**Draft Standard
MEF 80 Draft (R6)**

Quote Management
Requirements and Use Cases

May 2021

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

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1 List of Contributing Members

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

Member Company
Amdocs
Amartus
AT&T
Cataworx
Colt
Ericsson
Iometrix
Netcracker
Orange
Proximus
Spirent Communications
Telus
Verizon

Table 1 – Contributing Member Companies

2 Abstract

This specification identifies the common Quote use cases and attributes needed to support inter-carrier Quote management. It supports the requirements defined in the MEF Lifecycle Service Orchestration (LSO) Reference Architecture and Framework (MEF 55.1 [9], "LSO RA") requirements for Quotes over the Sonata Interface Reference Point (interactions between a Service Provider and a Partner). Information contained within this specification will be utilized by both Buyer and Seller for the development of automated API based interaction.

3 Release Notes

This document has completed all Call for Comment reviews within MEF. It is currently in the Letter Ballot process. No changes are expected to this document at this time and there are no open issues to be resolved with this document.

4 Terminology and Acronyms

This section defines the terms used in this specification. 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 that are defined in MEF 10.3 [4], MEF 12.2 [5], MEF 26.2 [6], MEF 50.1 [7], MEF 51.1 [8], MEF 55.1 [9], MEF 57.1 [10], and MEF 79 [11] are included in this document by reference and are not repeated in the table below.

Term	Definition	Reference
Budgetary Quote	A Quote that is provided quickly and with very little analysis such that the Buyer can get an idea of how much the requested Product Offering could cost. Any charges specified are subject to change.	This document
Buyer	In the context of this document, denotes the organization acting as the customer in a transaction over a Sonata Interface (Service Provider <-> Partner).	This document
Completion State	A state a Quote is in when the Seller has completed processing their Quote. This is one of the following Quote states: • ANSWERED • CANCELLED • ORDERABLE • ORDERABLE_ALTERNATE • REJECTED • UNABLE_TO_PROVIDE	This document
Currency	The unit of measurement in which a monetary cost is expressed. Currency is represented by currency codes defined in ISO 4217:2015 [1].	This document
Deferred Quote Response	A Seller's response to a Buyer's Create Quote request whereby the Seller immediately acknowledges that the Create Quote request was received and, over time, sends notifications to update the Buyer on the status and results of the Create Quote request (assuming the Buyer has subscribed to receive the notifications). The Buyer can also poll the Seller for the Quote details which also includes the status of the Quote. A Deferred Quote Response may take some time for the Seller to fulfill.	This document derived from MEF 79 [11]
Duration	A period of time specified in seconds, minutes, hours, business hours, business days, calendar days or calendar months.	This document

Term	Definition	Reference
Firm Quote	A Quote provided to the Buyer based on a complete pre-order analysis. All Monthly Recurring Charges and Non-Recurring Charges specified on a Firm Quote are committed. A Firm Quote may expire at some date specified by the Seller.	This document
Firm – Subject to Feasibility Check Quote	A Quote that is provided to the Buyer based on some, but not a complete, pre-order analysis. At this stage, the Seller may not be willing to perform any further work on the Quote and requests that the Buyer use the Firm – Subject to Feasibility Check Quote to proceed to the Order process. Ordering is possible based on the Firm – Subject to Feasibility Check Quote with some stipulations as to how cost identified during delivery is addressed. The Monthly Recurring Charges specified in the Quote Response are final. Non-Recurring Charges specified in the Quote Response are subject to change and new Non-Recurring Charges may be identified during fulfillment.	This document
Immediate Quote Response	A Seller's response to the Buyer's Create Quote request, whereby the Seller responds immediately with the results of the Create Quote request or indicates that the request cannot be processed. The maximum time to provide an Immediate Quote Response is for further study but is expected to be less than 30 seconds.	This document derived from MEF 79 [11]
Money	For the purposes of this document, a combination of a Currency and an amount in the currency specified by the Seller or as agreed upon between the Buyer and Seller.	This document
MRC	Monthly Recurring Charge	This document
Non-Recurring Charge	One-time charge for a product that is incurred by the Buyer. Examples are standard installation charges, construction charges, and expedite charges.	This document
Notification	A message sent from the Seller to the Buyer to inform them of an event that has occurred in regard to a specific instance of a POQ, Quote, or Order.	This document
NRC	Non-Recurring Charge	This document
Recurring Charge	Charge for a product that is incurred by the Buyer each specified time interval for that product.	This document
Request	A message passed from one party to the other that initiates a process.	This document

Term	Definition	Reference
Response	A message returned by the party receiving the Request.	This document
Seller	In the context of this document, denotes the organization acting as the supplier in a transaction over a Sonata Interface (Service Provider <-> Partner).	This document
Terminal State	A state in which the Quote is considered terminated, and no further actions may be taken by the Buyer. This is one of the following: • UNABLE_TO_PROVIDE • CANCELLED • EXPIRED • DECLINED • ACCEPTED • REJECTED	This document

Table 2 – Terminology and Abbreviations

5   Scope

This specification defines the process for MEF Quote Management between a Seller and Buyer. This specification is limited to the business process requirements depicted as Use Cases and attribute definitions needed for Quote 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 specification are to be interpreted as described in BCP 14 (RFC 2119, RFC 8174) 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**.**

7   Introduction

This specification defines the business requirements and process-related guidelines for the Quote process over the Sonata Interface Reference Point. The Sonata Interface Reference Point is defined in MEF 55.1 [9] as the Management Interface Reference Point supporting the management and operations interactions (e.g. ordering, billing, trouble management, etc.) between two network providers (e.g., Service Provider Domain and Partner Domain). The scope of this specification is limited to interactions between these parties; within this specification, they are referred to as the "Buyer" and the "Seller". A Buyer is defined as the organization acting as the customer in a transaction over a Sonata Interface Reference Point (Service Provider <-> Partner). A Seller is defined as the organization acting as the supplier in a transaction over a Sonata Interface Reference Point (Service Provider <-> Partner).
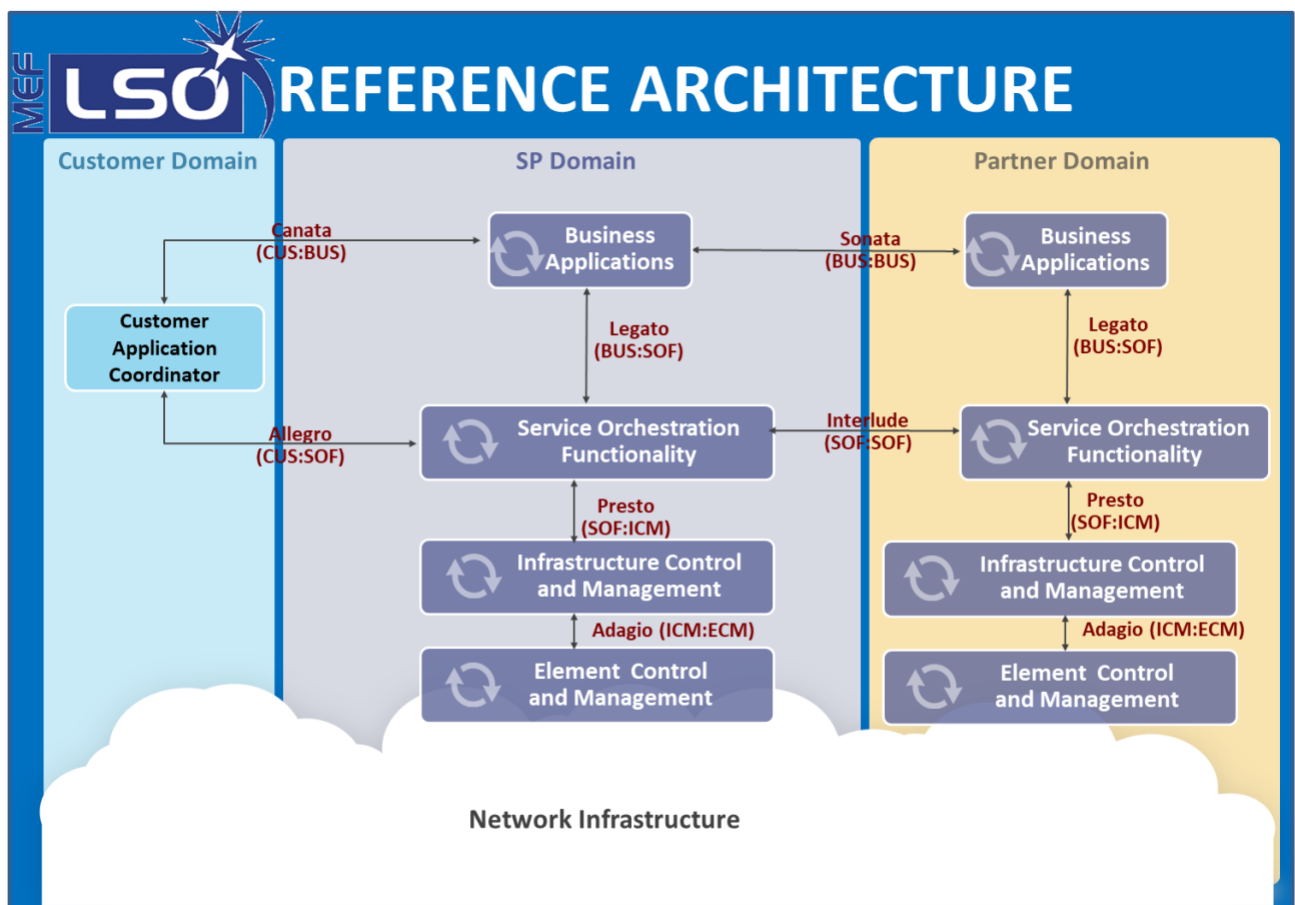
Figure 1 – LSO Reference Architecture

Within this document the following terms are used with the definition as specified below:

Notification - A message sent from the Seller to the Buyer to inform them of an event that has occurred in regard to a specific instance of a Quote. The attributes that are contained within a notification are specified within this document.

Request - A message passed from one party to the other that initiates a process. The attributes that are contained within a Request are specified within this document.

Response - A message returned by the party receiving the Request. The attributes that are contained within a Response are specified within this document.

Immediate Quote Response - A Seller's response to the Buyer's Create Quote request, whereby the Seller responds immediately with the results of the Create Quote request or indicates that the request cannot be processed. The Seller's response includes Quote and Quote Item attributes as specified.

Deferred Quote Response - A Seller's response to a Buyer's Create Quote request whereby the Seller immediately acknowledges that the Create Quote request was received with a response that includes a minimum set of Quote and Quote Item attributes. Over time, the Seller handles the Buyer's Create Quote request generating a quote and sends notifications to update the Buyer on the status of the (assuming the Buyer has subscribed to receive the notifications).

Quote – A Quote is the Seller's response to a Buyer's Create Quote request. A completed Quote may contain pricing information for the Quote Items included in the Buyer's request. A Quote is considered completed when the state of the Quote is one of the completion states as shown in Table 14 and the state of each Quote Item is one of the following:
- ANSWERED
- CANCELLED
- ORDERABLE
- ORDERABLE_ALTERNATE
- REJECTED
- UNABLE_TO_PROVIDE

The Buyer requests a Quote for the delivery of one or more of the Seller's Product Offerings or for an action to be performed on an existing Product. The terms Product Offerings and Products are defined in MEF 79 [11]. For a new installation, the Buyer references a Product Offering. If the Buyer is requesting a Quote to change or disconnect one of their existing products that is in the Seller's Product Inventory, the Buyer references the Product in the Seller's Product Inventory using the Product Identifier. A Buyer might request a Quote for a disconnect to determine if there are any termination charges.

There are 2 associated "patterns" of interaction between the Buyer and Seller when the Buyer issues a Create Quote request:

1. The Seller may respond immediately with the results of the request. This is called an Immediate Quote Response.
2. The Seller may acknowledge that the request has been received, but will not complete processing it immediately, and send notifications to update the Buyer on the status (assuming the Buyer has subscribed to receive the notifications). This is called a Deferred Quote Response.

Note: The Buyer may retrieve the Quote at any time to obtain status and details on the Quote.

The Seller may indicate that it is not possible to process the request (immediately or after initiating processing) if the Product Offering is not supported at a requested location, does not support the requested attributes, or for other exceptions.

A Buyer may request a Quote of either a Budgetary or Firm Quote Level using the Buyer Requested Quote Level Quote attribute. All Quote Items contained in a Quote have the same Buyer Requested Quote Level.

A Seller returns a Budgetary Quote if the Buyer requested a Budgetary Quote Level.

A Seller returns a Firm or Firm – Subject to Feasibility Check Quote if the Buyer requested a Firm Quote Level.

A Budgetary Quote Level provides estimated charges for the product install, change, or disconnect. A Budgetary level Quote might be requested by a Buyer during negotiations with a customer for a product. The Buyer is simply seeking a high-level estimate of the cost associated with the service. The Seller must return a Budgetary Quote if the Buyer requests a Budgetary Quote Level.

A Buyer requests a Quote having a Quote Level of Firm using the Buyer Requested Quote Level attribute when committed charges are needed. As an example, if the Buyer is trying to provide pricing to an end customer, the Buyer may require firm recurring charges and if possible, NRCs to provide the end customer with committed pricing.

A Seller responds with a Firm Level Quote with committed recurring charges and, where applicable, committed NRCs for the product install, change, or disconnect can be provided. When the Seller responds with a Firm Level Quote, this represents a commitment to the Buyer that the pricing will not change unless there are additional actions requested by the Buyer such as an Expedite request.

A Firm - Subject to Feasibility Check level allows the Seller to provide an indication of the pricing without the commitment of a Firm Quote Level. The Firm – Subject to Feasibility Check level Quote includes committed recurring charges and a combination of committed and estimated NRCs. Additional NRCs may be added during fulfillment as costs are identified. This can only be done with Quotes with the Quote Level of Firm – Subject to Feasibility Check.

For each Requested Quote Level specified by the Buyer, there are different states that the Seller's Quote can be in and provide the Buyer with some or all requested pricing information. The relationship between Quote Level and Quote State are described below:

- Buyer Requested Quote Level – FIRM
    - IN_PROGRESS_DRAFT – the Quote is only partially finalized
    - ORDERABLE – pricing is finalized, and all attributes match Buyer's request

- o ORDERABLE_ALTERNATE - pricing is finalized and not all attributes match the Buyer's request
- Buyer Requested Level – BUDGETARY
  - o ANSWERED – Budgetary pricing is finalized

To fully define the business interactions associated with inter-carrier quotes, this specification is focused on the following key areas:

- Quote Management Use Cases and Business Process Definitions

- Specific Quote Attributes supported in this specification

- Process Flows for Quotes and Quote Items

- Notifications of events that occur during processing of the Quote

8   Quote Use Cases and Business Process Definitions

8.1   High-Level Use Cases

This section provides the complete set of Use Cases needed to support Quote Management and expands on the Quote process defined in MEF 50.1 [7]. These Use Cases are based on business process standards of interactions between Buyers and Sellers of Products. The specific attributes associated with each Use Case are defined in section 9. Prior arrangements for Buyer authentication, security verification, and system interface requirements are not addressed within these use cases. Onboarding must take place between the Buyer and Seller prior to applying the Quote process described in the Use Cases described in this section.

The Buyer might have performed an Address or Site check, or a Product Offering Qualification (POQ) as specified in MEF 79 [11] prior to the process of requesting a Quote. The Seller may mandate that every request for an installation or change include an Address Identifier, Site Identifier where possible, and/or POQ Identifier, and will reject the Quote request if those identifiers are not provided by the Buyer. The Quote functionality is not specific to any particular Product or Product Offering, and thus the Buyer is able to get a Quote on any of the Products and Product Offerings available to the Buyer that are supported by the Seller. The characteristics of the product are found in its associated Product Specifications and Product Offerings.

Sonata Interface Pre-Order and Order Functions
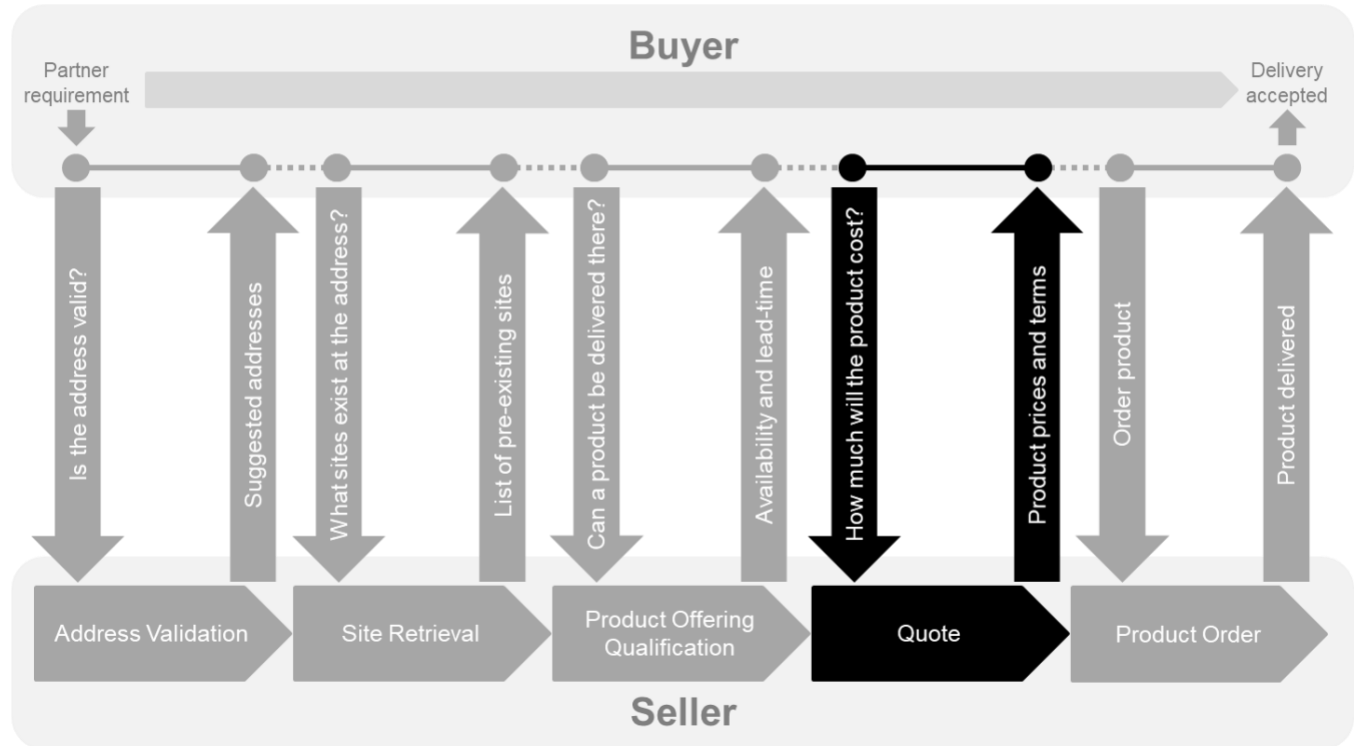
Figure 2 – Sonata Interface Focus

Figure 2 shows the Sonata Pre-Order and Order functions:

- Address Validation

- Site Retrieval

- Product Offering Qualification

- Quote

- Product Order

The use cases within this document support Quote Management. Quote Management allows the Buyer to submit a request to find out how much the installation of an instance of a product offering, an update to an existing Product, or a disconnect of an existing Product will cost. The Seller Quote contains the prices for each product or product offering included within the request.

 The Buyer may request, and the Seller may offer either an Immediate response or a Deferred response. An Immediate response is returned quickly, normally < 30 seconds from receiving the request. The Immediate response includes the Seller's Quote. A Deferred response allows the Seller some time period, days, weeks, etc., to complete the request. For a Deferred response, the Seller responds immediately with the attributes specified in this document and then provides

notifications to update the status of the Quote process. The Buyer can specify in their request and the Seller is required to offer either an Immediate response or a Deferred response.

8.2 Quote Use Cases

This section defines the use cases that support Quote Management.
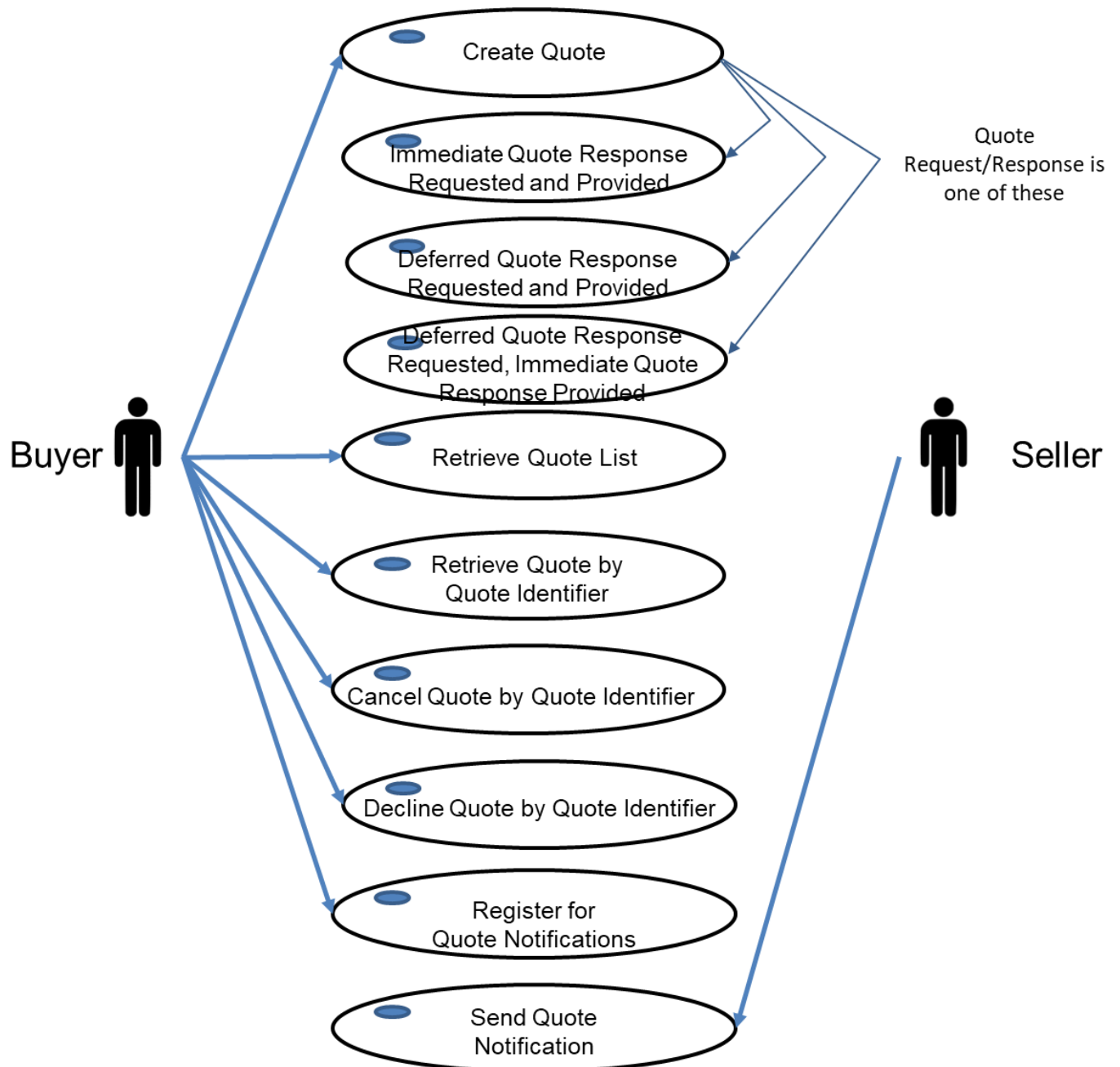
Figure 3 – Quote Use Cases

Use Case #	Use Case Name	Use Case Description
1	Create Quote	The Buyer requests a Quote from the Seller using one of the sub-Use Cases below.
1a	Immediate Quote Response Requested and Provided	The Buyer requests a Quote from the Seller and requests an Immediate Quote Response.
1b	Deferred Quote Response Requested and Provided	The Buyer requests a Quote from the Seller and does not request an Immediate Quote Response. The Seller provides a Deferred Quote Response.
1c	Deferred Quote Response Requested, Immediate Quote Response Provided	The Buyer requests a Quote from the Seller and does not request an Immediate Quote Response. The Seller provides an Immediate Quote Response.
2	Retrieve Quote List	The Buyer requests a list of Quotes from the Seller based on Quote filter criteria.
3	Retrieve Quote by Quote Identifier	The Buyer requests detailed information related to a single Quote based on a Quote Identifier.
4	Cancel Quote by Quote Identifier	The Buyer requests to Cancel a Quote.
5	Decline Quote by Quote Identifier	The Buyer declines the Quote.
6	Register for Quote Notifications	The Buyer initiates a request to instruct the Seller to send notifications of Quote and/or Quote Item state changes.
7	Send Quote Notification	Seller sends Notification to the Buyer

Table 3 – Use Case Table

The Buyer being on-boarded with the Seller is a Pre-Condition for all Use Cases. The on-boarding process includes the Buyer and Seller agreeing to several items including the language used for communication between the parties and the currency type used for price information.

[D1]   For all Addresses that have not been validated, a Buyer **SHOULD** initiate a Validate Address request, to get the Seller's full details associated with this Address prior to submitting a Create Quote request.

[D2]   For all Addresses that have been validated, the Buyer **SHOULD** use the Seller's Address Identifier to describe the location when submitting a Create Quote request and a Service Site Identifier does not exist.

A Seller assigns a Site Identifier to an address at some point in the POQ, Quote, or Product Order process. This is dependent upon the Seller and their processes. If a Site Identifier has been assigned by the Seller, then the following requirements ([D3], [D4]) apply.

[D3] After validating an Address, a Buyer **SHOULD** initiate a Retrieve Service Site List request and obtain the Seller's Service Site Identifiers for all Service Sites at the validated Address prior to submitting a Create Quote request.

[D4] Once the Buyer has obtained the Service Site Identifier of the Service Site, then for all subsequent operations related to this Service Site, the Buyer **SHOULD** use the Seller's Service Site Identifier to reference this Service Site when submitting a Create Quote request.

8.2.1   Use Case 1a Create Quote Request, Immediate Quote Response Provided

Table 4 defines the details for Quote Use Case 1a.

Field	Description
Use Case Number	1a
Use Case Name	Create Quote request, Immediate Quote Response Provided
Description	The Buyer requests a Quote from the Seller and requires an Immediate Quote Response
Actors	Buyer/Seller
Pre-Conditions	1. Buyer is authorized to purchase products from the Seller (Buyer on-boarded)
Process Steps	1. The Buyer initiates and submits a Create Quote request as specified in section 10.1.1. 2. The Seller validates the Create Quote request based on business validation rules and pre-conditions. 3. The Seller verifies the POQ Identifier, if provided. 4. The Seller moves the Quote to the appropriate state as described in section 11. 5. The Seller returns an Immediate Quote Response as shown in section 10.1.2.
Post-Conditions	The Buyer obtains an Immediate Quote Response, including a Quote Identifier.
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 rejects the Quote and returns an error message if mandated pre-ordering references are absent. 3. The Seller returns an error if the attributes specified in the Quote request do not match the attributes in the specified POQ or if the specified POQ has passed its Guaranteed Until Date.
Business Process	MEF 50.1 Order-to-Delivery

Table 4 – Use Case 1a Create Quote Request Immediate Quote Response

Note: Prior to submitting a Create Quote request the Buyer is advised to complete pre-order Address validation, Site retrieval and check, and/or POQ.

8.2.2   Use Case 1b, Create Quote Request Deferred Quote Response Requested, Deferred Quote Response Provided

Table 5 defines the details for Quote Use Case 1b.

Field	Description
Use Case Number	1b
Use Case Name	Create Quote request Deferred Quote Response, Deferred Quote Response Provided
Description	The Buyer requests a Quote from the Seller and does not request an Immediate Quote Response. The Seller replies with a Deferred Quote Response.
Actors	Buyer/Seller
Pre-Conditions	1. Buyer is authorized to purchase products from the Seller (Buyer on-boarded)
Process Steps	1. The Buyer initiates and submits a request for a Quote as specified in section 10.1.1 and does not specify that an Immediate Quote Response is required. 2. The Seller validates the Create Quote request based on business validation rules and pre-conditions. 3. The Seller verifies the requested date and time by which a Quote is to be provided and determines that they will not provide an Immediate Quote request response. 4. The Seller verifies the POQ Identifier, if provided. 5. The Seller moves the Quote to the appropriate state as described in section 11. 6. The Seller returns a Deferred Quote Response with a Quote Identifier. 7. The Seller begins to work on the Quote.
Post-Conditions	The Buyer obtains a Deferred Quote Response including a Seller Quote Identifier. The Buyer either queries the Quote using the Quote Identifier to obtain Quote details or subscribes to Notifications from the Seller and the Seller notifies the Buyer of Quote/Quote Item state changes. The Buyer may receive more than one notification about the Quote.

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 rejects the Quote request and specifies a Termination Error if mandated pre-ordering references are absent. 3. The Seller rejects the Quote and specifies a Termination Error if the attributes specified in the Quote request do not match the attributes in the specified POQ or if the specified POQ has [assed its Guaranteed Until Date.
Business Process	MEF 50.1 Order-to-Delivery

Table 5 – Use Case 1b Request Quote without Immediate Quote Response

Note: Prior to submitting a Create Quote request the Buyer is advised to complete pre-order Address validation, Site retrieval and check, and/or POQ.

8.2.3   Use Case 1c, Create Quote Request Deferred Quote Response Requested, Immediate Quote Response Provided

Table 6 defines the details for Quote Use Case 1c

Field	Description
Use Case Number	1c
Use Case Name	Create Quote request Deferred Quote Response requested, Immediate Quote Response Provided
Description	The Buyer requests a Quote from the Seller and does not request an Immediate Quote Response. The Seller provides an Immediate Quote Response.
Actors	Buyer/Seller
Pre-Conditions	1. Buyer is authorized to purchase products from the Seller (Buyer on-boarded)
Process Steps	1. The Buyer initiates and submits a request for a Quote as specified in section 10.1.1. 2. The Seller validates the Create Quote request based on business validation rules and pre-conditions. 3. The Seller verifies the requested date and time by which a Quote is to be provided. 4. The Seller verifies the POQ Identifier, if provided. 5. The Seller moves the Quote to the appropriate state as described in section 11. 6. The Seller returns an Immediate Quote Response as shown in section 10.1.2.
Post-Conditions	The Buyer obtains an Immediate Quote Response, including a Quote Identifier.

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 rejects the Quote request and returns an error message if mandated pre-ordering references are absent. 3. The Seller returns an error if the attributes specified in the Quote request do not match the attributes in the specified POQ or if the specified POQ has passed its Guaranteed Until Date.
Business Process	MEF 50.1 Order-to-Delivery

Table 6 – Use Case 1c Request Quote with Deferred Response, Immediate Provided

Note: Prior to submitting a Create Quote request the Buyer is advised to complete the following as needed Address validation, Site retrieval and check, or POQ.

Note: In Use Cases 1a, 1b, and 1c, a Create Quote request cannot be modified once submitted. If the Buyer wants to change the Create Quote request attributes The Quote can be cancelled or declined and another Create Quote request submitted. If the Seller determines that the Quote request cannot be provided due to an error in the Buyer provided attributes, they will place the Quote in a terminal state.

8.2.4   Use Case 2, Retrieve Quote List

Table 7 defines the details for Quote Use Case 2.

Field	Description
Use Case Number	2
Use Case Name	Retrieve Quote List
Description	The Buyer requests a list of Quotes from the Seller based on Quote filter criteria.
Actors	Buyer/Seller
Pre-Conditions	Buyer is authorized to purchase products from the Seller (Buyer on-boarded).
Process Steps	1. The Buyer submits a Retrieve Quote List request as shown in section 10.3.1 based on the filter criteria options. 2. The Seller receives and validates the request. 3. The Seller determines if there are any Quotes that match the filter criteria in the request. 4. The Seller returns a summarized list of Quote instances as specified in section 10.3.2 including the Seller Quote Identifier for each instance in the list. If no matches are found the list may be empty.
Post-Conditions	Buyer has received a summarized list of Quotes.

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 returns an error if the number of responses exceeds the Seller specified limit. The error indicates that query resulted too many Quotes being returned, and no results are returned. In this case, the Buyer would likely elect to reinitiate the Retrieve Quote List request using more specific criteria to obtain a summarized list containing fewer matching Quotes.
Business Process	MEF 50.1 Order-to-Delivery

Table 7 – Retrieve Quote List

8.2.5   Use Case 3, Retrieve Quote by Quote Identifier

Table 8 defines the details for Quote Use Case 3.

Field	Description
Use Case Number	3
Use Case Name	Retrieve Quote by Quote Identifier
Description	The Buyer requests detailed information related to a single Quote based on a Quote Identifier.
Actors	Buyer/Seller
Pre-Conditions	1. Buyer is authorized to purchase products from the Seller (Buyer on-boarded). 2. Buyer knows the identifier of the Quote to be retrieved.
Process Steps	1. The Buyer submits a request to retrieve information associated with a single Quote by Seller Quote Identifier as shown in section 10.4.1. 2. The Seller receives and validates the request. 3. The Seller determines if there is a Quote that matches the identifier. 4. The Seller returns the matching Quote instance with all the attributes as shown in section 10.4.2.
Post-Conditions	Buyer has detailed information on the Quote identified by the Quote Identifier.
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 will return an error if the Quote instance with the specified Quote identifier is not found. 3. The Seller returns an error because the Quote has been archived and it is no longer possible to retrieve information associated with the Quote.

Business Process	MEF 50.1 Order-to-Delivery

Table 8 – Retrieve Quote by Id

Note: the timeframe that a Quote in the final state remains available to be retrieved is agreed to by the Buyer and Seller during the on-boarding process.

Note: if the Buyer tries to retrieve a Quote that does not belong to them, the Seller response is that the Quote does not exist.

8.2.6   Use Case 4, Cancel Quote by Quote Identifier

Table 9 defines the details for Quote Use Case 4.

Field	Description
Use Case Number	4
Use Case Name	Cancel Quote by Quote Identifier
Description	The Buyer requests to Cancel a Quote.
Actors	Buyer/Seller
Pre-Conditions	1. The Quote state is IN_PROGRESS or IN_PROGRESS_DRAFT. 2. Buyer knows the identifier of the Quote to be retrieved.
Process Steps	1. The Buyer submits a Cancel Quote request with the Seller Quote Identifier as shown in section 10.2. 2. The Seller receives the request for cancellation, verifies a Quote with the given Seller Quote Identifier exists and that the current state of that Quote allows a transition to the CANCELLED state. 3. The Seller sets the Quote as CANCELLED. 4. The Seller provides a response to the Buyer as shown in section 10.1.2.
Post-Conditions	The Buyer receives a response that the Quote has been cancelled.
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 sends an error if the Quote to be cancelled does not exist. 3. The Seller sends an error if they are unable to Cancel the Quote because the referenced Quote is not in the correct state. As an example, a request to cancel a Quote that is not in the IN_PROGRESS , or IN_PROGRESS_DRAFT state would generate an error from the Seller.

Business Process	MEF 50.1 Order-to-Delivery

Table 9 – Cancel Quote

Note: if the Buyer tries to cancel a Quote that does not belong to them, the Seller response is that they Quote does not exist.

[R1]   The Seller **MUST** provide the ability for a Buyer to cancel a Quote when the Quote is in the following states: IN_PROGRESS, IN_PROGRESS_DRAFT.

8.2.7   Use Case 5, Decline Quote by Quote Identifier

Table 10 defines the details for Quote Use Case 5.

Field	Description
Use Case Number	5
Use Case Name	Decline Quote by Quote Identifier
Description	The Buyer requests to Decline a Quote that is in the ORDERABLE or ORDERABLE_ALTERNATE state.
Actors	Buyer/Seller
Pre-Conditions	1. The Quote state is ORDERABLE or ORDERABLE_ALTERNATE. 2. Buyer knows the identifier of the Quote to be retrieved.
Process Steps	1. The Buyer submits a Decline Quote request with the Seller Quote Identifier as shown in section 10.2. 2. The Seller receives the request to decline a Quote, verifies a quote with the given Seller Quote Identifier exists, and that the current Quote state of the Quote referenced by the Seller Quote Identifier allows the transition to DECLINED. 3. The Seller sets the Quote as DECLINED. 4. The Seller provides a response to the Buyer as shown in section 10.2.2.
Post-Conditions	The Buyer receives a response that the referenced Quote has been declined.
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 sends an error if the Quote to be declined does not exist. 3. The Seller sends an error if they are unable to Decline the Quote because the referenced Quote is not in the correct Quote State.
Business Process	MEF 50.1 Order-to-Delivery

Table 10 – Decline a Quote

Note: if the Buyer tries to decline a Quote that does not belong to them, the Seller response is that the Quote does not exist.

[R2] The Seller **MUST** provide the ability for a Buyer to decline a Quote when the Quote is in the following states: ORDERABLE_ALTERNATE, ORDERABLE.

8.2.8 Use Case 6, Register for Quote Notifications

Table 11 defines the details for Quote Use Case 6.

Field	Description
Use Case Number	6
Use Case Name	Register for Quote Notifications
Description	A request initiated by the Buyer to instruct the Seller to send notifications of Quote or Quote Item state changes in the event the Seller uses the Deferred Response pattern to respond to a Create Quote request. Notification Types are: • QUOTE_STATE_CHANGE • QUOTE_ITEM_STATE_CHANGE
Actors	Buyer/ Seller
Pre-Conditions	Buyer is authorized to purchase products from the Seller (Buyer on-boarded).
Process Steps	1. The Buyer sends the Register for Quote Notification request as shown in section 10.5.1 to the Seller specifying the details of the register for notifications. 2. The Seller receives this request, records which notifications to send, where to send such notifications for this Buyer, and returns an acknowledgement to the Buyer as shown in section 10.5.2.
Post-Conditions	The Seller is aware of where to send notifications of Quote/Quote Item state changes as described in Use Case 7 in Table 12.
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 returns an error message if they do not support notifications.
Business Process	MEF 50.1 Lead-Response-to-Contract

Table 11 – Register for Notifications

Note: Notifications are sent per Quote Identifier. Each Quote contains one or more Quote Item A Quote Item Identifier state change may result in a Quote Identifier state change. See section 11 for more details on Quote and Quote Item states and their interaction.

8.2.9   Use Case 7, Send Quote Notification

Table 12 defines the details for Quote Use Case 7.

Field	Description
Use Case Number	7
Use Case Name	Send Quote Notifications
Description	The Seller sends notifications for the following qualifying events: • QUOTE_STATE_CHANGE • QUOTE_ITEM_STATE_CHANGE
Actors	Buyer/ Seller
Pre-Conditions	The Buyer has registered for Quote notifications as described in section 8.2.8.
Process Steps	The Seller sends the notification to the location(s) requested by the Buyer as shown in section 10.6.
Post-Conditions	The Seller has sent Quote related notification.
Alternative Paths	
Business Process	MEF 50.1 Lead-Response-to-Contract

Table 12 – Quote Notifications

Note: if the Buyer's registered end point(s) are not accepting the Seller's notification, the Seller may continue to try to send notifications to the endpoint or may mark that end point as failed and stop sending notifications to that end point.

9   Quote Operation Attributes

This section identifies the attributes needed for each of the Quote Use Cases defined previously. It is important to note that this section defines the superset of all MEF-defined attributes needed to support the Use Cases for Quote Management 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, duration, date/time, or reference to another entry in the table
Comments	Comments about the attribute

9.1   Attribute Tables

The tables below identify and describe the attributes related to Quote.

9.1.1   Buyer and Seller Attributes

Table 13 shows the Buyer and Seller attributes.

Attribute	Description	Type	Comments
Buyer	The mutually agreed unique name of the organization that is acting as the customer in this transaction.	String	See section MEF 79 [11] section 8.8 for rules on use of Buyer
Seller	The mutually agreed unique name of the organization that is acting as the supplier in this transaction.	String	See section MEF 79 [11] section 8.8 for rules on use of Seller
Seller Response Code	A response identifier, indicating if the Seller was able to successfully accept the request. The detailed response options are for further study but include: Success and Failure.	String	For further study

Table 13 – Buyer and Seller Information

[R3]   The Seller Response Code **MUST** be included in all Seller responses.

9.1.2   Quote Attributes

Table 14 shows the Quote attributes.

Attribute	Description	Type	Comments
Seller Quote Identifier	Unique (within the Seller quoting domain) identifier for the Quote, as attributed by the Seller.	String	The identifier created by the Seller when the Quote is created.
Buyer Quote Identifier	Identifier given by the Buyer to facilitate Buyer searches subsequently.	String	Set by the Buyer
Project Identifier	An identifier that is used to group Quotes that represent a unit of functionality that is important to a Buyer. A Project can be used to relate multiple Quotes together.	String	Optional attribute set by the Buyer. This is retained by the Seller.
Description	Description of the Quote.	String	Optional attribute set by the Buyer
Quote State	The state of the Quote.	One of • ACCEPTED • ACKNOWLEDGED • ANSWERED • CANCELLED • DECLINED • EXPIRED • IN_PROGRESS • IN_PROGRESS_DRAFT • ORDERABLE_ALTERNATE • ORDERABLE • REJECTED • UNABLE_TO_PROVIDE	Set by the Seller
Quote Request Date	Date when the Quote was created within the Seller's system	DateTime	This value is set by the Seller.
Quote REJECTED Date	Date when the Quote State was set to REJECTED	DateTime	This value is set by the Seller
Quote IN_PROGRESS Date	Date when the Quote State was set to IN_PROGRESS	DateTime	This value is set by the Seller

Attribute	Description	Type	Comments
Quote IN_PROGRESS_DRAFT Date	Date when the Quote State was set to IN_PROGRESS_DRAFT	DateTime	This value is set by the Seller
Quote DECLINED Date	Date when the Quote State was set to DECLINED.	DateTime	This value is set by the Seller.
Quote EXPIRED Date	Date when the Quote State was set to EXPIRED.	DateTime	This value is set by the Seller.
Quote ACCEPTED Date	Date when the Quote State was set to ACCEPTED.	DateTime	This value is set by the Seller.
Expected Quote Completion Date	This is the date provided by the Seller to indicate the date by which the Quote is expected to reach a Quote Completion State.	DateTime	This value is set by the Seller.
Valid Until Date	The date that the Quote is valid until.	DateTime	Set by the Seller
Quote Completion Date	Date when the Quote State was set to one of the Completion States	DateTime	Set by Seller
Quote Completion State	The Completion State of the Quote	String that is one of: - ANSWERED - CANCELLED - ORDERABLE - ORDERABLE_ALTERNATE - REJECTED - UNABLE_TO_PROVIDE	Set by Seller
Buyer Requested Quote Level	An indication of whether the Buyer's Quote request is for a Quote of Budgetary or Firm level.	One of the following: - BUDGETARY - FIRM	Set by the Buyer. Buyer Requested Quote Level contains the possible values and may be set by the Buyer on the Quote request. All Quote Items in a Quote have the same Buyer Requested Quote Level.

Attribute	Description	Type	Comments
Quote Level	The level of the Quote provided by the Seller.	One of the following: • BUDGETARY • FIRM_SUBJECT_TO_FEASIBILITY_CHECK • FIRM	Set by the Seller. The Quote Level is provided by the Seller when responding to a Create Quote request.
Immediate Quote Response	If this flag is set to TRUE, Buyer requests an immediate Quote to be provided in the response to the creation of a Quote. If TRUE, the Requested Quote Completion Date is ignored by the Seller	Boolean	Set by the Buyer. If set to FALSE, the Seller does not have to provide an immediate Quote but may elect to. If set to TRUE and the Seller cannot accommodate the request, the Quote is moved to the UNABLE_TO_PROVIDE state, and the process is stopped.
Requested Quote Completion Date	This is the date desired by the Buyer to have the Quote completed (meaning priced). The accuracy of the pricing might differ based on the Quote Level.	DateTime	Set by the Buyer if Immediate Quote Response is FALSE. If Immediate Quote Response is TRUE, this is ignored by the Seller.
Notes	A set of unstructured comments or information associated to the Quote. This can be empty.	List of Reference to a Note (see Table 22)	The notes may be defined by the Buyer or Seller
Quote Items	The Quote is composed of one or more Quote Items. This is the list of associated Quote Items.	List of Reference to a Quote Item (see Table 15)	

Attribute	Description	Type	Comments
Buyer Contact Information	The contact information for the person or organization representing the Buyer that can answer questions related to this Quote request.	Reference to Contact Information (see Table 21)	Buyer Contact Information. This is required for a Quote request when Immediate Quote Response is FALSE. This is optional for a Quote request when Immediate Quote Response is TRUE.
Seller Contact Information	The contact information for the person or organization representing the Seller that can answer questions related to this Quote request.	Reference to Contact Information (see Table 21)	Set by the Seller

Table 14 – Quote Attributes

9.1.3   Quote Item Attributes

Table 15 shows Quote Item attributes.

Attribute	Description	Type	Comments
Quote Item Reference Number	A Buyer provided identifier to identify Quote Items and to be able to relate them to one another.	String	This is set by the Buyer and is unique per Quote request. Examples of Quote Item Reference Number could be 1, 2, 3 or A, B, C. The Quote Item Reference Number can be reused in multiple Quote requests to identify a Quote Item within that Quote request.
Quote Item Product Action	Product action to be applied to this Quote Item. .	String that is one of • INSTALL • CHANGE • DISCONNECT	Set by the Buyer
Requested Quote Item Term	The terms of the Quote Item	Reference to a Quote Item Term (see Table 17)	Set by the Buyer. Used to describe a term (also known as commitment) as requested by the Buyer

Attribute	Description	Type	Comments
			for a Quote Item. Each Quote Item in a Quote request could have a different Requested Quote Item Term. The Buyer specifies the longest term that they would accept. The Buyer may be willing to accept a shorter term. If the Seller responds with a term longer than the Buyer's request, it is treated as an alternate response.
Requested Quote Item Installation Interval	The Installation Interval requested by the Buyer.	Reference to Duration (see Table 28)	Set by the Buyer. This matches the Installation Interval Unit and Value returned by the Seller in the POQ and is defined in MEF 79 [11]
Product Identifier	The Buyer's existing Product for which the Quote is being requested.	String	Set by the Buyer if the Quote Item Product Action is CHANGE or DISCONNECT.
Product Offering Identifier	The identifier of the Product Offering the buyer wants to have a Quote on from the Seller for ordering a new product.	String	Set by the Buyer if the Quote Item Product Action is INSTALL.
Product Specific Attributes	The technical attributes for the Product that would be delivered to fulfill this Quote 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
Subject to Feasibility Check	For a Firm Quote Level indicates if the pricing requires a Feasibility Check.	boolean	The Seller indicates if the Quote Item requires a Feasibility Check. This is not used for a Budgetary Quote Level.
Place Relationship	The relationship between this Quote Item and Place	List of Reference to Place Relationship (see Table 24)	Set by the Buyer. A list of Places. If the Product Specification does not include a Place, this is unused.
Quote 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 Quote Item.	List of Reference to Contact Information (see Table 21)	Set by Buyer. Used only if there is a Place defined.
Quote Item Technical Contact	The person to contact when additional technical information is needed in order to be able to provide a correct Quote for the Quote Item.	List of Reference to Contact Information (see Table 21)	Set by Buyer
Quote Item Relationship	The relationship between Quote Items within the same Quote. Shown as a list.	List of Reference to Quote Item Relationship (see Table 19)	Set by Buyer
Product Relationship	The relationship between a Quote Item and an existing Product is shown as a list.	List of Reference to Product Relationship (see Table 20)	Set by Buyer
Quote Item Note	A set of unstructured comments or information associated to the Quote Item. This can be empty.	List of Reference to a Note (see Table 22)	The notes may be defined by the Buyer or Seller
Agreement	Name of the agreement. The name is unique between the Buyer and Seller.	String	Set by the Buyer. Agreement is a unique method of identifying a contract, service description, or other identifier.

Attribute	Description	Type	Comments
POQ	The Product Offering Qualification and Product Offering Qualification Item associated to this Quote Item.	Reference to a POQ (see Table 23)	Set by the Buyer. The POQ Item 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.
Quote Item State	The state of the Quote Item	One of • ABANDONED • ANSWERED • IN_PROGRESS • IN_PROGRESS_DRAFT • ORDERABLE • ORDERABLE_ALTERNATE • REJECTED • UNABLE_TO_PROVIDE	Set by the Seller.
Quote Item Price	Price associated to the Quote Item.	List of Quote Item Prices (see Table 18)	Set by Seller
Quote Item Term	Quote Item Term as defined by the Seller and part of the Quote for the Quote Item.	Reference to Quote Item Term (see Table 17)	Set by Seller
Quote Item Deal Reference	A pre-agreed pricing modifier reference that the Seller is offering to the Buyer which will impact the price	String	Set by Buyer

Attribute	Description	Type	Comments
Quote Item Installation Interval	Quote Item Installation Interval as proposed by the Seller for the Quote.	Reference to Duration (see Table 28)	Set by Seller. To move the Quote request to the ORDERABLE state, the installation interval must be ≤ the Requested Quote Item Installation Interval set by the Buyer. If the Seller returns a value > the Requested Quote Item Installation Interval, the Quote moves to the ORDERABLE_ALTER NATE state.
Quote Item Termination Error	When the Seller cannot process the Quote Item Request, the Seller returns a text-based list of reasons here.	List of String	Set by the Seller. Reasons are for further study.

Table 15 – Quote Item Attributes

[R4] If the Buyer's Create Quote request has the Buyer Requested Quote Level set to BUDGETARY, the Quote Level in the Seller's Quote **MUST** be BUDGETARY.

[R5] If the Seller's Quote has a Quote Level of BUDGETARY and all Quote Items are in the ANSWERED state, the Quote State **MUST** be ANSWERED.

[R6] If the Seller's Quote has a Quote Level of BUDGETARY and all Quote Items are not in the ANSWERED state, the Quote State **MUST NOT** be ANSWERED as shown in Table 39.

[R7] If the Seller's Quote is BUDGETARY and the Quote is in a terminal state, all Quote Items **MUST** be in a terminal state as shown in Figure 7.

[R8] If the Buyer's Create Quote request has the Buyer Requested Quote Level set to FIRM, the Quote Level in the Seller's Quote **MUST** be either FIRM – SUBJECT_TO_FEASIBILITY_CHECK or FIRM.

9.1.4 Cancel or Decline Quote Request Attributes

Table 16 shows the Cancel or Decline Quote request attributes.

Attribute	Description	Type	Comments
Seller Quote Identifier	Unique (within the Seller quoting domain) identifier for the Quote, as attributed by the Seller.	String	Set by the Buyer to match the Quote request that the Buyer desires to Cancel or Decline.
Reason	Allows the Buyer to specify a reason for the Cancel or Decline Quote request	String	Set by the Buyer
Requested Quote State	The state, either CANCELLED or DECLINED, to which the Buyer wants to move the specified Quote.	One of • CANCELLED • DECLINED	Set by Buyer

Table 16 – Cancel or Decline Quote Attributes

9.1.5 Quote Item Term Attributes

Table 17 shows Quote Item Term attributes. A Quote Item Term is the length of the contract commitment by the Buyer for each Quote Item.

Attribute	Description	Type	Comments
Quote Item Term Name	Name of the term	String	Set by Buyer in Requested Quote Item Term. Set by the Seller in Quote Item Term
Quote Item Term Description	Description of the term	String	Set by Buyer in Requested Quote Item Term. Set by the Seller in Quote Item Term
Quote Item Term Duration	Duration of the term	Reference to Duration	Set by Buyer in Requested Quote Item Term. Set by the Seller in Quote Item Term
End of Term Action	The action that needs to be taken by the Seller once the term expires.	Indicator with following allowed values: • ROLL • AUTO_DISCO NNECT • AUTO_RENE W	Set by Buyer in Requested Quote Item Term. Set by the Seller in Quote Item Term. 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 Quote Item Term. Auto-disconnect indicates that the Product will be disconnected at the end of the Quote Item Term. Auto-renew indicates that the Product's contract will be automatically renewed for the Quote Item Term Duration at the end of the Quote Item Term.

Attribute	Description	Type	Comments
Roll Interval	The recurring period that the Buyer is willing to pay to the end of upon disconnecting the Product after the original term has expired.	Reference to Duration	Set by Buyer in Requested Quote Item Term. Set by the Seller in Quote Item Term

Table 17 – Quote Item Term Attributes

9.1.6 Quote Item Price Attributes

Table 18 shows Quote Item Price attributes.

Attribute	Description	Type	Comments
Quote Item Price Name	Name of the Quote Item price.	String	Set by the Seller
Quote Item Price Description	Description of the Item price.	String	Set by the Seller
Quote Item Price Type	Indicates if the price is for recurring, non-recurring, or usage-based charges.	One of • RECURRING • NON_RECURRING • USAGE_BASED	Set by the Seller
Quote Item Price Recurring Charge Period	Used for a recurring charge to indicate period	One of • HOUR • DAY • WEEK • MONTH • YEAR	
Quote Item Price Unit Of Measure	Unit of Measure (Gb, SMS volume, etc.) if Quote Item Price Type = USAGE_BASED	String	Set by the Seller if Quote Item Price Type = USAGE_BASED
Quote Item Price Amount	The associated price.	Reference to a Price (see Table 25)	Set by the Seller

Table 18 – Quote Item Price Attributes

9.1.7 Quote Item Relationship Attributes

Table 19 shows Quote Item Relationship attributes.

Attribute	Description	Type	Comments
Related Quote Item Reference Number	Reference number of the related Quote Item (must be in the same Quote).	String	Set by Buyer
Quote Item Relationship Nature	Specifies the nature of the relationship to the related Quote Items. The nature of required relationships vary 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.	String that is one of the relationship types specified in the Product Specification.	Set by the Buyer

Table 19 – Quote Item Relationship Attributes

9.1.8 Product Relationship Attributes

Table 20 shows Product Relationship attributes.

Attribute	Description	Type	Comments
Related Product Identifier	A list of one or more identifiers of the related products in the inventory. Any Product Identifier in inventory can be referenced by the Quote Item.	List	Set by Buyer

Attribute	Description	Type	Comments
Product Relationship Nature	Specifies the nature of the relationship to the related Product. The nature of required relationships vary 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.	String that is one of the relationship types specified in the Product Specification.	Set by the Buyer

Table 20 – Product Relationship Attributes

Note: The Buyer may provide a list of Product Identifiers with the same Relationship Nature using the Related Product Identifier attribute. As an example, the Buyer submits a Quote request for a Product that requires an interconnection between Buyer and Seller. The Quote request may contain the Product Identifier for one or more interconnections. The Seller returns the best result for the Quote request over any of the Related Product Identifiers. The Buyer includes one of the Related Product Identifiers in the Order request if they place an order based on this Quote. If none of the Related Product Identifiers from the Quote are included in the Order request, the Seller may Decline the Order request.

9.1.9 Contact Information Attributes

Table 21 shows Contact Information attributes.

Attribute	Description	Type	Comments
Contact Name	The person or organization to be contacted.	String	
Contact Phone Number	The telephone number for this contact.	String	

Contact Phone Number Extension	The telephone number extension for this contact.	String	
Contact email Address	The email address for this contact.	String	
Contact Postal Address	Identifies the postal address of the person or office to be contacted.	Postal address that includes all attributes of the Fielded Address (see MEF 79 [11] section 8.9.2)	
Contact Organization	The organization or company that the contact belongs to	String	

Table 21 – Contact Information Attributes

[R9] The Contact Information **MUST** include the Contact Name, Contact Phone Number, and Contact email Address attributes.

[O1] The Contact Information **MAY** include the Contact Phone Number Extension, Contact Postal Address, and Contact Organization.

9.1.10   Note Attributes

Table 22 shows Note attributes.

Attribute	Description	Type	Comments
Note Date	The date of the note.	DateTime	Set by 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 22 – Note Attributes

[R10] All attributes shown in Table 22 **MUST** be included when a Note or Quote Item Note is added.

9.1.11   POQ Attributes

Table 23 shows POQ and POQ Item attributes.

Attribute	Description	Type	Comments
POQ Identifier	Identifier of the Product Offering Qualification	String	Reference to a POQ. Copied by the Buyer from the Seller's response to a Create POQ request as specified in MEF 79 [11]. 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. Copied by the Buyer from the Seller's response to a Create POQ request as specified in MEF 79 [11]. 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 [11]

Table 23 – POQ Attributes

Note: if the Buyer is selecting an Alternate Product Proposal, they include the POQ Identifier, POQ Item Identifier, and the Alternate Product Proposal Identifier in the Create Quote request.

9.1.12 Place Relationship Attributes

Table 24 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

Attribute	Description	Type	Comments
Quote Item Location Type	The method used to describe the location at which this Quote Item is installed or is to be installed if needed per the Product Specification.	String that is one of: • SERVICE_SITE_IDENTIFIER • FIELDED_ADDRESS • FORMATTED_ADDRESS • GEOGRAPHIC_POINT • GEOGRAPHIC_ADDRESS_LABEL	The Buyer is encouraged to use the Seller's SERVICE_SITE_IDENTIFIER if one exists. If one does not exist, then the Buyer may use any other Quote Item Location Type.
Quote Item Location	The detailed location at which this Quote Item is installed or is to be installed if this Quote Item is to be installed at a particular location.	Reference to MEF 79 [11]: • Service Site (see MEF 79 sec 8.2) • Fielded Address (see MEF 79 sec 8.9.2) • Formatted Address (see MEF 79 sec 8.9.3) • Geographic Address Label (see MEF 79 sec 8.9.4) • Geographic Point (see MEF 79 sec 8.9.5)	

Table 24 – Place Attributes

9.1.13   Price Attributes

Table 25 shows Price attributes.

Attribute	Description	Type	Comments
Price Tax Rate	The tax rate applied.	String	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. If the Seller provides a BUDGETARY or FIRM – SUBJECT TO FEASIBILITY CHECK Quote Level Quote, the maximum value of the included price is provided here.
Price Duty Free Amount	All taxes excluded amount (expressed in the given currency).	Money • Currency • Value	If the Seller provides a BUDGETARY or FIRM – SUBJECT TO FEASIBILITY CHECK Quote Level, the maximum value of the included price is provided here.

Table 25 – Price Attributes

9.1.14   Register for Notification Attributes

Table 26 shows the Register for Notification attributes.

Attribute	Description	Type	Comments
Notification Target Information	The detailed information on the technical API end-point address specifying where the Seller is to send any Quote Notifications. There can be multiple locations for one Buyer.	String	This is the Callback target in the API
List of Notification Types	The types of notifications that the Buyer wishes to receive. Each item in the list is either QUOTE STATE CHANGE (send notification when there is a change to the Quote State attribute), or QUOTE_ITEM_STATE_CHANGE (send notification when there is a change to the Quote Item State attribute)	List of one or more of: • QUOTE_STATE_CHANGE • QUOTE_ITEM_STATE_CHANGE	This is a list of attributes
Action	Specification to Start Notifications or Stop Notifications.	One of: • START • STOP	

Table 26 – Register for Quote Notifications Buyer Attributes

9.1.15   Notification Attributes

Table 27 shows Quote Notification attributes.

Attribute	Description	Type	Comments
Notification Type	The type of notification.	One of: • QUOTE_STATE_CHANGE • QUOTE_ITEM_STATE_CHANGE	
Seller Quote Identifier	Unique (within the Seller quoting domain) identifier for the Quote, as attributed by the Seller.	String	
Quote Item Reference Number	Unique identifier of the Quote Item	String	Only used when Notification Type is QUOTE_ITEM_STATE_CHANGE

Table 27 – Seller Quote Notification

9.1.16   Duration

Table 28 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 28 – Duration Attributes

10 Quote Requirements

This section defines the requirements related to Quotes Use Cases for both Buyers and Sellers.

10.1 Create Quote

The Service Attributes and requirements for the Buyer's request and the Seller's response and Quote are defined in the following sections.

[R11] The Seller **MUST** support either Use Case 1a or 1b.

[O2] The Seller **MAY** support Use Cases 1a, 1b, and 1c.

10.1.1 Buyer Create Quote Request

This section contains the Service Attributes and requirements for the Buyer's Create Quote request for Use Case 1a, 1b, and 1c.

10.1.1.1 Common Requirements

[R12] This section contains the requirements for Use Case 1a, 1b, and 1c. which are common to all Quote Item Product Actions. A Buyer **MUST** include at least one Quote Item in a Create Quote request.

[R13] A Buyer requesting a Quote **MUST** include the following attributes as defined in Table 14:

- Buyer Requested Quote Level

- Quote Item(s)

- Immediate Quote Response

[O3] The Buyer's Create Quote request **MAY** contain the following attributes as defined in Table 14:

- Buyer Quote Identifier

- Project Identifier

- Description

- Notes

[O4] The Buyer **MAY** include the Agreement attribute as defined in Table 15.

[R14] The Buyer **MUST** specify the following attributes in Table 15 for each Quote Item in the Create Quote request:

- Quote Item Reference Number

- Quote Item Product Action

[R15] If the Immediate Quote Response is FALSE, the Buyer **MUST** include the Quote Item Technical Contact attribute in Table 15 for each Quote Item in the Buyer's Create Quote request.

[R16] If the Immediate Quote Response is FALSE, the Buyer **MUST** include the Buyer Contact Information.

[R17] If the Buyer Create Quote request specifies the Immediate Quote Response of FALSE, the Buyer **MUST** specify the Requested Quote Completion Date defined in Table 14.

[R18] If the Buyer has specified Immediate Quote Response to be TRUE, then the Seller **MUST** ignore the Requested Quote Completion Date attribute if it is specified by the Buyer.

[O5] The Seller **MAY** make the POQ attribute defined in Table 15 mandatory for a Buyer Create Quote request.

[CR1]<[O5] The Buyer **MUST** provide the valid POQ Identifier and POQ Item Identifier in the Create Quote request as defined in Table 23 for each Quote Item if required by the Seller.

[R19] If a Quote Item has a relationship to another Quote Item, the attributes in Table 19 **MUST** be included in the Create Quote request.

[R20] If a Quote Item has a relationship to a Product, the attributes in Table 20 **MUST** be included in the Create Quote request.

[O6] The Buyer Create Quote request **MAY** include the following attributes for each Quote Item as defined in Table 15:

- Requested Quote Item Installation Interval

- Quote Item Deal Reference

- Quote Item Note

- Requested Quote Item Term

10.1.1.2   Quote Item Product Action – INSTALL

The requirements that are applicable for a Quote Item in a Buyer's Create Quote request with Quote Item Product Action INSTALL are defined in this section.

[R21] The Buyer Create Quote request **MUST** include the following attributes for each Quote Item as defined in Table 15 when Quote Item Product Action is INSTALL:

- Product Offering Identifier

- Product Specific Attributes

[R22] If the Buyer includes the Requested Quote Item Installation Interval in the Create Quote request and they completed a POQ prior to submitting the Create Quote request, the Requested Quote Item Installation Interval **MUST** be longer or equal to the interval returned in the referenced POQ Item or Alternate Product Proposal.

Note: if the Buyer includes the Requested Quote Item Installation Interval in the Create Quote request and they have not completed a POQ prior to submitting the Create Quote request, the Requested Quote Item Installation Interval may be any value allowed by the Seller.

[R23] If a Quote Item refers to a Product Offering for which a location is required by the Product Specification, the Buyer Create Quote request **MUST** include all the Place Relationship attributes as described in Table 24 for that Quote Item.

[R24] If the Quote Item requires a Place Relationship and the Immediate Quote Response is FALSE, the Buyer **MUST** include the Quote Item Location Contact for that Quote Item.

[R25] For each Quote Item for which the Buyer wants to select an Alternate Product Proposal included in the response of the POQ linked to the Quote Item, the Buyer **MUST** include a valid POQ Item Identifier and Alternate Product Proposal Identifier attribute as described in Table 23.

[R26] If the Buyer does not desire to select an Alternate Product in their Create Quote request, they **MUST NOT** include the Alternate Product Proposal Identifier attribute in Table 23.

[R27] If Quote Item Product Action is INSTALL, the Buyer **MUST NOT** specify the Product Identifier attribute in Table 15.

[O7] The Buyer Create Quote request **MAY** contain any of the other attributes in Table 15 marked as Set by Buyer.

10.1.1.3 Quote Item Product Action - CHANGE

The requirements that are applicable for a Quote Item with Quote Item Product Action CHANGE are defined in this section.

[R28] The Buyer Create Order Request **MUST** include the following attributes for each Quote Item with Quote Item Product Action = CHANGE:

- Product Identifier

- Product Specific Attributes

[O8] The Buyer Create Quote request **MAY** include Requested Quote Item Term attribute described in Table 15 when Quote Item Product Action = CHANGE.

[CR2]<[O8]If the Buyer includes the Requested Quote Item Installation Interval in the Create Quote request, they **MUST** be ≥ to the interval returned in the referenced POQ.

Note: if the Buyer includes the Requested Quote Item Installation Interval in the Create Quote request and they have not completed a POQ prior to submitting the Create Quote request, the Requested Quote Item Installation Interval may be any value allowed by the Seller.

[R29]   The Buyer Create Quote request **MUST NOT** include the Product Offering Identifier for each Quote Item with a Quote Item Product Action = CHANGE.

10.1.1.4   *Quote Item Product Action – DISCONNECT*

The requirements that are applicable for a Quote Item with Quote Item Product Action DISCONNECT are defined in this section.

It is unlikely that a Quote is required for a Quote Item Product Action of DISCONNECT. The requirements in this section only apply in the event that the Buyer prefers to request a Quote rather than use the Charge Process defined for Product Order.

[R30]   If the Quote Item Product Action is DISCONNECT, the Buyer **MUST** specify the Product Identifier as described in Table 15.

[R31]   If the Quote Item Product Action is DISCONNECT, the Buyer **MUST NOT** specify the following attributes in Table 15:

- Product Offering Identifier

- Product Specific Attributes

- Product Relationship

- Quote Item Relationship

[R32]   The Requested Quote Item Installation Interval **MUST** be ≥ the Installation Interval identified in the referenced POQ/POQ Item via the Installation Interval Unit and the Installation Interval Value as described in MEF 79 [11].

Note: if the Buyer includes the Requested Quote Item Installation Interval in the Create Quote request and they have not completed a POQ prior to submitting the Create Quote request, the Requested Quote Item Installation Interval may be any value allowed by the Seller.

10.1.2   Seller Create Quote Response and Quote Attributes

This section contains the attributes with which the Seller answers the Buyer's Create Quote request.

If the Immediate Quote Response is TRUE in the Buyer's Create Quote request, the Seller's response includes the Seller's Quote including the Seller's Quote Identifier.

If the Immediate Quote Response is FALSE in the Buyer's Create Quote request and the Seller is providing a Deferred Quote Response (see section 7), the Seller's response includes at least the Seller Quote Identifier, and the Seller provides their Quote at a later time. The Buyer retrieves the Quote using the Retrieve Quote by Quote Identifier Use Case.

If the Immediate Quote Response is FALSE in the Buyer's Create Quote request and the Seller opts to provide an Immediate Quote Response, the response includes the Seller's Quote including the Seller Quote Identifier.

10.1.2.1   Common Requirements for Immediate and Deferred Quote Response

[R33]   When providing a response to a Create Quote request the Seller **MUST** specify the Seller Response Code attribute shown in Table 13.

The following requirements apply if the Seller Response Code does not indicate success.

[R34]   If the Seller Response Code does not indicate success, the Seller **MUST NOT** specify any of the following attributes in Table 14 in the response: Seller Quote Identifier, Quote State, Seller Contact Information, and Quote Items.

The following requirements apply when the Seller Response Code indicates success and apply to the Seller's HTTP Response as described in section 7 whether an Immediate or Deferred Response have been requested.

[R35]   When providing a response to a Create Quote request, the Seller **MUST** specify the Seller Quote Identifier attribute in Table 14.

[R36]   The Seller's response **MUST** echo back all attributes and values set by the Buyer in their Create Quote request.

[R37]   The Seller's response **MUST** specify the Seller Contact Information attribute in Table 14.

[R38]   The Seller's response **MUST** contain each Quote Item included in the Buyer's Create Quote request.

[R39]   The Seller's response **MUST** contain the Quote Request Date as described in Table 14.

[O9]   The Seller's response **MAY** contain Notes as described in Table 14.

[O10]   The Seller's response **MAY** contain Quote Item Notes as described in Table 15.

The following requirements apply to the Seller's Quote as described in section 7.

[R40]   For a Create Quote request with a Buyer Requested Quote Level of FIRM, the Seller's Quote **MUST** contain the Quote Level which is either FIRM or FIRM_SUBJECT_TO_FEASIBILITY_CHECK.

[R41]   The Quote Level **MUST** be FIRM_SUBJECT_TO_FEASIBILITY_CHECK if any of the Quote Items in the Quote has the Subject to Feasibility Check attribute set to TRUE.

[R42]   For a Create Quote request with a Buyer Requested Quote Level of BUDGETARY, the Seller's Quote **MUST** contain a Quote Level of BUDGETARY.

[R43]   The Seller's Quote **MUST** specify the Seller Contact Information attribute in Table 14.

[R44]   The Seller **MUST** specify the Quote State attribute for their Quote as described in section 11.

[R45]   Each Quote Item in the Seller's Quote **MUST** correspond to one and only one Quote Item in the Buyer's Create Quote request.

[R46]   The Seller **MUST** specify the Quote Item State attribute for each Quote Item their Quote as described in section 11.

[R47]   For each Quote Item in the Buyer's Create Quote request that contains a Requested Quote Item Installation Interval , the Seller's Quote **MUST** contain a Quote Item Installation Interval that is ≤ the Buyer's Requested Quote Item Installation Interval if the Quote Item State is ORDERABLE or ANSWERED.

[R48]   For each Quote Item in the Buyer's Create Quote request that contains a Requested Quote Item Installation Interval if the Seller's Quote contains a Quote Item Installation Interval that is > the Buyer's Requested Quote Item Installation Interval the Quote Item State **MUST** be ORDERABLE_ALTERNATE.

[R49]   For each Quote Item in the Buyer's Create Quote request that does not contain a Requested Quote Item Installation Interval the Seller's Quote **MUST** contain a Quote Item Installation Interval if the   Quote State is ANSWERED, ORDERABLE, or ORDERABLE_ALTERNATE.

[R50]   If the Seller's Quote is in UNABLE_TO_PROVIDE, REJECTED, ANSWERED, ORDERABLE, ORDERABLE_ALTERNATE, or CANCELLED Quote State, all Quote Items within the Create Quote request **MUST** be in a terminal state.

[R51]   If the Seller is unable to provide a Quote for a Quote Item that matches the Buyer Requested Quote Level, the Seller **MUST** set the Quote Item State attribute for that Quote Item to UNABLE_TO_PROVIDE.

[R52]   If the Quote Item State of a Quote Item is ABANDONED, the Seller **MUST NOT** specify the Quote Item Installation Interval attribute as specified in Table 15for that Quote Item.

[R53]   If the Quote state indicates ORDERABLE_ALTERNATE at least one of the Quote Items **MUST** indicate a Quote Item State of ORDERABLE_ALTERNATE.

[R54]   If the Seller's Quote moves to the ANSWERED state, the Seller **MUST** make available the following Quote Item attributes:

- Quote Item State

- Quote Item Price

- Quote Item Term

- Quote Item Installation Interval

The following requirements apply to pricing as shown in Table 17, Table 18, and Table 25 and apply only if the Seller Response Code indicates success.

[R55] The Seller **MUST** provide at least one Quote Item Price with the Quote Item Price Type of RECURRING if a Recurring Charge applies for each Quote Item in IN_PROGRESS_DRAFT, ANSWERED, ORDERABLE, or ORDERABLE_ALTERNATE state including the following attributes shown in Table 18:

- Quote Item Price Name

- Quote Item Price Type

- Quote Item Price Amount

[O11] The Seller **MAY** provide at least one Quote Item Price with a Quote Item Price Type of NON_RECURRING if the Non-Recurring Charge is known for each Quote Item in IN_PROGRESS_DRAFT, ANSWERED, ORDERABLE, or ORDERABLE_ALTERNATE state including the following attributes shown in Table 18:

- Quote Item Price Name

- Quote Item Price Type

- Quote Item Price Amount

[O12] The Seller **MAY** provide a Quote Item Price for each Quote Item in IN_PROGRESS_DRAFT, ANSWERED, ORDERABLE, or ORDERABLE_ALTERNATE state including the following attributes shown in Table 18 and Table 25:

- Quote Item Price Description

- Price Tax Rate

- Price Tax Included Amount

[R56] If the Quote Item Price Type is RECURRING for a Quote Item Price, the Seller **MUST** include the Quote Item Price Recurring Charge Period for the Quote Item Price in their response.

Table 29 shows the combination of attributes that are be provided for each Quote Item Price Type.

Price Type	Price Recurring Charge Period	Price Unit of Measure	Price Duty Free Amount	Comments
RECURRING	X		X	
NON-RECURRING			X	
USAGE_BASED		X	X	Usage based Price Duty Free Amount is the charge per Unit of Measure

Table 29 – Price Type Required Information

[R57] If the Seller's Quote includes a Quote Item Price Type of USAGE_BASED, the Seller's Quote Item Price **MUST** include the following attributes shown in Table 18 for that Quote Item:

- Quote Item Price Name

- Quote Item Price Type

- Quote Item Price Unit of Measure

- Quote Item Price Amount

[R58] The Seller's Quote **MUST** include the Quote Item Term.

[R59] The Quote Item Term Duration specified in the Seller's Quote **MUST** be the closest term duration that the Seller offers to the Buyer's Requested Quote Item Term Duration.

[O13] The Quote Item Term Duration specified by the Seller in their Quote **MAY** be greater than, equal to, or less than the Buyer's Requested Quote Item Term Duration.

[R60] If the Quote Item Term Duration specified in the Seller's Quote is less than the Buyer's Request Quote Item Term Duration and the Quote moves to the Orderable states, the Quote Item State **MUST** be ORDERABLE_ALTERNATE.

[R61] If the Seller's Quote includes an End of Term Action of ROLL for a Quote Item's Quote Item Term, then the Seller **MUST** specify the Roll Interval as shown in Table 17 for that Quote Item.

[R62] If the Seller's Quote includes an End of Term Action of AUTO_DISCONNECT or AUTO_RENEW for the Quote Item's Quote Item Term, then the Seller **MUST NOT** specify the Roll Interval as shown in Table 17 for that Quote Item Term.

[R63]   The grace period after auto-renewal during which the Buyer can disconnect the Product without penalty **MUST** be agreed between Seller and Buyer as part of on-boarding if the Seller chooses to use the value "AUTO_RENEW" for the End of Term Action of the Quote Item Term.

10.1.2.2   *Requirements for Create Quote Request with Immediate Quote Response = TRUE Seller Provides Immediate Response*

The following requirements apply if the Seller Response Code indicates success.

[R64]   When providing a response to a Create Quote request with an Immediate Quote Response of TRUE, the Seller **MUST** include their Quote as described in section 7 in the Response.

[R65]   When providing a response to a Create Quote request with an Immediate Quote Response of TRUE, the Seller **MUST** specify the Quote State attribute in Table 14 in the Quote. This **MUST** be either ANSWERED, ORDERABLE, ORDERABLE_ALTERNATE, or UNABLE_TO_PROVIDE.

[R66]   When providing a response to a Create Quote request with an Immediate Quote Response of TRUE, the Seller **MUST** specify the following Quote attributes described in Table 14 in the Quote:

- Quote Completion Date

- Quote Completion State

- Valid Until Date

[R67]   When providing a response to a Create Quote request with an Immediate Quote Response of TRUE and the Quote State indicates ORDERABLE or ORDERABLE_ALTERNATE, then for each Quote Item in the request, the Seller **MUST** specify the following Quote Items attributes defined in Table 15 that are set by the Seller in the Quote:

- Quote Item State

- Quote Item Price

- Quote Item Term

- Quote Item Installation Interval

[R68]   If the Seller's Quote has a Quote State of ORDERABLE_ALTERNATE at least one of the Quote Items within the Quote **MUST** indicate a Quote Item State of ORDERABLE_ALTERNATE.

[R69]   A Quote Item with a Quote Item State of ORDERABLE_ALTERNATE **MUST** contain at least one of the following:

- A Quote Item Term that is > the Buyer's Requested Quote Item Term

- A Quote Item Installation Interval that is > the Buyer's Requested Quote Item Installation Interval

[R70]   Create Quote request with an Immediate Quote Response of TRUE and the Quote State indicates ORDERABLE, then for each Quote Item in the request, the Seller **MUST** specify all of the mandatory Quote Items attribute in Table 15 that are set by the Seller in the Quote and all of those Quote Items **MUST** indicate a Quote Item State of ORDERABLE.

10.1.2.3   Requirements for Create Quote Request with Immediate Quote Response = FALSE Seller Provides Deferred Response

When providing a Deferred Response to a Create Quote request the Seller provides a response that is defined in requirements specified in section 10.1.2.1. This section defines the requirements for the Quote that the Seller makes available to the Buyer once the Seller has completed the Quote.

The following requirements apply if the Seller Response Code indicates success.

[R71]   When providing a Quote for a Create Quote request with an Immediate Quote Response of FALSE and the Quote state indicates ORDERABLE or ORDERABLE_ALTERNATE, then for each Quote Item in the request, the Seller **MUST** specify the following Quote Items attributes defined in Table 15 that are set by the Seller in the Quote:

- Quote Item State

- Quote Item Price

- Quote Item Term

- Quote Item Installation Interval

10.1.2.4   Requirements for Create Quote Request Immediate Quote Response = FALSE Seller Provides Immediate Quote Response

In this case, the Seller provides an Immediate Quote Response containing their Quote even though the Buyer did not mandate that an Immediate Quote Response be provided. The Seller's Quote must meet the requirements specified in sections 10.1.2.1 and 10.1.2.2.

10.2   Cancel or Decline Quote by Quote Identifier

The Buyer may Cancel a Create Quote request that is in progress or may Decline a Quote that the Seller has provided. The requirements are the same for both a Cancel Quote by Quote Identifier request and a Decline Quote by Quote Identifier request. A Buyer creates a Cancel Quote by Quote

Identifier request or Decline Quote by Quote Identifier request and sends the request to the Seller. The Seller does not need to respond with an Accept or Decline. Instead, it is inferred that if the Seller Response Code indicates success, the Buyer's request has been accepted.

10.2.1 Buyer Cancel Quote by Quote Identifier Request or Decline Quote by Quote Identifier Request

This section contains the requirements for Use Case 4 and Use Case 5. Table 16 contains the attributes that the Buyer may set in the Cancel Quote by Quote Identifier request or Decline Quote by Quote Identifier request.

[R72]　A Buyer requesting to Cancel a Create Quote request, or Decline a Quote **MUST** include the following attributes defined in Table 16:

- Seller Quote Identifier

- Requested Quote State

[O14]　The Buyer Cancel Quote by Quote Identifier request **MAY** specify the Reason attribute in Table 16.

[O15]　The Buyer Decline Quote by Quote Identifier request **MAY** specify the Reason attribute in Table 16.

10.2.2 Seller Cancel Quote by Quote Identifier or Decline Quote by Quote Identifier Request Response

This section defines requirements for the Seller's response to a Cancel Quote request by Quote Identifier request or Decline Quote by Quote Identifier request. If the Seller Response Code indicates success, the request is considered accepted, and the Seller takes the appropriate action on the Quote.

[R73]　When providing a response to a Buyer Cancel Quote by Quote Identifier request or Decline Quote by Quote Identifier request, the Seller **MUST** specify the Seller Response Code attribute shown in Table 13.

[R74]　If the Seller Response Code indicates success, the Seller **MUST** take the following actions:

- Set the Quote State to the Requested Quote State

- Set the Quote DECLINED Date if Quote has been Declined

- Set the Quote CANCELLED date if the Quote has been Cancelled

10.3   Retrieve Quote List

The requirements for the Buyer's Retrieve Quote List request and the Seller's response are defined in the following sections.

10.3.1   Buyer's Retrieve Quote List Request

This section contains the requirements for Use Case 2. Table 13 and Table 14 contain the attributes that the Buyer may set in the Retrieve Quote List request.

[O16]   The Buyer **MAY** use any of the following attributes specified in Table 13 for a Retrieve Quote List request:

- Seller

- Buyer

[O17]   The Buyer **MAY** use any of the following attributes specified in Table 14 for a Retrieve Quote List request:

- Buyer Quote Identifier

- Requested Quote Completion Date (range of dates)

- Quote Request Date (range of dates)

- Quote Completion Date (range of dates)

- Quote State

- Quote Level

- Expected Quote Completion Date (range of dates)

- Project Identifier

[O18]   The Buyer **MAY** use a combination of attributes to avoid getting a Too Many Records response code.

10.3.2   Seller Response to Retrieve Quote List Request

The Seller responds to the Retrieve Quote List request with the attributes shown in Table 13 and Table 14.

[R75]   When providing a response to a Retrieve Quote List request the Seller **MUST** specify the Seller Response Code attribute shown in Table 13.

[R76] The Seller's response **MUST** include the following attributes specified in Table 13 for if they were specified in the Retrieve Quote List request:

- Seller

- Buyer

[R77] The Seller's response to the Buyer's Retrieve Quote List request **MUST** contain the following attributes from Table 14 for each Quote that matches the filter criteria:

- Seller Quote Identifier

- Buyer Quote Identifier

- Quote Request Date

- Quote Completion Date

- Quote Completion State

- Quote State

- Quote Level

- Expected Quote Completion Date

- Project Identifier

- Requested Quote Completion Date

[R78] If the Seller Response Code does not indicate success, the Seller **MUST NOT** reply with any of the attributes in Table 14.

10.4 Retrieve Quote by Quote Identifier

The Quote and Quote Item attributes expected in the Buyer's request and the Seller's response for Use Case 3 are shown in the following sections.

10.4.1 Buyer Retrieve Quote by Quote Identifier Request

The Buyer's request uses the Seller Quote Identifier attribute from Table 14.

[R79] The Buyer **MUST** include the Seller Quote Identifier as specified in Table 14 in their Retrieve Quote by Quote Identifier request.

10.4.2 Seller Response to Retrieve Quote by Quote Identifier Request

The attributes with which the Seller responds to the Buyer's Retrieve Quote by Quote Identifier request are shown in this section in Table 30, Table 31, Table 32, and Table 33.

In Table 30, Table 31, Table 32, and Table 33, the Quote and Quote Item attributes Echoed from the Buyer's Create Quote request are 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". Any cells that are left blank in the table indicate that the Seller does not include this attribute in their response.

	ACCEPTED	ACKNOWLEDGED	CANCELLED	DECLINED	EXPIRED	IN_PROGRESS	IN_PROGRESS_DRAFT	ORDERABLE	ORDERABLE_ALTERNATE	REJECTED	UNABLE_TO_PROVIDE
Seller	E, PR	E, PR	E, PR	E, PR	E, PR	E, PR	E, PR	E, PR	E, PR	E, PR	E, PR
Buyer	E	E	E	E	E	E	E	E	E	E	E
Seller Response Code	R	R	R	R	R	R	R	R	R	R	R
Seller Quote Identifier	R	R	R	R	R	R	R	R	R	R	R
Buyer Quote Identifier	E	E	E	E	E	E	E	E	E	E	E
Project Identifier	E	E	E	E	E	E	E	E	E	E	E
Description	E	E	E	E	E	E	E	E	E	E	E
Quote State	R	R	R	R	R	R	R	R	R	R	R
Quote Request Date	R	R	R	R	R	R	R	R	R	R	R
Quote IN_PROGRESS Date	O	O	O	O	O	R		O	O	O	O
Quote IN_PROGRESS_DRAFT Date	O	O	O	O	O		R	O	O	O	O
Quote DECLINED Date				R							
Quote EXPIRED Date					R						
Quote ACCEPTED Date	R										
Expected Quote Completion Date	O	O	O	O	O	R	R	O	O	O	O
Valid Until Date	O			O	O			R	R		
Quote Completion Date			R					R	R		R
Quote Completion State			R					R	R		R
Buyer Requested Quote Level	E	E	E	E	E	E	E	E	E	E	E
Quote Level	R		PR	R	R		R	R	R		
Immediate Quote Response	E	E	E	E	E	E	E	E	E	E	E

	ACCEPTED	ACKNOWLEDGED	CANCELLED	DECLINED	EXPIRED	IN_PROGRESS	IN_PROGRESS_DRAFT	ORDERABLE	ORDERABLE_ALTERNATE	REJECTED	UNABLE_TO_PROVIDE
Requested Quote Completion Date	E	E	E	E	E	E	E	E	E	E	E
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
Buyer Contact Information	E	E	E	E	E	E	E	E	E	E	E
Seller Contact Information	R	E	R	R	R	R	R	R	R	E	R

Table 30 – Seller Response to Query by ID FIRM Quote Level Quote Attributes

	ACCEPTED	ACKNOWLEDGED	CANCELLED	DECLINED	EXPIRED	IN_PROGRESS	IN_PROGRESS_DRAFT	ORDERABLE	ORDERABLE_ALTERNATE	REJECTED	UNABLE_TO_PROVIDE
Quote Item Reference Number	E	E	E	E	E	E	E	E	E	E	E
Quote Item Product Action	E	E	E	E	E	E	E	E	E	E	E
Requested Quote Item Term	E	E	E	E	E	E	E	E	E	E	E
Requested Quote Item Installation Interval	E	E	E	E	E	E	E	E	E	E	E
Product Identifier	E	E	E	E	E	E	E	E	E	E	E
Product Offering Identifier	E	E	E	E	E	E	E	E	E	E	E
Product Specific Attributes	E	E	E	E	E	E	E	E	E	E	E
Subject to Feasibility Check	R	PR	PR	R	R		R	R	R		
Place Relationship	E	E	E	E	E	E	E	E	E	E	E
Quote Item Location Contact	E	E	E	E	E	E	E	E	E	E	E
Quote Item Technical Contact	E	E	E	E	E	E	E	E	E	E	E
Quote Item Relationship	E	E	E	E	E	E	E	E	E	E	E

	ACCEPTED	ACKNOWLEDGED	CANCELLED	DECLINED	EXPIRED	IN_PROGRESS	IN_PROGRESS_DRAFT	ORDERABLE	ORDERABLE_ALTERNATE	REJECTED	UNABLE_TO_PROVIDE
Product Relationship	E	E	E	E	E	E	E	E	E	E	E
Quote 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
Agreement	E	E	E	E	E	E	E	E	E	E	E
POQ Item	E	E	E	E	E	E	E	E	E	E	E
Quote Item State	R	R	R	R	R	R	R	R	R	R	R
Quote Item Price	R			R	R		R	R	R		
Quote Item Term	R			R	R		R	R	R		
Quote Item Deal Reference	E	E	E	E	E	E	E	E	E	E	E
Quote Item Installation Interval	R			R	R		R	R	R		
Quote Item Termination Error				PR							R

Table 31 – Seller Response to Query by ID FIRM Quote Level Quote Item Attributes

	ANSWERED	ACKNOWLEDGED	CANCELLED	EXPIRED	IN_PROGRESS	REJECTED	UNABLE_TO_PROVIDE
Seller	E	E	E	E	E	E	E
Buyer	E	E	E	E	E	E	E
Seller Response Code	R	R	R	R	R	R	R
Quote Identifier	R	R	R	R	R	R	R
Buyer Quote Identifier	E	E	E	E	E	E	E
Project Identifier	E	E	E	E	E	E	E
Description	E	E	E	E	E	E	E
Quote State	R	R	R	R	R	R	R
Quote Request Date	R	R	R	R	R	R	R
Quote IN_PROGRESS Date	O		O	O	R		O
Quote IN_PROGRESS_DRAFT Date	NA		NA	NA	NA		NA

	ANSWERED	ACKNOWLEDGED	CANCELLED	EXPIRED	IN_PROGRESS	REJECTED	UNABLE_TO_PROVIDE
Quote DECLINED Date	NA		NA	NA	NA		NA
Quote EXPIRED Date				R			
Quote ACCEPTED Date	NA	NA	NA	NA	NA	NA	NA
Expected Quote Completion Date	O		O	O	R		O
Valid Until Date	R						
Quote Completion Date	R		R	R			R
Quote Completion State	R		R	R			R
Buyer Requested Quote Level	E	E	E	E	E	E	E
Quote Level	R	R	R	R	R	R	R
Immediate Quote Response	E	E	E	E	E	E	E
Requested Quote Completion Date	E	E	E	E	E	E	E
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
Buyer Contact Information	E	E	E	E	E	E	E
Seller Contact Information	R	R	R	R	R	R	R

Table 32 – Seller Response to Query by ID BUDGETARY Quote Level Quote Attributes

	ANSWERED	ACKNOWLEDGED	CANCELLED	EXPIRED	IN_PROGRESS	REJECTED	UNABLE_TO_PROVIDE
Quote Item Reference Number	E	E	E	E	E	E	E
Quote Item Product Action	E	E	E	E	E	E	E
Requested Quote Item Term	E	E	E	E	E	E	E
Requested Quote Item Installation Interval	E	E	E	E	E	E	E
Product Identifier	E	E	E	E	E	E	E

	ANSWERED	ACKNOWLEDGED	CANCELLED	EXPIRED	IN_PROGRESS	REJECTED	UNABLE_TO_PROVIDE
Product Offering Identifier	E	E	E	E	E	E	E
Product Specific Attributes	E	E	E	E	E	E	E
Subject to Feasibility Check	NA	NA	NA	NA	NA	NA	NA
Place Relationship	E	E	E	E	E	E	E
Quote Item Location Contact	E	E	E	E	E	E	E
Quote Item Technical Contact	E	E	E	E	E	E	E
Quote Item Relationship	E	E	E	E	E	E	E
Product Relationship	E	E	E	E	E	E	E
Quote 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
Agreement	E	E	E	E	E	E	E
POQ Item	E	E	E	E	E	E	E
Quote Item State	R	R	R	R	R	R	R
Quote Item Price	R			R			
Quote Item Term	R			R			
Quote Item Deal Reference	E	E	E	E	E	E	E
Quote Item Installation Interval	R			R			
Quote Item Termination Error						PR	PR

Table 33 – Seller Response to Query by ID BUDGETARY Quote Level Quote Item Attributes

[R80]   If the Seller Response Code does not indicate success, the Seller **MUST NOT** specify any of the attributes in Table 30, Table 31, Table 32, and Table 33.

[R81]   If the Seller Response Code indicates success, the Seller's response to a Buyer Retrieve Quote by Quote Identifier request for a Quote with a Buyer Requested Quote Level = FIRM, the Seller **MUST** specify the attributes as shown in Table 30..

[R82]   If the Seller Response Code indicates success, the Seller's response to a Buyer Retrieve Quote by Seller Quote Identifier request with a Buyer Requested Quote Level = BUDGETARY, the Seller **MUST** specify the attributes as shown in Table 32..

[R83]   Each Quote Item in the Seller's response **MUST** correspond to one and only one Quote Item in the Buyer's Create Quote request.

When the Quote State is ORDERABLE or ORDERABLE_ALTERNATE the Seller provides the Quote Item Price for each Quote Item as shown in section 10.1.2.1. Requirements that apply to Quote Item Price are the following:

- [R55]

- [O11]

- [O12]

- [R56]

- [R57]

10.5   Register for Quote Notifications

The Buyer's Register for Quote Notifications request and the Seller's response for Use Case 7 are shown in the following sections.

[O19]   The Seller **MAY** support the ability for the Buyer to Register for Quote Notifications.

[CR3]<[O19] If the Seller supports the ability for the Buyer to Register for Quote Notifications, they **MUST** support sending Quote Notifications.

10.5.1   Buyer Register for Quote Notifications Request

The Buyer's request uses the attributes from Table 26.

[R84]   The Buyer's Register for Quote Notifications request **MUST** specify the Notification Target Information, List of Notification Types, and Action attributes shown in Table 26.

[R85]   If the Action attribute is START, the Buyer **MUST** specify the List of Notification Types to be started.

[R86] If the Action attribute is STOP, the Buyer **MUST** specify the List of Notification Types to be stopped.

10.5.2 Seller Response to a Register for Quote Notification Request

The Seller's response to a Buyer's Register for Quote Notifications request uses the Seller Response Code from Table 13.

[R87] When responding to a Register for Quote Notification request, the Seller **MUST** specify the Seller Response Code attribute shown in Table 13.

If the Seller Response Code indicates success, then subsequent notifications are sent. If the Seller Response Code does not indicate success, the subsequent notifications are not sent.

10.6 Send Quote Notification

This section contains the requirements for Use Case 7. The following requirements apply to the Quote Notification.

[O20] The Seller **MAY** support sending Quote Notifications.

[CR4]<[O20] The Seller **MUST** be able to send Quote Notifications to Buyers for both Immediate Quote Responses and Deferred Quote Responses.

[CR5]<[O20] If the Buyer has registered for QUOTE_STATE_CHANGE notifications, Quote Notifications for Immediate Quote Responses **MUST** be sent to the Buyer when a Quote has changed from the ORDERABLE_ALTERNATE or ORDERABLE states to one of the end states (DECLINED, EXPIRED, or ACCEPTED).

[CR6]<[O20] The Seller **MUST NOT** send Quote Notifications to Buyers who have not registered for Quote Notifications.

[CR7]<[O20] The Seller **MUST** send Quote Notifications to Buyers who have registered for Quote Notifications.

[CR8]<[O20] Quote Notifications **MUST** include the Attributes shown in Table 27.

[CR9]<[O21] The Quote Item Reference Number **MUST** be included in a QUOTE_ITEM_STATE_CHANGE notification as described in Table 27.

11 Process Flows

11.1 Quote Process Flow

The Quote process flows are shown below. The diagrams capture various states that the Quote goes through in its lifecycle. The specific states are managed by the Seller based on its processing and/or based on Buyer's action. If the Buyer subscribes to Quote State change notifications, they will receive a Quote Notification every time the state changes. If the Buyer subscribes to Quote Item State change notifications, they will receive a Quote Item Notification every time the state changes.

[R88] For a Quote with a Buyer Requested Quote Level of FIRM, the Seller **MUST** support Quote States and their associated state transitions as shown in Figure 4 and Table 34.

[R89] For a Quote with a Buyer Requested Quote Level of BUDGETARY, the Seller **MUST** support Quote States and their associated state transitions as shown in Figure 5 and Table 35.

[R90] For a Quote with a Buyer Requested Quote Level of FIRM the Seller **MUST** support Quote Item States, and their associated state transitions shown in, Figure 7 and Table 37.

[R91] For a Quote with a Buyer Requested Quote Level of BUDGETARY the Seller **MUST** support Quote Item States, and their associated state transitions as shown in Figure 7 and Table 37.
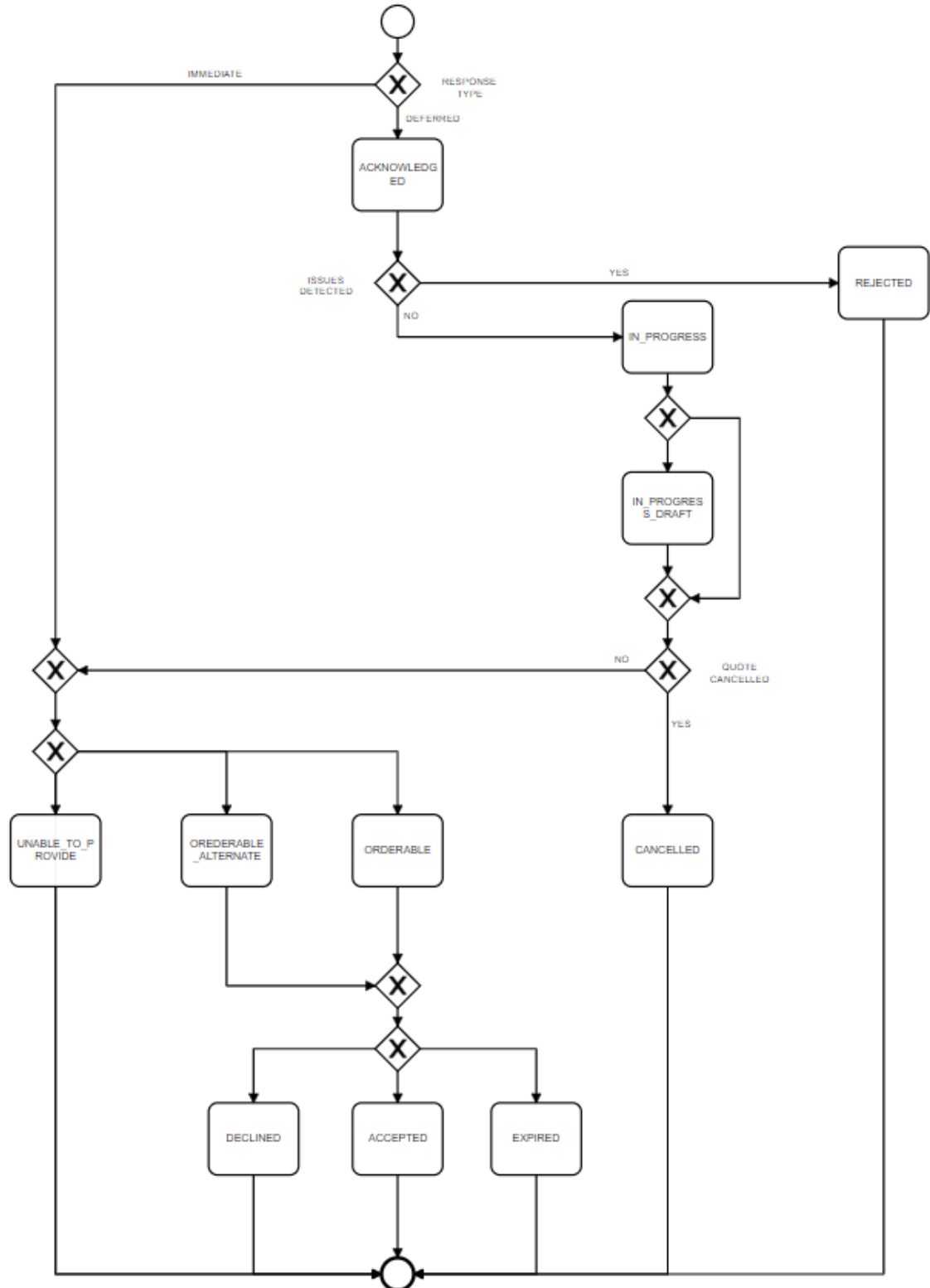
Figure 4 – FIRM Buyer Quote Level Quote Process Flow

Note: Figure 4 reflects a Create Quote request with a Buyer Requested Quote Level of FIRM and a Seller Quote Level of either FIRM or FIRM – SUBJECT_TO_FEASIBILITY_CHECK.

The definitions of the various Quote States for a Quote with a Buyer Requested Quote Level of FIRM are as follows:

State	Description
ACCEPTED	The ACCEPTED state is set by the Seller. It is triggered by a Product Order. All Quote Items must be in an ORDERABLE or ORDERABLE_ALTERNATE state. In that case, the Quote moves from the ORDERABLE or ORDERABLE_ALTERNATE state to the ACCEPTED state.
ACKNOWLEDGED	A Create Quote request has been received by the Seller and has passed basic validation. Quote Identifier is assigned in the ACKNOWLEDGED state. The Quote remains in the ACKNOWLEDGED state until all validations of Quote and Quote Item(s) attributes as applicable are completed. If the Quote and Quote Item attributes are validated the Quote moves to the IN_PROGRESS state for a Deferred Quote Response . If all Quote and Quote Item(s) attributes are not validated, the Quote moves to the REJECTED state.
CANCELLED	A Quote can only be cancelled when it is in an IN_PROGRESS state or an IN_PROGRESS_DRAFT state. The CANCELLED state is when the Quote process is stopped by a Buyer through an explicit Cancel Quote by Quote Identifier request. Quote Items might be in an IN_PROGRESS, IN_PROGRESS_DRAFT, ORDERABLE_ALTERNATE, or ORDERABLE state. Any Quote Items in an IN_PROGRESS or IN_PROGRESS_DRAFT state are moved to an ABANDONED state. The Seller moves the Quote to the CANCELLED state upon the receipt of a Cancel Quote by Quote Identifier request from the Buyer.
DECLINED	The DECLINED state is used when the Buyer does not wish to use the Quote in any of their Product Orders. The Buyer requests to change the state of the Quote to DECLINED through a Decline Quote by Quote Identifier request. In order for a Buyer to Decline the Quote, the Quote must be in an ORDERABLE or ORDERABLE_ALTERNATE state. The Seller moves the Quote to DECLINED state. The state of any associated Quote Items does not change.

State	Description
EXPIRED	This state is set by the Seller for a Quote in either the ORDERABLE state or ORDERABLE_ALTERNATE state to indicate that the Valid Until Date for the Quote has passed and Quote will no longer be honored. All the Quote Items must be in an ORDERABLE or ORDERABLE_ALTERNATE state
IN_PROGRESS	The Quote is in the IN_PROGRESS state when the Seller is collecting all information for building the Quote according to the Buyer's requirements. The Seller may update pricing and Expected Quote Completion Cate in this state. At least one Quote Item is in an IN_PROGRESS state. No Quote Items may be in an UNABLE_TO_PROVIDE state.
IN_PROGRESS_DRAFT	The IN_PROGRESS_DRAFT state is when the Seller has populated some information in the Quote in answer to the Buyer's request. The Seller is continuing to work on the Quote and the Quote cannot be referenced in a Product Order in this state. At least one Quote Item is in an IN_PROGRESS_DRAFT state. No Quote Items are in an ABANDONED, REJECTED, or UNABLE_TO_PROVIDE state.
ORDERABLE	The ORDERABLE state is where the Quote has been internally approved by the Seller and is ready for the Buyer to review. All Quote Items must be in an ORDERABLE state. In case of an Immediate Quote Response for a Quote, the Quote State can directly move to ORDERABLE state without going through the IN_PROGRESS state.
ORDERABLE_ALTERNATE	This state is set by the Seller when the Seller's Quote contains a Quote Item Term that is > the Buyer's Requested Quote Item Term and/or a Quote Item Installation Interval that is > the Buyer's Requested Quote Item Installation Interval. At least one Quote Item is in the ORDERABLE_ALTERNATE state. From ORDERABLE or ORDERABLE_ALTERNATE the Quote can move to the DECLINED, EXPIRED, or ACCEPTED states.
REJECTED	A Create Quote request was submitted, and it has failed at least one of the validation checks the Seller performs after it reached the ACKNOWLEDGED state if a Deferred Response.

State	Description
UNABLE_TO_PROVIDE	This state is set when the Seller is unable to provide a Quote in the timeframe required by the Buyer (e.g. if an immediate response or a response date is set but cannot be met by the Seller) or cannot provide a price as requested by the Buyer. The Quote request moves to UNABLE_TO_PROVIDE when one Quote Item is in an UNABLE_TO_PROVIDE state. Any Quote Items in an IN_PROGRESS state are moved to an ABANDONED state. When a Quote is in the UNABLE_TO_PROVIDE state, some Quote Items might be in the ORDERABLE or ORDERABLE_ALTERNATE state. In case of an Immediate Quote Response for a Quote, the Quote State can directly move to the UNABLE_TO_PROVIDE state without going through the IN_PROGRESS state.

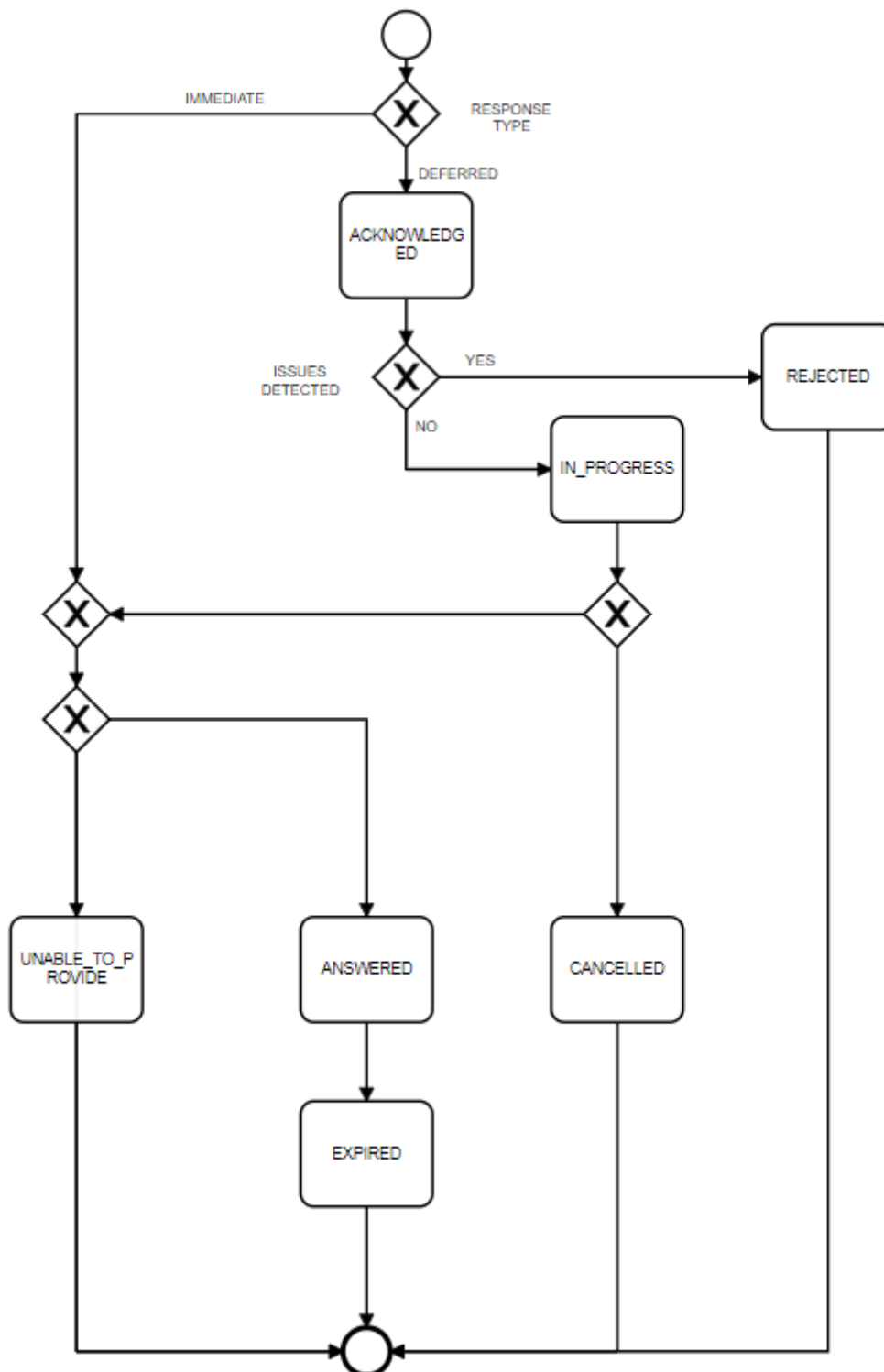**Table 34 – Firm Quote State Values**

Figure 5 – BUDGETARY Buyer Quote Level Quote Process Flow

The definitions of the various Quote States for BUDGETARY Quote Level are as follows:

State	Description
ACKNOWLEDGED	A Create Quote request has been received by the Seller and has passed basic validation. Quote Identifier is assigned in the ACKNOWLEDGED state. The Quote remains in the ACKNOWLEDGED state until all validations of Quote and Quote Item(s) attributes as applicable are completed. If the Quote and Quote Item attributes are validated the Quote moves to the IN_PROGRESS state for a Deferred Quote Response . If all Quote and Quote Item(s) attributes are not validated, the Quote moves to the REJECTED state.
ANSWERED	The ANSWERED state is applied when a Buyer Requested Quote Level is BUDGETARY, and the Seller has provided a Quote to answer the Buyer's Create Quote request. When the Quote request is in the ANSWERED state, all Quote Items must be in the ANSWERED state.
CANCELLED	A Quote can only be cancelled when it is in an IN_PROGRESS state or an IN_PROGRESS_DRAFT state. The CANCELLED state is when the Quote process is stopped by a Buyer through an explicit Cancel Quote by Quote Identifier request.

Quote Items might be in an IN_PROGRESS, IN_PROGRESS_DRAFT, ORDERABLE_ALTERNATE, or ORDERABLE state. Any Quote Items in an IN_PROGRESS or IN_PROGRESS_DRAFT state are moved to an ABANDONED state.

The Seller moves the Quote to the CANCELLED state upon the receipt of a Cancel Quote by Quote Identifier request from the Buyer. |
EXPIRED	This state is set by the Seller for a Quote in either the ORDERABLE state or ORDERABLE_ALTERNATE state to indicate that the Valid Until Date for the Quote has passed and Quote will no longer be honored. All the Quote Items must be in the ANSWERED state.
IN_PROGRESS	The IN_PROGRESS state is when the quote is currently in the hands of the Seller to build it according to the Buyer's requirements. The pricing and Expected Quote Completion Date should be updatable in this state. At least one Quote Item is in an IN_PROGRESS state. No Quote Items may be in an UNABLE_TO_PROVIDE state.
REJECTED	A Create Quote request was submitted, and it has failed at least one of the validation checks the Seller performs after it reached the ACKNOWLEDGED state if a Deferred Response.

State	Description
UNABLE_TO_PROVIDE	This state is set when the Seller is unable to provide a Quote in the timeframe required by the Buyer (e.g. if an immediate response or a response date is set but cannot be met by the Seller) or cannot provide pricing as requested by the Buyer. The Quote request moves to UNABLE_TO_PROVIDE when one Quote Item is in an UNABLE_TO_PROVIDE state. Any Quote Items in an IN_PROGRESS state are moved to an ABANDONED state. When a Quote is in the UNABLE_TO_PROVIDE state, some Quote Items might be in the ORDERABLE or ORDERABLE_ALTERNATE state. In case of an Immediate Quote Response for a Quote, the Quote State can directly move to the UNABLE_TO_PROVIDE state without going through the IN_PROGRESS state.

Table 35 – BUDGETARY Quote State Values

11.2   Quote Item Process Flow

There are two Quote Item process flows. One when the Buyer Requested Quote Level is BUDGETARY and one when the Buyer Requested Quote Level is FIRM. These are shown below. The diagrams capture various states that the Quote Item goes through in its lifecycle. The specific states are managed by the Seller based on its processing and/or based on Buyer's action.
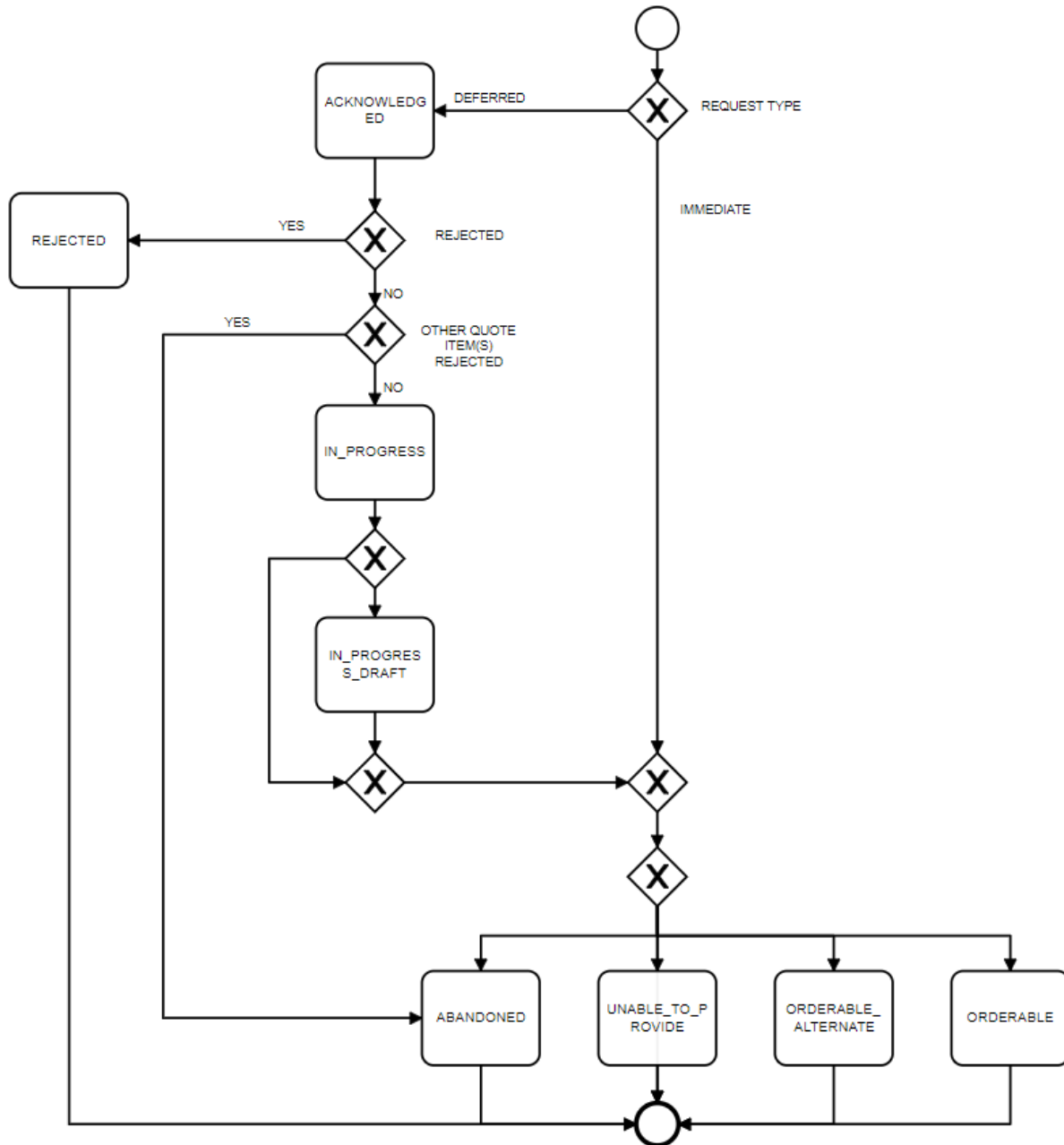
Figure 6 – FIRM Buyer Requested Quote Level Quote Item Process Flow

The definitions of the various Quote Item States for a FIRM Quote Level are as follows:

State	Description
ABANDONED	The ABANDONED state is applied to Quote Items that are in an IN_PROGRESS state when the Quote is moved to one of the terminal states (UNABLE_TO_PROVIDE or CANCELLED.

State	Description
ACKNOWLEDGED	A Create Quote request has been received by the Seller and has passed basic validation. The Quote Item remains in the ACKNOWLEDGED state until all validations of Quote Item attributes as applicable are completed.

If the Quote Item attributes are validated the Quote Item moves to the IN_PROGRESS state for a Deferred Quote Response. If all Quote Item attributes are not validated, the Quote Item moves to the REJECTED state. |
| IN_PROGRESS | The IN_PROGRESS state is applied when the Quote Item is under construction. |
IN_PROGRESS_DRAFT	The IN_PROGRESS_DRAFT state is applied to a Buyer Requested Quote Level of FIRM and the Seller is providing a partial response for this Quote Item in answer to the Buyer's request. The information for this Quote Item may be subject to revision.
ORDERABLE_ALTERNATE	This state is set by the Seller when they have provided a Quote for this Quote Item and one or more attribute values in the Seller's Quote do not exactly match the values as requested by the Buyer. This excludes the Quote Level.
ORDERABLE	The ORDERABLE state is where a Quote for the Quote Item has been internally approved by the Seller. In case of an Immediate Quote Response for a Quote, a Quote Item can directly move to ORDERABLE state without going through the IN_PROGRESS state.
REJECTED	A Quote Item has failed at least one of the validation checks the Seller performs after it reached the ACKNOWLEDGED state if a Deferred Response.
UNABLE_TO_PROVIDE	The UNABLE_TO_PROVIDE state is set on a Quote Item when the Seller cannot provide pricing for this item. In case of an Immediate Quote Response for a Quote, a Quote Item can directly move to the UNABLE_TO_PROVIDE state without going through the IN_PROGRESS state.

Table 36 – FIRM Quote Item State Values
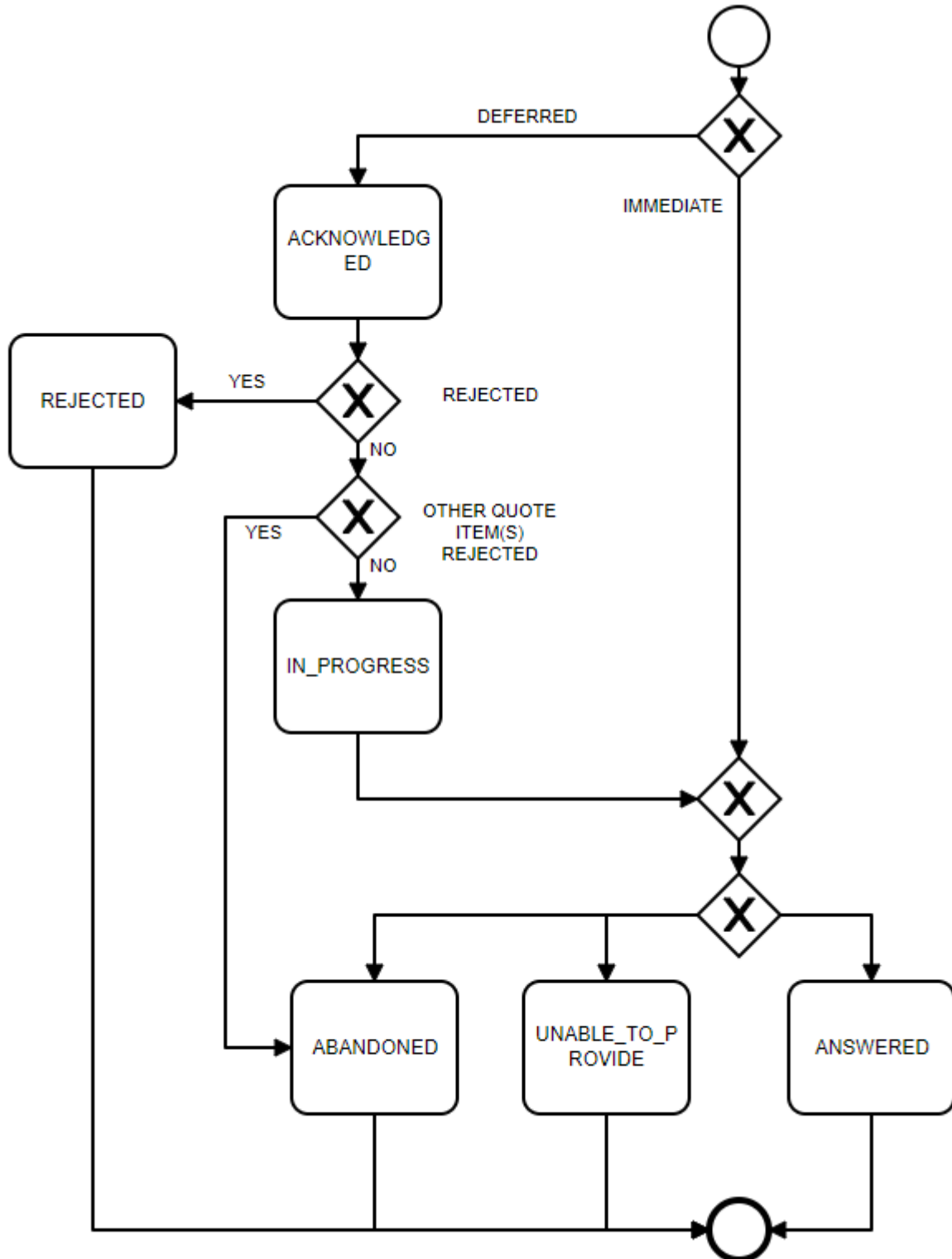
Figure 7 – BUDGETARY Buyer Requested Quote Level Quote Item Process Flow

The definitions of the various Quote Item States for a BUDGETARY Quote Level are as follows:

State	Description
ABANDONED	The ABANDONED state is applied to Quote Items that are in an IN_PROGRESS state when the Quote is moved to one of terminal states (UNABLE_TO_PROVIDE or CANCELLED.
ACKNOWLEDGED	A Create Quote request has been received by the Seller and has passed basic validation. The Quote Item remains in the ACKNOWLEDGED state until all validations of Quote Item attributes as applicable are completed. If the Quote Item attributes are validated the Quote Item moves to the IN_PROGRESS state for a Deferred Quote Response . If all Quote Item attributes are not validated, the Quote Item moves to the REJECTED state.
ANSWERED	The ANSWERED state is applied when a Buyer Requested Quote Level is BUDGETARY, and the Seller has provided a Quote in answer to the Buyer's Create Quote request.
IN_PROGRESS	The IN_PROGRESS state is applied when the Quote Item is currently in the hands of the Seller to build it regarding Buyer requirements. The price for the Quote Item is under construction.
REJECTED	A Quote Item has failed at least one of the validation checks the Seller performs after it reached the ACKNOWLEDGED state if a Deferred Response.
UNABLE_TO_PROVIDE	The UNABLE_TO_PROVIDE state is set on a Quote Item when the Seller cannot provide pricing for this Quote Item. In case of an Immediate Quote Response for a Quote, a Quote Item can move to the UNABLE_TO_PROVIDE state without going through the IN_PROGRESS state.

Table 37 – BUDGETARY Quote Item State Values

Table 38 shows the allowable Quote Item States for each Quote State when the Quote Level is FIRM. As an example, if the Quote State is ACCEPTED, the state of the Quote Items in that Quote are either ORDERABLE or ORDERABLE_ALTERNATE.

Quote State	Quote Items State							
	ABANDONED	ACKNOWLEDGED	IN_PROGRESS	IN_PROGRESS _DRAFT	ORDERABLE _ALTERNATE	ORDERABLE	REJECTED	UNABLE _TO_PR OVIDE
ACCEPTED					X	X		
ACKNOWLEDGED		X	X	X				
CANCELLED	X				X	X		X
DECLINED					X	X		
EXPIRED					X	X		
IN_PROGRESS			X	X	X	X		
IN_PROGRESS_DRAFT				X	X	X		
ORDERABLE_ALTERNATE					X	X		
ORDERABLE						X		
REJECTED	X						X	
UNABLE_TO_PROVIDE	X				X	X		X

Table 38 – Allowable Quote Item States per Quote State for FIRM Quote Level

Table 38 shows the allowable Quote Item States for each Quote State when the Quote Level is BUDGETARY. As an example, if the Quote State is ANSWERED, the state of the Quote Items in that Quote are either ANSWERED or UNABLE_TO_PROVIDE.

Quote State	Quote Items State					
	ABANDONED	ACKNOWLEDGED	ANSWERED	IN_PROGRESS	REJECTED	UNABLE_TO_PROVIDE
ACKNOWLEDGED		X		X		
ANSWERED			X			
CANCELLED	X		X			
EXPIRED			X			
IN_PROGRESS			X	X		
REJECTED	X				X	
UNABLE_TO_PROVIDE	X		X			X

Table 39 – Allowable Quote Item States per Quote State for BUDGETARY Quote Level

12 References

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[2]   Internet Engineering Task Force RFC 2119, *Key words for use in RFCs to Indicate Requirement Levels*, March 1997

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[12]   TMF622, TM Forum, TMF622 Product Ordering Management API REST Specification R19.0.1, November 2019.

[13]   TMF637 TM Forum, *TMF637 Product Inventory Management API REST Specification R16.5.1*, April 2017.