Mplify Standard

Mplify 150

Installation Place and Service Site Management
Business Requirements and Use Cases

June 2025

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1   List of Contributing Members

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

Member Company
Amartus
AT&T
Colt Technology Services
Proximus

Table 1 – Contributing Member Companies

2   Abstract

This document identifies the common attributes and processes needed to support Installation Place and Service Site operations across the Cantata and Sonata Management Interface Reference Points (IRPs). These processes allow the "Buyer" to:

- Validate Installation Place information including exact formats for Installation Place Representations known to the Seller
- Retrieve Installation Place information including exact formats for Installation Place Representations known to the Seller
- Retrieve Service Site information for Service Sites known to the Seller

This document supports the requirements defined in MEF 55.1 [6], Section 8.11 Partner Management for LSO for partner interactions over the Cantata and Sonata interface. Both Buyer and Seller will utilize information contained within this document.

3   Terminology and Acronyms

This section defines the terms used in this document. In some 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 Mplify or external documents.

In addition, terms defined in the following documents are included in this document by reference and are not repeated in the table below.

- MEF 50.1 [5]
- MEF 55.1 [6]
- MEF 55.1.1 [7]

Term	Definition	Reference
Alternate Installation Places	An array of zero or more Installation Places with Installation Place Representations known to the Seller that are considered by the Seller to be an alternate to the Buyer Specified Installation Place Representations.	This document
Area of Validation	The areas of the world in which a Seller can validate addresses such as a state, province, or country.	This document
Deferred Response	A Seller's response to a Buyer's Validate Installation Place request whereby the Seller immediately (less than 30 seconds) acknowledges that the Validate Installation Place request was received and, over time, sends notifications to update the Buyer on the state and results of the Validate Installation Place request (assuming the Buyer has subscribed to receive the notifications). A Deferred Response may take some time for the Seller to fulfill.	This document
Installation Place	A place on Earth, which may or may not be fixed, described using one or more Installation Place Representations.	This document
Installation Place Fielded Address Representation	A type of Installation Place Representation where a discrete field and value for each type of boundary or identifier down to the lowest level of detail. For example, "street number" is one field, "street name" is another field, etc.	This document
Installation Place Formatted Address Representation	A type of Installation Place Representation string based on local postal addressing conventions.	This document
Installation Place Geographic Point Representation	A type of Installation Place Representation where a set of coordinates (typically including latitude, longitude and sometimes elevation) is used to specify a particular place on Earth.	This document

Term	Definition	Reference
Installation Place Identifier	An identifier which is assigned by the Seller and is unique to the Installation Place which the Buyer may use to specify the Installation Place in other requests	This document
Installation Place Label Representation	A type of Installation Place Representation that is a unique combination of label and Administrative Authority (any organization that distributes labels) that controls assignment of the label and that specifies either a place which may or may not be fixed on Earth.	This document
Installation Place Operation	An Operation involving validating or querying an Installation Place.	This document
Installation Place Representation	A concrete method of describing a specific location which uses well defined formats to detail the attributes of the location.	This document
OFF-NET	A Service Site that is served by a partner of the Seller and not directly by the Seller's network.	This document
ON-NET	A Service Site that is connected to the Seller's network.	This document
Operation	An interaction between the Buyer and Seller, potentially involving multiple back and forth transactions.	This document
Private Site	A Service Site for which the existence is on a need-to-know basis.	This document
Public Site	A Service Site for which the existence is public information.	This document
Requesting Entity	The business organization that is acting on behalf of one or more Buyers. In the most common case, the Requesting Entity represents only one Buyer, and these terms are then synonymous.	This document
Responding Entity	The business organization that is acting on behalf of one or more Sellers. In the most common case, the Responding Entity represents only one Seller, and these terms are then synonymous.	This document
Service Site	A fixed place or mobile place at which a Product can be installed.	This document
Service Site Operation	An Operation involving querying Service Site information.	This document

Term	Definition	Reference
Use Case	A Use Case is a means to capture the requirements of a system(s). A system may have several Use Cases that define different aspects of its behavior	OMG UML v2.5

Table 2 – Terminology and Abbreviations

4   Scope

This specification defines the Business Requirements and Use Cases to allow a Buyer to perform the following functions across the Cantata and Sonata IRPs:

- Validate Installation Place information including exact formats for Installation Place Representations known to the Seller
- Retrieve Installation Place information including Installation Place Representations exact formats (attributes) for Installation Places known to the Seller
- Retrieve Service Site detailed information for Service Sites known to the Seller

There must be an authentication mechanism whereby a Seller can be assured who a Buyer is and vice-versa. There must also be authorization mechanisms in place to control what a particular Buyer or Seller is allowed to do and what information may be obtained. Further, audit trails likely need to be maintained specifying who initiated each relevant transaction. Defining a standard for these security related matters is beyond the scope of this document. Security requirements are defined in MEF 128.1 [8].

This document contains the requirements for the resulting APIs enabling automated operations across the Cantata and Sonata IRPs.

5 Compliance Levels

The key words ""**MUST**", ""**MUST NOT**", ""**REQUIRED**", ""**SHALL**", ""**SHALL NOT**", ""**SHOULD**", ""**SHOULD NOT**", ""**RECOMMENDED**", ""**NOT RECOMMENDED**", ""**MAY**"," and ""**OPTIONAL**"" in this document are to be interpreted as described in BCP 14 (RFC 2119 [1][1], RFC 8174) [2][2]) 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.

6   Introduction

Installation Place Validation, Installation Place Retrieval, and Service Site Retrieval at the Cantata and Sonata Interface Reference Points (IRPs) are addressed within this document. A Buyer requests validation or information from a Seller and a Seller responds to the Buyer's request. Installation Place Validation, Installation Place Retrieval, and Service Site Retrieval are parts of the pre-sale process that occurs between Buyer and Seller.

Cantata and Sonata Interface Pre-Order and Order Functions
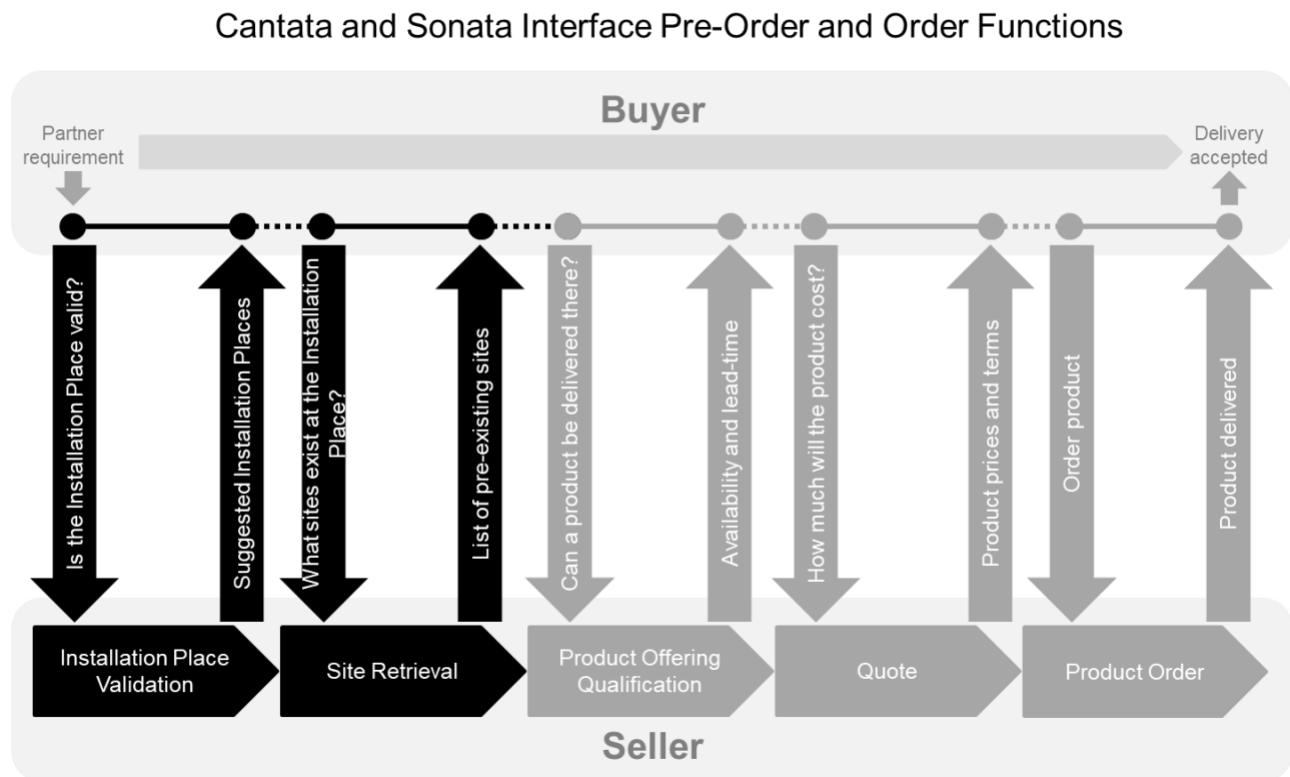
Figure 1 – Cantata/Sonata Pre-Order and Order Functions

Figure 1 reflects five functions from Installation Place Validation to Product Order. This document focuses on the two functions shown in black. A Buyer asks a Seller if they understand a given Installation Place Representation. The Seller may:

1. Confirm that the Installation Place Representation(s) to be validated is a match for an Installation Place Representation of an Installation Place known by the Seller.

2. Provide one or more Installation Place Representation suggestions for the Installation Place Seller believes could match the Buyer's Installation Place Representation.

When one or more suggestions are provided by the Seller, the Seller may optionally indicate which one they believe is the most likely to be a match.

The Buyer checks to see if any Service Sites exist at the Installation Place. The Seller responds with a list of Service Sites at that Installation Place.

6.1 Installation Place Validation and Service Site Retrieval Overview

The purpose of this section is to provide an explanation of how Installation Place Validation and Service Site Retrieval are used by a Buyer to determine how a Seller represents a specific Installation Place, and which Service Sites are known at that Installation Place.

Installation Place Validation is used by the Buyer to ensure that the Buyer and Seller are referring to the same Installation Place using the same Installation Place Representation. As an example, 123 Main St, Anytown, Anycountry might be reflected as 123 Main Street, Anytown, Anycountry in the Seller's systems and as 123 Main, Anytown, Anycountry in the Buyer's systems (and is what the end-customer provided to the Buyer). To successfully obtain a POQ, Quote, or submit a Product Order for a Product Offering, the Buyer may need to specify an Installation Place as reflected in the Seller's systems. The Seller assigns an identifier to the Installation Place within their systems and the Buyer uses this identifier to refer to the Installation Place going forward. Subsequent, the Installation Place – as reflected in the Seller's system – or Installation Place Identifier can be used by the Buyer to successfully obtain a POQ, Quote or submit a Product Order.

Service Site Retrieval allows the Buyer to determine if there is already a Service Site, as defined by the Seller, at the Installation Place. The Buyer requests a list of Service Sites at an Installation Place or if the Service Site identifier is known, may ask for details on that site. Service Site information includes the type of site, Public or Private, the specific location within the Installation Place where the site is located, and additional Service Site information. The Buyer can use the Service Site Identifier for POQ, Quote, or Product Order.

It is important to understand that none of the above steps are mandated to place a Product Order. The Seller may require some steps or none of the steps. A Buyer may skip any or all of Installation Place Validation and Service Site Retrieval optional steps. The Buyer may submit a Quote or Product Order request to the Seller using the end-customer provided Installation Place details and for a Product Offering that they believe the Seller offers. There is no option for returning a list of Alternate Installation Places when a POQ, Quote or Product Order is submitted. Errors in the information in the Installation Place Representation contained in these requests might result in the Seller rejecting the request.

The Seller returns an Installation Place Identifier during Installation Place Validation and returns a Service Site Identifier to the Buyer during Service Site Retrieval. The Seller may require that the Buyer use either the Installation Place Identifier or the Service Site Identifier for any future operations.

Each of the steps described above are discussed in the following sections.

6.1.1 Installation Place Validation

This section provides details on why and when a Buyer may want to perform Installation Place Validation. Figure 2 provides a high-level view of Installation Place Validation.

Figure 2 – Cantata/Sonata Interface Installation Place Validation

The first step in the overall Cantata/Sonata process shown in Figure 2 is used to validate the Installation Place provided to the Buyer by their end-customer. **This Installation Place Validation does not determine if the Seller offers the products the Buyer wants to order at the Installation Place, it only validates that the Seller understands and knows the Installation Place as specified by the Buyer. The Seller is allowed to return a list of Alternate Installation Places during Installation Place Validation.**

Since there are often different representations of the same Installation Place, as an example 123 Main Street might be represented as 123 Main Street, 123 Main St, or 123 Main. The Buyer sends a request with the Installation Place Representation as they know it to the Seller and the Seller returns possible matching Installation Places that the Buyer can select from, including the Installation Place Identifier for each match.

Each Installation Place has an Identifier within the Seller's systems. If a Buyer submits an Installation Place (as defined in section 8.1) validation request for an Installation Place Representation where the Installation Place Representation is not included in the Seller's system, but the Seller knows other Installation Place Representations which are a close match the Seller returns Alternate Installation Places in the Seller response. A close match is described as in the vicinity of, or close in Street Number, Street Name, etc. to the submitted Installation Place Representation such as Buyer submits Street Number of 124, Seller knows Street Numbers 122 and 126 and returns them to the Buyer.

As another example of this, the Buyer submits a request to validate the Installation Place represented as 123 Main St, Unit 8, Anytown, Anycountry. The Seller does not know this representation although they do know:

- 123 Main St, Anytown, Anycountry (Installation Place Identifier 123)

- 123 Main St, Unit 6, Anytown, Anycountry (Installation Place Identifier 456)

- 123 Main St, Unit 15, Anytown, Anycountry (Installation Place Identifier 789)

The Seller may approach this example in one of two ways. The first approach is that the Seller assumes that Unit 8 exists at 123 Main St, returns Unit 8 as the "best match", returns an Installation Place Identifier to the Buyer, and may return the known Installation Places as alternatives.

The second approach is that the Seller may determine that they do not know Unit 8 at 123 Main St and return one of the known Installation Places as the "best match" or returns no "best match" and returns the known Installation Places as alternatives.

When the Installation Place Validation process is completed, the Buyer knows how the Installation Place is represented in the Seller's systems and has a Seller defined identifier of the Installation Place.

6.1.2   Service Site Retrieval

A Service Site within a Seller's network represents a location at which a Product can be installed and usually where the Seller has already delivered one or more products. A Service Site Identifier is assigned by the Seller to reference the Service Site. A Service Site is associated to one and only one Installation Place.

Once the Seller's Installation Place Representation or Installation Place Identifier for an Installation Place is known, the Buyer can retrieve the Service Site(s) for the Installation Place. Figure 3 shows a high-level view of the Service Site Retrieval process.

Cantata and Sonata Interface Pre-Order and Order Functions
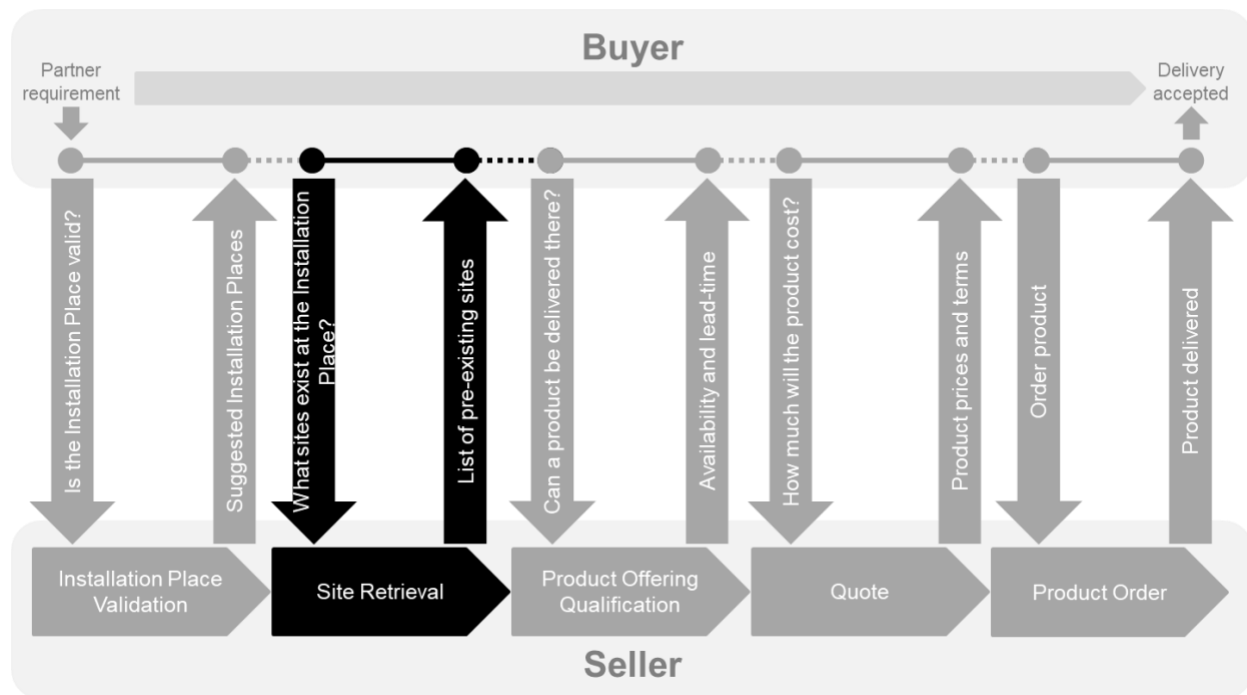
Figure 3 – Cantata/Sonata Interface Service Site Retrieval

Before the Buyer can request that the Seller performs a Product Offering Qualification, Quote, or submits a Product Order, they may need to obtain details on the Service Site. These details can include whether the site is public or private, room and floor information, and additional details. Section 8.5 provides more information on the Service Site details that can be obtained by the Buyer.

One example of why a Buyer may need to perform a Service Site Retrieval prior to submitting a Product Offering Qualification request is to determine if that site is Public, meaning that the Seller is willing to provide service to any end-customer at the site, or Private, meaning that the end-customers that the Seller will provide service to at that site is limited.

Public sites are often located in a common area at an Installation Place, such as a basement, which all end-customers at that Installation Place can access. Normally, all Public sites at an Installation Place will be included in the list of Service Sites returned by the Seller in response to the Buyers Retrieve Service Site List request.

Private sites are dedicated to a single end-customer and are not usually be shared with other end-customers at that Installation Place. The Seller cannot connect a Buyer to the Private site without the permission of a party authorized to use the Private site. Normally, a Private site will not be included in the list of Service Sites at an Installation Place returned by the Seller in response to the Buyers Retrieve Service Site List request unless the Buyer is determined by the Seller as authorized to view the Private sites at that Installation Place.

Page 11
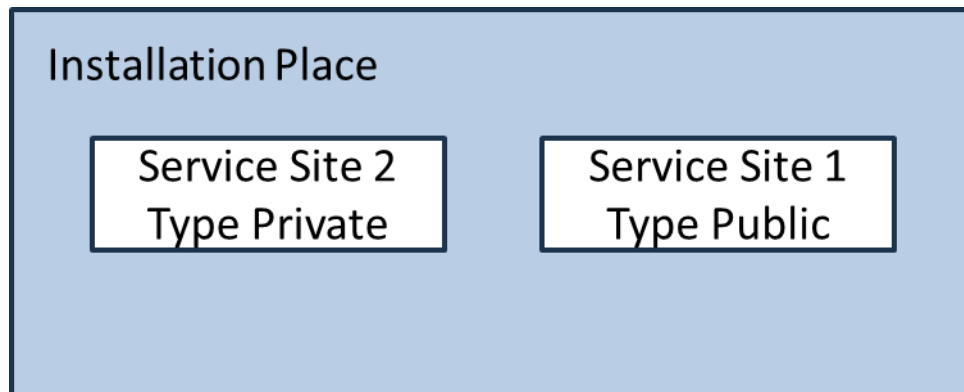
Figure 4 – Installation Place to Service Site Relationship

Figure 4 shows how the Service Site and Installation Place are related. The description of the Service Site includes the Type (Public or Private), and the Installation Place of the Service Site. Zero or more Service Sites may exist at an Installation Place depending on what the Seller has defined. The Service Site is made up of the Service Site Identifier, Service Site attributes, and any Service Site Sub-Units.

If the Buyer has the Service Site Identifier or they do not desire to verify the site, they may omit this step in the process. This may result in an increase in the time it takes to complete other processes such as POQ, Quote, or Product Order.

6.1.3 Known and Unknown Installation Places

The terms Known and Unknown are used within this document to reference Installation Places. A Known Installation Place has an Installation Place Identifier that is returned to the Buyer as a part of Installation Place Validation. The Known Installation Place is referred to by the Installation Place Identifier for all future actions.

An Unknown Installation Place does not have an Installation Place Identifier assigned by the Seller and is referred to by the values of the Installation Place Representations for all future actions.

6.2 Pre-Requisites to Installation Place and Service Site Operations

Pre-requisites for Installation Place Validation and Service Site Retrieval Use Cases are described in this section. The following bullets indicate the areas that are agreed to by the Buyer and Seller as a part of the on-boarding process:

- Commercial contract and terms

- Authentication method

- Installation Place Representation types to be used, and the optional (if any) attributes of those Installation Place Representation types to be used for each representation

The Buyer and Seller have established a commercial relationship. Typically, this involves the Buyer gaining a full understanding of the Seller's Product Offerings as well as establishing a contract under which business is to be conducted.

The Buyer and Seller have established mechanisms to authenticate any Operations initiated by the other party and ensure that they are authorized to initiate the request. For requests of all types, there is a business entity that is initiating an Operation (called the Requesting Entity) and a business entity that is responding to this request (called the Responding Entity). In the simplest case, the Requesting Entity is the Buyer, and the Responding Entity is the Seller. However, in some cases, the Requesting Entity may represent more than one Buyer and similarly, the Responding Entity may represent more than one Seller. These mechanisms are outside the scope of this document, but they must be established prior to initiating any Operations between the parties.

As there is no mandatory common set of attributes used for referencing an Installation Place on Earth, the Buyer and Seller need to negotiate, agree upon, and implement a minimum set of Installation Place Representation attributes, which may vary according to factors like geographic areas.

[R1]   Buyer and Seller **MUST** agree what Installation Place Representations may be included in the Installation Place Validation request and a Retrieve Service Site List request.

[R2]   The Buyer and Seller **MUST** agree to a minimum set of Attributes, based on requirements in this standard, for each Installation Place Representation Type defined which they will support for describing an Installation Place.

The Administrative Authority that is used is agreed to by the Buyer and Seller during on-boarding.

6.3   Address and Service Site Operation Example

Once these pre-requisites are met, the Operations described in this specification may be invoked. The likely steps are discussed below.

A Customer has expressed interest in obtaining connectivity between two Installation Places from the Buyer. The Customer specifies the Installation Places by the following mechanism:

- Providing Installation Place Representation attributes. As an example, a street address is defined as a way of specifying an absolute fixed Installation Place on Earth using pre-established boundary and identifier information such as country, city, postal code, and street information.

The Buyer needs to determine if a Seller knows the Installation Place, what the Installation Place Representation(s) are for the Installation Place in the Seller system(s), and if there are any Service Sites located at the Installation Place.

The Buyer will likely validate their Installation Place Representation with the Seller because the way the Buyer represents the Installation Place might not match exactly with the Installation Place Representation as known by the Seller. For example, the Buyer might be looking for "123 Bank

Street" but the Seller may hold "123 Bank St" as their way of representing the Installation Place. **The Seller's Installation Place Representation is authoritative**, so this Operation can be seen as the Buyer sending Installation Place criteria to the Seller so that the Buyer can obtain the Seller's authoritative Installation Place Representations.

- The Buyer determines any Service Site information known by the Seller at that Installation Place at which a Product can be installed by initiating one or more Service Site Operations.

A Service Site is defined as a physical Installation Place at which a Product can be installed. There are many possible cases for example: A particular Installation Place may not have any suitable Service Sites to install telecom equipment; it may have one Service Site (e.g., a wiring closet in the basement); or it may have multiple Service Sites (e.g., a wiring closet in each suite of a multi-tenant building). Moreover, even if the Seller is aware of the Installation Place, they may or may not hold any of this Service Site information at the time of the Buyer's request.

Section 8 describes the Use Cases and Business Requirements for Installation Place and Service Site management, the attributes that are passed between the Buyer and Seller for each of these Use Cases, and any related requirements.

7 Installation Place Representations

The Installation Place Representations are described in this section of the document. An Installation Place has one or more Installation Place Representations. An Installation Place Representation is how the Buyer and Seller pass attributes describing an Installation Place. There are four types of Installation Place Representations:

- Installation Place Fielded Address Representation

- Installation Place Formatted Address Representation

- Installation Place Label Representation

- Installation Place Geographic Point Representation.

A Buyer can use any combination of these Installation Place Representation types when submitting a Validate Installation Place request.

As an example, a Buyer may include an Installation Place Fielded Address Representation and an Installation Place Geographic Point Representation in a single Validate Installation Place request. This provides the Seller with the most information that the Buyer can provide in an attempt to validate the Installation Place.
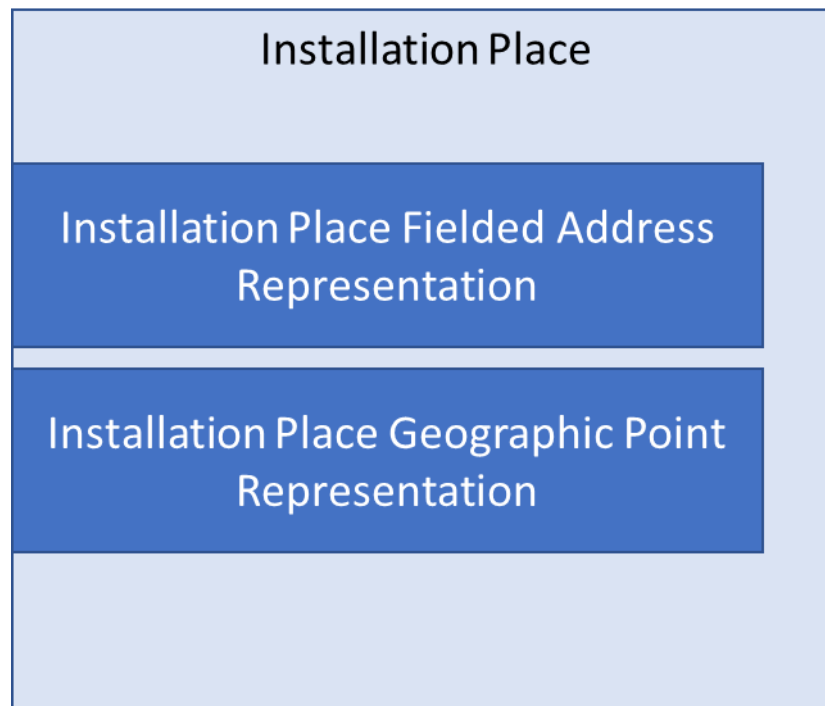
Figure 5 – Installation Place Representation Example One

As another example, a specific building may be located at an intersection of two streets and have an address on each street. The Buyer's Validate Installation Place request contains one or more of these. The Seller's response contains both Installation Place Representations.
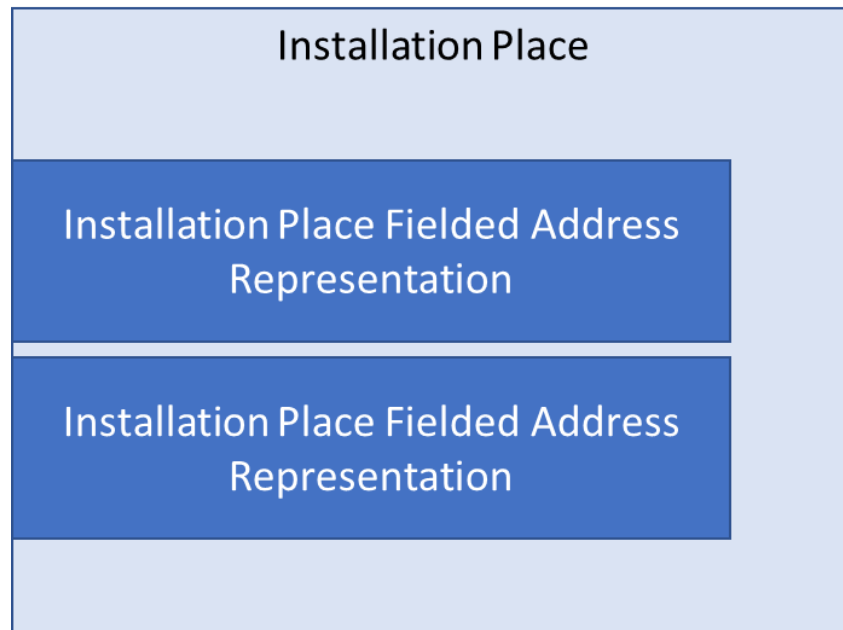
Figure 6 – Installation Place Representation Example Two

The different Installation Place Representations are defined in sections 7.1, 7.2, 7.3, and 7.4.

7.1 Installation Place Fielded Address Representation

Installation Place Fielded Address Representation attributes are shown in Table 3 and Table 4.

Attribute	Description	Type
Street Number	Number identifying a specific property on a public street. It may be combined with "Street Number Last" for ranged Addresses	String
Street Number Suffix	The first street number suffix (in a street number range) or the suffix for the street number if there is no range	String
Street Number Last	Last number in a range of street numbers allocated to an Address	String
Street Number Last Suffix	Suffix for Street Number Last for a ranged Address	String
Street Pre-Direction	The direction of the street that appears before the Street Name	String
Street Name	Name of the street	String
Street Type	The type of street (e.g., alley, avenue, boulevard, crescent, drive, highway, lane, terrace, parade, place, tarn, way, wharf)	String
Street Post-Direction	A modifier denoting a relative direction that appears after the Street Name.	String
PO Box Number	Number identifying a specific delivery location in a post office.	String
Locality	An area of defined or undefined present boundaries within a local authority or other legislatively defined area.	String
City	City in which the Address is located.	String
Postal Code	Descriptor for a postal delivery area, used to speed and simplify the delivery of mail (also known as zip code)	String
Postal Code Extension	The extension used on a postal code. Note: there are different use codes for this attribute depending upon the country.	String
State Or Province	The State or Province in which the Address is located.	String
Country	Country in which the Address is located. Country is defined using two characters as defined in ISO 3166 [3]..	String

Attribute	Description	Type
Sub Units	A list of zero or more Sub Units.	List of Sub Units as described in Table 4
Building Name	The well-known name of a building that is located at this Installation Place Fielded Address (e.g., where there is one Address for a campus).	String
Private Street Number	Street number on a private street within the Installation Place Fielded Address.	String
Private Street Name	Private streets internal to a property (e.g., a university) may have internal names that are not recorded by the land title office.	String
Language	The language in which the Installation Place Representation is expressed.	String based on ISO 639:2023 [3] 2 Letter Code

Table 3 – Installation Place Fielded Address Representation Attributes

[O1] Street Name **MAY** contain the Street Type or Street Type **MAY** be used as a stand-alone field.

An example is a Street Name of Main St or a Street Name of Main and a Street Type of St.

[O2] If a single Installation Place Fielded Address Representation has more than one Street Number, the Street Number Last **MAY** be used to represent the end of the range.

An example is a building that has an address of 12-14 Main St.

[R3] Street Number Last Suffix **MUST** only be used when there is a Street Number Last present.

[R4] Street Pre-Direction **MUST** be used when the direction of the street comes before the Street Name.

[R5] Street Post-Direction **MUST** be used when the direction of the street comes after the Street Name.

[R6] When specifying an Installation Place with an Installation Place Fielded Address Representation, the Seller **MUST** specify the agreed to attributes in Table 3.

[O3] When specifying an Installation Place with an Installation Place Fielded Address Representation, the Seller **MAY** specify any of the other attributes in Table 3 and Table 4.

[R7] Installation Place Fielded Address Representations **MUST** use the ISO 3166 [4] two letter codes to represent the Country attribute.

[R8]   The Language **MUST** use ISO 639-2023 [3] two letter codes to indicate the language.

The use of the Language attribute is strongly recommended to clarify the language used for the Installation Place Fielded Address Representation.

In some cases an Installation Place Fielded Address Representation may contain both Street Pre-Direction and Street Post-Direction.

Attribute	Description	Type
Sub Unit Type	The type of the sub unit (e.g., BERTH, FLAT, PIER, SUITE, SHOP, TOWER, UNIT, ROOM, LEVEL).	String
Sub Unit Name	The distinctive value for the Sub Unit (e.g., 42 or A)	String

Table 4 – Installation Place Fielded Address Representation Sub Unit Attributes

[R9]   If a Sub Unit is specified, the Sub Unit Name and Sub Unit Type **MUST** be included.

Note: The use of Sub Unit Attributes allows the Buyer to specify the details of an Installation Place.

Note: A list of Sub Units is to be used only to represent a hierarchy that point to single bottom level Sub Unit. Not to represent a list of "sibling" Sub Units or all Sub Units within an Installation Place.
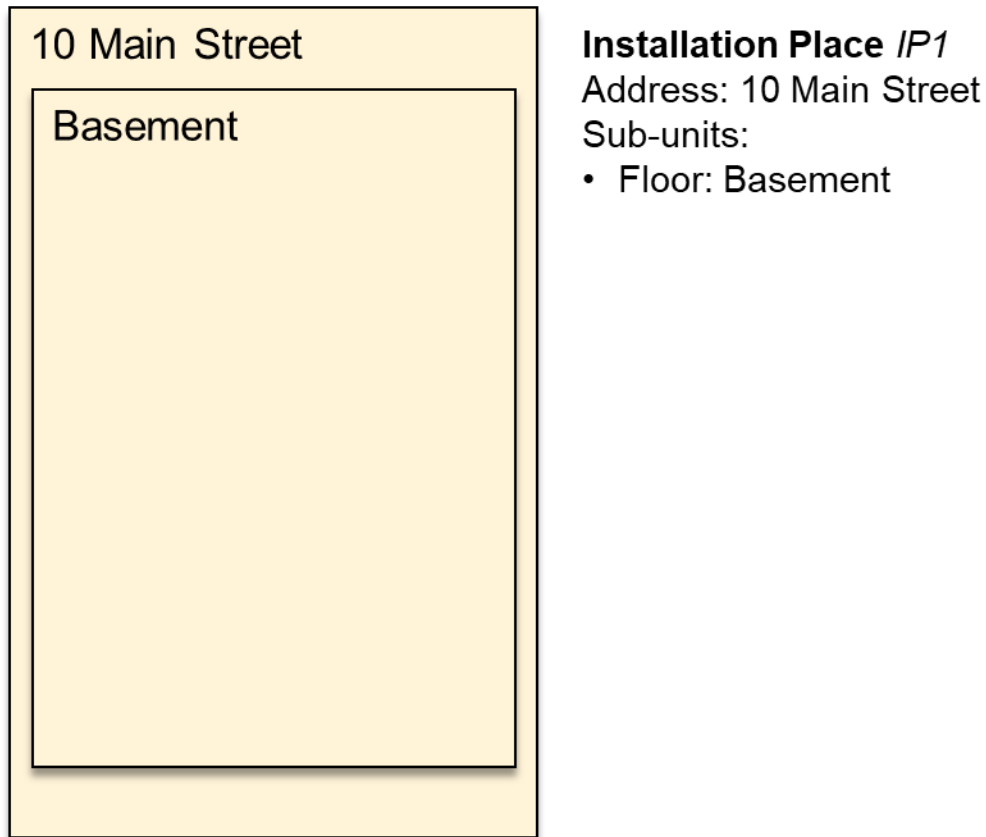
Figure 7 – Single Sub Unit in an Installation Place Example

Figure 7 shows an Installation Place Representation that includes a single Sub Unit of the basement.

Installation Place *IP2*
Address: 10 Main Street
Sub-units:
- Floor: Basement
- Bay: South
- Cage: 3

```
10 Main Street
  Basement
    South Bay
      Cage 3
```
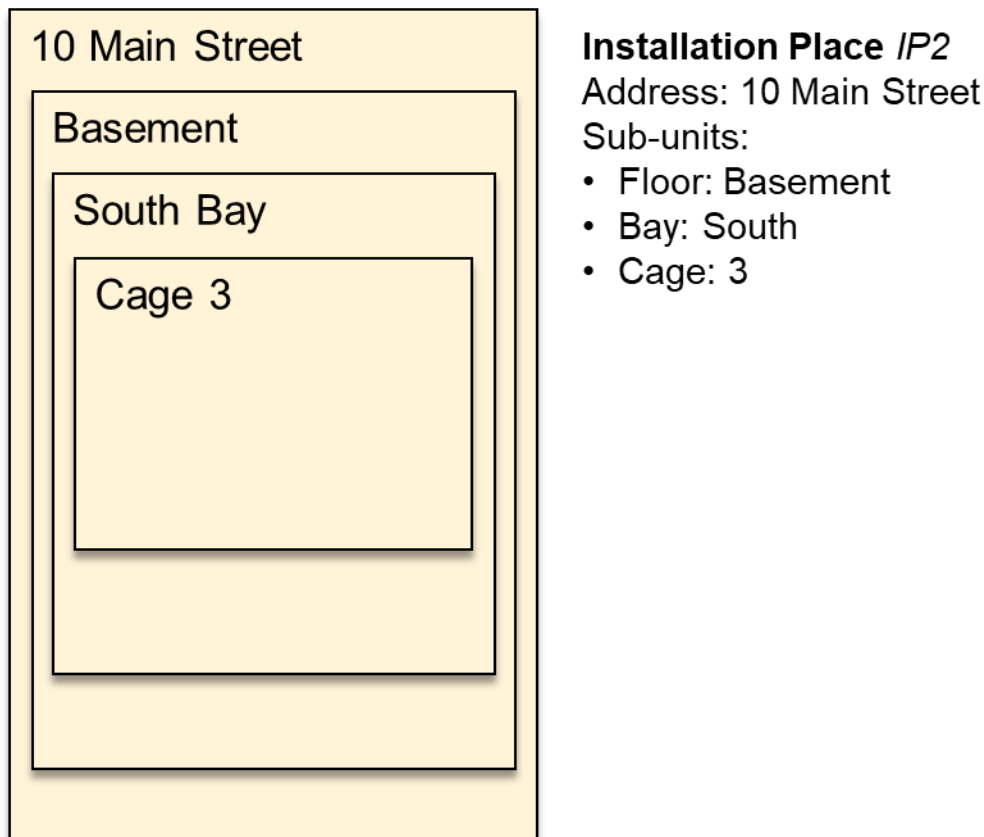
Figure 8 – Multiple Sub Units in an Installation Place Example

Figure 8 shows an Installation Place Representation that contains multiple Sub Units of Floor, Bay, and Cage.

7.2   Installation Place Formatted Address Representation

Table 5 shows the Installation Place Formatted Address Representation attributes.

Attribute	Description	Type
Formatted Address	A formatted Installation Place Representation that contains a non-fielded address.	String
Language	The language in which the Formatted Address is expressed.	String based on ISO 639:2023 [3]

Table 5 – Installation Place Formatted Address Representation Attributes

An Installation Place Formatted Address Representation is a freeform text representation agreed to by the Buyer and Seller. An example of an Installation Place Formatted Address Representation is 123 Main St, Anytown, Anycountry, 12345.

[R10]   When specifying an Installation Place Formatted Address Representation, the Formatted Address attribute **MUST** be provided.

[R11]   The Language **MUST** use ISO 639-2023 [3] two letter codes to indicate the language.

7.3 Installation Place Label Representation

Table 6 shows the Installation Place Label Representation attributes.

Attribute	Description	Type
Installation Place Label	The unique reference to an Installation Place assigned by the Administrative Authority.	String
Administrative Authority	The organization or standard from that organization that administers the Installation Place Label ensuring it is unique within the Administrative Authority.	String
Language	The language in which the Installation Place Label is expressed.	String based on ISO 639:2023 [3]

Table 6 – Installation Place Label Representation Attributes

[R12]   If an Installation Place Label Representation is used, it **MUST** include both the Installation Place Label and Administrative Authority.

[R13]   The Language **MUST** use ISO 639-2023 [3] two letter codes to indicate the language.

Note: An Installation Place Label Representation can be used to identify things that do not have a static Installation Place, such as airplanes or ships. In this case, the unique identifier (i.e., airplane tail number) for the airplane or ship is used as an Installation Place Label Representation.

7.4 Installation Place Geographic Point Representation

Table 7 shows the Installation Place Geographic Point Representation attributes.

Attribute	Description	Type
Spatial Reference	The system used to identify how latitude and longitude are reflected, decimal, or degrees, minutes, seconds, to locate geographical entities.	String
Latitude	The latitude of the Installation Place using the format required by the Spatial Reference system.	String
Longitude	The longitude of the Installation Place using the format required by the Spatial Reference system.	String
Elevation	The elevation of the Installation Place using the format required by the Spatial Reference system.	String

Table 7 – Installation Place Geographic Point Representation Attributes

[R14]   If an Installation Place Geographic Point Representation is used, it **MUST** specify the Spatial Reference, Latitude, and Longitude.

[R15]   The Buyer and Seller **MUST** agree to the level of accuracy of the Latitude, Longitude, and Elevation.

Level of accuracy in this context means the number of decimal points used in the Latitude, Longitude, and Elevation.

[O4]   If the Buyer is using an Installation Place Geographic Point Representation, the Buyer **MAY** specify the Elevation as defined in Table 7.

[R16]   The Buyer and Seller **MUST** agree on which Spatial Reference(s) are used.

[O5]   When specifying an Installation Place Geographic Point Representation, the Seller **MAY** specify the Elevation as shown in Table 7

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8   Use Cases and Business Process Definitions

The Use Cases within this document support Installation Place Validation and Service Site Retrieval. Installation Place Validation allows the Buyer to identify how a Seller represents a given Installation Place (if the Product Offering requires an Installation Place) within the Seller's systems. Service Site Retrieval allows the Buyer to retrieve information on a Service Site.

Table 8 numbers these Use Cases and provides a brief description of each.

Use Case #	Use Case Name	Use Case Description
1	Validate Installation Place	The Buyer sends to the Seller one or more Installation Place Representations for a place known to them. The Seller responds with a list of Installation Places known to them, which likely match information sent by the Buyer. For each Installation Place returned, the Seller provides an Installation Place Identifier, which uniquely identifies this Installation Place within the Seller. The Seller may reply with an Immediate Response or a Deferred Response as directed by the Buyer. If the Buyer has stated that they would accept a Deferred Response, the Seller may still reply with an Immediate Response.
2	Retrieve Validate Installation Place Request by Validate Installation Place Request Identifier	The Buyer requests the details of a Deferred Response to a Validate Installation Place Request.
3	Retrieve Installation Place by Installation Place Identifier	The Buyer requests the details of a single Installation Place based on an Installation Place Identifier that was previously provided by the Seller.
4	Retrieve Service Site List	See sub Use Cases 4a and 4b.
4a	Retrieve Service Site List using Unknown Installation Place ID Method	The Buyer requests that the Seller provides a list of Service Sites known to the Seller based on a set of criteria using the Unknown Installation Place ID Method. For each Service Site returned, the Seller also provides a Service Site Identifier, which uniquely identifies this Service Site within the Seller.
4b	Retrieve Service Site List using Known Installation Place ID Method	The Buyer requests that the Seller provides a list of Service Sites known to the Seller using an Installation Place Identifier. For each Service Site returned, the Seller also provides a Service Site Identifier, which uniquely identifies this Service Site within the Seller.

Use Case #	Use Case Name	Use Case Description
5	Retrieve Service Site by Service Site Identifier	The Buyer requests the full details for a single Service Site based on a Service Site identifier that was previously provided by the Seller.
6	Register for Notifications	The Buyer registers for notifications on Validate Installation Place requests that are Deferred.
7	Send Notification	The Seller generates notifications to Buyer's who have subscribed to notifications.

Table 8 – Use Case Table

[R17]   A Buyer **MUST** be able to initiate Use Cases 1 and 3 as described in Table 8.

[R18]   A Seller **MUST** associate an Installation Place Identifier to each unique Installation Place of which they are aware.

[R19]   A Seller **MUST** be able to provide either an Immediate Response or a Deferred Response for Use Case 1 in Table 8.

[R20]   If a Seller supports Deferred Response for the Validate Installation Place Use Case, the Seller **MUST** support Use Cases 2, 6, and 7.

[D1]   A Buyer **SHOULD** be able to initiate, as agreed to by the Buyer and Seller, Use Cases 3 through 5 as described in Table 8.

[R21]   If a Seller supports Service Sites, they **MUST** support Use Cases 4a or 4b.

[D2]   For all Installation Places that have not been validated, a Buyer **SHOULD** initiate a Validate Installation Place request, to get the Seller's Installation Place Representations and Identifier associated with this Installation Place.

[D3]   For all Installation Places that have been validated, the Buyer **SHOULD** use the Seller's Installation Place Identifier to reference the Installation Place.

Note that it will be possible that a Seller doesn't have any Service Sites matching the Buyers selection criteria at a given Installation Place. This does not imply that the Seller cannot deliver Products to this Installation Place.

The following sections define the details associated with each Use Case. Pre-requisites defined in section 6.2 apply to all Use Cases and are not repeated below. Only additional pre-conditions applicable for a particular Use Case are listed in the Use Case's section.

8.1   Validate Installation Place Use Case

Step 1 is found in section 8.1.1. Step 2 is found in section 8.1.2.1.

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Note: Only the Unknown Installation Place Method can be used for Installation Place Validation. Both the Unknown Installation Place ID Method and the Known Installation Place ID Method can be used for other actions such as POQ, Quote, etc. As an example, the Buyer submits a request to validate an Installation Place using the Unknown Installation Place ID Method. The Installation Place Representation included in the request is 123 Main Street, Anytown, Anycountry, 00443. The Seller finds a match to this Installation Place Representation and returns an Installation Place ID of 123MAA in their response.

It is expected that any Installation Place Representations that are provided for a single validation request all represent the same Installation Place.

8.1.1 Validate Installation Place Buyer Actions

Installation Place Validation Is Not Performed To Verify That A Product Can Be Provided At That Installation Place. It Simply Indicates The Way The Buyer Needs To Specify The Installation Place To The Seller.

1. The Buyer sends a Validate Installation Place request to the Seller specifying the Installation Place Representation attributes (as understood by the Buyer) for the Installation Place the Buyer wishes to validate.

Attribute	Description	Type
Buyer Specified Installation Place	The Installation Place to be validated.	Contains one or more Installation Place Representations
Immediate Response Only	The type of response that is requested by the Buyer	Boolean

Table 9 – Validate Installation Place Buyer Request Attributes

[R22]   For Use Case 1 (Validate Installation Place), the Buyer **MUST** specify the Buyer Specified Installation Place attribute and the Response Type attribute.

[R23]   An Installation Place specified by the Buyer **MUST** have at least one Installation Place Representation.

[R24]   The Buyer **MUST** specify all attributes in the Installation Place Representation agreed with the Seller during on-boarding.

Note: The Seller response to the request is shown in section 8.1.2.1 (Immediate) or section 8.1.2.2 (Deferred).

8.1.2 Validate Installation Place Seller Actions

The Seller responds to the Buyer's Validate Installation Place request using either an Immediate Response or a Deferred Response. In the case of an Immediate Response, the Seller returns a complete response, and the state is READY.

[O6]   A Seller **MAY** provide an immediate response regardless of the Response Type the Buyer has asked for.

[R25]   A Seller **MUST NOT** provide a deferred response if the Buyer has asked for an immediate response.

8.1.2.1 *Validate Installation Place Seller Actions Immediate Response*

2. The Seller receives the Validate Installation Place request and attempts to match the Buyer's criteria with Installation Place Representations known to the Seller. The determination of what is considered a match is at the Seller's discretion.

3. If the criteria match one or more Installation Place Representations known to the Seller, a positive response that indicates that validation was successful, containing one or more matching Installation Places with all known Installation Place Representations is returned with the following:

   - Seller's Installation Place information

   - the Best Match identified by the Seller

   - any Alternate Installation Places known by the Seller

   - if the Installation Place has Public Sites

   - if the Installation Place allows New Sites

   - an Installation Place Identifier (that is unique within this Seller) for each Installation Place returned.

If validation was completed and the Seller could not match any of the Installation Place Representations from the Buyer to an Installation Place Representation they know, the Seller returns a positive response indicating that the response contains zero matching Installation Places....

4. The Buyer has received the list of Installation Places known to the Seller for the Installation Place submitted by the Buyer or confirmation that the Seller was not able to identify any match based on the Buyer's submitted Installation Place.

Attribute	Description	Type
Seller Response Code	A response identifier, indicating if the Seller was able to successfully fulfill the request. The detailed response options are included in the Developers Guides.	String
Seller Verified Best Match Installation Place	This attribute specifies the Installation Place which the Seller believes is the best match to the Buyer specified Installation Place.	Installation Place as defined in section 7
Seller Verified Alternate Installation Place(s)	An array of zero or more Installation Places with Installation Place Representations known to the Seller that are considered by the Seller to be an alternate to the Buyer Specified Installation Place.	A List of Installation Places as defined in section 7
Validate Installation Place Request State	The state of a Validate Installation Place request.	One of: • ACKNOWLEDGED • IN_PROGRESS • READY • REJECTED

Table 10 – Seller Response Attributes

[R26]   For an Immediate response, the Seller **MUST** only provide the READY state.

[R27]   The Seller **MUST** always respond with a Seller Response Code and State.

Attribute	Description	Type
Installation Place Identifier	An Installation Place Identifier by which the Seller refers to the Installation Place.	String
Installation Place Has Public Sites	This attribute indicates if public sites exist at the installation place. .	One of: True False Unknown
Installation Place Allows New Sites	This attribute specifies if a Buyer must use one of the known existing Service Sites at this location for any Products delivered to this Installation Place.	One of: True False Unknown
Installation Place Representations	A list of Installation Place Representations as represented in Table 3, Table 4, Table 5, Table 6, and Table 7.	List of Installation Place Representation

Table 11 – Per Installation Place Seller Response Attributes

[R28]   The Seller **MUST** support all attributes in Table 11.

Note: Unknown means that either the Seller does not support Site Management, or they are not aware of whether the value is True or False.

[R29]   The Seller **MUST** echo back all attributes received in the Buyer's request in their response.

[R30]   If the Seller determines that there is a "Best Match" to the Installation Place provided by the Buyer, the Seller **MUST** identify a maximum of one Installation Place as the Seller Verified Best Match Installation Place.

[R31]   If the Seller does not determine there is a "Best Match" to the Installation Place provided by the Buyer, they **MUST NOT** include the Seller Verified Best Match Installation Place in the response.

[R32]   Any Installations Places known to the Seller which the Seller considers to be a match to the Buyer Specified Installation Place that are not a "best match" **MUST** be returned as a Seller Verified Alternate Installation Place(s).

Note: an empty Seller Validated Best Match Installation Place and Seller Verified Alternate Installation Place(s) is considered successful.

[R33]   When a Seller validates an Installation Place Representation, they **MUST** validate that the Installation Place Representation is within their Area of Validation.

[R34]   When the Seller validates, as described in [R33], an Installation Place Representation that is not within their Area of Validation they **MUST** return an error.

8.1.2.2   *Validate Installation Place Use Case Seller Actions Deferred Response*

2. The Seller returns a Validate Installation Place response that contains a Validate Installation Place Request Identifier and the Buyer's Specified Installation Place.

Attribute	Description	Type
Seller Response Code	A response identifier, indicating if the Seller was able to successfully fulfill the request. The detailed response options are included in the Developers Guides.	String
Validate Installation Place Request Identifier	An identifier that the Seller assigns to the Validate Installation Place request when the response is Deferred. This is not applicable to an Immediate response.	String
Seller Verified Best Match Installation Place	This attribute specifies the Installation Place which the Seller believes is the best match to the Buyer specified Installation Place.	Installation Place as defined in section 7
Seller Verified Alternate Installation Place(s)	An array of zero or more Installation Places with Installation Place Representations known to the Seller that are considered by the Seller to be an alternate to the Buyer Specified Installation Place.	A List of Installation Places as defined in section 7
Validate Installation Place Request State	The state of a Validate Installation Place request.	One of: • ACKNOWLEDGED • IN_PROGRESS • READY • REJECTED

Table 12 – Seller Response Attributes

[R35]   When using a Deferred response, the Seller's response **MUST** include the Seller Response Code, a Validate Installation Place Request Identifier, the Validate Installation Place Request State, and the Buyer Specified Installation Place attributes as shown in Table 12.

8.1.3 Validate Installation Place Use Case Alternative Paths

1. The Seller returns an error message if an error is encountered while processing that prevents the Seller from completing the request.

8.2 Retrieve Validate Installation Place Request by Validate Installation Place Request Identifier Use Case

This Use Case is used to retrieve the details of the Validate Installation Place Request. The Buyer performs the request, and the Seller provides the update in the response.

Step 1 of this Use Case is in section 8.2.1. Step 2 is in section 8.2.2.

8.2.1 Retrieve Validate Installation Place Request by Validate Installation Place Request Identifier Buyer Actions

1. The Buyer sends a Retrieve Validate Installation Place Request by Validate Installation Place Request Identifier request including the Validate Installation Place Request Identifier.

[R36]   The Retrieve Validate Installation Place Request by Validate Installation Place Request Identifier request **MUST** contain the Validate Installation Place Request Identifier.

8.2.2 Retrieve Validate Installation Place Request by Validate Installation Place Request Identifier Seller Actions.

2.   The Seller responds to a Retrieve Validate Installation Place Request by Validate Installation Place Request Identifier with the information contained in Table 10.

[R37]   The Seller response to the Retrieve Validate Installation Place Request by Validate Installation Place Request Identifier request **MUST** include all the attributes shown in Table 12.

Note: This may result in empty lists being returned if the Seller has not completed the validation process.

[R38]   If the state of the Retrieve Validate Installation Place by Validate Installation Place Request Identifier is READY and the Seller has determined that there are one or more matches, the Seller's response to the Retrieve Validate Installation Place Request by Retrieve Validate Installation Place Request Identifier **MUST** include the attributes contained in Table 11.

8.2.3 Retrieve Validate Installation Request by Validate Installation Place Request Identifier Alternative Actions

1. The Seller returns an error message if an error is encountered while processing that prevents the Seller from completing the request.

8.3 Retrieve Installation Place By Installation Place Identifier Use Case

This Use Case is used to retrieve the details of an Installation Place using the Known Installation Place ID Method.

The Installation Place Identifier assigned to the Installation Place is used in the Known Installation Place ID Method.   An Installation Place has only one Installation Place Identifier regardless of the number of Installation Place Representations it has. As an example, an Installation Place may have two different Installation Place Representations, one in English and the other in French.

 The same Installation Place Representation may be used for more than one Installation Place. Depending on the level of accuracy agreed to for an Installation Place Geographic Point Representation, there may be multiple Installation Places within the area described by the same values of the Installation Place Geographic Point Representation. Each Installation Place covered by the Installation Place Geographic Point Representation has its own Installation Place Identifier.

[R39]   This Use Case **MUST** be supported by the Buyer and Seller.

Step 1 of this Use Case is in section 8.3.1. Step 2 is in section 8.3.2.

8.3.1 Retrieve Installation Place by Installation Place Identifier Buyer Actions

1. The Buyer sends a Retrieve Installation Place by Installation Place Identifier request to the Seller specifying the Installation Place Identifier.

[R40]   The Buyer's Retrieve Installation Place by Installation Place Identifier request **MUST** include the Installation Place Identifier.

8.3.2 Retrieve Installation Place by Installation Place Identifier Seller Actions

2. The Seller receives this request and returns details and all Installation Place Representations known to the Seller for this Installation Place Identifier as shown in Table 11.

[R41]   The Seller **MUST** return all of the Installation Place Representations of types agreed to by the Buyer and Seller that the Seller is aware of when responding to the Buyer's Retrieve Installation Place by Identifier request.

[R42]   The Seller's response **MUST** include all of the attributes shown in Table 11.

8.4 Retrieve Service Site List Use Case

This section addresses both Retrieve Service Site List using Unknown Installation Place ID Method and Retrieve Service Site List using Known Installation Place ID Method Use-cases.

8.4.1 Retrieve Service List Buyer Actions - Common Attributes

This section addresses the common attributes between the Unknown and Known Installation Place Identifier methods.

Attribute	Description	Type
Service Site Name	The name for the Service Site	String
Service Site Administrative Authority Name	The name of the administrative authority (building owner or company responsible for managing telecom within the building) for the space within this Service Site.	String
Service Site Customer Name	The name of the company that has presence at this Service Site. (For example, the company leasing space in a multi-tenant building).	String
Service Site Restriction Type	This defines whether a Service Site is public or private. "Public" means that the existence of this Service Site is public information. A meet-me-room in a hosted data center facility (where all interconnects between parties take place) is an example of a public Service Site. A shared facility in the basement of a multi-tenant business building where all interconnects between parties take place is another example of a public Service Site. "Private" means that the existence of this Service Site is on a need-to-know basis. A wiring closet set	String that is one of: • PUBLIC • PRIVATE

Attribute	Description	Type
	up inside a customer facility just to connect two parties, one of whom is the Service Site Administrative Authority, is an example of a private Service Site.	
Service Site Network Type	Indicates whether the Seller is owner of the network to which the Service Site is connected or whether that network is owned by a 3rd party.	One of: o OFF-NET o ON-NET
Service Site Sub Units	The Service Site Sub Unit represented as a list. This is a list to allow complex sub-unit information such as SUITE 42 ROOM A	See Table 14Table 14 for additional detail. .

Table 13 – Service Site Buyer Request Attributes Use Case 4

Attribute	Description	Type
Sub Unit Type	The type of the sub unit (e.g., BERTH, FLAT, PIER, SUITE, SHOP, TOWER, UNIT, ROOM, LEVEL).	String
Sub Unit Name	The distinctive value for the Sub Unit (e.g., 42 or A)	String

Table 14 – Service Site Sub Unit Attributes

8.4.1.1 Retrieve Service Site List Using Unknown Installation Place ID Method Buyer Action

1. The Buyer sends the Retrieve Service Site List request to the Seller Specifying the Service Site filter criteria shown in Table 13 and Table 14 and the Installation Place as shown in Table 15.

Attribute	Description	Type
Service Site Installation Place	A list of Installation Place Representations describing where this Service Site is located.	One or more of: • Installation Place Fielded Address Representation • Installation Place Formatted Address Representation • Installation Place Label Representation • Installation Place Geographic Point Representation

Table 15 – Service Site Buyer Request Attributes Use Case 4a

The following are the requirements on the Buyer when making the request for Use Case 4a (Retrieve Service Site List Using Unknown Installation Place ID Method). The requirements defining when to specify the Buyer ID and Seller ID attributes in Table 13 are described in section 8.8..

[O7]   The Buyer **MAY** use any of the following attributes specified in Table 13, for a Retrieve Service Site List using Unknown Method request:

• Service Site Name

• Service Site Administrative Authority Name

- Service Site Customer Name

- Service Site Restriction Type

- Service Site Network Type

- Service Site Sub Units

[O8] The Buyer **MAY** use a combination of attributes to avoid getting a Too Many Records response code.

[R43] The Buyer **MUST** specify the Service Site Installation Place attribute in Table 15.

8.4.1.2 *Retrieve Service Site List Using Known Installation Place ID Method Buyer Action*

1. The Buyer sends the Retrieve Service Site List Using Installation Place Identifier request to the Seller specifying the Service Site filter criteria shown in Table 13, Table 14, and Table 16.

Attribute	Description	Type
Installation Place Identifier	An Installation Place described by the Seller's Installation Place Identifier	Installation Place Identifier as specified in Table 11

Table 16 – Service Site Buyer Request Attributes Use Case 4b

The following are the requirements on the Buyer when making the request for the Operation associated with Use Case 4b (Retrieve Service Site List Using Known Installation Place ID). The requirements around specifying the Buyer ID and Seller ID attributes in Table 15 are described in section 8.8..

[R44] The Buyer's Retrieve Service Site List Using Known Installation Place ID Method request **MUST** contain the attribute Installation Place Identifier as defined in Table 16.

[O9] The Buyer **MAY** specify any of the attributes in Table 13 as criteria for this request.

- Service Site Name

- Service Site Administrative Authority Name

- Service Site Customer Name

- Service Site Restriction Type

- Service Site Network Type

- Service Site Sub Units

[O10] The Buyer **MAY** use a combination of attributes to avoid getting a Too Many Records response code.

8.4.2 Retrieve Service Site List Seller Actions

This section provides the common attributes for a Retrieve Service Site List Seller's response.

Attribute	Description	Type
Seller Response Code	A response identifier, indicating if the Seller was able to successfully fulfill the request. The detailed response options are included in the Developers Guides.	String
Service Site List	A list of Service Sites known to the Seller and corresponding to the selection criteria defined by the Buyer.	List of Service Sites

Table 17 – Service Site Seller Response Attributes Use Case 4

Attribute	Description	Type
Service Site Identifier	A unique within the Seller identifier for the Service Site	String
Installation Place Identifier	An Installation Place described by the Seller's Installation Place Identifier	Installation Place Identifier as specified in Table 11
Installation Place Representation	A list of Installation Place Representations describing where this Service Site is located.	One or more of: • Installation Place Fielded Address Representation • Installation Place Formatted Address Representation • Installation Place Label Representation • Installation Place Geographic Point Representation
Service Site Name	The name of the Service Site	String
Service Site Administrative Authority Name	The name of the company that is the administrative authority (e.g., controls access) for this Service Site. (For example, the building owner)	String
Service Site Customer Name	The name of the company that is present within this Service Site. (For example, the company leasing space in a multi-tenant building).	String

Attribute	Description	Type
Service Site Restriction Type	This defines whether a Service Site is public or private. "Public" means that the existence of this Service Site is public information. A meet-me-room in a hosted data center facility (where all interconnects between parties take place) is an example of a public Service Site. A shared facility in the basement of a multi-tenant business building where all interconnects between parties take place is another example of a public Service Site. "Private" means that the existence of this Service Site is on a need-to-know basis. A wiring closet set up inside a customer facility just to connect two parties is an example of a private Service Site.	String that is one of: • PUBLIC • PRIVATE
Service Site Network Type	This defines whether the Service Site is on-net or off-net, as specified by the Seller.	One of: • OFF-NET • ON-NET
Service Site Sub-Unit	A list of Sub Units. This is a list to allow complex sub-unit information such as SUITE 42 ROOM A	See Table 19

Table 18 – Service Site Attributes Per Service Site Response

Attribute	Description	Type
Sub Unit Type	The type of the sub unit (e.g., BERTH, FLAT, PIER, SUITE, SHOP, TOWER, UNIT, WHARF, ROOM, LEVEL).	String
Sub Unit Name	The distinctive value for the Sub Unit (e.g., 42 or A)	String

Table 19 – Service Site Seller Response Sub-Unit Attributes

Note : The Seller returns the Installation Place Représentations for Use Case 4a and the Installation Place ID for Use Case 4b.

8.4.2.1 Retrieve Service Site List Using Unknow Installation Place Method Seller Actions

2. The Seller receives the request and attempts to match the Buyer's filter criteria with Service Site information known to the Seller. The determination of what is considered a match for a free text field (Service Site Name, Service Site Administrative Authority Name, Service Site Customer Name) is at the Seller's discretion.

[R45]   A Service Site included in the Seller's response **MUST** be located at an Installation Place having an exact match to the Service Site Installation Place.

If an exact match is not identified, the Seller returns an empty list.

[R46]   If the Buyer provided Service Site Installation Place Representations do not represent the same Installation Place the Seller **MUST** return an empty list.

3. The Seller returns zero or more Service Sites matching the filter criteria.

[R47]   The Seller **MUST** have a match to the criteria provided by the Buyer to return an entry in the response.

Note: any attributes that are not specified by the Buyer are not included in the decision making process by the Seller.

[R48] If Successful, the Seller's response **MUST** contain all attributes from Table 18 for each Service Site matching the filter criteria.

[R49] If the Seller Response Code does not indicate success, the Seller **MUST** only reply with the Seller Response Code and no attributes.

[R50] Each Service Site **MUST** be assigned a Service Site Identifier which is unique within the Seller's network.

8.4.2.2 *Retrieve Service Site List Using Known Installation Place ID Method Seller Actions*

2. The Seller returns zero or more Service Sites matching the filter criteria.

Note: A single Installation Place Identifier may have zero or more Service Sites associated with it.

[R51] The Seller **MUST** have a match to the Buyer provided Installation Place Identifier to return an entry in the response.

[R52] Each Service Site **MUST** be assigned a Service Site Identifier which is unique within the Seller's network.

8.4.3 Retrieve Service Site List Using Installation Place 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. If the Seller cannot find a Service Site match to the given Installation Place, a positive response with an empty Service Site list is returned to the Buyer.
3. If the Seller finds too many records that meet the filter criteria, they return either an empty list or an agreed upon number of records.

8.5 Retrieve Service Site by Service Site Identifier Use Case

The Buyer requests the full detail associated with a single Service Site based on a known Service Site Identifier. The Buyer knows the Service Site Identifier for the Service Site they wish to retrieve details for (typically from the results of a previously executed Service Site operation).

Step 1 is in section 8.5.1. Step 2 is in section 8.5.2.

8.5.1 Retrieve Service Site by Service Site Identifier Buyer Action

1. The Buyer sends the Retrieve Service Site by Service Site Identifier request to the Seller specifying the Service Site Identifier.

[R53] The Buyer's Retrieve Service Site by Service Site Identifier request **MUST** include only the Service Site Identifier.

8.5.2   Retrieve Service Site by Service Site Identifier Seller Action

2. The Seller receives the Retrieve Service Site by Service Site Identifier request and returns all Service Site information, as shown in Table 20, known to the Seller for this Service Site.

Attribute	Description	Type
Service Site Identifier	The Identifier of the Service Site	String
Installation Place Identifier	The Installation Place Identifier of this Service Site	Installation Place Identifier defined in section 8.1
Installation Place Representation	A list of Installation Place Representations describing where this Service Site is located.	One or more of: • Installation Place Fielded Address Representation • Installation Place Formatted Address Representation • Installation Place Label Representation • Installation Place Geographic Point Representation
Service Site Sub-Unit	A list of Sub Units which describes the Service Site detailed position within the Installation Place. This is a list to allow complex sub-unit information such as SUITE 42 ROOM A	See Table 21
Service Site Name	The Service Site Name	String
Service Site Administrative Authority Name	The name of the company that is the administrative authority (e.g., controls access) for this Service Site. (For example, the building owner)	String
Service Site Customer Name	The name of the company that is the administrative authority for the space within this Service Site. (For example, the company leasing space in a multi-tenant building).	String

Attribute	Description	Type
Service Site Restriction Type	This defines whether a Service Site is public or private. "Public" means that the existence of this Service Site is public information. A meet-me-room in a hosted data center facility (where all interconnects between parties take place) is an example of a public Service Site. A shared facility in the basement of a multi-tenant business building where all interconnects between parties take place is another example of a public Service Site. "Private" means that the existence of this Service Site is on a need-to-know basis. A wiring closet set up inside a customer facility just to connect two parties is an example of a private Service Site.	String that is one of: • PUBLIC • PRIVATE
Service Site Network Type	Indicates whether the Seller is owner of the network to which the Service Site is connected or whether that network is owned by a 3rd party.	One of: o OFF-NET o ON-NET

Table 20 – Service Site

Note: It is mandatory that both Buyer and Seller support the Retrieve Installation Place by Installation Place Identifier Use Case which means that the Buyer can obtain additional information on the Installation Place Identifier using that capability.

Attribute	Description	Type
Sub Unit Type	The type of the sub unit (e.g., BERTH, FLAT, PIER, SUITE, SHOP, TOWER, UNIT, WHARF, ROOM, LEVEL).	String
Sub Unit Name	The distinctive value for the Sub Unit (e.g., 42 or A)	String

Table 21 - Place Sub Unit Attributes

[R54]   The Seller **MUST** return all attributes from Table 20 in their response.

[R55]   The Buyer and Seller **MUST** agree on whether the Installation Place Representations or Installation Place Identifier are returned.

8.5.3 Retrieve Service Site by 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 returns an error if a Service Site with the specified Service Site Identifier is not found in the Seller's records.

8.6 Register for Notifications Use Case

When Installation Place validation responses are deferred, the Seller supports notifications on the state of the validation request. To receive these notifications, the Buyer needs to register for them. The Register for Notifications use case is defined in this section. Step 1 is in section 8.6.1 and Step 2 is in section 8.6.2.

8.6.1 Buyer Input for Register for Notifications

1. The Buyer sends the Register for Notifications request to the Seller specifying the criteria of where to send such notifications as shown in Table 22.

Attribute	Description	Type
Buyer ID	The unique identifier of the organization that is acting as the customer in this transaction.	String
Seller ID	The unique identifier of the organization that is acting as the supplier in this transaction.	String
Return Address Information	The detailed information on the mechanism and address specifying where the Seller is to send any Notifications. There can be multiple destinations for one Buyer.	String
List of Notification Types	The types of notifications that the Buyer wishes to receive. Each Item in the list is either STATE_CHANGE (send notification when there is a change to the Validate Address Request State attribute)	One of: • STATE_CHANGE
Action	Specification to Start Notifications or Stop Notifications	String that is one of: • START • STOP

Table 22 – Register for Notification Buyer Attributes

The following are the requirements on the Buyer when making the Register for Notification request. The requirements around specifying the Buyer ID and Seller ID attributes are described in section 8.8.

> [R56] When making a Register for Notification request, the Buyer **MUST** specify the Return Address Information and Action attributes shown in Table 22.

8.6.2 Seller Response to Register for Installation Place Validation Request Notification

2. The Seller receives this request, records the destination for such notifications for this Buyer, and returns an acknowledgement to the Buyer.

Table 23 defines the attributes that the Seller uses to respond to the Installation Place Validation Request Notification Request.

Attribute	Description	Type
Seller Response Code	A response identifier, indicating if the Seller was able to successfully fulfill the request. The detailed response options are for further study but include Success, Not supported and Invalid Return Address Information.	String

Table 23 – Service Site Seller Response Attributes for Use Case 6

[R57] When responding to a Register for Installation Place Validation Request notification request, the Seller **MUST** specify the Seller Response Code attribute shown in Table 23.

8.6.3   Register for Notifications 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 they only use the Immediate Response method when responding to Validate Installation Place requests.

8.7   Send Notification Use Case

When a Seller uses the Deferred Response method, they need to be able to provide asynchronous notifications to the Buyer when the Validate Installation Place request itself changes state. These notifications are sent only if the Buyer has registered for these notifications and the Seller has responded to the Buyer's Validate Installation Place request with a Deferred Response. Any time the Validate Installation Place request changes state (see section 9), the Seller sends a notification to the Buyer with the attributes defined in Table 24.

The Seller sends notifications for Validate Installation Place request state change. Notifications are sent only if the particular Buyer has subscribed to notifications from this Seller.

Note that there may be multiple parties within the Buyer who have subscribed to receive these notifications.

Attribute	Description	Type
Validate Installation Place Identifier	The identifier for the Installation Place Validation request (unique within this Seller) that has changed state.	String
Notification Type	The type of State change that occurred. CHANGE happens any time a Validate Installation Place changes state.	String that is one of • STATE_CHANGE
State	The State of the Installation Place Validation request	•ACKNOWLEDGED •IN_PROGRESS •READY •REJECTED

Table 24 – Notification of Installation Place Validation State Change Attributes

[R58]   A Seller **MUST** send Notifications to Buyers for Notification Types that they have registered for.

[R59]   A Seller **MUST NOT** send Notifications to Buyers for Notification Types for which the Buyer has not registered.

[R60]   A Seller **MUST** only send Validate Installation Place Request State Change Validate Installation Place requests where the Seller has responded to the Buyer's Validate Installation Place request with a Deferred Response.

[R61]   The Seller **MUST** send a notification to all of the targets specified by the Buyer every time there is a change in state.

The Buyer becomes aware of the change of state of the Validate Installation Place request. Typically, this will cause the Buyer to issue Retrieve Validate Installation Place to retrieve the current state and other details.

8.8   Specifying the Buyer ID and the Seller ID

For requests of all types, there is a business entity that is initiating an Operation (called a Requesting Entity) and a business entity that is responding to this request (called the Responding Entity). In the simplest case, the Requesting Entity is the Buyer, and the Responding Entity is the Seller. However, in some cases, the Requesting Entity may represent more than one Buyer and similarly, the Responding Entity may represent more than one Seller.
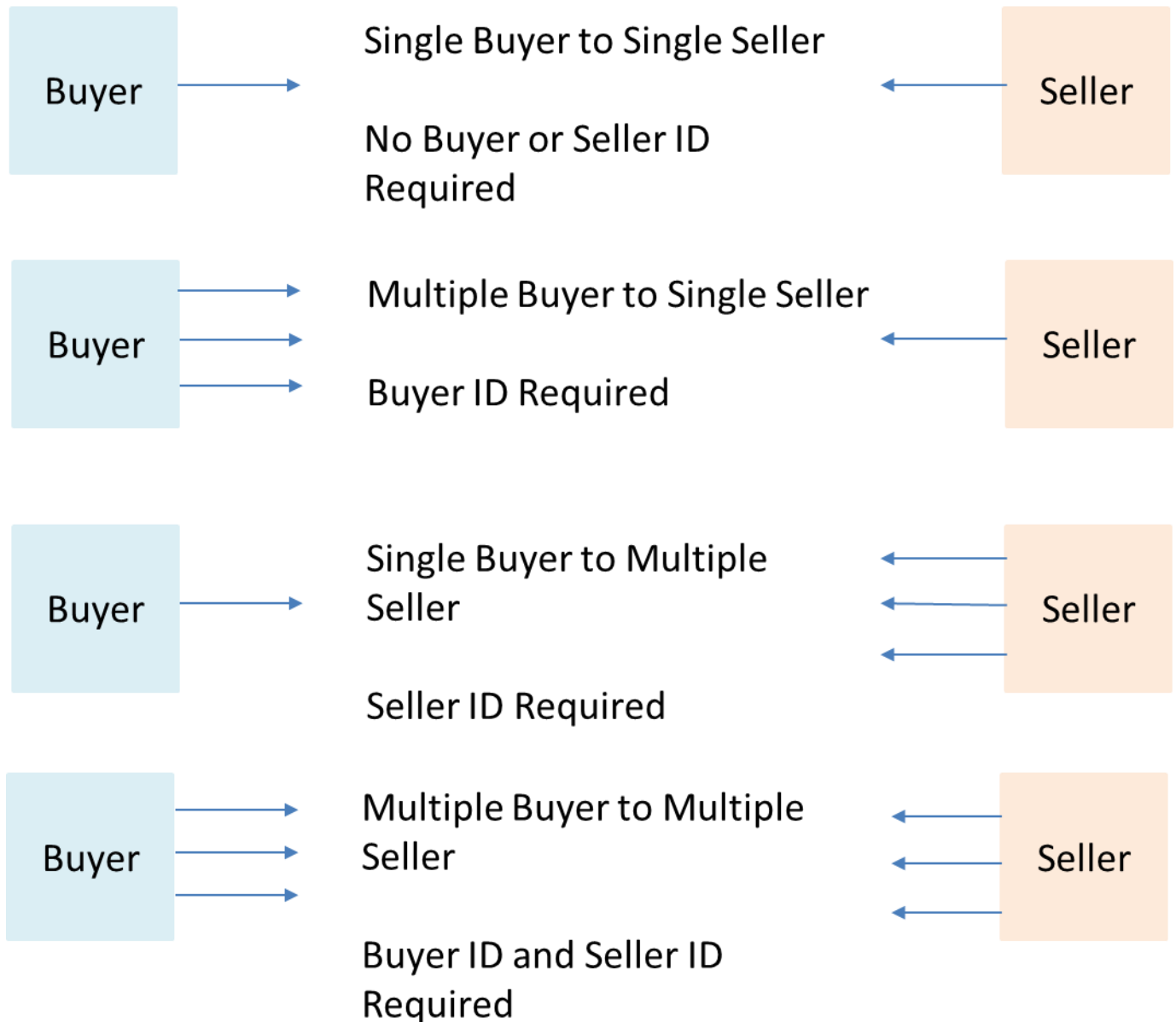
Figure 9 – Buyer ID and Seller ID Examples

As shown in Figure 9, if a Requesting Entity representing a single Buyer is doing business with a Responding Entity representing a single Seller, Buyer and Seller IDs are not required to be passed between the two entities. If a Requesting Entity representing more than one Buyer is doing business with a Responding Entity representing a single Seller, the Buyer ID is required to be passed between the two entities. If a Requesting Entity representing a single Buyer is doing business with a Responding entity representing multiple Sellers, the Seller ID is required to be passed between the two entities. If a Requesting Entity representing multiple Buyers is doing business with a Responding Entity representing multiple Sellers, both the Buyer ID and the Seller ID are required to be passed between the entities.

While it is outside the scope of this specification, it is assumed that the Requesting Entity and the Responding Entity are aware of each other and can authenticate requests initiated by the other party. It is further assumed that the Requesting Entity knows a) the list of Buyers the Requesting Entity represents when interacting with this Responding Entity; and b) the list of Sellers that this Responding Entity represents to this Requesting Entity. It is also assumed that the Responding Entity knows a) the list of Sellers that this Responding Entity represents to this Requesting Entity and b) the list of Buyers the Requesting Entity represents when interacting with this Responding Entity.

[R62]   If the Requesting Entity has the authority to represent more than one Buyer with the Responding Entity, the request attributes **MUST** specify the Buyer being represented in this request using the Buyer ID attribute.

[R63]   If the Responding Entity represents more than one Seller that has a commercial relationship with the Buyer, the Requesting Entity **MUST** specify the Seller with whom their request is associated by using the Seller ID attribute.

9   Lifecycle Flow

The Lifecycle Flow for the Validate Installation Place Request is shown in this section.
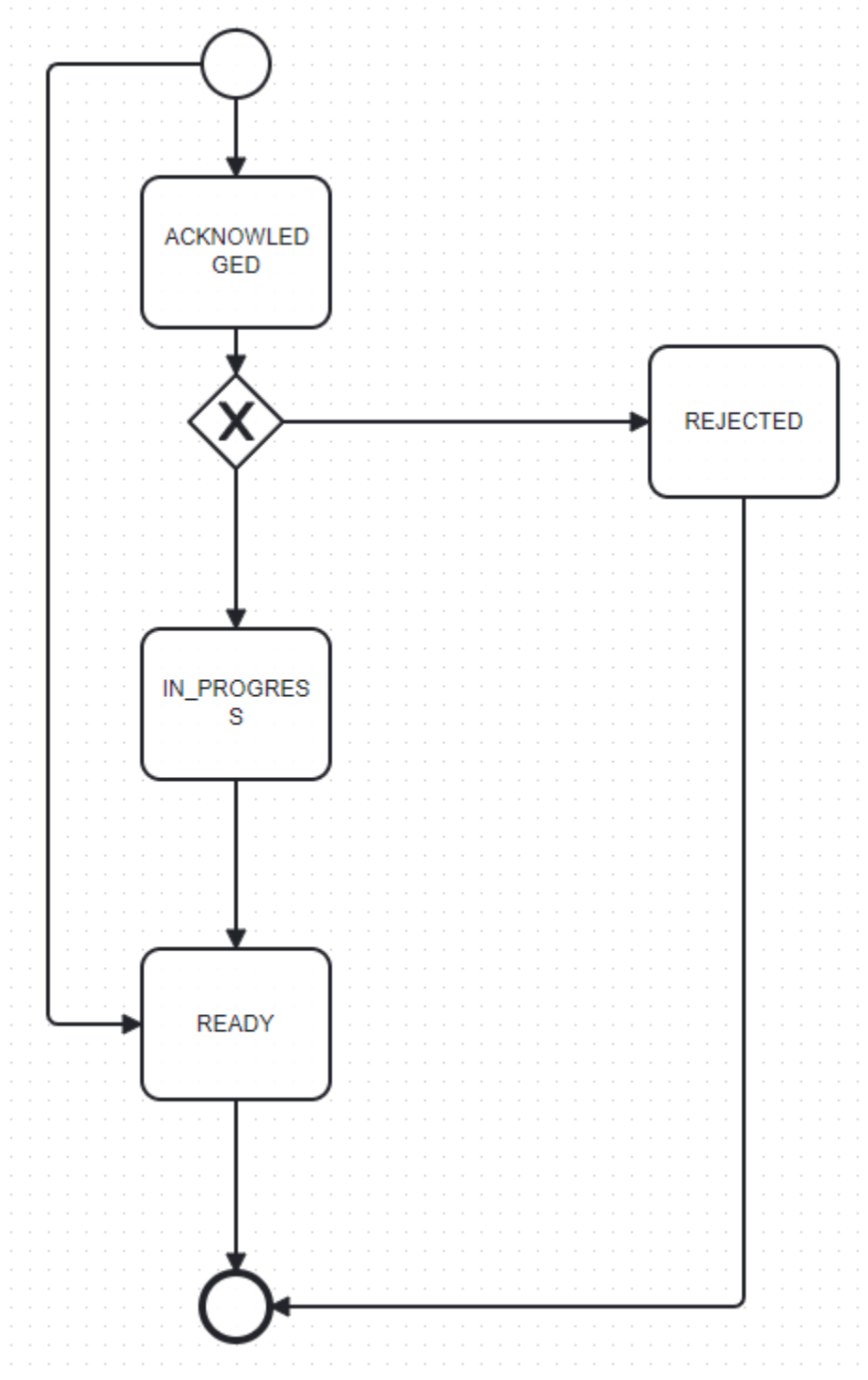

Figure 10 – Lifecycle of Validate Installation Place Request

Note: an alternative can be selected by the Buyer, or the Buyer may do additional queries.

State	Description
ACKNOWLEDGED	A Validate Installation Place Request has been received by the Seller and has passed basic validation. A Validate Installation Place Identifier is assigned in the ACKNOWLEDGED state and moves to the IN_PROGRESS state when it passes business validation. If it does not pass business validation, it moves to the REJECTED state.
IN_PROGRESS	The IN_PROGRESS state is when the Validate Installation Place Request is currently being worked on by the Seller.
READY	The READY state is when the processing of the Validate Installation Place Request is completed by the Seller and is ready to be retrieved or the Immediate Response has been returned.
REJECTED	A Validate Installation Place Request was submitted, and it has failed at least one of the validation checks the Seller performs after it reached the ACKNOWLEDGED state.

Table 25 –Validate Installation Place Request States

10 References

[1] IETF RFC 2119, *Key words for use in RFCs to Indicate Requirement Levels*, by S. Bradner, March 1997

[2] IETF RFC 8174, *Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words*, by B. Leiba, May 2017, Copyright (c) 2017 IETF Trust and the persons identified as the document authors. All rights reserved.

[3] ISO 639:2023, *Code for individual languages and language groups,* November 2023

[4] ISO 3166, *Codes for the representation of names of countries and their subdivisions — Part 1: Country code*, 2020

[5] MEF 50.1, Mplify Alliance, *MEF Services Lifecycle Process Flows*, August 2017.

[6] MEF 55.1, Mplify Alliance, *LSO Reference Architecture*, January 2021

[7] MEF 55.1.1, Mplify Alliance*, Amendment to MEF 55.1: Reference Architecture and Framework – Terminology*, October 2023

[8] MEF 128.1, Mplify Alliance, *LSO API Security Profile*, April 2024

[9] TMF673, *Geographic Address Management API User Guide v4.0.0*, July 2020

[10] TMF674, *Geographic Site API REST Specification R17.5.0*, May 2020

Appendix A   Acknowledgements (Informative)

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

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