in MEF 80 [10]. The Seller can make this field mandatory or optional. If mandatory, the Buyer must include the POQ Identifier.
Quote Item Identifier	Identifier of the Product Offering Qualification Item	String	A unique identifier of the POQ item. Provided by the Buyer from the Seller's response to a Create POQ Request as specified in MEF 80 [10]. Seller can make this field mandatory or optional.

Table 42 – Quote Attributes

10.23 Duration

Table 43 shows the attributes for Duration.

Attribute	Description	Type	Comments
Duration Unit	The unit of the duration.	String one of the following: • BUSINESS_DAYS • BUSINESS_HOURS • BUSINESS_MINUTES • CALENDER_MONTHS • CALENDAR_DAYS • CALENDAR_HOURS • CALENDAR_MINUTES	
Duration Value	The value of the duration.	Integer	

Table 43 – Duration Attributes

11 Product Order Requirements

This section contains the requirements for Product Orders for both Buyers and Sellers. Requirements for Sellers are divided into attributes that must be included in the Seller's initial response to the Buyer's Create Product Order request and requirements that apply to updates during the lifecycle of the Product Order that are performed by the Seller.

11.1 Create Product Order

This section defines the attributes and requirements for the Buyer's Create Product Order request and the Seller's Create Product Order response for INSTALL, CHANGE, and DISCONNECT Order Item Product Actions.

11.1.1 Buyer Create Product Order Request Order Level Attributes

This section defines the Order Level attributes and requirements for the Buyer's Create Product Order Request. These attributes and requirements are the same regardless of the Order Item Product Actions contained in Product Order Items within the Order.

[R2] The Buyer's Create Product Order request **MUST** contain the following attributes as specified in Table 23:

- Order Contact

- At least one Product Order Item (see section 11.1.4 for detail on Order Item requirements)

- Buyer Request Date

[O1] The Buyer's Create Product Order request **MAY** contain any attributes identified in Table 23 as settable by the Buyer and not included in [R2].

[R3] The Buyer's Create Product Order request **MUST NOT** contain any attributes identified in Table 24 as settable by the Seller.

[O2] The Seller **MAY** require that the Buyer perform a POQ prior to submitting the Order.

[CR1]<[R3] The Buyer's Create Product Order request **MUST** contain the POQ Identifier if required by the Seller.

[O3] The Seller **MAY** require that the Buyer perform a Quote prior to submitting the Order.

[CR2]<[O3] The Buyer's Create Product Order request **MUST** contain the Quote Identifier if required by the Seller.

11.1.2 Create Product Order Seller Create Product Order Initial Response Order Level

This section defines the Order Level attributes and requirements for the Seller's initial response to a Create Product Order request. These attributes and requirements are the same regardless of the Order Item Product Actions contained in Product Order Items within the Order.

[R4] When providing a response if the Seller Response Code indicates success, the Seller **MUST** specify the following attributes defined in Table 23 in the response:

- Product Order Identifier

- Product Order Version

- Order State

- Seller Contact

[R5] The Seller Order Contact **MUST** include the following attributes defined in Table 23:

- Contact Name

- Contact Telephone Number

- Contact Email Address

[O4] The Seller Order Contact **MAY** contain the following attributer as Contact Phone Extension as specified in Table 28

- Contact Telephone Extension

- Contact Geographic Address

- Contact Organization

[R6] The Seller Order Identifier **MUST** remain the same value for the life of the order.

[R7] When providing a Response if the Seller Response Code does not indicate success, the Seller **MUST NOT** specify the Seller Order Identifier attribute in the response.

[R8] The Seller's response **MUST** include Order attributes defined in Table 23 copied from the Buyer's Create Product Order request as specified in [R2] and [O1].

[R9] The Seller **MUST** set the Seller Order Version to 1 (one) at the time that the Buyer Create Product Order is accepted.

11.1.3 Seller Product Order Lifecycle Updates Order Level

This section contains requirements for subsequent updates performed by the Seller on a Product Order at the Order level during the lifecycle of the Product Order.

[R10]   If the Order State in the Seller's response is FAILED, the Order Final State Date **MUST** contain the date the order moved to the FAILED state.

[R11]   If the Order State in the Seller's response is CANCELLED, the Order Expected Completion Date attribute **MUST NOT** be provided.

[O5]   For all Order States other than FAILED and CANCELLED the Seller **MAY** include the Order Expected Completion Date.

[R12]   If the Order State in the Seller's response is COMPLETED, the response **MUST** contain the Order Closed Date attribute as defined in Table 23.

[R13]   The Seller **MUST** increment the Seller Order Version by 1 (one) each time an Amend Request is accepted for this Product Order Identifier.

[O6]   The Seller **MAY** add a Note to any Product Order.

Note: The method for adding a Note to a Product Order is for further study.

11.1.4 Buyer Create Product Order Order Item Common Requirements

This section defines the common attributes and requirements for the Buyer's Create Product Order request for at least two of the Order Item Product Actions as described.

[R14]   The Buyer's Create Product Order request **MUST** contain the following attributes for the Buyer Order Item Contact, the Buyer Implementation Contact, and the Buyer Technical Contact as specified in Table 24 and Table 28:

- Contact Name

- Contact Telephone Number

- Contact Email Address if not already in profile in Seller's system

[O7]   The Buyer's Create Product Order request **MAY** contain the following attributes for the contacts in [R14] as specified in Table 28:

- Contact Telephone Extension

- Contact Geographic Address

- Contact Organization

[R15] The Buyer's Create Product Order request **MUST** contain the following attributes as specified in Table 25:

- Order Item Reference Number

- Order Item Product Action

- Order Item Requested Completion Date

[R16] The Buyer's Create order request **MUST NOT** contain the Order Item Expedite Indicator set to TRUE.

Note: The Buyer must receive the Expected Completion Date for the Product Order Item before they can request that the Seller expedite the fulfillment of the Product Order Item.

[O8] The Seller **MAY** require that the Buyer Billing Attributes be the same for all Product Order Items in a Product Order.

[O9] The Buyer's Create Product Order request **MAY** contain the following as specified in as specified in Table 24:

- Order Item Coordinated Action

- Order Item Note

- Order Item Term Duration

- Order Item End Customer Name

- Related Buyer Purchase Order Number

- Telecommunication Service Priority/Restoration Priority

[R17] If the Product Action is INSTALL or CHANGE, the Buyer's Create Product Order request **MUST** contain the Product Specific Attributes as specified in Table 24.

[R18] If the Buyer requires the Telecommunication Service Priority or restoration priority of the Product to be specified for the Product Order Item, the Buyer's Create Product Order request **MUST** contain the Order Item Telecommunication Service Priority/Restoration Priority as defined in Table 24.

[R19] If the Product Specification requires a Place Relationship for an Order Item, the Buyer's Create Product Order request **MUST** contain the following attributes for the Order Item Service Site Contact as specified in Table 35 and Table 28:

- Contact Name

- Contact Telephone Number

- Contact Email Address

[O10] The Buyer's Create Product Order request **MAY** contain the following attributes for the Order Item Service Site Contact as specified in Table 28:

- Contact Telephone Extension

- Contact Geographic Address

- Contact Organization

[O11] If the Order Item Product Action is CHANGE or DISCONNECT, the Buyer's Create Product Order request **MAY** contain the Buyer Billing Information as specified in Table 24.

[R20] The Buyer's Create Product Order request **MUST** contain the Buyer Billing information as specified in Table 29 for all Product Order requests or if there are multiple Buyer billing accounts.

[R21] If the Order Item Location Type as defined in Table 35 is SERVICE_SITE_IDENTIFIER, the Buyer's Create Product Order request **MUST** contain a Service Site Identifier as defined in Table 35.

[R22] If the Order Item Location Type as defined in Table 35 is FIELDED_ADDRESS, the Buyer's Create Product Order request **MUST** contain the Fielded Address attributes defined in Table 35.

[R23] If the Order Item Location Type as defined in Table 35 is FORMATTED_ADDRESS, the Buyer's Create Product Order request **MUST** contain the Formatted Address attributes defined in Table 35.

[R24] If the Order Item Location Type as defined in Table 35 is GLOBAL_ADDRESS, the Buyer's Create Product Order Request **MUST** contain the Global Address attributes defined in Table 35.

[R25] If the Order Item Location Type as defined in Table 35 is GEOGRAPHIC_POINTS, the Buyer's Create Product Order request **MUST** contain the Geographic Points attributes defined in Table 35.

11.1.5 Seller Create Product Order Initial Response Product Order Item Common Requirements

[R26] The Seller's response to the Buyer's Create Product Order request **MUST** contain the Order Item State as defined in Table 24.

[R27] The Seller's response **MUST** include all Product Order Item attributes as defined in Table 24 copied from the Buyer's Create Product Order request.

[R28] If the Buyer's Create Product Order request Order Item Expedite Indicator is FALSE, the Seller's response **MUST NOT** have the Order Item Expedite Accepted attribute set to TRUE.

[R29] The Seller's response **MUST NOT** include the Order Item Expedite Accepted attribute set to TRUE until the Charge Process for any charges associated with the expedite is complete.

11.1.6 Seller Lifecycle Response Product Order Item Common Requirements

This section defines the attributes and requirements for the Seller's response for an Order Item during the lifecycle of the Product Order.

[R30] If there are any additional construction costs associated with the Product Order Item and the Order State is HELD, the Seller's response **MUST** have the Order Item Construction Cost attribute set to TRUE.

[R31] If there are not any additional construction costs associated with the Product Order Item, the Seller's response **MUST NOT** have the Order Item Construction Cost attribute set to TRUE.

[R32] If the Order Item Construction Cost attribute in the Seller's response is set to TRUE, the response **MUST** include the Order Item Construction Cost Value as defined in Table 17.

11.1.7 Buyer Create Product Order Order Item with Product Action INSTALL

This section defines the attributes and requirements for the Buyer's Create Product Order request when an Order Item Product Action is INSTALL.

[R33] If there is a relationship with another Product Order Item, the Buyer's Create Product Order request **MUST** contain the Order Item Relationship as specified in Table 24.

[R34] The Buyer's Create Product Order request **MUST** contain either an Order Item Product Offering Identifier for a new product.

[R35] If the Order Item Product Action is INSTALL, the Buyer **MUST** include the Buyer Billing Account as specified in Table 25 and Table 29.

[R36] If the Buyer desires a coordinated action between Product Order Items, the Buyer's Create Product Order request **MUST** contain the Order Item Coordinated Action attributes as defined in Table 24 and Table 31.

11.1.8 Seller Create Product Order Initial Response Order Item with Product Action INSTALL

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Product Order request when the Order Item Product Action is INSTALL.

[R37]   If the Buyer Create Product Order request does not contain a value for the Order Item Term Duration, the Seller **MUST** include a value in their response.

[R38]   If the Seller provides a value for Order Item Term Duration, it **MUST** be equal to the value returned for the specified Product Quote and Product Quote Item Quote Item Term Duration.

11.1.9 Seller Create Product Order Lifecycle Response Order Item with Product Action INSTALL

This section defines the attributes and requirements for the Seller's response for an Order Item with a Product Action of INSTALL during the lifecycle of the Product Order.

[R39]   If the Order Item State in the Seller's response is FAILED, the Order Item Failed Date **MUST** contain the date the Product Order Item moved to the FAILED state.

[R40]   If the Order Item State in the Seller's response is IN_PROGRESS, the Order Item Expected Completion Date attribute defined in Table 24 **MUST** be provided.

[R41]   If the Order Item State in the Seller's response is CANCELLED, the Order Item Expected Completion Date attribute **MUST NOT** be provided.

[O12]   For all Order Item States other than IN_PROGRESS, FAILED, and CANCELLED the Seller **MAY** include the Order Item Expected Completion Date.

[R42]   If the Order Item State in the Seller's response is COMPLETED, the response **MUST** contain the Order Item Completion Date attribute as defined in Table 24.

[R43]   If the Order Item State in the Seller's response is not COMPLETED, the response **MUST NOT** contain the Order Item Completion Date attribute.

[R44]   If the Seller revises the Expected Completion Date for any Product Order Item, they **MUST** include an Order Item Note that indicates that the date has been revised and the reason for the revision.

11.1.10 Buyer Create Product Order Order Item Product Action CHANGE

The following requirements apply to Buyer's Create Product Order request with an Order Item Activity Type of CHANGE.

[R45]   If there is a relationship with another Product Order Item, the Buyer's Create Product Order request **MUST** contain the Order Item Relationship as specified in Table 24.

[R46] If the Order Item Product Action is CHANGE, the Buyer's Create Product Order request **MUST** contain an Order Item Product Identifier for an existing product.

[O13] If the Order Item Product Action is CHANGE, the Buyer **MAY** include the Buyer Billing Account as specified in Table 25 and Table 29.

[O14] The Seller **MAY** require that the Buyer Billing Attributes be the same for all Product Order Items in an Order.

11.1.11 Seller Create Product Order Initial Response Order Item with Product Action CHANGE

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Product Order request when the Order Item Product Action is CHANGE.

[R47] If there are any additional construction costs and the Order State is ASSESSING_CHARGE or IN_PROGRESS, the Seller's response **MUST** have the Order Item Construction Cost attribute set to TRUE.

[R48] If the Construction Cost attribute in the Seller's response is set to TRUE, the response **MUST** include the Order Item Construction Cost Value as defined in Table 17.

11.1.12 Seller Order Lifecycle Response Order Item with Product Action CHANGE

This section defines the attributes and requirements for the Seller's response for an Order Item with a Product Action of CHANGE during the lifecycle of the Product Order.

[R49] If the Order State in the Seller's response is FAILED, the Order Item Failed Date **MUST** contain the date the order moved to the FAILED state.

[R50] If the Order State in the Seller's response is IN_PROGRESS, the Order Item Expected Completion Date attribute defined in Table 24 **MUST** be provided.

11.1.13 Buyer Create Product Order Order Item Product Action DISCONNECT

The following requirements apply to Buyer's Create Product Order request with an Order Item Product Action of DISCONNECT.

[R51] The Buyer's Create Product Order request **MUST** contain an Order Item Product Identifier for the existing product to be disconnected.

[O15] If the Order Item Product Action is DISCONNECT, the Buyer **MAY** include the Buyer Billing Account as specified in Table 25 and Table 29.

11.1.14 Seller Create Product Order Initial Response with Order Item Product Activity DISCONNECT

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Product Order request when the Order Item Product Activity is DISCONNECT.

[R52]   The Seller's response to the Buyer's Create Product Order request **MUST** contain the Order Item State as defined in Table 24.

11.1.15 Seller Create Product Order Lifecycle Response with Order Item Product Activity DISCONNECT

This section defines the attributes and requirements for the Seller's response for an Order Item with a Product Action of DISCONNECT during the lifecycle of the Product Order.

[R53]   If the Order Item State in the Seller's response is FAILED, the Failed Date **MUST** contain the date the Product Order Item moved to the FAILED state.

[R54]   If the Order Item State in the Seller's response is IN_PROGRESS, the Order Item Expected Completion Date attribute defined in Table 23 **MUST** be provided.

[R55]   If the Order Item State in the Seller's response is CANCELLED, the Order Item Expected Completion Date attribute **MUST NOT** be provided.

[O16]   For all Order Item States not described in FAILED and CANCELLED the Seller **MAY** include the Order Item Expected Completion Date.

[R56]   If the Order Item State in the Seller's response is COMPLETED, the response **MUST** contain the Order Item Completion Date attribute as defined in Table 23.

[R57]   If the Order Item State in the Seller's response is not COMPLETED, the response **MUST NOT** contain the Order Item Completion Date attribute.

11.2 Charge Process

This section defines the attributes and requirements for the Charge Process that is initiated by the Seller and responded to by the Buyer.

11.2.1 Initiate Charge Process

This section defines the attributes and requirements for the Charge Process. The Charge Process is initiated by the Seller when they determine that there is a charge associated with a Product Order Item contained within a Product Order.

[R58]   When the Seller initiates the Charge Process, the following, as defined in Table 37 and Table 38, , **MUST** be included:

- Charge Identifier

- Product Order Identifier

- Order Item Reference Number

- Charge Request State

- Charge Identifier

- Charge Type

- Blocking

- Charge Value

11.2.2 Buyer Response to Charge Process

This section defines the attributes and requirements for the Buyer's response to the Charge Process.

[R59] The Buyer's response to the Charge Process MUST include the following as defined in Table 37 and Table 38:

- Charge Identifier

- Product Order Identifier

- Order Item Reference Number

- Charge Request State

- Charge Identifier

- Charge Type

- Blocking

- Charge Value

- Charge Acceptance Indicator

11.3 Create Amend Request

This section defines the attributes and requirements for the Buyer's Create Amend Request and the Seller's Create Amend Response for AMEND, CANCEL, ADD, and NO_CHANGE Amend Request Order Item Actions.

[R60] A Buyer **MUST** have submitted the Product Order Request to be able to submit an Amend Request on the Product Order.

11.3.1 Buyer Create Amend Request Order Level

This section defines the Amend Request Order Level attributes and requirements for the Buyer's Create Amend Request. These attributes and requirements are the same regardless of the Order Item Actions contained in Product Order Items within the Amend Request.

[R61]   The Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 25:

- Buyer Product Order Identifier

- Buyer Request Date

[O17]   The Buyer's Create Amend Request **MAY** contain the following attributes as specified in Table 25:

- Project Identifier

- Related Buyer Purchase Order Number

- Agreement Identifier

- POQ Identifier

- Quote Identifier

[O18]   The Seller **MAY** require that the Buyer perform a POQ prior to submitting the Amend Request.

[CR3]<[O18] The Buyer's Create Amend Request **MUST** contain the POQ Identifier if required by the Seller.

[O19]   The Seller **MAY** require that the Buyer perform a Quote Request prior to submitting the Amend Request.

[CR4]<[O19] The Buyer's Create Amend Request **MUST** contain the Quote Identifier if required by the Seller.

[R62]   The Buyer's Create Amend Request **MUST** contain at least one Product Order Item.

11.3.2 Seller Create Amend Response Order Level

This section defines the Order Level attributes and requirements for the Seller's response to a Create Amend Request. These attributes and requirements are the same regardless of the Amend Item Actions contained in Amend Items within the Request.

[R63]   When providing a Response if the Seller Response Code indicates success, the Seller **MUST** specify the following attributes defined in Table 25 in the response:

- Seller Amend Identifier

- Amend State

- Seller Contact

[R64] The Seller Contact **MUST** include the following attributes defined in Table 25:

- Contact Name

- Contact Phone Number

- Contact Email Address

[O20] The Seller Contact **MAY** contain the Contact Phone Extension as specified in Table 25 and Table 28

[R65] The Seller Amend Identifier **MUST** remain the same value for the life of the Amend Request.

[R66] When providing a Response if the Seller Response Code does not indicate success, the Seller **MUST NOT** specify the Seller Amend Identifier attribute in the response.

[R67] The Seller's response **MUST** include Amend attributes defined in Table 25 copied from the Buyer's Create Amend Request.

[R68] If the Amend State in the Seller's response is REJECTED, the Closed Date **MUST** contain the date the order moved to the REJECTED state.

[R69] If the Amend State in the Seller's response is ACCEPTED, the Closed Date **MUST** contain the date the order moved to the ACCEPTED state.

[R70] If the Amend State in the Seller's response is IN_PROGRESS, the Amend Request Expected Completion Date **MUST** be provided.

11.3.3 Buyer Create Amend Request Amend Request Order Item Action is AMEND and Order Item Product Action INSTALL

This section defines the attributes and requirements for the Buyer's Create Amend Request when the Amend Request Order Item Action is AMEND and the Order Item Product Action in the Product Order is INSTALL.

[R71] The Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26:

- Order Item Reference Number

- Order Item Product Action

- Amend Request Order Item Action

- Order Item Requested Completion Date

- Order Item Expedite Indicator

- Order Item Location Type

- Order Item Location

- Order Item Relationship

- Product Relationship

[R72] If the Amend Request Order Item Product Action is INSTALL, CHANGE, or DISCONNECT, the Buyer's Create Amend   Request **MUST** contain the following attributes for the Buyer Order Item Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Email Address if not already in profile in Seller's system

[O21] The Buyer's Create Amend Request **MAY** contain the Contact Phone Extension for the Buyer Order Contact as specified in Table 26 and Table 28.

[R73] If the Product Action is INSTALL, CHANGE, or DISCONNECT, the Buyer's Create Amend Request **MUST** contain the following attributes for the Buyer Implementation Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Email Address

[O22] The Buyer's Create Amend Request **MAY** contain the Contact Phone Extension for the Buyer Implementation Contact as specified in Table 26 and Table 28.

[R74] If the Product Action is INSTALL or CHANGE, the Buyer's Create Amend Request **MUST** contain the following attributes for the Buyer Technical Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Email Address

[O23] The Buyer's Create Amend Request **MAY** contain the Contact Phone Extension for the Buyer Technical Contact as specified in Table 26 and Table 28.

[R75] If the Product Action is INSTALL or DISCONNECT, the Buyer's Create Amend Request **MUST** contain the following attributes for the Order Item Location Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Email Address

[O24] The Buyer's Create Amend Request **MAY** contain the Contact Phone Extension for the Buyer Technical Contact as specified in Table 24 and Table 28.

[R76] The Buyer's Create Amend Request **MUST** contain either an Order Item Product Offering Identifier for a new product or an Order Item Product Identifier for an existing product.

[R77] The Buyer's Create Amend Request **MUST** contain the Buyer Billing Attributes as specified in Table 26 and Table 29.

[O25] The Seller **MAY** require that the Buyer Billing Attributes be the same for all Order Items in the Amend Request.

[R78] If the Buyer desires a Desired Response for the Product Order Item other than CONFIRMATION_ONLY, the Buyer's Create Amend Request **MUST** contain a Desired Response of either CONFIRMATION_AND_ENGINEERING or NONE as appropriate.

[R79] If the Product Order Item is a Customer Location, the Buyer's Create Amend Request **MUST** contain the Order Item End Customer Name defined in Table 26.

[R80] If the Buyer desires a delayed start date on the Product Order Item, the Buyer's Create Amend Request **MUST** contain the Order Item Requested Start Date defined in Table 26.

[R81] If the Buyer requires the TSP or restoration priority of the Product to be specified for the Product Order Item, the Buyer's Create Amend Request **MUST** contain the Order Item Telecommunication Service Priority/Restoration Priority as defined in Table 26.

11.3.4 Seller Create Amend Response Amend Request Order Item Action is AMEND and Order Item Product Action INSTALL

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Amend Request when the Order Item Action is AMEND and the Order Item Product Action is INSTALL.

[R82]   If the Seller's response to the Buyer's Create Amend Request is ACCEPTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST** be updated as requested by the Buyer.

[R83]   If the Seller's response to the Buyer's Create Amend Request is REJECTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST NOT** be updated.

11.3.5 Buyer Create Amend Request Order Item Action is AMEND and Order Item Product Action CHANGE

The following requirements apply to Buyer's Create Amend Request has an Order Item Action of AMEND and references a Product Order with an Order Item Activity Type of CHANGE.

[R84]   If the Order Item Product Action is CHANGE the Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for each Product Order Item in the Amend Request:

- Order Item Reference Number

- Product Action

- Order Item Action

- Order Item Relationship

- Order Item Requested Completion Date

- Order Item Expedite Indicator

[R85]   If the Product Action is CHANGE and the Order Item Location is changing the Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for each Product Order Item in the Amend Request:

- Order Item Location Type

- Order Item Location

[R86]   The Buyer's Create Amend Request **MUST** contain the following attributes for the Buyer Order Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Email Address if not already in profile in Seller's system

[O26]   The Buyer's Create Amend Request **MAY** contain the Contact Phone Extension for the Buyer Order Contact as specified in Table 26 and Table 28.

[O27]   The Buyer's Create Amend Request **MAY** contain the following attributes for the Buyer Implementation Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Phone Extension

- Contact Email Address

[O28]   The Buyer's Create Amend Request **MAY** contain the following attributes for the Buyer Technical Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Phone Extension

- Contact Email Address

[R87]   If the Order Item Location is changing, the Buyer's Create Amend Request **MUST** contain the following attributes for the Order Item Location Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Phone Extension

- Contact Email Address

[O29]   If the Order Item Location is not changing, the Buyer's Create Amend Request **MAY** contain the following attributes for the Order Item Location Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Phone Extension

- Contact Email Address

[R88] The Buyer's Create Amend Request **MUST** contain either an Order Item Product Offering Identifier for a new product or an Order Item Product Identifier for an existing product.

[R89] The Buyer's Create Amend Request **MUST** contain the Buyer Billing Account as specified in Table 29.

[O30] The Buyer's Create Amend Request **MAY** contain the remaining Buyer Billing Attributes as specified in Table 26 and Table 29.

[O31] The Seller **MAY** require that the Buyer Billing Attributes be the same for all Product Order Items in an Order.

[R90] If the Product Order Item is a Customer Location, the Buyer's Create Amend Request **MUST** contain the End Customer Name defined in Table 26.

[R91] If the Buyer desires a delayed start date on the Product Order Item, the Buyer's Create Amend Request **MUST** contain the Order Item Requested Start Date defined in Table 26.

[R92] If the Buyer requires the TSP or restoration priority of the Product to be specified for the Product Order Item, the Buyer's Create Amend Request **MUST** contain the Order Item Telecommunication Service Priority/Restoration Priority as defined in Table 26.

11.3.6 Seller Create Amend Response Amend Request Order Item Action is AMEND and Order Item Product Action CHANGE

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Amend Request when the Order Item Action is AMEND and the Order Item Product Action is CHANGE.

[R93] If the Seller's response to the Buyer's Create Amend Request is ACCEPTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST** be updated as requested by the Buyer.

[R94] If the Seller's response to the Buyer's Create Amend Request is REJECTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST NOT** be updated.

11.3.7 Buyer Create Amend Request Order Item Action is AMEND and Order Item Product Action DISCONNECT

The following requirements apply to Buyer's Create Amend Request with and Order Item Action of AMEND and an Order Item Product Action of DISCONNECT.

[R95] If the Order Item Product Action is DISCONNECT the Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for the Product Order Item in the Order Request:

- Order Item Reference Number

- Order Item Product Action

- Order Item Action

- Order Item Requested Completion Date

[R96] If the Buyer desires a Desired Response other than CONFIRMATION_ONLY the Buyer's Create Amend Request **MUST** contain a Desired Response of NONE.

[O32] The Buyer's Create Amend Request **MAY** contain the following Product Order Item attributes as specified in Table 23:

- Project Identifier

- Related Buyer Purchase Order Number

- Requested Start Date

- Telecommunication Service Priority/Restoration Priority

- Note

[R97] The Buyer's Create Amend Request **MUST NOT** contain the following Product Order Item attributes as specified in Table 26:

- Expedite Indicator

- Billing Account

- Billing Contact

- Buyer Implementation Contact

- Buyer Technical Contact

- Agreement Identifier

[R98] The Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for each Product Order Item in the Order Request:

- Order Item Reference Number

- Order Item Action

[O33] The Buyer's Create Amend Request **MAY** contain the following attributes for the Order Item Location Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Phone Extension

- Contact Email Address

[R99] The Buyer's Create Amend Request **MUST** contain a Product Identifier for the existing product to be disconnected.

11.3.8 Seller Create Amend Response Amend Request Order Item Action is AMEND and Order Item Product Action DISCONNECT

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Amend Request when the Order Item Action is AMEND and the Order Item Product Action is DISCONNECT.

[R100] If the Seller's response to the Buyer's Create Amend Request is ACCEPTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST** be updated as requested by the Buyer.

[R101] If the Seller's response to the Buyer's Create Amend Request is REJECTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST NOT** be updated.

11.3.9 Buyer Create Amend Request Amend Request Order Item Action is ADD and Order Item Product Action INSTALL

This section defines the attributes and requirements for the Buyer's Create Amend Request when the Amend Request Order Item Action is ADD and the Order Item Product Action in the Product Order is INSTALL.

[R102] The Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26:

- Order Item Reference Number

- Order Item Product Action

- Amend Request Order Item Action

- Order Item Requested Completion Date

- Order Item Expedite Indicator

- Order Item Location Type

- Order Item Location

- Order Item Relationship

- Product Relationship

[R103] If the Amend Request Order Item Product Action is INSTALL, CHANGE, or DISCONNECT, the Buyer's Create Amend Request **MUST** contain the following attributes for the Buyer Order Item Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Email Address if not already in profile in Seller's system

[O34] The Buyer's Create Amend Request **MAY** contain the Contact Phone Extension for the Buyer Order Contact as specified in Table 26 and Table 28.

[R104] If the Product Action is INSTALL, CHANGE, or DISCONNECT, the Buyer's Create Amend Request **MUST** contain the following attributes for the Buyer Implementation Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Email Address

[O35] The Buyer's Create Amend Request **MAY** contain the Contact Phone Extension for the Buyer Implementation Contact as specified in Table 26 and Table 28.

[R105] If the Product Action is INSTALL or CHANGE, the Buyer's Create Amend Request **MUST** contain the following attributes for the Buyer Technical Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Email Address

[O36] The Buyer's Create Amend Request **MAY** contain the Contact Phone Extension for the Buyer Technical Contact as specified in Table 26 and Table 28.

[R106] If the Product Action is INSTALL or DISCONNECT, the Buyer's Create Amend Request **MUST** contain the following attributes for the Order Item Location Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Email Address

[O37] The Buyer's Create Amend Request **MAY** contain the Contact Phone Extension for the Buyer Technical Contact as specified in Table 26 and Table 28.

[R107] The Buyer's Create Amend Request **MUST** contain either an Order Item Product Offering Identifier for a new product or an Order Item Product Identifier for an existing product.

[R108] The Buyer's Create Amend Request **MUST** contain the Buyer Billing Attributes as specified in Table 26 and Table 29.

[O38] The Seller **MAY** require that the Buyer Billing Attributes be the same for all Product Order Items in the Amend Request.

[R109] If the Product Order Item is a Customer Location, the Buyer's Create Amend Request **MUST** contain the Order Item End Customer Name defined in Table 26.

[R110] If the Buyer desires a delayed start date on the Product Order Item, the Buyer's Create Amend Request **MUST** contain the Order Item Requested Start Date defined in Table 26.

[R111] If the Buyer requires the TSP or restoration priority of the Product to be specified for the Product Order Item, the Buyer's Create Amend Request **MUST** contain the Order Item Telecommunication Service Priority/Restoration Priority as defined in Table 26.

11.3.10 Seller Create Amend Response Amend Request Order Item Action is ADD and Order Item Product Action INSTALL

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Amend Request when the Order Item Action is ADD and the Order Item Product Action is INSTALL.

[R112] If the Seller's response to the Buyer's Create Amend Request is ACCEPTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST** be updated as requested by the Buyer.

[R113] If the Seller's response to the Buyer's Create Amend Request is REJECTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST NOT** be updated.

11.3.11 Buyer Create Amend Request Order Item Action is ADD and Order Item Product Action CHANGE

The following requirements apply to Buyer's Create Amend Request has an Order Item Action of ADD and references a Product Order with an Order Item Activity Type of CHANGE.

[R114] If the Order Item Product Action is CHANGE the Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for each Order Item in the Amend Request:

- Order Item Reference Number

- Product Action

- Order Item Action

- Order Item Relationship

- Order Item Requested Completion Date

- Order Item Expedite Indicator

[R115] If the Product Action is CHANGE and the Order Item Location is changing the Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for each Product Order Item in the Amend Request:

- Order Item Location Type

- Order Item Location

[R116] The Buyer's Create Amend Request **MUST** contain the following attributes for the Buyer Order Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Email Address if not already in profile in Seller's system

[O39] The Buyer's Create Amend Request **MAY** contain the Contact Phone Extension for the Buyer Order Contact as specified in Table 26 and Table 28.

[O40] The Buyer's Create Amend Request **MAY** contain the following attributes for the Buyer Implementation Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Phone Extension

- Contact Email Address

[O41] The Buyer's Create Amend Request **MAY** contain the following attributes for the Buyer Technical Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Phone Extension

- Contact Email Address

[R117] If the Order Item Location is changing, the Buyer's Create Amend Request **MUST** contain the following attributes for the Order Item Location Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Phone Extension

- Contact Email Address

[O42] If the Order Item Location is not changing, the Buyer's Create Amend Request **MAY** contain the following attributes for the Order Item Location Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Phone Extension

- Contact Email Address

[R118] The Buyer's Create Amend Request **MUST** contain either an Order Item Product Offering Identifier for a new product or an Order Item Product Identifier for an existing product.

[R119] The Buyer's Create Amend Request **MUST** contain the Buyer Billing Account as specified in Table 29.

[O43] The Buyer's Create Amend Request **MAY** contain the remaining Buyer Billing Attributes as specified in Table 26 and Table 29.

[O44] The Seller **MAY** require that the Buyer Billing Attributes be the same for all Product Order Items in an Order.

[R120] If the Buyer desires a Desired Response other than CONFIRMATION_ONLY the Buyer's Create Amend Request **MUST** contain a Desired Response of either CONFIRMATION_AND_ENGINEERING or NONE as appropriate.

[R121] If the Product Order Item is a Customer Location, the Buyer's Create Amend Request **MUST** contain the End Customer Name defined in Table 26.

[R122] If the Buyer desires a delayed start date on the Product Order Item, the Buyer's Create Amend Request **MUST** contain the Order Item Requested Start Date defined in Table 26.

[R123] If the Buyer requires the TSP or restoration priority of the Product to be specified for the Product Order Item, the Buyer's Create Amend Request **MUST** contain the Order Item Telecommunication Service Priority/Restoration Priority as defined in Table 26.

11.3.12 Seller Create Amend Response Amend Request Order Item Action is ADD and Order Item Product Action CHANGE

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Amend Request when the Order Item Action is AMEND and the Order Item Product Action is CHANGE.

[R124] If the Seller's response to the Buyer's Create Amend Request is ACCEPTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST** be updated as requested by the Buyer.

[R125] If the Seller's response to the Buyer's Create Amend Request is REJECTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST NOT** be updated.

11.3.13 Buyer Create Amend Request Order Item Action is ADD and Order Item Product Action DISCONNECT

The following requirements apply to Buyer's Create Amend Request with and Order Item Action of ADD and an Order Item Product Action of DISCONNECT.

[R126] If the Order Item Product Action is DISCONNECT the Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for the Product Order Item in the Order Request:

- Order Item Reference Number

- Order Item Product Action

- Order Item Action

- Order Item Requested Completion Date

[O45] The Buyer's Create Amend Request **MAY** contain the following Product Order Item attributes as specified in Table 26:

- Project Identifier

- Related Buyer Purchase Order Number

- Requested Start Date

- Telecommunication Service Priority/Restoration Priority

- Note

[R127] The Buyer's Create Amend Request **MUST NOT** contain the following Product Order Item attributes as specified in Table 26:

- Expedite Indicator

- Billing Account

- Billing Contact

- Buyer Implementation Contact

- Buyer Technical Contact

- Agreement Identifier

[R128]   The Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for each Product Order Item in the Order Request:

- Order Item Reference Number

- Order Item Action

[O46]   The Buyer's Create Amend Request **MAY** contain the following attributes for the Order Item Location Contact as specified in Table 26 and Table 28:

- Contact Name

- Contact Phone Number

- Contact Phone Extension

- Contact Email Address

Editor Note 5:   *It seems that you need the Location Contact info if the Seller needs to retrieve equipment from the location. Should this be required?*

[R129]   The Buyer's Create Amend Request **MUST** contain a Product Identifier for the existing product to be disconnected.

11.3.14 Seller Create Amend Response Amend Request Order Item Action is ADD and Order Item Product Action DISCONNECT

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Amend Request when the Order Item Action is AMEND and the Order Item Product Action is DISCONNECT.

[R130]   If the Seller's response to the Buyer's Create Amend Request is ACCEPTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST** be updated as requested by the Buyer.

[R131]   If the Seller's response to the Buyer's Create Amend Request is REJECTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST NOT** be updated.

11.3.15 Buyer Create Amend Request Amend Request Order Item Action is CANCEL and Order Item Product Action INSTALL, CHANGE, or DISCONNECT

This section defines the attributes and requirements for the Buyer's Create Amend Request when the Amend Request Order Item Action is CANCEL and the Order Item Product Action in the Product Order is INSTALL, CHANGE, or DISCONNECT.

[R132] If the Order Item Product Action is INSTALL, CHANGE, or DISCONNECT the Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for the Product Order Item in the Order Request:

- Order Item Reference Number

- Order Item Product Action

- Order Item Action

- Order Item Requested Completion Date

11.3.16 Seller Create Amend Response Amend Request Order Item Action is CANCEL and Order Item Product Action INSTALL, CHANGE, or DISCONNECT

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Amend Request when the Order Item Action is CANCEL and the Order Item Product Action is INSTALL, CHANGE, or DISCONNECT.

[R133] If the Seller's response to the Buyer's Create Amend Request is ACCEPTED, the Seller's response to the Product Order and associated Order Item that is specified in the Create Amend Request **MUST** be updated as requested by the Buyer.

[R134] If the Seller's response to the Buyer's Create Amend Request is REJECTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST NOT** be updated.

11.3.17 Buyer Create Amend Request Amend Request Order Item Action is NO_CHANGE and Order Item Product Action INSTALL, CHANGE, or DISCONNECT

This section defines the attributes and requirements for the Buyer's Create Amend Request when the Amend Request Order Item Action is NO_CHANGE and the Order Item Product Action in the Product Order is INSTALL, CHANGE, or DISCONNECT.

[R135] If the Order Item Product Action is INSTALL, CHANGE, or DISCONNECT the Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for the Product Order Item in the Order Request:

- Order Item Reference Number

- Order Item Product Action

- Order Item Action

- Order Item Requested Completion Date

11.3.18 Seller Create Amend Response Amend Request Order Item Action is NO_CHANGE and Order Item Product Action INSTALL, CHANGE, or DISCONNECT

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Amend Request when the Order Item Action is NO_CHANGE and the Order Item Product Action is INSTALL, CHANGE, or DISCONNECT.

[R136] If the Seller's response to the Buyer's Create Amend Request is ACCEPTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST** be updated as requested by the Buyer.

[R137] If the Seller's response to the Buyer's Create Amend Request is REJECTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST NOT** be updated.

11.3.19 Buyer Create Amend Request Amend Request Order Item Action is ACCEPT_CHARGE and Order Item Product Action is INSTALL, CHANGE, or DISCONNECT

This section defines the attributes and requirements for the Buyer's Create Amend Request when the Amend Request Order Item Action is ACCEPT_CHARGE and the Order Item Product Action in the Product Order is INSTALL, CHANGE, or DISCONNECT.

[R138] If the Order Item Action is ACCEPT_CHARGE and Order Item Product Action is INSTALL, CHANGE, or DISCONNECT the Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 26 for the Product Order Item in the Order Request:

- Order Item Reference Number

- Order Item Product Action

- Order Item Action

- Order Item Charge

[R139] The Buyer **MUST** include a response for each Order Item Charge included in a list for that Product Order Item.

[R140] If the Buyer desires to accept the charge identified by the Seller they **MUST** set the Charge Acceptance Indicator to Accept as specified in Table 38.

[R141] If the Buyer desires to reject the charge identified by the Seller they **MUST** set the Charge Acceptance Indicator to Reject as specified in Table 38.

[R142] If the Buyer desires to inform the Seller they are reviewing the charge they **MUST** set the Charge Acceptance Indicator to IN_PROGRESS as specified in Table 38.

11.3.20 Seller Create Amend Response Amend Request Order Item Action is ACCEPT_CHARGE and Order Item Product Action INSTALL, CHANGE, or DISCONNECT

This section defines the attributes and requirements for the Seller's Response to a Buyer's Create Amend Request when the Order Item Action is ACCEPT_CHARGE and the Order Item Product Action is INSTALL, CHANGE, or DISCONNECT.

> **[R143]** If the Seller's response to the Buyer's Create Amend Request is ACCEPTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST** be updated as requested by the Buyer.

> **[R144]** If the Seller's response to the Buyer's Create Amend Request is REJECTED, the Seller's response to the Product Order and associated Product Order Item that is specified in the Create Amend Request **MUST NOT** be updated.

11.4 Create Cancel Request

This section defines the attributes and requirements for the Buyer's Create Cancel Request and the Seller's Create Cancel. The Cancel Request cancels the Product Order and all associated Product Order Items.

> **[R145]** A Buyer **MUST** have submitted the Product Order Request to be able to submit an Amend Request on the Product Order.

11.4.1 Buyer Create Cancel Request Order Level

This section defines the Cancel Request Order Level attributes and requirements for the Buyer's Create Cancel Request.

> **[R146]** The Buyer's Create Amend Request **MUST** contain the following attributes as specified in Table 27:
>
> - Product Order Identifier
>
> - Buyer Product Order Identifier
>
> - Buyer Request Date

> **[O47]** The Buyer's Create Amend Request **MAY** contain the following attributes as specified in Table 27:
>
> - Project Identifier
>
> - Related Buyer Purchase Order Number
>
> - Agreement Identifier

- POQ Identifier

- Quote Identifier

[O48]   The Seller **MAY** require that the Buyer perform a POQ prior to submitting the Amend Request.

[CR5]<[O48] The Buyer's Create Amend Request **MUST** contain the POQ Identifier if required by the Seller.

[O49]   The Seller **MAY** require that the Buyer perform a Quote Request prior to submitting the Amend Request.

[CR6]<[O49] The Buyer's Create Amend Request **MUST** contain the Quote Identifier if required by the Seller.

11.4.2 Seller Create Cancel Response Order Level

This section defines the Order Level attributes and requirements for the Seller's response to a Create Cancel Request.

[R147]   When providing a Response if the Seller Response Code indicates success, the Seller **MUST** specify the following attributes defined in Table 27 in the response:

- Seller Cancel Identifier

- Cancel State

- Seller Contact

[R148]   The Seller Contact **MUST** include the following attributes defined in Table 27:

- Contact Name

- Contact Phone Number

- Contact Email Address

[O50]   The Seller Contact **MAY** contain the Contact Phone Extension as specified in Table 27 and Table 28

[R149]   The Seller Cancel Identifier **MUST** remain the same value for the life of the Cancel Request.

[R150]   When providing a Response if the Seller Response Code does not indicate success, the Seller **MUST NOT** specify the Seller Cancel Identifier attribute in the response.

[R151] The Seller's response **MUST** include Cancel attributes defined in Table 27 copied from the Buyer's Create Cancel Request.

[R152] If the Cancel State in the Seller's response is REJECTED, the Closed Date **MUST** contain the date the order moved to the REJECTED state.

[R153] If the Cancel State in the Seller's response is ACCEPTED, the Closed Date **MUST** contain the date the order moved to the ACCEPTED state.

[R154] If the Cancel State in the Seller's response is IN_PROGRESS, the Cancel Request Expected Completion Date **MUST** be provided.

11.5 Retrieve Product Order List

This section defines the attributes and requirements associated with Retrieve Product Order List (Use Case 2). This includes the Buyer's Retrieve Product Order List request and the Seller's Retrieve Product Order List response.

11.5.1 Buyer Retrieve Product Order List Request

This section defines the attributes and requirements for the Buyer's Retrieve Product Order List request.

[O51] The Buyer's Retrieve Product Order List request **MAY** contain the following attributes as defined in Table 23:

- Requested Order Completion Date (range of dates)

- Order Expected Completion Date (range of dates)

- Order Accept Date (range of dates)

- Order Cancellation Date (range of dates)

- Order Closed Date (range of dates)

- Project Identifier

- Order State

- Buyer Product Order Identifier

11.5.2 Seller Retrieve Product Order List Response

This section defines the attributes and requirements for the Seller's response to a Buyer's Retrieve Product Order List request.

[R155] If successful, the Seller's response to the Buyer's Retrieve Product Order List request **MUST** contain the following from Table 23 for each Order Identifier that matches the filter criteria:

- Buyer Filter Criteria (as specified by Buyer in Retrieve section 11.5.1)

- Product Order Identifier

- Product Order Version

- Buyer Product Order Identifier

- Requested Order Completion Date

- Order Accept Date

- Order Cancellation Date

- Order State

- Order Closed Date

- Project Identifier

[R156] If the Seller Response Code does not indicate success, the Seller **MUST** only reply with the Response Code and no attributes.

11.6 Retrieve Product Order by Order Identifier

This section defines the attributes and requirements associated with Retrieve Product Order by Order Identifier (Use Case 3). This includes the Buyer's Retrieve Product Order by Order Identifier request and the Seller's Retrieve Product Order by Order Identifier response.

11.6.1 Buyer Retrieve Product Order by Order Identifier Request

This section defines the attributes and requirements for the Buyer's Retrieve Product Order by Order Identifier request.

[R157] The Buyer **MUST** include the Seller Order Identifier as specified in Table 23 in their Retrieve Product Order by Order Identifier request.

11.6.2 Seller Query Order by Identifier Response

This section defines the attributes and requirements for a Seller's response to the Buyer's Retrieve Product Order by Order Identifier Request.

[R158] The Seller's response **MUST** comply with the states and attributes detailed in Table 44 and Table 45.

In Table 44 the Product Order attributes either Echoed from the Buyer's Create Product Order request shown by an "E", Required to be provided by the Seller shown by an "R", Required if Populated by the Seller shown by an "PR", or Optional to be provided by the Seller or the Buyer shown by an "O".

	ACKNOWLEDGED	ASSESSING_AMEND	ASSESSING_CANCELLATION	ASSESSING_CHARGE	CANCELLED	CANCELLING	COMPLETED	FAILED	IN_PROGRESS	PARTIAL	REJECTED
Product Order Identifier	R	R	R	R	R	R	R	R	R	R	
Product Order Version	R	R	R	R	R	R	R	R	R	R	
Buyer Product Order Identifier	E	E	E	E	E	E	E	E	E	E	E
Buyer Request Date	E	E	E	E	E	E	E	E	E	E	E
Project Identifier	E	E	E	E	E	E	E	E	E	E	E
Order State	R	R	R	R	R	R	R	R	R	R	R
Seller Contact	R	R	R	R	R	R	R	R	R	R	R
Cancellation Reason					E – Buyer R- Seller						
Order Cancellation Date					R						
Order Expected Completion Date		R	R	R	O	R	O	O	R	O	
Order Final State Date					R		R	R		R	R
Order Cancellation Date					R						
Note	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller

Table 44 – Seller Response Product Order Attributes Based on Product Order State

In Table 45 the Product Order Item attributes either Echoed from the Buyer's Create Product Order request shown by an "E", Required to be provided by the Seller shown by an "R", Required if Populated by the Seller shown by an "PR", or Optional to be provided by the Seller or the Buyer shown by an "O".

	ACKNOWL EDGED	ASSESSING _CANCELL ATION	ASSESSING _CHANGE	CANCELLE D	CANCELLI NG	COMPLETE	FAILED	HELD	IN_PROGR ESS	PENDING	REJECTED	VALIDATE D
Order Item Reference Number	E	E	E	E	E	E	E	E	E	E	E	E
Seller Order Item Identifier	R	R	R	R	R	R	R	R	R	R	R	R
Order Item Product Action	E	E	E	E	E	E	E	E	E	E	E	E
Order Item Product Identifier	E	E	E	E	E	E	E	E	E	E	E	E
Order Item Product Offering Identifier	E	E	E	E	E	E	E	E	E	E	E	E
Order Item Product Specific Attributes	E	E	E	E	E	E	E	E	E	E	E	E
Place Relationship	E	E	E	E	E	E	E	E	E	E	E	E
Order Item End Customer Name	E	E	E	E	E	E	E	E	E	E	E	E
Order Item Relationship	E	E	E	E	E	E	E	E	E	E	E	E
Order Item Coordinated Action	E	E	E	E	E	E	E	E	E	E	E	E
Product Relationship	E	E	E	E	E	E	E	E	E	E	E	E
Order Item Note	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller
Order Item Requested Completion Date	E	E	E	E	E	E	E	E	E	E	E	E
Order Item Expedite Indicator	E	E	E	E	E	E	E	E	E	E	E	E
Order Item Expedite Accepted Indicator		PR	PR	PR	PR	PR	PR	PR	PR	PR		PR
Order Item Charges		PR	PR	PR	PR	PR	PR	PR	PR	PR		PR
Order Item Telecommunications Service Priority/Restoration Priority	E	E	E	E	E	E	E	E	E	E	E	E

	ACKNOWL EDGED	ASSESSING _CANCELL ATION	ASSESSING _CHANGE	CANCELLE D	CANCELLI NG	COMPLETE	FAILED	HELD	IN_PROGR ESS	PENDING	REJECTED	VALIDATE D
Buyer Order Item Contact	E	E	E	E	E	E	E	E	E	E	E	E
Buyer Implementation Contact	E	E	E	E	E	E	E	E	E	E	E	E
Buyer Technical Contact	E	E	E	E	E	E	E	E	E	E	E	E
Order Item Failed Date							R					
Order Item Expected Completion Date		R	R	R	R	R	R	R	R	R		
Order Item Completion Date						R						
Order Item POQ Attributes	E	E	E	E	E	E	E	E	E	E	E	E
Order Item State	R	R	R	R	R	R	R	R	R	R	R	R
Order Item Quote Attributes	E	E		E	E	E	E	E	E	E	E	E
Charge Process Identifier		PR	PR	PR	PR	PR	PR	PR	PR	PR		PR
Order Item Term	E - Buyer	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E	E - Buyer PR - Seller
Related Buyer Purchase Order Number	E	E	E	E	E	E	E	E	E	E	E	E
Buyer Billing Information	E	E	E	E	E	E	E	E	E	E	E	E
Appointment		E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E - Buyer PR - Seller	E	E - Buyer PR - Seller

Table 45 - Seller Response Product Order Attributes Based on Product Order State

11.7 Query Amend Request List

This section defines the attributes and requirements associated with Query Amend Request List. This includes the Buyer's Query Amend Request List Request and the Seller's Query Amend Request List Response.

11.7.1 Buyer Query Amend Request List Request

This section defines the attributes and requirements for the Buyer's Query Amend Request List Request.

[R159]   The Buyer's Query Amend Request List Request **MUST** contain at least one of the following attributes as defined in Table 25 or Table 26:

- Date Range containing a range of one of the following attributes:

  - Buyer Request Date

  - Amend Request Expected Completion Date

  - Amend Request Completed Date

  - Order Item Requested Completion Date

  - Order Item Requested Start Date

- Order Item End Customer Name

- Project Identifier

- Order Item Location Type

- Amend Request State

[R160]   If the Order Item Location Type is Fielded Address the Buyer's Query Order List Request **MUST** contain the following attributes as defined in **Table 35**.:

- Street Name

- Street Type

- City

- State or Province

- Postal Code

[O52] If the Order Item Location Type is Fielded Address the Buyer's Query Order List Request **MAY** contain any of the remaining attributes as defined in **Table 35**..

[R161] If the Order Item Location Type is Formatted Address the Buyer's Query Order List Request **MUST** contain the following attributes as defined in **Table 35**.:

- Formatted Address Identifier

- Address Line 1

- State or Province

- Postal Code

- Country

[O53] If the Order Item Location Type is Formatted Address the Buyer's Query Order List Request **MAY** contain any of the remaining attributes as defined in **Table 35**..

[R162] If the Order Item Location Type is Global Address the Buyer's Query Order List Request **MUST** contain the **Table 35**.

[R163] Global Address Reference Identifier attribute as defined in **Table 35**..

[O54] If the Order Item Location Type is Global Address the Buyer's Query Order List Request **MAY** contain the Administrative Authority attribute as defined in **Table 35**..

[R164] If the Order Item Location Type is Geographic Points the Buyer's Query Order List Request **MUST** contain the Latitude and Longitude attributes as defined in **Table 35**..

[O55] If the Order Item Location Type is Geographic Points the Buyer's Query Order List Request **MAY** contain the Spatial Reference attribute as defined in **Table 35**..

11.7.2 Seller Query Amend Request List Response

This section defines the attributes and requirements for the Seller's Response to a Buyer's Query Amend Request List Request.

[R165] The Seller's response to the Buyer's Query Order List request **MUST** contain the following from Table 25 for each Order Identifier that matches the filter criteria:

- Seller Amend Identifier

- Buyer Product Order Identifier

- Amend Request State

[R166] The Seller's response to the Buyer's Query Amend Request List request **MUST** contain the following from Table 26 for each Product Order Item within the Order Identifier that matches the filter criteria Order Item Reference Number

- Order Item Product Action

- Order Item Action

- Order Item Location Type

- Order Item Location

- Order Item State

- Order Item Requested Start Date

- Order Item Expedite Indicator

- Order Item Requested Completion Date

- Order Item Expected Completion Date

- Order Item Completion Date

[R167] If the Seller Response Code indicates success, the Seller **MUST** specify at least one Order Identifier in their response.

[R168] If the Seller Response Code does not indicate success, the Seller **MUST NOT** reply with any of the attributes in Table 25 or Table 26.

11.8 Query Amend Request by Seller Amend Identifier

This section defines the attributes and requirements associated with Query Amend Request Details. This includes the Buyer's Query Amend Request by Identifier Request and the Seller's Query Amend Request by Identifier Response.

11.8.1 Buyer Query Amend by Identifier Request

This section defines the attributes and requirements for the Buyer's Query Order by Identifier Request.

[R169] The Buyer **MUST** include the Seller Order Identifier as specified in Table 25 in their Query Order by Identifier request.

11.8.2   Seller Query Amend by Identifier Response

This section defines the attributes and requirements for a Seller's response to the Buyer's Query Amend by Identifier Request.

[R170]   The Seller's response **MUST** include the attributes as specified for the Amend States as shown in Table 46.

In Table 46 the attributes are either Echoed from the Buyer's Request shown by an E, Required to be provided by the Seller shown by an R, Optional to be provided by the Seller or Buyer shown by an O, or not included in the response shown by a blank in the cell.

	ACKNOWLEDGED	ACCEPTED	REJECTED
Seller Amend Identifier	R	R	R
Product Order Identifier	E	E	E
Product Order Version	E	R	E
Buyer Product Order Identifier	E	E	E
Buyer Order Version	E	E	E
Buyer Request Date	E	E	E
Project Identifier	E - Buyer R - Seller	E - Buyer R - Seller	E - Buyer R - Seller
Related Buyer Purchase Order Number	E	E	E
Amend Request State	R	R	R
Amend Request Closed Date		R	R
Amend Request Expected Completion Date	R		
Amend Request Contact	E	E	E
Seller Contact	R	R	R

	ACKNOWLEDGED	ACCEPTED	REJECTED
Cancelled Reason	E - Buyer R - Seller	E - Buyer R - Seller	E - Buyer R - Seller
Note	E - Buyer R - Seller	E - Buyer R - Seller	E - Buyer R - Seller
Quote Identifier	E	E	E
Order Item Reference Number	E	E	E
Order Item Product Action	E	E	E
Amend Request Order Item Action	E	E	E
Order Item Product Identifier	E	E	E
Order Item Product Offering Identifier	E	E	E
Order Item Product Specific Attributes	E	E	E
Place Relationship	E	E	E
Order Item Location Contact	E	E	E
Order Item End Customer Name	E	E	E
Order Item Last Mile Provider Name		R	R
Order Item Relationship	E	E	E
Order Item Coordinated Action	E	E	E
Product Relationship	E	E	E
Note	E - Buyer	E - Buyer	E - Buyer

	ACKNOWLEDGED	ACCEPTED	REJECTED
	R - Seller	R - Seller	R - Seller
Order Item Requested Completion Date	E	E	E
Order Item Expedite Indicator	E	E	E
Order Item Charges		R	R
Order Item Telecommunications Service Priority/Restoration Priority	E	E	E
Buyer Order Item Contact	E	E	E
Buyer Implementation Contact	E	E	E
Buyer Technical Contact	E	E	E
Order Item Accepted Date		R	
Order Item Rejected Date			R
Order Item POQ Identifier	E	E	E
Quote Identifier	E	E	E
Quote Item Identifier	E	E	E
Charge Process Identifier		R	R
Agreement Name	E	E	E
Order Item Term	E - Buyer	E - Buyer	E - Buyer
		R - Seller	R - Seller

	ACKNOWLEDGED	ACCEPTED	REJECTED
Related Buyer Purchase Order Number	E	E	E
Buyer Billing Account	E	E	E

Table 46 – Seller's Response Based on Amend State

[R171] The Seller Order Contact **MUST** include the following attributes defined in Table 25:

- Contact Name

- Contact Phone Number

- Contact Email Address

[O56] The Seller Order Contact **MAY** contain the Contact Phone Extension as specified in Table 25 and Table 28

[R172] The Seller's response **MUST** include Amend Request attributes defined in Table 25 copied from the Buyer's Create Amend Request.

[R173] The Seller's response **MUST** include the Product Order Item attributes defined in Table 26 copied from the Buyer's Create Amend Request and the attributes shown in Table 46 as updated by the Seller.

11.9 Query Cancel Request List

This section defines the attributes and requirements associated with Query Cancel Request List. This includes the Buyer's Query Cancel Request List Request and the Seller's Query Cancel Request List Response.

11.9.1 Buyer Query Cancel Request List Request

This section defines the attributes and requirements for the Buyer's Query Cancel Request List Request.

[R174] The Buyer's Query Cancel Request List Request **MUST** contain at least one of the following attributes as defined in Table 27:

- Date Range containing a range of one of the following attributes:

  - Cancel Request Close Date

  - Cancel Request Expected Completion Date

- Project Identifier

- Cancel Request State

11.9.2 Seller Query Cancel Request List Response

This section defines the attributes and requirements for the Seller's Response to a Buyer's Query Cancel Request List Request.

[R175] The Seller's response to the Buyer's Query Cancel List request **MUST** contain the following from Table 27 for each Cancel Identifier that matches the filter criteria:

- Seller Cancel Identifier

- Product Order Identifier

- Buyer Product Order Identifier

- Cancel Request State

[R176] If the Seller Response Code indicates success, the Seller **MUST** specify at least one Cancel Identifier in their response.

[R177] If the Seller Response Code does not indicate success, the Seller **MUST NOT** reply with any of the attributes in Table 27.

11.10 Query Cancel Request by Seller Cancel Identifier

This section defines the attributes and requirements associated with Query Cancel Request Details. This includes the Buyer's Query Cancel Request by Identifier Request and the Seller's Query Cancel Request by Identifier Response.

11.10.1 Buyer Query Order by Identifier Request

This section defines the attributes and requirements for the Buyer's Query Cancel by Identifier Request.

[R178] The Buyer **MUST** include the Seller Cancel Identifier as specified in Table 27 in their Query Cancel by Identifier request.

11.10.2 Seller Query Cancel by Identifier Response

This section defines the attributes and requirements for a Seller's response to the Buyer's Query Cancel by Identifier Request.

[R179] The Seller's response MUST include the attributes per Cancel State as shown in Table 47.

In Table 47 the attributes are either Echoed from the Buyer's Request shown by an E, Required to be provided by the Seller shown by an R, Optional to be provided by the Seller or Buyer shown by an O, or not included in the response shown by a blank in the cell.

	Cancel States		
	ACKNOWLEDGED	ACCEPTED	REJECTED
Seller Cancel Identifier	R	R	R
Product Order Identifier	E	E	E
Product Order Version	E	E	E
Buyer Product Order Identifier	E	E	E
Buyer Order Version	E	E	E
Buyer Request Date	E	E	E
Project Identifier	Buyer – E Seller - R	Buyer – E Seller - R	Buyer – E Seller - R
Related Buyer Purchase Order Number	E	E	E
Note	Buyer – E Seller - R	Buyer – E Seller - R	Buyer – E Seller - R
Quote Identifier	E	E	E
Cancel Request State	R	R	R
Cancel Request Closed Date		R	R
Cancel Request Expected Completion Date	R		
Cancel Request Contact	E	E	E
Seller Contact	R	R	R
Related Buyer Purchase Order Number	E	E	E
Cancellation Reason	Buyer – E Seller - R	Buyer – E Seller - R	Buyer – E Seller - R

Table 47 – Seller's Response Based on Cancel State

[R180] The Seller Order Contact **MUST** include the following attributes defined in Table 25:

- Contact Name

- Contact Phone Number

- Contact Email Address

[O57] The Seller Order Contact **MAY** contain the Contact Phone Extension as specified in Table 25 and Table 28

11.11 Query Charge Process Request List

This section defines the attributes and requirements associated with Query Charge Process Request List. This includes the Buyer's Query Charge Process Request List Request and the Seller's Query Charge Process Request List Response.

11.11.1 Buyer Query Charge Process List Request

This section defines the attributes and requirements for the Buyer's Query Charge Process List Request.

[R181] The Buyer's Query Charge Process List Request **MUST** contain at least one of the following attributes as defined in Table 37:

- Charge Process Identifier

- Product Order Identifier

- Charge Process State

11.11.2 Seller Query Charge Process List Response

This section defines the attributes and requirements for the Seller's Response to a Buyer's Query Charge Process List Request.

[R182] The Seller's response to the Buyer's Query Charge Process List request **MUST** contain the following from Table 37 for each Charge Process Identifier that matches the filter criteria:

- Charge Process Identifier

- Product Order Identifier

- Buyer Product Order Identifier

- Charge Process Request State

[R183] If the Seller Response Code indicates success, the Seller **MUST** specify at least one Charge Process Identifier in their response.

[R184] If the Seller Response Code does not indicate success, the Seller **MUST NOT** reply with any of the attributes in Table 37.

11.12 Query Charge Process by Seller Cancel Identifier

This section defines the attributes and requirements associated with Query Charge Process Details. This includes the Buyer's Query Charge Process by Identifier Request and the Seller's Query Charge Process by Identifier Response.

11.12.1 Buyer Query Charge Process by Identifier Request

This section defines the attributes and requirements for the Buyer's Query Charge Process by Identifier Request.

> **[R185]** The Buyer **MUST** include the Seller Charge Process Identifier as specified in Table 37 in their Query Charge Process by Identifier request.

11.12.2 Seller Query Charge Process by Identifier Response

This section defines the attributes and requirements for a Seller's response to the Buyer's Query Charge Process by Identifier Request.

> **[R186]** The Seller's response MUST include the attributes per Charge Process State as shown in Table 48.

In Table 48 the attributes are either Echoed from the Buyer's Request shown by an E, Required to be provided by the Seller shown by an R, Optional to be provided by the Seller or Buyer shown by an O, or not included in the response shown by a blank in the cell.

Charge Process States			
	AWAITING_RESPONSE	COMPLETED	WITHDRAWN_BY_SELLER
Seller Charge Process Identifier	R	R	R
Product Order Identifier	R	R	R
Product Order Version	R	R	R
Order Item Reference Number	R	R	R
Charge Identifier(s)	R	R	R
Response Due Date	R	R	R

Charge Process States			
	AWAITING_RESPONSE	COMPLETED	WITHDRAWN_BY_SELLER
Charge Process State	R	R	R

Table 48 – Seller's Response Based on Charge Process State

In Table 49 the attributes are either Echoed from the Buyer's Request shown by an E, Required to be provided by the Seller shown by an R, Optional to be provided by the Seller or Buyer shown by an O, or not included in the response shown by a blank in the cell.

Charge Identifier States				
	AWAITING_RESPONSE	ACCEPTED_BY_BUYER	REJECTED_BY_BUYER	WITHDRAWN_BY_SELLER
Charge Identifier(s)	R	R	R	R
Charge Type	R	R	R	R
Blocking	R	R	R	R
Charge Value	R	R	R	R
Charge Acceptance Indicator		E	E	R

Table 49 - Seller's Response Based on Charge Identifier State

11.13 Register for Notifications

This section defines the attributes and requirements associated with the Register for Notifications (Use Case 14). This includes the Buyer's Register for Notifications Request and the Seller's Register for Notifications Response.

11.13.1 Buyer Register for Notifications Request

This section defines the attributes and requirements for the Buyer's Register for Notifications Request.

[O58]   The Seller **MAY** support Notifications.

[CR7]<[O58] If the Action attribute in the Buyer's Register for Notifications request is START, the Buyer **MUST** specify the Return Address Information and List of Notification Types attributes shown in Table 33.

[CR8]<[O58] If the Action attribute in the Buyer's Register for Notifications request is STOP, the Buyer **MUST** specify the List of Notification Types to be stopped.

11.13.2 Seller Register for Notification Response

This section defines the attributes and requirements for a Seller's response to the Buyer's Register for Notifications request. It is expected that the Seller's response is simply an acknowledgement of the request outside of the API.

11.14 Seller Send Notification

This section defines the attributes and requirements associated with the Seller Notification Use Case (Use Case 15).). If the Buyer responds to a Notification received from the Seller is beyond the scope of this document. It will be addressed in the Developer's Guide.

[R187] The Seller **MUST NOT** send Notifications to Buyers for Seller Object Identifier Types for which the Buyer has not registered.

[R188] The Seller **MUST** send Notifications to Buyers for Seller Object Identifier Types for which the Buyer has registered.

[R189] Notifications **MUST** include all Attributes shown in **Table 34**.

[R190] If the Seller Object Identifier Type is ORDER, the Notification **MUST** include the Product Order Identifier.

[R191] If the Seller Object Identifier Type is AMEND, the Notification **MUST** include the Seller Amend Identifier.

[R192] If the Seller Object Identifier Type is CANCEL, the Notification **MUST** include the Seller Cancel Identifier.

[R193] If the Seller Object Identifier Type is CHARGE_PROCESS, the Notification **MUST** include the Charge Process Identifier.

11.15 Specifying the Buyer Identifier and the Seller Identifier

For requests of all types, there is a business entity that is initiating an Operation (called a Requesting Entity) and a business entity that is responding to this request (called the Responding Entity). In the simplest case, the Requesting Entity is the Buyer, and the Responding Entity is the Seller. However, in some cases, the Requesting Entity may represent more than one Buyer and similarly, the Responding Entity may represent more than one Seller.

While it is outside the scope of this specification, it is assumed that the Requesting Entity and the Responding Entity are aware of each other and can authenticate requests initiated by the other party. It is further assumed that both the Buying Entity and the Requesting Entity know a) the list of Buyers the Requesting Entity represents when interacting with this Responding Entity; and b) the list of Sellers that this Responding Entity represents to this Requesting Entity.
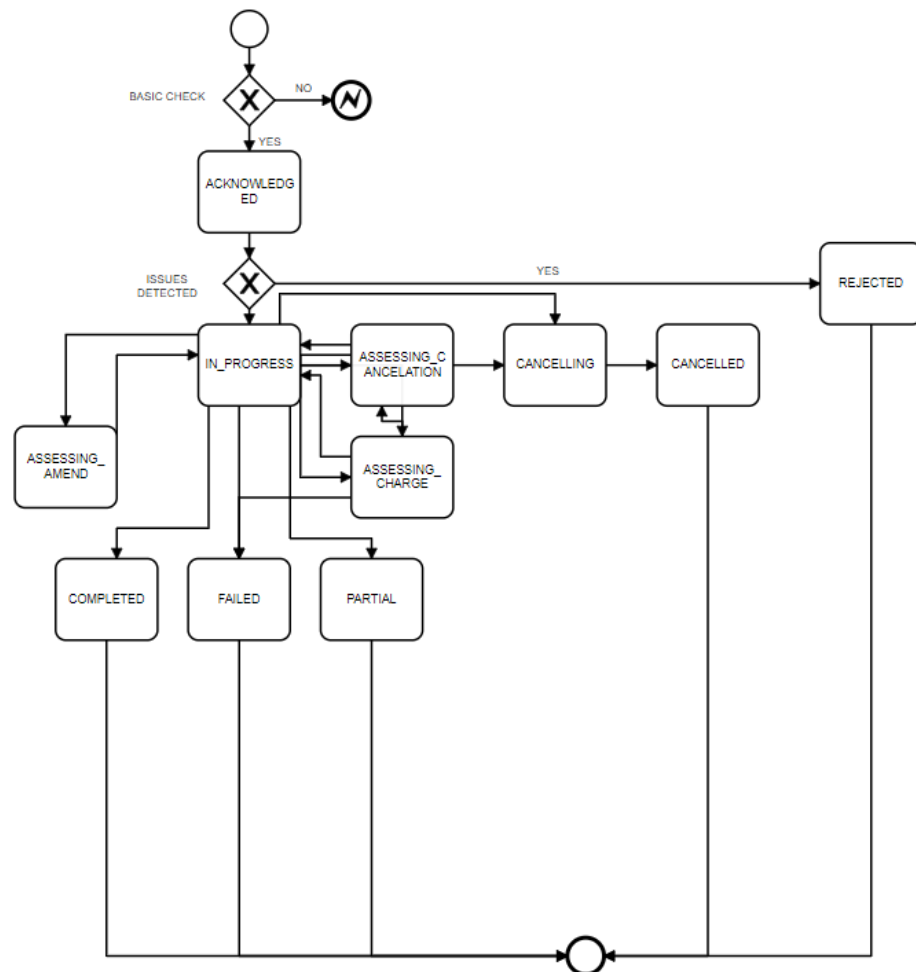
[R194] If the Requesting Entity has the authority to represent more than one Buyer with the Responding Entity, the request **MUST** specify the Buyer being represented in this request using the Buyer Identifier attribute.

[R195] If the Requesting Entity represents precisely one Buyer with the Responding Entity, the request **MUST NOT** specify the Buyer Identifier attribute.

[R196] If the Responding Entity represents more than one Seller to this Buyer, the request **MUST** specify the Seller with whom this request is associated by using the Seller Identifier attribute.

[R197] If the Responding Entity represents precisely one Seller to this Buyer, the request **MUST NOT** specify the Seller Identifier attribute.

12 Ordering State Machines

State diagrams are used to give an abstract description of the behavior of a system. This behavior is analyzed and represented in a series of events, that could occur in one or more possible states. The below state diagrams and state definitions are adapted from TMF622 [11] (Product Ordering API REST Specification) and should be used to convey Product Order, Product Order Item, Amend Process, Cancel Process, and Charge Process states during the lifecycle of Ordering.

12.1 Product Order State Machines

The Product Order States and State Machines are detailed in this section.

Figure 3 - Sonata Order Process Flow

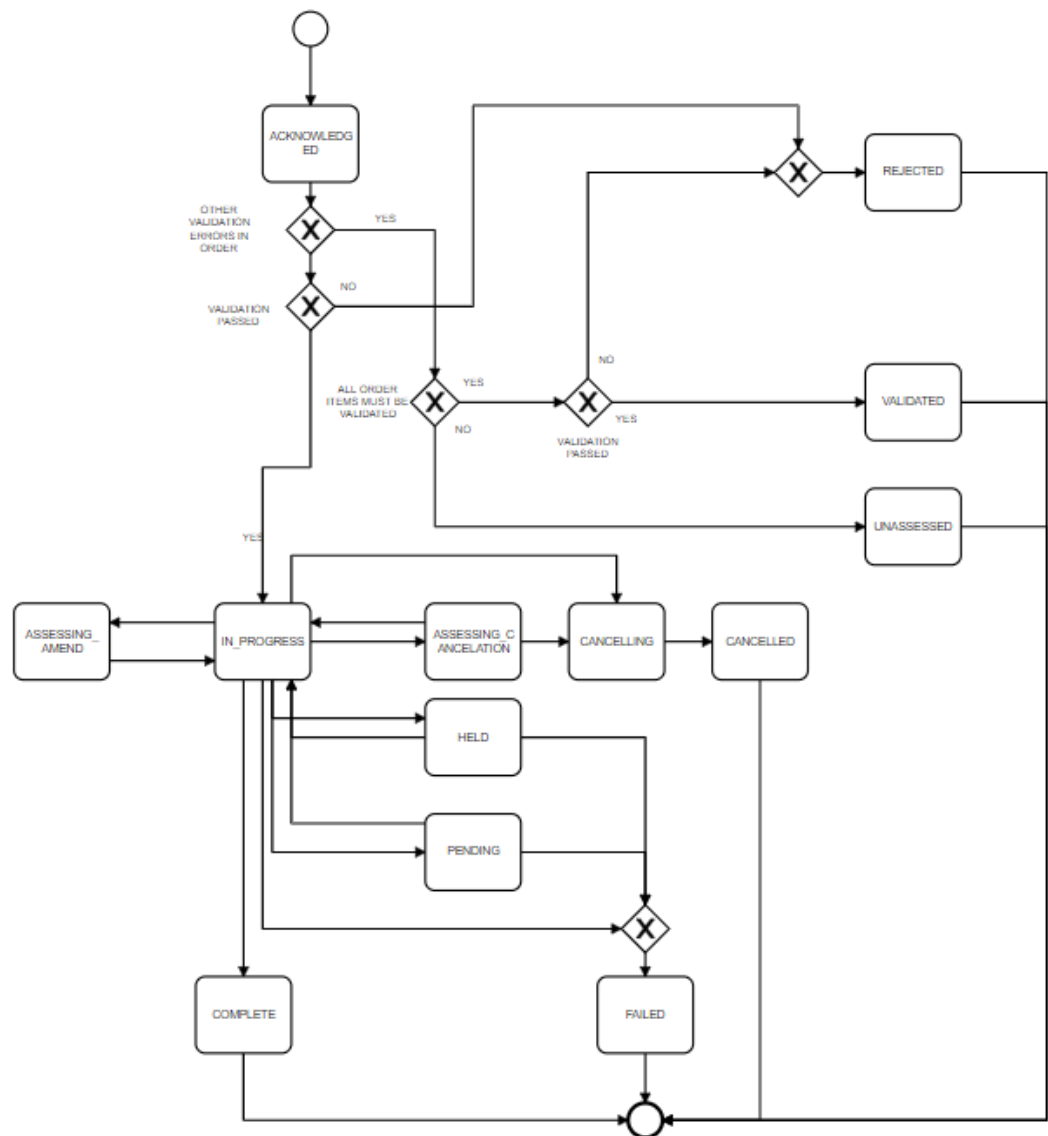| State	Description
ACKNOWLEDGED	An Order has been received by the Seller and has passed basic validation. Product Order Identifier is assigned in the ACKNOWLEDGED state and response is returned to the Buyer. The Order remains in the ACKNOWLEDGED state while validations of Product Order and Product Order Item(s) attributes as applicable is completed. If the Order and Order Item attributes are validated the Product Order moves to the IN_PROGRESS state. If not validated, the Product Order moves to the REJECTED state.
ASSESSING_AMEND	A request has been made by the Buyer to amend one or more Product Order Items contained within the Order and the Amend Request is currently being assessed to determine whether it can be accepted. If the Seller determines that the Amend Request can be accepted, the amended Product Order returns to the IN_PROGRESS state. If the Seller determines that the Amend Request cannot be accepted, the unamended Product Order returns to the IN_PROGRESS state.
ASSESSING_CANCELLATION	A request has been made by the Buyer to cancel the Order and the Order is currently being assessed to determine whether it can be cancelled. If there are any charges associated with the Buyer's Cancel Request, the Product Order moves to the ASSESSING_CHARGE state.
ASSESSING_CHARGE	A Charge Process has been initiated by the Seller and the Seller is awaiting a Buyer response to the Charge Process. If a blocking or non-blocking charge is accepted by the Buyer, the Product Order moves to IN_PROGRESS. If a non-blocking charge is rejected by the Buyer, the Product Order moves to IN_PROGRESS. If a blocking charge is rejected by the Buyer and there are no unrelated Product Order Items in the Product Order, the Product Order moves to the FAILED state. If a blocking charge is rejected by the Buyer and there are unrelated Product Order Items in the Product Order, the Product Order moves to the IN_PROGRESS state.
CANCELLED	The In-Flight Product Order has been successfully cancelled. This is a terminal state.

CANCELLING	The Buyer's Cancel Request has been assessed and it has been determined that it is feasible to proceed with the cancellation. This state can also result from a Seller cancelling the Order within their systems without a request from the Buyer.
COMPLETED	The Product Order has completed fulfillment and the Product is now active. This is a terminal state
FAILED	All Product Order Items have failed which results in the entire Product Order failing. This is a terminal state.
IN_PROGRESS	The Product Order has been successfully validated, and fulfillment has started.
PARTIAL	Fulfillment of at least one Product Order Item has failed, and fulfillment of at least one Product Order Item has been successful. This is a terminal state.
REJECTED	An Order was submitted, and it has failed at least one of the validation checks the Seller performs after it reached the ACKNOWLEDGED state.

Table 50 – Order Process Flow States

12.2 Product Order Item State Machine

The Product Order Item States and State machine are detailed in this section.

Figure 4 – Sonata Product Order Item Process Flow

State	Description
ACKNOWLEDGED	A Product Order Item has been received and has passed basic business validations. From the ACKNOWLEDGED state the Product Order Item is further validated and depending on the results of the validation and if other Product Order Items in the Product Order are also validated the Product Order Item moves to IN_PROGRESS, VALIDATED, or UNASSESSED.
ASSESSING_CANCELLATION	A request has been made by the Buyer to either cancel the Product Order via a Cancel In-Flight Order request or to cancel a Product Order Item via an Amend Request. The Product Order Item is currently being assessed to determine whether it can be cancelled and if there are any charges related to the cancellation.
ASSESSING_CHANGE	A request has been made by the Buyer to modify a Product Order Item via an Amend Request. The Product Order Item is currently being assessed to determine whether it can be modified and if there are any charges related to the modification.
CANCELLED	The In-Flight Product Order Item has been successfully cancelled.
COMPLETED	The Product Order Item has completed provisioning. This is an end state
FAILED	The fulfillment of a Product Order Item has failed. A Product Order Item may fail because the Buyer rejected a Blocking charge identified via the Charge Process, the Buyer failed to respond to a charge included in a Charge Process, or the Seller is unable to fulfill the Product Order Item. A Product Order Item moving to FAILED state results in the Order State being FAILED or PARTIAL. This is a terminal state.

HELD	The Product Order Item cannot be progressed due to either an issue on the Buyer or Seller side or the Seller has identified one or more charges related to the Product Order Item and has initiated the Charge Process for these charges. The Seller stops work on the Product Order Item until either the issue has been resolved or the Charge Process has completed, Upon resolution of the issue or acceptance by the Buyer of all Blocking charges, the Product Order Item returns to IN_PROGRESS state or in the case of a charge related to Cancelling the Product Order Item, the state moves to Cancelled.. If the issue cannot be resolved or the Buyer rejects a Blocking charge, the Order Item moves to the FAILED state.
IN_PROGRESS	The Product Order Item has been successfully validated and fulfillment has started. If the Seller's system links validation between Product Order Items in a Product Order, a Product Order Item in this state also indicates that the other Product Order Items passed validation.
PENDING	The Product Order Item cannot be progressed due to either an issue on either the Buyer or Seller side or with a Charge Process that the Seller has initiated on a Product Order Item that has a relationship with this Product Order Item. The Seller stops work on the Product Order Item until either the issue has been resolved or the Charge Process has completed, Upon resolution of the issue or acceptance by the Buyer of any Blocking charges, the Product Order Item returns to IN_PROGRESS state. If the issue cannot be resolved or the Buyer rejects a Blocking charge, the Product Order Item moves to the FAILED state.
CANCELLING	The Buyer's Cancel Request or the Buyer's Amend Request that is requesting the Seller to cancel this Product Order Item has been assessed and it has been determined that it is feasible to proceed with the cancellation This state can also result from a Seller cancelling the Order and hence all Product Order Items contain within the Order within their systems without a request from the Buyer.
REJECTED	A Product Order Item was submitted, and it has failed at least one validation checks the Seller performs during the ACKNOWLEDGED state.
VALIDATED	An Order was submitted, and it has passed all validation checks the Seller performs during the ACKNOWLEDGED state, but another Product Order Item in the Order has moved to the REJECTED state.

Table 51 – Product Order Item Process Flow States

12.3 Amend Process State Machines

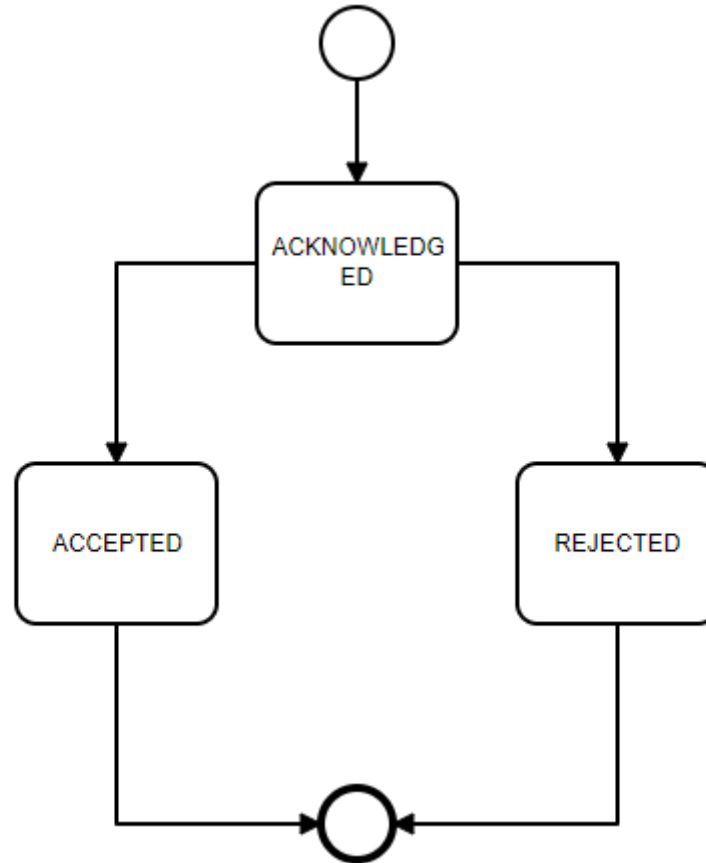The States and State Machines for the Amend Process are detailed in this section.

Figure 5 – Amend Process Flow

State	Description
ACCEPTED	An Amend Request has been accepted by the Seller. The appropriate updates are made in the referenced Order and Product Order Items
ACKNOWLEDGED	An Amend Request has been received and has passed basic validation. Seller Amend Identifier is assigned in the ACKNOWLEDGED state. Validation of Amend and Amend Item attributes as applicable are completed in the ACKNOWLEDGED state.
REJECTED	An Amend Request was submitted, and it has failed any validation checks the Seller performs during the ACKNOWLEDGED state. No updates are made to the referenced Order or Product Order items.

Table 52 – Amend Process Flow States

12.4 Cancel Process State Machine

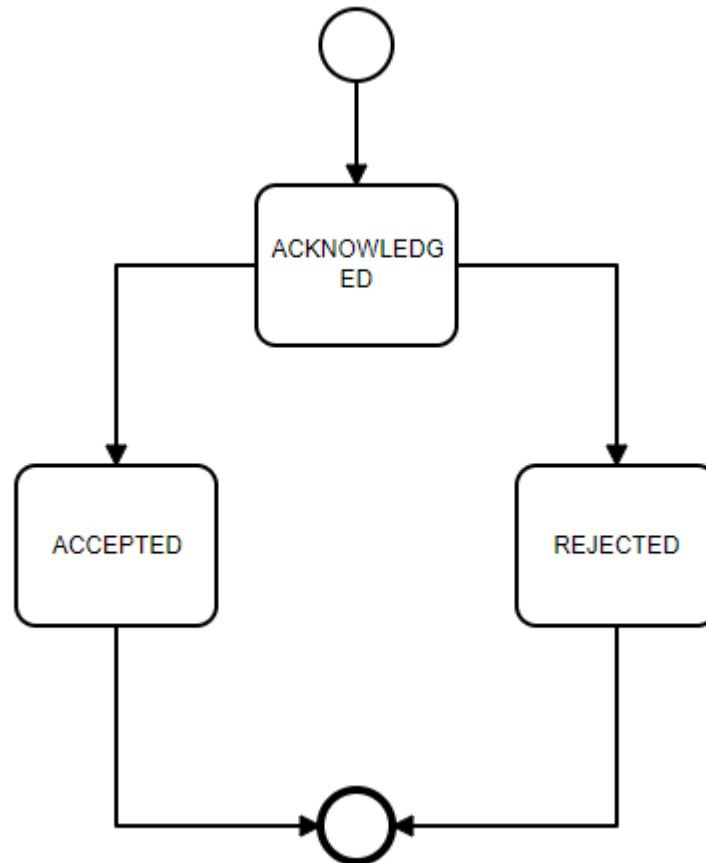The States and State Machines of the Cancel Process are detailed in this section.

Figure 6 – Cancel Order Process Flow

State	Description
ACCEPTED	A Cancel Request has been accepted by the Seller. The referenced Order is cancelled.
ACKNOWLEDGED	A Cancel Request has been received and has passed basic validation. Seller Cancel Identifier is assigned in the ACKNOWLEDGED state. Validation of Cancel attributes as applicable are completed in the ACKNOWLEDGED state.
REJECTED	A Cancel Request was submitted, and it has failed any validation checks the Seller performs during the ACKNOWLEDGED state. No updates are made to the referenced Order.

Table 53 – Cancel Process Flow States

12.5 Charge Process State Machines

The States and State Machines of the Charge Process are detailed in this section.

12.5.1 Charge Process Process Flow

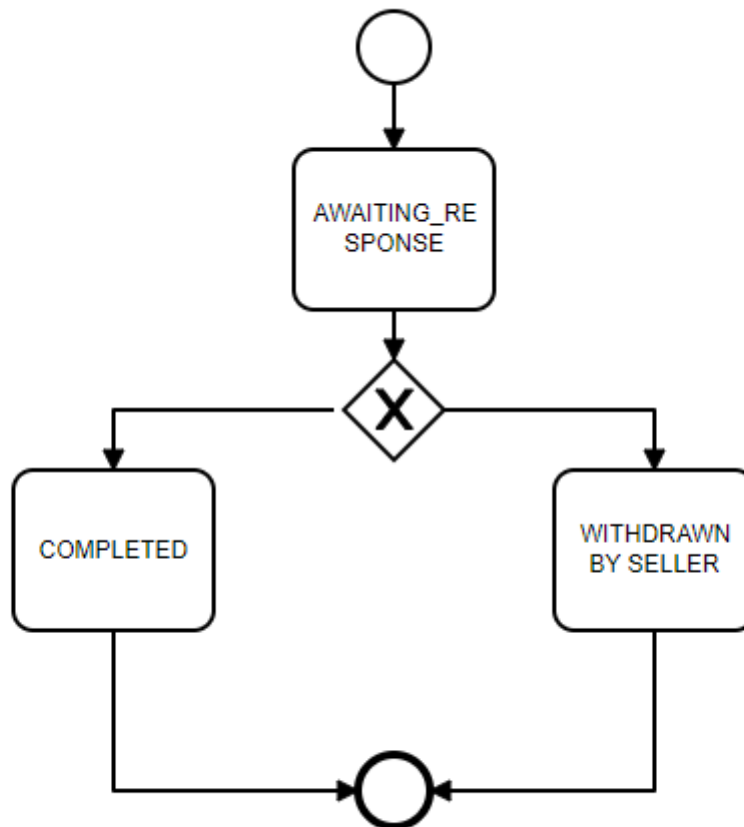The States and State Machine for the Charge Process process is detailed in this section.

Figure 7 – Charge Process Process Flow

State	Description
COMPLETED	All Charges included in the Charge Process for a given Product Order Item have moved to either the ACCEPTED state or the REJECTED state.

AWAITING_RESPONSE	A Charge Process has been initiated by the Buyer. The Charge Process includes one or more charges related to a Product Order Item.
WITHDRAWN_BY_SELLER	The Seller determines that the Charge Process is incorrect. They withdraw the Charge Process and initiate a new Charge Process with the required correction(s).

Table 54 – Charge Process Process Flow States

Charge

12.5.2 Charge Identifier Process States and State Machine

The Charge Identifier process States and State Machine are detailed in this section.
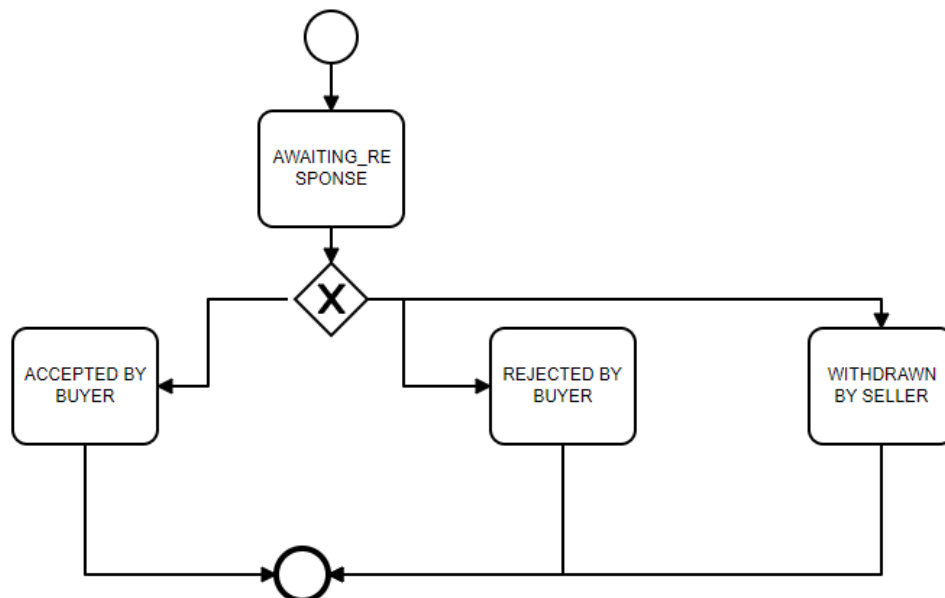
Figure 8 - Charge Identifier Process

State	Description
ACCEPTED_BY_BUYER	A Charge identified in the Charge Process has been accepted by the Buyer. The referenced Order and Product Order Items are updated.
AWAITING_RESPONSE	A Charge Process has been initiated by the Buyer. The Charge Process includes one or more charges related to a Product Order Item.

REJECTED_BY_BUYER	A Charge identified in the Charge Process has been rejected by the Buyer. The referenced Order and Product Order Items are updated. If a Blocking charge is rejected, the Seller may cancel the referenced Product Order Item and any related Product Order Items.
WITHDRAWN_BY_SELLER	The Seller determines that the Charge Process is incorrect. They withdraw the Charge Process and initiate a new Charge Process with the required correction(s).

Table 55 – Charge Identifier Process Flow States

13 References

[1]   ATIS-0300253, *Structure for the Representation of Location Entities for Information Exchange*, December 2016

[2]   IETF RFC 2119, *Key words for use in RFCs to Indicate Requirement Levels*, March 1997

[3]   IETF RFC 8174, *Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words*, May 2017

[4]   MEF 50.1, MEF Forum, *MEF Services Lifecycle Process Flows, MEF 50.1*, August 2017.

[5]   MEF 51.1, MEF Forum, *Operator Services Definitions*, December 2018

[6]   MEF 55, MEF Forum, *LSO Reference Architecture*, March 2016.

[7]   MEF 55.0.1, MEF Forum,

[8]   MEF 79, *Address, Service Site, and Product Offering Qualification Management Requirements and Use Cases*, June 2019

[9]   MEF 79.0.2, *Amendment to MEF 79: Address Validation*, September 2020

[10]   MEF 80, *Quote Management Requirements and Use Cases*, Draft Standard, June 2020

[11]   TMF622 TM Forum, *TMF622 Product Ordering API REST Specification R17.5.1*, May 2018.

Appendix A   Interactions Between Process Flows

This section provides details on interactions between different process flows shown in section 12. Interactions described include Product Order Item to Product Order, Product Order to Product Order Item, Amend to Product Order and Product Order Item, Cancel to Product Order and Product Order Item, and Charge Process to Product Order and Product Order Item.

A.1   Product Order Item to Product Order

The process flow state changes at the Product Order level that are the result of state changes at the Product Order Item level are described in this section.

	(T) Product Order Request Submitted	(T+1) Seller Completes Validation of all Order Items	(T+2) Order Item Completed	(T+3) All Order Items Completed
Product Order Item	ACKNOWLEDGED	IN_PROGRESS	COMPLETED	COMPLETED
Other Order Items	ACKNOWLEDGED	IN_PROGRESS	IN_PROGRESS	COMPLETED
Product Order	ACKNOWLEDGED	IN_PROGRESS	IN_PROGRESS	COMPLETED

Table 56 – Order Item COMPLETED to Order State Mapping

	(T) Product Order Request Submitted	(T+1) Seller Completes Validation of all Order Items
Product Order Item	ACKNOWLEDGED	REJECTED
Other Order Items	ACKNOWLEDGED	VALIDATED
Product Order	ACKNOWLEDGED	REJECTED

Table 57 – Order Item REJECTED to Order State Mapping

	(T) Product Order Request Submitted	(T+1) Seller Completes Validation of all Order Items	(T+2) Order Item Failed	(T+3) All Order Items Completed
Product Order Item	ACKNOWLEDGED	IN_PROGRESS	FAILED	FAILED
Other Order Items	ACKNOWLEDGED	IN_PROGRESS	IN_PROGRESS	COMPLETED
Product Order	ACKNOWLEDGED	IN_PROGRESS	IN_PROGRESS	PARTIAL

Table 58 – One Order Item FAILED to Order State Mapping

	(T) Product Order Request Submitted	(T+1) Seller Completes Validation of all Order Items	(T+2) All Order Items Failed
Product Order Item	ACKNOWLEDGED	IN_PROGRESS	FAILED
Other Order Items	ACKNOWLEDGED	IN_PROGRESS	FAILED
Product Order	ACKNOWLEDGED	IN_PROGRESS	FAILED

Table 59 – All Order Items FAILED to Order State Mapping

A.2   Product Order to Product Order Item

The process flow state changes at the Product Order Item level that are the result of state changes at the Product Order level are described in this section.

	(T) Product Order Request Submitted	(T+1) Seller Completes Validation of all Order Items	(T+2) Order Completed
Product Order	ACKNOWLEDGED	IN_PROGRESS	COMPLETED
Product Order Item	ACKNOWLEDGED	IN_PROGRESS	COMPLETED
Other Order Items	ACKNOWLEDGED	IN_PROGRESS	COMPLETED

Table 60 – Order COMPLETED to Order Item State Mapping

	(T) Product Order Request Submitted	(T+1) Seller Completes Validation of all Order Items
Product Order	ACKNOWLEDGED	REJECTED
Product Order Item	ACKNOWLEDGED	REJECTED
Other Order Items	ACKNOWLEDGED	VALIDATED

Table 61 – Order REJECTED to Order Item State Mapping

	(T) Product Order Request Submitted	(T+1) Seller Completes Validation of all Order Items	(T+2) Order Item Failed	(T+3) All Order Items Completed

Product Order	ACKNOWLEDGED	IN_PROGRESS	IN_PROGRESS	PARTIAL
Failed Product Order Item	ACKNOWLEDGED	IN_PROGRESS	FAILED	FAILED
Other Order Items	ACKNOWLEDGED	IN_PROGRESS	IN_PROGRESS	COMPLETED

Table 62 –Order PARTIAL to Order Item State Mapping

	(T) Product Order Request Submitted	**(T+1) Seller Completes Validation of all Order Items**	**(T+2) All Order Items Failed**
Product Order	ACKNOWLEDGED	IN_PROGRESS	FAILED
Product Order Item	ACKNOWLEDGED	IN_PROGRESS	FAILED
Other Order Items	ACKNOWLEDGED	IN_PROGRESS	FAILED

Table 63 – All Order Items FAILED to Order State Mapping

A.3   Amend Request to Product Order and Product Order Item

The process flow state changes for an Amend Request and the impacts at the Product Order and Product Order Item level are described in this section.

	(T) Amend Request Submitted	**(T+1) Seller Completes Validation of Amend Request**	**(T+2) Amend Request is Accepted**	
Amend Request	ACKNOWLEDGED	IN_PROGRESS	ACCEPTED	
Product Order	IN_PROGRESS	ASSESSING_AMEND	IN_PROGRESS	
Product Order Item Being Modified by Amend Request	IN_PROGRESS	ASSESSING_CHANGE	IN_PROGRESS	
Product Order Item Being Cancelled by Amend Request	IN_PROGRESS	ASSESSING_CANCELLATION	CANCELLING	CANCELLED
Product Order Item	NA	NA	IN_PROGRESS	

Being Added by Amend Request			
Other Order Items not Impacted by Amend Request	IN_PROGRESS	IN_PROGRESS	IN_PROGRESS

Table 64 – Amend Request Accepted to Order and Order Item State Mapping

Note: for Order Items being added by an Amend Request the validation of the Order Item attributes takes place during the Amend Request IN_PROGRESS state.

	(T) Amend Request Submitted	(T+1) Seller Completes Validation of Amend Request	(T+2) Amend Request is Rejected
Amend Request	ACKNOWLEDGED	IN_PROGRESS	REJECTED
Product Order	IN_PROGRESS	ASSESSING_AMEND	IN_PROGRESS
Product Order Item Being Modified by Amend Request	IN_PROGRESS	ASSESSING_CHANGE	IN_PROGRESS
Product Order Item Being Cancelled by Amend Request	IN_PROGRESS	ASSESSING_CANCELLATION	IN_PROGRESS
Product Order Item Being Added by Amend Request	NA	NA	NA
Other Order Items not Impacted by Amend Request	IN_PROGRESS	IN_PROGRESS	IN_PROGRESS

Table 65 – Amend Request Rejected to Order and Order Item State Mapping

Note: if the Amend Request is rejected, Order Items that are modified or cancelled by the Amend Request are not modified and return to the IN-PROGRESS state with attributes as they were set prior to the Amend Request.