Liberty ID-SIS Personal Profile Service Specification

Version: 1.1

Editors:
Sampo Kellomäki, Symlabs, Inc.
Rob Lockhart, IEEE-ISTO

Contributors:
Rajeev Angal, Sun Microsystems, Inc.
Carolina Canales-Valenzuela, Ericsson
David del Ser, Vodafone Group Plc
Andy Feng, America Online, Inc.
Ariel Gordon, France Télécom
Vincent Guesdon, France Télécom
Jukka Kainulainen, Nokia Corporation
Lena Kannappan, France Télécom
Bronislav Kavsan, RSA Security Inc.
John Linn, RSA Security Inc.
Jonathan Sergent, Sun Microsystems, Inc.
John Kemp, IEEE-ISTO
Thomas Wason, IEEE-ISTO

Abstract:

The Liberty ID-SIS Personal Profile (ID-SIS-PP) defines a web service. It offers profile information regarding a Principal. ID-SIS-PP is an instance of a data-oriented identity web service and is characterized by the ability to query and update attribute data and incorporates mechanisms from other specifications for access control and conveying data validation information and usage directives. Readers of this document should be familiar with SOAP, SAML, and XML.

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Liberty Alliance Project
Licensing Administrator
c/o IEEE-ISTO
445 Hoes Lane
Piscataway, NJ 08855-1331, USA
info@projectliberty.org

Contents

1. Introduction

The ID-SIS Personal Profile (ID-SIS-PP) is a Liberty identity service that supports identity information regarding Principals themselves. This document normatively describes the ID-SIS-PP service. For rationale and guidance, please see the companion document Liberty ID-SIS Personal Profile Service Implementation Guidelines [LibertyIDPPGuide]. This document is prescriptive, having precedence over any guidelines or XML schema descriptions. Any published errata is hereby incorporated to this document by reference and as such is normative.

1.1. Notational Conventions

The key words "MUST," "MUST NOT," "REQUIRED," "SHALL," "SHALL NOT," "SHOULD," "SHOULD NOT," "RECOMMENDED," "MAY," and "OPTIONAL" in this specification are to be interpreted as described in the IETF [RFC2119]. These keywords are thus capitalized when used to unambiguously specify requirements over protocol and application features and behavior that affect the interoperability and security of implementations. When these words are not capitalized, they are meant in their natural-language sense.

1.2. ID-SIS-PP Based on DST and WSF

The ID-SIS-PP service is an instance of the Data Services Template ([LibertyDST]) specification. All stipulations of [LibertyDST] are hereby incorporated unless expressly waived or modified in this document.

The Liberty architectural framework specifications ensure that a service properly represents the Principal or that the Principal has consented to sharing the data. A service that consults an ID-SIS-PP service MUST adhere to the interface defined in this specification to request information about a Principal. Further, a requesting entity MUST ensure security and privacy through the adherence to the Liberty [LibertyProtSchema] and [LibertyBindProf] specifications. A requester MAY, and frequently will, use the [LibertySOAPBinding] specification for information interchange with an ID-SIS-PP Service. An ID-SIS-PP Service MUST adhere to the [LibertyProtSchema] and [LibertyBindProf] specifications in its communications with the requestor and other Liberty-enabled entities. Additionally, an ID-SIS-PP Service MUST use the [LibertyInteract] and [LibertyDisco] specifications for identity-related interactions with other Liberty-enabled services. Overviews of the application of these specifications are available in [LibertyIDFFOverview] and [LibertyIDWSFOverview].

Table 1. DST Support Level

Parameter	Value
ServiceType	`urn:liberty:id-sis-pp:2005-05`
Discovery Options	See Section 2.1
Data Schema	See Section 5
SelectType Element	See Section 2.2
Query Language	XPATH subset (see Section 2.2 and Section 2.3), MAY support full XPATH
Multiple Query	MAY
Multiple QueryItem	MUST
Support Modification	MAY
Multiple Modify	MAY
Multiple Modification	MAY
Extension in Query	MUST NOT
Extension in Modify	MUST NOT
Multiple elem uniqueness	Use id XML attribute for AddressCard and MsgContact elements. Use lang and script XML attributes for localizable elements.
Support changedSince and notChangedSince	MAY
Support includeCommonAttributes	MUST
Data Extension Supported	MAY, using Extension element

1.3. Conformance

A **deployment** is an instance of an **implementation**. This specification defines an interface to an ID-SIS-PP service to which an *implementation* and a subsequent **deployment** MUST conform. For an AP implementation to conform to this ID-SIS-PP specification, it MUST adhere to all mandatory aspects of the specification.

A conforming ID-SIS-PP implementation MAY not support some optional ID-SIS-PP containers, elements, or features; this may be referred to as a "minimally conforming implementation." Such an implementation may be labeled as an "ID-SIS-PP implementation" provided that publicly-available documentation about the implementation discloses the parts of the schema and the features not supported. All other features and schema components may be assumed to be supported. A service that does not support the complete schema SHOULD only register the discovery option keywords that it supports.

An implementation that supports all of the schema and features specified in this document MAY be labeled as a "full ID-SIS-PP implementation." An implementation that is deficient in any feature or part of the schema MUST NOT be labeled as a "full ID-SIS-PP implementation." A "full ID-SIS-PP implementation" deployment may administratively restrict the schema and the features.

A deployment that supports the complete schema and all features specified in this document MAY be labeled as a "full ID-SIS-PP deployment" or a "full ID-SIS-PP service." A full ID-SIS-PP deployment or service MUST support all of the schema and features for all Principals wishing to use them, with the exception of those schema components and features excluded to a Principal as the result of a policy decision.

A deployment that only supports some subset of ID-SIS-PP may be labeled as an "ID-SIS-PP deployment" or "ID-SIS-PP service" provided that the deployment publicly discloses the subset that it supports.

1.4. Namespaces

The namespace for the ID-SIS-PP service is designated by the URI "`urn:liberty:id-sis-pp:2005-05`."

This namespace is abbreviated as `"pp:"` in this document. If the namespace has been omitted at any place in this document, `"pp:"` is to be considered to be the default namespace. The namespace URI is also used as the `ServiceType` designator.

For enumerator URNs, the version number is not usually used. As enumerator URNs are separate from XML, this does not have an adverse effect.

Table 2. Referenced XML Namespaces

Prefix	URI	Description
`ds:`	`http://www.w3.org/2000/09/xmldsig`	XML DSIG [RFC3275] (for `SignKey` type)
`xml:`	`http://www.w3.org/TR/REC-xml`	XML Definition [XML] (for `xml:lang`)
`xs:`	`http://www.w3.org/2002/XMLSchema`	XML Schema Definition [Schema1]

1.5. Extension and Namespace Reservation

There are six methods for accomplishing extensions:

1. by adding more enumerators to existing attributes,
2. by adding new attributes to existing containers.
3. by creating new containers,

4. by creating new discovery option keywords,

5. by extending the supported subset of XPATH expressions, and/or

6. by schema extension.

ID-SIS-PP elements that have enumerated values use URIs as values ("values" may be referred to as "enumerators"). Each element's description details the authority for adopting new official enumeration values. See [LibertyReg] for more information.

All containers and elements defined in the ID-SIS-PP schema have an `Extension` element which permits arbitrary schema extension. An implementation MAY support schema extension, but is not required to do so. If an implementation does support schema extension, then it MAY register the corresponding discovery option keyword `urn:liberty:dst:can:extend`.

2. Discovery and Queries

2.1. Discovery Option Keywords

ID-SIS-PP defines a number of discovery keywords to be included as `Option` elements in discovery registrations and queries, see [LibertyDisco]. Some keywords express the availability of data; other keywords express the ability to update data. An attribute provider MAY advertise the ability to update data even if it currently does not have a given data item populated for the Principal.

2.1.1. Data Availability Discovery Option Keywords

The keywords that express data availability extract selected components from the profile as if an XPATH expression were applied. An implementation is not required to use XPATH if the results are equivalent. Presence of the keyword implies that the corresponding data can be obtained, if queried. However, the data may not be available due to permissions or race conditions between data removal and updates to the discovery service.

Table 3. Data Availability Discovery Option Keywords

Keyword	Equivalent XPATHs	Meaning
urn:liberty:id-sis-pp	/pp:PP	Has some ID-SIS-PP data
urn:liberty:id-sis-pp:domicile	/pp:PP/pp:AddressCard [pp:AddrType= "urn:liberty:id-sis-pp:addrType: domicile"]	Has some address card data corresponding to the domicile
urn:liberty:id-sis-pp:home	/pp:PP/pp:AddressCard [pp:AddrType= "urn:liberty:id-sis-pp:addrType: home"]	Has some address card data corresponding to the home address
urn:liberty:id-sis-pp:work	/pp:PP/pp:AddressCard [pp:AddrType= "urn:liberty:id-sis-pp:addrType: work"], /pp:PP/pp:MsgContact [pp:MsgType= "urn:liberty:id-sis-pp:msgType: work"]	Has some address card or messaging contact data corresponding to the office address
urn:liberty:id-sis-pp:personal	/pp:PP/pp:MsgContact [pp:MsgType= "urn:liberty:id-sis-pp:msgType: personal"]	Has some messaging contact data corresponding to personal contact
urn:liberty:id-sis-pp:mobile	/pp:PP/pp:MsgContact [pp:MsgType= "urn:liberty:id-sis-pp:msgType: mobile"]	Has some messaging contact data for mobile contact
urn:liberty:id-sis-pp:vacation	/pp:PP/pp:MsgContact [pp:MsgType= "urn:liberty:id-sis-pp:msgType: vacation"], /pp:PP/pp:AddressCard [pp:AddrType= "urn:liberty:id-sis-pp:addrType: vacation"]	Has some messaging contact or address data for vacation contact
urn:liberty:id-sis-pp:address	/pp:PP/pp:AddressCard	Has some address card data
urn:liberty:id-sis-pp:cn	/pp:PP/pp:CommonName	Has some common name data
urn:liberty:id-sis-pp: informalName	/pp:PP/pp:InformalName, /pp:PP/pp:LInformalName	Has informal name
urn:liberty:id-sis-pp:legal	/pp:PP/pp:LegalIdentity	Has some legal identity data
urn:liberty:id-sis-pp:employment	/pp:PP/pp:EmploymentIdentity	Has some employment identity data
urn:liberty:id-sis-pp:facade	/pp:PP/pp:Facade	Has some facade data
urn:liberty:id-sis-pp:keys	/pp:PP/pp:SignKey, /pp:PP/pp:EncryptKey	Has either or both keys
urn:liberty:id-sis-pp: demographics	/pp:PP/pp:Demographics	Has some demographics data
urn:liberty:id-sis-pp:emergency	/pp:PP/pp:EmergencyContact, /pp:PP/pp:AddressCard [pp:AddrType= "urn:liberty:id-sis-pp:addrType: emergency"]	Has some emergency contact data

An attribute provider MUST NOT register a data availability discovery option keyword if it is *probable* that the data will not be available. For example, if an AP does not yet have the data, it MUST NOT register the keyword with an intent of gathering the data by the time it is requested or with the intent of gathering the data when requested via the Interaction Service protocol [[LibertyInteract]]. An attribute provider SHOULD NOT register a keyword if the Principal has set permissions on the data such that it can not be released under any plausible circumstances.

2.1.2. Data Update Discovery Option Keywords

153 The data update discovery option keywords express the willingness and ability of the AP to store some data
154 corresponding to the given XPATH expression. These keywords do not imply that the AP currently has any data
155 regarding the containers referenced by the keyword.

156 **Table 4. Data Update Discovery Option Keywords**

Keyword	Equivalent XPATHs	Meaning
urn:liberty:id-sis-pp:can	/pp:PP	Can store some ID-SIS-PP data
urn:liberty:id-sis-pp:can:domicile	/pp:PP/pp:AddressCard [pp:AddrType="urn:liberty:id-sis-pp:addrType:domicile"]	Can store some address card data corresponding to the domicile
urn:liberty:id-sis-pp:can:home	/pp:PP/pp:AddressCard [pp:AddrType="urn:liberty:id-sis-pp:addrType:home"]	Can store some address card data corresponding to the home address
urn:liberty:id-sis-pp:can:work	/pp:PP/pp:AddressCard [pp:AddrType="urn:liberty:id-sis-pp:addrType:work"], /pp:PP/pp:MsgContact [pp:MsgType="urn:liberty:id-sis-pp:msgType:work"]	Can store some address card or messaging contact data corresponding to the office address
urn:liberty:id-sis-pp:can:personal	/pp:PP/pp:MsgContact [pp:MsgType="urn:liberty:id-sis-pp:msgType:personal"]	Can store some messaging contact data corresponding to personal contact
urn:liberty:id-sis-pp:can:mobile	/pp:PP/pp:MsgContact [pp:MsgType="urn:liberty:id-sis-pp:msgType:mobile"]	Can store some messaging contact data for mobile contact
urn:liberty:id-sis-pp:can:vacation	/pp:PP/pp:MsgContact [pp:MsgType="urn:liberty:id-sis-pp:msgType:vacation"], /pp:PP/pp:AddressCard [pp:AddrType="urn:liberty:id-sis-pp:msgType:vacation"]	Can store some messaging contact or address data for vacation contact
urn:liberty:id-sis-pp:can:address	/pp:PP/pp:AddressCard	Can store some address card data
urn:liberty:id-sis-pp:can:cn	/pp:PP/pp:CommonName	Can store some common name data
urn:liberty:id-sis-pp:can:informalName	/pp:PP/pp:InformalName, /pp:PP/pp:LInformalName	Can store informal name
urn:liberty:id-sis-pp:can:legal	/pp:PP/pp:LegalIdentity	Can store some legal identity data
urn:liberty:id-sis-pp:can:employment	/pp:PP/pp:EmploymentIdentity	Can store some employment identity data
urn:liberty:id-sis-pp:can:facade	/pp:PP/pp:Facade	Can store some facade data
urn:liberty:id-sis-pp:can:keys	/pp:PP/pp:SignKey, /pp:PP/pp:EncryptKey	Can store either or both keys
urn:liberty:id-sis-pp:can:demographics	/pp:PP/pp:Demographics	Can store some demographics data
urn:liberty:id-sis-pp:can:emergency	/pp:PP/pp:pp:EmergencyContact	Can store some emergency data

157 An implementation MUST NOT register a data update discovery option keyword unless some Modify request
158 regarding the data referenced by the keyword can plausibly succeed. For example, if an AP is read only, it MUST

NOT register any data update discovery option keywords.Similarlyy, if the underlying database is incapable of storing the data, then the keyword MUST NOT be advertised.

An implementation that registers a data update discovery option keyword SHOULD be capable of accepting any Modify request (subject to permissions) regarding that category of data, and SHOULD support all elements specified in ID-SIS-PP schema for that category.

An implementation MAY choose to support a read-only service. Such an implementation MUST NOT register any data update discovery option keywords.

2.2. Supported XPATH Expressions for Queries

The [LibertyDST] specifies a `Query` element that potentially contains several `QueryItem` elements, which in turn each contain a `Select` element. [LibertyDST] does not define the contents of the `Select` element, `SelectType`. ID-SIS-PP defines `SelectType` as follows:

```
<xs:simpleType name="SelectType">
   <xs:restriction base="xs:string"/>
</xs:simpleType>
```

The `Select` string holds an XPATH expression. An ID-SIS-PP implementation MAY support full XPATH expressions [XPATH] as a `Select` expression. If it does support full XPATH expressions, it MAY advertise the discovery option keyword `urn:liberty:dst:fullXPath`. Conforming implementations of the ID-SIS-PP specification MUST support at a minimum the following the XPATH expressions as `Select` expressions:

1. slash-separated path to any depth. The path is always anchored at the document root and may not contain wild cards or empty nodes. ID-SIS-PP may be extended; the current complete set of all possible slashed paths is as follows:

```
/pp:PP
/pp:PP/pp:InformalName
/pp:PP/pp:LInformalName
/pp:PP/pp:CommonName
/pp:PP/pp:CommonName/pp:CN
/pp:PP/pp:CommonName/pp:LCN
/pp:PP/pp:CommonName/pp:AltCN
/pp:PP/pp:CommonName/pp:LAltCN
/pp:PP/pp:CommonName/pp:AnalyzedName
/pp:PP/pp:CommonName/pp:AnalyzedName/pp:PersonalTitle
/pp:PP/pp:CommonName/pp:AnalyzedName/pp:LPersonalTitle
/pp:PP/pp:CommonName/pp:AnalyzedName/pp:FN
/pp:PP/pp:CommonName/pp:AnalyzedName/pp:LFN
/pp:PP/pp:CommonName/pp:AnalyzedName/pp:SN
/pp:PP/pp:CommonName/pp:AnalyzedName/pp:LSN
/pp:PP/pp:CommonName/pp:AnalyzedName/pp:MN
/pp:PP/pp:CommonName/pp:AnalyzedName/pp:LMN
/pp:PP/pp:LegalIdentity
/pp:PP/pp:LegalIdentity/pp:LegalName
/pp:PP/pp:LegalIdentity/pp:LLegalName
/pp:PP/pp:LegalIdentity/pp:AnalyzedName
/pp:PP/pp:LegalIdentity/pp:AnalyzedName/pp:PersonalTitle
/pp:PP/pp:LegalIdentity/pp:AnalyzedName/pp:LPersonalTitle
/pp:PP/pp:LegalIdentity/pp:AnalyzedName/pp:FN
/pp:PP/pp:LegalIdentity/pp:AnalyzedName/pp:LFN
/pp:PP/pp:LegalIdentity/pp:AnalyzedName/pp:SN
/pp:PP/pp:LegalIdentity/pp:AnalyzedName/pp:LSN
/pp:PP/pp:LegalIdentity/pp:AnalyzedName/pp:MN
/pp:PP/pp:LegalIdentity/pp:AnalyzedName/pp:LMN
/pp:PP/pp:LegalIdentity/pp:VAT
/pp:PP/pp:LegalIdentity/pp:VAT/pp:IDValue
/pp:PP/pp:LegalIdentity/pp:VAT/pp:IDType
/pp:PP/pp:LegalIdentity/pp:AltID
```

```
/pp:PP/pp:LegalIdentity/pp:AltID/pp:IDValue
/pp:PP/pp:LegalIdentity/pp:AltID/pp:IDType
/pp:PP/pp:LegalIdentity/pp:DOB
/pp:PP/pp:LegalIdentity/pp:Gender
/pp:PP/pp:LegalIdentity/pp:MaritalStatus
/pp:PP/pp:EmploymentIdentity
/pp:PP/pp:EmploymentIdentity/pp:JobTitle
/pp:PP/pp:EmploymentIdentity/pp:LJobTitle
/pp:PP/pp:EmploymentIdentity/pp:O
/pp:PP/pp:EmploymentIdentity/pp:LO
/pp:PP/pp:EmploymentIdentity/pp:AltO
/pp:PP/pp:EmploymentIdentity/pp:AltLO
/pp:PP/pp:AddressCard
/pp:PP/pp:AddressCard/pp:AddrType
/pp:PP/pp:AddressCard/pp:Address
/pp:PP/pp:AddressCard/pp:Address/pp:PostalAddress
/pp:PP/pp:AddressCard/pp:Address/pp:LPostalAddress
/pp:PP/pp:AddressCard/pp:Address/pp:PostalCode
/pp:PP/pp:AddressCard/pp:Address/pp:L
/pp:PP/pp:AddressCard/pp:Address/pp:LL
/pp:PP/pp:AddressCard/pp:Address/pp:St
/pp:PP/pp:AddressCard/pp:Address/pp:LSt
/pp:PP/pp:AddressCard/pp:Address/pp:C
/pp:PP/pp:AddressCard/pp:Nick
/pp:PP/pp:AddressCard/pp:LNick
/pp:PP/pp:AddressCard/pp:LComment
/pp:PP/pp:MsgContact
/pp:PP/pp:MsgContact/pp:Nick
/pp:PP/pp:MsgContact/pp:LNick
/pp:PP/pp:MsgContact/pp:LComment
/pp:PP/pp:MsgContact/pp:MsgType
/pp:PP/pp:MsgContact/pp:MsgMethod
/pp:PP/pp:MsgContact/pp:MsgTechnology
/pp:PP/pp:MsgContact/pp:MsgProvider
/pp:PP/pp:MsgContact/pp:MsgAccount
/pp:PP/pp:MsgContact/pp:MsgSubaccount
/pp:PP/pp:Facade
/pp:PP/pp:Facade/pp:MugShot
/pp:PP/pp:Facade/pp:WebSite
/pp:PP/pp:Facade/pp:NamePronounced
/pp:PP/pp:Facade/pp:GreetSound
/pp:PP/pp:Facade/pp:GreetMeSound
/pp:PP/pp:Demographics
/pp:PP/pp:Demographics/pp:DisplayLanguage
/pp:PP/pp:Demographics/pp:Language
/pp:PP/pp:Demographics/pp:Birthday
/pp:PP/pp:Demographics/pp:Age
/pp:PP/pp:Demographics/pp:TimeZone
/pp:PP/pp:SignKey
/pp:PP/pp:EncryptKey
/pp:PP/pp:EmergencyContact
/pp:PP/pp:LEmergencyContact
```

When slash-separated paths are used, only the container selected by the path and its contents will be returned.

2. Selection of `AddressCard` by an exact match on the contents of a leaf element for the following leaf elements:

   a. `pp:AddrType`

   b. `pp:Nick`

   c. `pp:LNick`

   Only one of the tests needs to be supported in any one slashed path. Such bracketed expression may also appear within (i.e., in the middle of) a slashed path.

3. Selection of `MsgContact` by an exact match on the contents of a leaf element for the following leaf elements:

    a. `pp:Nick`

    b. `pp:LNick`

    c. `pp:MsgTechnology`

    d. `pp:MsgMethod`

    e. `pp:MsgType`

   `Nick` and `LNick` need only be testable in isolation. `MsgTechnology`, `MsgMethod`, and `MsgType` can be tested in isolation or simultaneously combined with an AND operator. Other operators do not need to be supported. Such bracketed expression may also appear within a slashed path.

4. Selection by the `id` XML attribute of `AddressCard` or `MsgContact`. This test may appear within a slashed path and need not be combinable with any other test.

5. Selection of `/pp:PP/pp:LegalIdentity/pp:AltID` by an exact match against the `pp:IDType` element's contents

XML namespaces MUST be fully supported in the XPATH expressions by all implementations of ID-SIS-PP, including minimally conforming implementations. The XML namespace mechanism provides flexibility that allows any extension attributes to coexist with standard attributes.

Subject to permissions and usage directives, the query MUST return a result that matches the XPATH expression and is extracted from the ID-SIS Personal Profile XML document according to the rules specified in [XPATH]. The result MAY be empty if no elements match the XPATH expression.

2.3. Supported XPATH Expressions for Modifies

For Modify requests, the following slashed paths MUST be supported in `Select` elements (see [LibertyDST]):

```
/pp:PP
/pp:PP/pp:InformalName
/pp:PP/pp:LInformalName
/pp:PP/pp:CommonName
/pp:PP/pp:LegalIdentity
/pp:PP/pp:EmploymentIdentity
/pp:PP/pp:AddressCard
/pp:PP/pp:MsgContact
/pp:PP/pp:Facade
/pp:PP/pp:Demographics
/pp:PP/pp:SignKey
/pp:PP/pp:EncryptKey
/pp:PP/pp:EmergencyContact
/pp:PP/pp:LEmergencyContact
```

This set of slashed paths defines the minimal granularity of updates that MUST be supported. Updates to the containers listed above SHOULD be atomic when feasible.

An implementation MAY support full XPATH for modifies. In such cases the implementation MAY restrict the set of slashed paths to the list above. If an implementation supports full XPATH for querying, then it MUST also support full XPATH for modifies.

3. Processing Rules and Other Considerations

3.1. Repeated Queries Not Required to Report the Same Data

An ID-SIS-PP instance is NOT REQUIRED to report the same results to two instances of the same query. An ID-SIS-PP instance SHOULD report the same results to the same query made by the same client, unless an update (Modify or out-of-band) has occurred in the interim. An ID-SIS-PP instance MAY use the Interaction Service protocol [LibertyInteract] or out-of-band means to determine which data to return.

An ID-SIS-PP provider is guided by its policies, the permissions the Principal has set, and the interaction with the Principal, in determining the data to be returned in response to a query. Clients should use the data based on the data's semantic meaning as specified here and further qualified by the `acc` (Attribute Collection Context) XML attributes [LibertyDST] that may be present in the query response. A client SHOULD NOT attempt to use ID-SIS-PP as a transparent data store, as there can be multiple updates, permission, and policy reasons that impede the transparency.

3.2. Support of Multiple Modifications Not Required

A minimally compliant implementation is not required to support multiple `Modification` elements. The Modify operation functions as described in [LibertyDST]. The Modify operation has the additional relaxation that a minimally compliant ID-SIS-PP implementation MAY refuse a `Modify` request with multiple `Modification` elements, provided all processing rules specified in [LibertyDST] are followed regarding failure to support multiple `Modification` elements.

Implementations SHOULD support multiple `Modification` elements when feasible. If an implementation supports multiple `Modification` elements it MAY register the discovery option keyword `urn:liberty:dst:multipleModification`.

As specified in [LibertyDST], a minimally compliant ID-SIS-PP implementation MUST support multiple `QueryItem` elements.

Support for Multiple `Modify` and `Query` elements is not required.

4. Qualifying Attributes with XML Attributes

4.1. ID-SIS-PP-Specific XML Attributes

4.1.1. `nameScheme`

Synopsis	Scheme for analyzing a name into components
Data type	anyURI
Example	

Schemes are culture-dependent; therefore, it expected that the list will be expanded. The enumerators are URIs to facilitate expansion without conflict. Currently the following enumerators are defined:

```
urn:liberty:id-sis-pp:nameScheme:firstlast
urn:liberty:id-sis-pp:nameSc heme:firstmiddlelast
```

Additional enumerators can be defined as specified in [LibertyReg].

4.2. Use of `id` XML Attribute

An `id` XML attribute is allowed on any element; it is mandatory for `AddressCard` and `MsgContact` containers, because there can be multiple of each as children of the `PP` container. The `id` XML attribute has uniqueness properties as specified in [LibertyDST], i.e., the id is unique among elements within the conceptual underlying XML document.

A client that adds `AddressCard` and `MsgContact` containers MUST supply an `id` when making a `Modify` request. A client MAY supply an `id` XML attribute for any element as part of the `Modify` request, but a server is not required to store the `id` XML attribute except for `AddressCard` and `MsgContact` containers.

`AddressCard` and `MsgContact` containers that are populated out-of-band MUST provision the `id` XML attribute; this can beaccomplishedd in an implementation-dependent manner. Out-of-band provisioning MAY supply an `id` XML attribute for any element.

Once an `id` XML attribute has been provisioned for `AddressCard` and `MsgContact` containers, whether via `Modify` or by out-of-band update, it MUST remain unaltered and MUST be returned by queries regarding these containers until another `Modify` or out-of-band update occurs. Modifies and out-of-band updates that do not create these containers, but merely modify their contents, SHOULD not alter the `id` XML attribute.

Modifies and out-of-band updates that do not create an element, but merely modify it's contents, SHOULD not alter the `id` XML attribute. With the exceptions of `AddressCard` or `MsgContact` containers, once an `id` XML attribute has been provisioned for an element, whether via `Modify` or by out-of-band update, it MUST remain unaltered if it is returned by queries regarding the element until another `Modify` or out-of-band update occurs.

5. Containers and Attributes of the ID-SIS-PP

5.1. PP

Synopsis	ID-SIS Personal Profile
Cardinality	0-1

XML schema:

```
<xs:element name="PP" type="PPType"/>
<xs:complexType name="PPType">
   <xs:sequence>
      <xs:element ref="InformalName" minOccurs="0"/>
      <xs:element ref="LInformalName" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="CommonName" minOccurs="0"/>
      <xs:element ref="LegalIdentity" minOccurs="0"/>
      <xs:element ref="EmploymentIdentity" minOccurs="0"/>
      <xs:element ref="AddressCard" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="MsgContact" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="Facade" minOccurs="0"/>
      <xs:element ref="Demographics" minOccurs="0"/>
      <xs:element ref="SignKey" minOccurs="0"/>
      <xs:element ref="EncryptKey" minOccurs="0"/>
      <xs:element ref="EmergencyContact" minOccurs="0"/>
      <xs:element ref="LEmergencyContact" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

5.2. InformalName

Synopsis	Screen name of the Principal
Data type	cis
Cardinality	0-1

5.3. LInformalName

Synopsis	Localized screen name of the Principal
Data type	cis
Cardinality	0-n

5.4. CommonName

Synopsis	The name the user prefers to be referred to with in everyday situations
Cardinality	0-1

XML schema:

```
<xs:element name="CommonName" type="CommonNameType"/>
<xs:complexType name="CommonNameType">
   <xs:sequence>
      <xs:element ref="CN" minOccurs="0"/>
      <xs:element ref="LCN" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="AltCN" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="LAltCN" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="AnalyzedName" minOccurs="0"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

5.4.1. CN

Synopsis	Everyday name in the Latin writing system
Data type	cis
Cardinality	0-1

5.4.2. LCN

Synopsis	Everyday name in a local writing system
Data type	cis
Cardinality	0-n

5.4.3. AltCN

Synopsis	Additional everyday names in the Latin writing system
Data type	cis
Cardinality	0-n

5.4.4. LAltCN

Synopsis	An additional everyday name in a local writing system
Data type	cis
Cardinality	0-n

5.4.5. AnalyzedName

Synopsis	Name analyzed (decomposed) into its components
Cardinality	0-1
XML-attributes	nameScheme

XML schema:

```
<xs:element name="AnalyzedName" type="AnalyzedNameType"/>
<xs:complexType name="AnalyzedNameType">
   <xs:sequence>
      <xs:element ref="PersonalTitle" minOccurs="0"/>
      <xs:element ref="LPersonalTitle" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="FN" minOccurs="0"/>
      <xs:element ref="LFN" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="SN" minOccurs="0"/>
      <xs:element ref="LSN" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="MN" minOccurs="0"/>
      <xs:element ref="LMN" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attribute name="nameScheme" type="xs:anyURI" use="optional"/>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

5.4.5.1. PersonalTitle

Synopsis	Personal or honorary title
Data type	cis
Cardinality	0-1

5.4.5.2. LPersonalTitle

Synopsis	Personal title in a local writing system
Data type	cis
Cardinality	0-n

5.4.5.3. FN

Synopsis	First name, Given name
Data type	cis
Cardinality	0-1

5.4.5.4. LFN

Synopsis	First name in a local writing system
Data type	cis
Cardinality	0-n

5.4.5.5. SN

Synopsis	Surname (familyname)
Data type	cis
Cardinality	0-1

5.4.5.6. LSN

Synopsis	Surname in a local writing system
Data type	cis
Cardinality	0-n

5.4.5.7. MN

Synopsis	Middle name oinitialal
Data type	cis
Cardinality	0-1

5.4.5.8. LMN

Synopsis	Middle name or initial in a local writing system
Data type	cis
Cardinality	0-n

5.5. LegalIdentity

Synopsis	Official legal identification of the Principal
Cardinality	0-1

XML schema:

```
   <xs:element name="LegalIdentity" type="LegalIdentityType"/>
   <xs:complexType name="LegalIdentityType">
      <xs:sequence>
         <xs:element ref="LegalName" minOccurs="0"/>
         <xs:element ref="LLegalName" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="AnalyzedName" minOccurs="0"/>
         <xs:element ref="VAT" minOccurs="0"/>
         <xs:element ref="AltID" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="DOB" minOccurs="0"/>
         <xs:element ref="Gender" minOccurs="0"/>
         <xs:element ref="MaritalStatus" minOccurs="0"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
```

5.5.1. LegalName

Synopsis	Full legal name in the Latin writing system
Data type	cis
Cardinality	0-1

5.5.2. LLegalName

Synopsis	Full legal name in a local writing system

Data type	cis
Cardinality	0-n

5.5.3. VAT

Synopsis	Fiscal identification number
Cardinality	0-1

Processing rules

If AP chooses to store the VAT attribute, AP MUST implement sufficient permissions enforcement, policies, audit trail, and usage directives to ensure that the VAT is only used for legitimate purposes. AP MUST NOT disclose the VAT to inappropriate parties. It is RECOMMENDED that this attribute not be populated.

XML schema:

```
<xs:element name="VAT" type="VATType"/>
<xs:complexType name="VATType">
   <xs:sequence>
      <xs:element ref="IDValue"/>
      <xs:element ref="IDType" minOccurs="0"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

5.5.3.1. IDValue

Synopsis	Identification number value
Data type	ces
Cardinality	0-1

5.5.3.2. IDType

Synopsis	Type of identification number stored in a VAT or AltID attribute
Data type	URI enumeration
Cardinality	0-1

Enumerators are be defined as specified in [LibertyReg]. The current enumerators are:

```
urn:liberty:id-sis-pp:IDType:ukvat
urn:liberty:id-sis-pp:IDType:itcif
urn:liberty:id-sis-pp:IDType:ptnif
urn:liberty:id-sis-pp:IDType:esnif
urn:liberty:id-sis-pp:IDType:fialv
urn:liberty:id-sis-pp:IDType:rfid
```

5.5.4. AltID

Synopsis	Other identification number(s)
Cardinality	0-n

Processing rules

If an AP chooses to store `AltID` attributes, the AP MUST implement sufficient permissions enforcement, policies, audit trail, and usage directives to ensure that `AltID` is used for legitimate purposes only. AP MUST NOT disclose `AltID` to inappropriate parties. It is RECOMMENDED that this attribute not be populated.

XML schema:

```
<xs:element name="AltID" type="AltIDType"/>
<xs:complexType name="AltIDType">
   <xs:sequence>
      <xs:element ref="IDValue"/>
      <xs:element ref="IDType" minOccurs="0"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

See VAT Section 5.5.3 for descriptions of IDValue and IDType.

5.5.5. DOB

Synopsis	Date of Birth
Data type	date
Cardinality	0-1

If an AP chooses to store the `DOB` attribute, the AP MUST implement sufficient permissions enforcement, policies, audit trail, and usage directives to ensure that `DOB` is used only for legitimate purposes. An AP MUST NOT disclose `DOB` to inappropriate parties. It is RECOMMENDED that this attribute not be populated. It is RECOMMENDED that the `Age` attribute be used instead when feasible.

5.5.6. Gender

Synopsis	Gender of the Principal
Data type	URI enumeration
Cardinality	0-1

The following enumerators MUST be supported:

```
urn:liberty:id-sis-pp:gender:m (male)
urn:liberty:id-sis-pp:gender:f (female)
```

5.5.7. MaritalStatus

Synopsis	Marital status, such as single or married
Data type	URI enumeration
Cardinality	0-1

The following enumerators MUST be supported:

```
urn:liberty:id-sis-pp:maritalstatus:single
urn:liberty:id-sis-pp:maritalstatus:married
urn:liberty:id-sis-pp:maritalstatus:commonlawmarriage
urn:liberty:id-sis-pp:maritalstatus:separated
urn:liberty:id-sis-pp:maritalstatus:divorced
urn:liberty:id-sis-pp:maritalstatus:widowed
urn:liberty:id-sis-pp:maritalstatus:dead
urn:liberty:id-sis-pp:maritalstatus:notapplicable
```

The list of enumerators MAY be extended as described in [LibertyReg].

5.6. EmploymentIdentity

Synopsis	Minimal Employer and employment details
Cardinality	0-1

XML schema:

```
<xs:element name="EmploymentIdentity" type="EmploymentIdentityType"/>
<xs:complexType name="EmploymentIdentityType">
   <xs:sequence>
      <xs:element ref="JobTitle" minOccurs="0"/>
      <xs:element ref="LJobTitle" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="O" minOccurs="0"/>
      <xs:element ref="LO" minOccurs="0"/>
      <xs:element ref="AltO" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="AltLO" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

5.6.1. JobTitle

Synopsis	Job title in Latin script
Data type	cis
Cardinality	0-1

5.6.2. LJobTitle

Synopsis	Job title in a local writing system
Data type	cis
Cardinality	0-n

5.6.3. O

Synopsis	Informal name of an organization
Data type	cis
Cardinality	0-1

5.6.4. LO

Synopsis	Localized version of organization’s informal name
Data type	cis
Cardinality	0-1

5.6.5. AltO

Synopsis	Additional informal names of an organization
Data type	cis
Cardinality	0-n

5.6.6. AltLO

Synopsis	Localized version of an organization’s informal name
Data type	cis
Cardinality	0-n

5.7. AddressCard

Synopsis	An address card data structure for ID-SIS-PP
Cardinality	0-n

XML schema:

```
<xs:element name="AddressCard" type="AddressCardType"/>
<xs:complexType name="AddressCardType">
   <xs:sequence>
      <xs:element ref="AddrType" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="Address" minOccurs="0"/>
      <xs:element ref="Nick" minOccurs="0"/>
      <xs:element ref="LNick" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="LComment" minOccurs="0"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

5.7.1. AddrType

Synopsis	Defines the role of an AddressCard
Data type	URI enumeration
Cardinality	0-n

Following enumerators MUST be supported:

```
urn:liberty:id-sis-pp:addrType:domicile   legal residence
urn:liberty:id-sis-pp:addrType:home   everyday home
urn:liberty:id-sis-pp:addrType:work   work address, the office where the person works
urn:liberty:id-sis-pp:addrType:vacation   holiday address
urn:liberty:id-sis-pp:addrType:emergency   structured emergency contact
```

Additional enumerators MAY be defined as described in [LibertyReg].

5.7.2. Address

Synopsis	Commonly used group of postal address fields
Cardinality	0-1

Processing rules

AP SHOULD implement permissions enforcement that allows only C and PostalCode attributes to be provided to those SPs that do not need the entire address.

XML schema:

```
<xs:element name="Address" type="AddressType"/>
<xs:complexType name="AddressType">
   <xs:sequence>
      <xs:element ref="PostalAddress" minOccurs="0"/>
      <xs:element ref="LPostalAddress" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="PostalCode" minOccurs="0"/>
      <xs:element ref="L" minOccurs="0"/>
      <xs:element ref="LL" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="St" minOccurs="0"/>
      <xs:element ref="LSt" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="C" minOccurs="0"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

5.7.2.1. PostalAddress

Synopsis	Detailed local address, e.g., street or block address with house number, etc.
Data type	cis
Cardinality	0-1

Multiline address MUST be represented using the dollar sign ("$") to mark the line breaks.

5.7.2.2. LPostalAddress

Synopsis	Street address in a local writing system
Data type	cis
Cardinality	0-n

5.7.2.3. PostalCode

Synopsis	Postal code, such as zip code
Data type	cis
Cardinality	0-1

5.7.2.4. L

Synopsis	Locality or city
Data type	cis
Cardinality	0-1

5.7.2.5. LL

Synopsis	Locality or city in a local writing system
Data type	cis
Cardinality	0-n

5.7.2.6. St

Synopsis	State or province, if applicable
Data type	cis
Cardinality	0-1

5.7.2.7. LSt

Synopsis	State or province in a local writing system
Data type	cis
Cardinality	0-n

5.7.2.8. C

Synopsis	Country
Data type	ISO 3166 country code
Cardinality	0-1

5.7.3. Nick

Synopsis	Nickname foidentifyingng an item in a user interface
Data type	cis
Cardinality	0-1

Nickname SHOULD NOT be printed in address label. The nickname can not and SHOULD NOT be used as machine-readable identification of any data item. Nick names are not unique.

5.7.4. LNick

Synopsis	Local script version of nickname
Data type	cis
Cardinality	0-n

5.7.5. LComment

Synopsis	Private comment about a data object
Data type	cis
Cardinality	0-1

5.8. MsgContact

Synopsis	Generic phone, email, or instant messaging contact information
Cardinality	0-n

XML schema:

```
<xs:element name="MsgContact" type="MsgContactType"/>
<xs:complexType name="MsgContactType">
   <xs:sequence>
      <xs:element ref="Nick" minOccurs="0"/>
      <xs:element ref="LNick" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="LComment" minOccurs="0"/>
      <xs:element ref="MsgType" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="MsgMethod" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="MsgTechnology" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="MsgProvider" minOccurs="0"/>
      <xs:element ref="MsgAccount" minOccurs="0"/>
      <xs:element ref="MsgSubaccount" minOccurs="0"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

5.8.1. MsgType

Synopsis	Usage role of the messaging contact
Data type	URI enumeration
Cardinality	0-n

Following enumerators MUST be supported:

```
urn:liberty:id-sis-pp:msgType:personal
urn:liberty:id-sis-pp:msgType:work
urn:liberty:id-sis-pp:msgType:mobile
urn:liberty:id-sis-pp:msgType:vacation
urn:liberty:id-sis-pp:msgType:emergency
```

Additional enumerators MAY be defined as described in [LibertyReg].

5.8.2. MsgMethod

Synopsis	Messaging method associated with this contact or device
Data type	URI
Cardinality	0-n

Following enumerators MUST be supported:

```
urn:liberty:id-sis-pp:msgMethod:voice
urn:liberty:id-sis-pp:msgMethod:fax
urn:liberty:id-sis-pp:msgMethod:email
urn:liberty:id-sis-pp:msgMethod:pager
urn:liberty:id-sis-pp:msgMethod:im
```

Additional enumerators MAY be defined as described in [LibertyReg].

5.8.3. MsgTechnology

Synopsis	Messaging technology or protocol associated with this contact or device
Data type	URI enumeration
Cardinality	0-n
XML-attributes	msgLimit

Following enumerators MUST be supported:

```
urn:liberty:id-sis-pp:msgTechnology:pots
urn:liberty:id-sis-pp:msgTechnology:voip
urn:liberty:id-sis-pp:msgTechnology:fax
urn:liberty:id-sis-pp:msgTechnology:email
urn:liberty:id-sis-pp:msgTechnology:sms
urn:liberty:id-sis-pp:msgTechnology:mms
urn:liberty:id-sis-pp:msgTechnology:pager
urn:liberty:id-sis-pp:msgTechnology:aol
urn:liberty:id-sis-pp:msgTechnology:icq
urn:liberty:id-sis-pp:msgTechnology:yahoo
urn:liberty:id-sis-pp:msgTechnology:msn
urn:liberty:id-sis-pp:msgTechnology:mim
urn:liberty:id-sis-pp:msgTechnology:irc
```

Additional enumerators MAY be defined as described in [LibertyReg].

5.8.4. MsgProvider

Synopsis	Service provider or domain that provides messaging services
Data type	ces
Cardinality	0-1

5.8.5. MsgAccount

Synopsis	Account or address information within the messaging provider
Data type	ces
Cardinality	0-1

5.8.6. MsgSubaccount

Synopsis	Subaccount within a messaging account, such as voice mail box under phone number
Data type	ces
Cardinality	0-1

5.9. Facade

Synopsis	Principal’s look and sound facade
Cardinality	0-1

XML schema:

```
<xs:element name="Facade" type="FacadeType"/>
<xs:complexType name="FacadeType">
   <xs:sequence>
      <xs:element ref="MugShot" minOccurs="0"/>
      <xs:element ref="WebSite" minOccurs="0"/>
      <xs:element ref="NamePronounced" minOccurs="0"/>
      <xs:element ref="GreetSound" minOccurs="0"/>
      <xs:element ref="GreetMeSound" minOccurs="0"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

5.9.1. MugShot

Synopsis	Face photo
Data type	URL
Cardinality	0-1

5.9.2. WebSite

Synopsis	Web site of the Principal
Data type	URI
Cardinality	0-1

5.9.3. NamePronounced

Synopsis	User’s common name pronounced (usually by the user)
Data type	URL
Cardinality	0-1

5.9.4. GreetSound

Synopsis	Greeting sound, e.g., user saying "Hello" to someone else

Data type	URL
Cardinality	0-1

5.9.5. GreetMeSound

Synopsis	Sound for user interface to greet the user
Data type	URL
Cardinality	0-1

5.10. Demographics

Synopsis	Base level demographics used by ID-PP
Cardinality	0-1

XML schema:

```
<xs:element name="Demographics" type="DemographicsType"/>
<xs:complexType name="DemographicsType">
   <xs:sequence>
      <xs:element ref="DisplayLanguage" minOccurs="0"/>
      <xs:element ref="Language" minOccurs="0" maxOccurs="unbounded"/>
      <xs:element ref="Birthday" minOccurs="0"/>
      <xs:element ref="Age" minOccurs="0"/>
      <xs:element ref="TimeZone" minOccurs="0"/>
      <xs:element ref="Extension" minOccurs="0"/>
   </xs:sequence>
   <xs:attributeGroup ref="commonAttributes"/>
</xs:complexType>
```

5.10.1. DisplayLanguage

Synopsis	The language the Principal prefers for displayed user interfaces
Data type	ISO Language code
Cardinality	0-1

5.10.2. Language

Synopsis	Language the Principal is able to understand
Data type	ISO Language code
Cardinality	0-n

5.10.3. Birthday

Synopsis	Birthday without year
Data type	gMonthDay
Cardinality	0-1

5.10.4. Age

Synopsis	Age of the Principal in years
Data type	number
Cardinality	0-1

5.10.5. TimeZone

Synopsis	Time zone of the Principal
Data type	ces
Cardinality	0-1

Syntax of time zone is plus or minus sign followed by two digit hour, a colon, and a two digit minute expressing the offset from UTC.

5.11. SignKey

Synopsis	Principal's public key or certificate for signing
Data type	pp:KeyInfoType
Cardinality	0-1

5.12. EncryptKey

Synopsis	Principal's public key or certificate for encryption
Data type	`pp:KeyInfoType`
Cardinality	0-1

5.13. EmergencyContact

Synopsis	Next of kin or other person to contact if Principal has medical emergency
Data type	ces
Cardinality	0-1

5.14. LEmergencyContact

Synopsis	Localized EmergencyContact
Data type	ces
Cardinality	0-n

6. XML schema for ID-SIS-PP

The formal XML schema for the ID Personal Profile follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
      targetNamespace="urn:liberty:id-sis-pp:2005-05"
      xmlns="urn:liberty:id-sis-pp:2005-05"
      xmlns:xs="http://www.w3.org/2001/XMLSchema"
      xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
      elementFormDefault="qualified" version="1.1">
   <xs:import
      namespace="http://www.w3.org/2000/09/xmldsig#"
      schemaLocation="http://www.w3.org/TR/2002/REC-xmldsig-core-20020212/xmldsig
-core-schema.xsd"/>
   <xs:include schemaLocation="liberty-idwsf-dst-v1.1.xsd"/>
   <xs:include schemaLocation="liberty-idwsf-dst-dt-v1.1.xsd"/>
   <xs:complexType name="KeyInfoType" mixed="true">
      <xs:complexContent mixed="true">
         <xs:extension base="ds:KeyInfoType">
            <xs:attribute ref="modificationTime"/>
            <xs:attribute ref="ACC"/>
            <xs:attribute ref="ACCTime"/>
            <xs:attribute ref="modifier"/>
         </xs:extension>
      </xs:complexContent>
   </xs:complexType>
   <xs:simpleType name="SelectType">
      <xs:restriction base="xs:string"/>
   </xs:simpleType>
   <xs:element name="PP" type="PPType"/>
   <xs:complexType name="PPType">
      <xs:sequence>
         <xs:element ref="InformalName" minOccurs="0"/>
         <xs:element ref="LInformalName" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="CommonName" minOccurs="0"/>
         <xs:element ref="LegalIdentity" minOccurs="0"/>
         <xs:element ref="EmploymentIdentity" minOccurs="0"/>
         <xs:element ref="AddressCard" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="MsgContact" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="Facade" minOccurs="0"/>
         <xs:element ref="Demographics" minOccurs="0"/>
         <xs:element ref="SignKey" minOccurs="0"/>
         <xs:element ref="EncryptKey" minOccurs="0"/>
         <xs:element ref="EmergencyContact" minOccurs="0"/>
         <xs:element ref="LEmergencyContact" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="InformalName" type="DSTString"/>
   <xs:element name="LInformalName" type="DSTLocalizedString"/>
   <xs:element name="CommonName" type="CommonNameType"/>
   <xs:complexType name="CommonNameType">
      <xs:sequence>
         <xs:element ref="CN" minOccurs="0"/>
         <xs:element ref="LCN" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="AltCN" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="LAltCN" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="AnalyzedName" minOccurs="0"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="CN" type="DSTString"/>
   <xs:element name="LCN" type="DSTLocalizedString"/>
   <xs:element name="AltCN" type="DSTString"/>
```

```
   <xs:element name="LAltCN" type="DSTLocalizedString"/>
   <xs:element name="AnalyzedName" type="AnalyzedNameType"/>
   <xs:complexType name="AnalyzedNameType">
      <xs:sequence>
         <xs:element ref="PersonalTitle" minOccurs="0"/>
         <xs:element ref="LPersonalTitle" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="FN" minOccurs="0"/>
         <xs:element ref="LFN" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="SN" minOccurs="0"/>
         <xs:element ref="LSN" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="MN" minOccurs="0"/>
         <xs:element ref="LMN" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attribute name="nameScheme" type="xs:anyURI" use="optional"/>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="PersonalTitle" type="DSTString"/>
   <xs:element name="LPersonalTitle" type="DSTLocalizedString"/>
   <xs:element name="FN" type="DSTString"/>
   <xs:element name="LFN" type="DSTLocalizedString"/>
   <xs:element name="SN" type="DSTString"/>
   <xs:element name="LSN" type="DSTLocalizedString"/>
   <xs:element name="MN" type="DSTString"/>
   <xs:element name="LMN" type="DSTLocalizedString"/>
   <xs:element name="LegalIdentity" type="LegalIdentityType"/>
   <xs:complexType name="LegalIdentityType">
      <xs:sequence>
         <xs:element ref="LegalName" minOccurs="0"/>
         <xs:element ref="LLegalName" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="AnalyzedName" minOccurs="0"/>
         <xs:element ref="VAT" minOccurs="0"/>
         <xs:element ref="AltID" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="DOB" minOccurs="0"/>
         <xs:element ref="Gender" minOccurs="0"/>
         <xs:element ref="MaritalStatus" minOccurs="0"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="LegalName" type="DSTString"/>
   <xs:element name="LLegalName" type="DSTLocalizedString"/>
   <xs:element name="VAT" type="VATType"/>
   <xs:complexType name="VATType">
      <xs:sequence>
         <xs:element ref="IDValue"/>
         <xs:element ref="IDType" minOccurs="0"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="IDValue" type="DSTString"/>
   <xs:element name="IDType" type="DSTURI"/>
   <xs:element name="AltID" type="AltIDType"/>
   <xs:complexType name="AltIDType">
      <xs:sequence>
         <xs:element ref="IDValue"/>
         <xs:element ref="IDType" minOccurs="0"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="DOB" type="DSTDate"/>
   <xs:element name="Gender" type="DSTURI"/>
   <xs:element name="MaritalStatus" type="DSTURI"/>
   <xs:element name="EmploymentIdentity" type="EmploymentIdentityType"/>
   <xs:complexType name="EmploymentIdentityType">
```

```
      <xs:sequence>
         <xs:element ref="JobTitle" minOccurs="0"/>
         <xs:element ref="LJobTitle" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="O" minOccurs="0"/>
         <xs:element ref="LO" minOccurs="0"/>
         <xs:element ref="AltO" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="AltLO" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="JobTitle" type="DSTString"/>
   <xs:element name="LJobTitle" type="DSTLocalizedString"/>
   <xs:element name="O" type="DSTString"/>
   <xs:element name="LO" type="DSTLocalizedString"/>
   <xs:element name="AltO" type="DSTString"/>
   <xs:element name="AltLO" type="DSTLocalizedString"/>
   <xs:element name="AddressCard" type="AddressCardType"/>
   <xs:complexType name="AddressCardType">
      <xs:sequence>
         <xs:element ref="AddrType" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="Address" minOccurs="0"/>
         <xs:element ref="Nick" minOccurs="0"/>
         <xs:element ref="LNick" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="LComment" minOccurs="0"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="AddrType" type="DSTURI"/>
   <xs:element name="Address" type="AddressType"/>
   <xs:complexType name="AddressType">
      <xs:sequence>
         <xs:element ref="PostalAddress" minOccurs="0"/>
         <xs:element ref="LPostalAddress" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="PostalCode" minOccurs="0"/>
         <xs:element ref="L" minOccurs="0"/>
         <xs:element ref="LL" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="St" minOccurs="0"/>
         <xs:element ref="LSt" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="C" minOccurs="0"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="PostalAddress" type="DSTString"/>
   <xs:element name="LPostalAddress" type="DSTLocalizedString"/>
   <xs:element name="PostalCode" type="DSTString"/>
   <xs:element name="L" type="DSTString"/>
   <xs:element name="LL" type="DSTLocalizedString"/>
   <xs:element name="St" type="DSTString"/>
   <xs:element name="LSt" type="DSTLocalizedString"/>
   <xs:element name="C" type="DSTString"/>
   <xs:element name="Nick" type="DSTString"/>
   <xs:element name="LNick" type="DSTLocalizedString"/>
   <xs:element name="LComment" type="DSTString"/>
   <xs:element name="MsgContact" type="MsgContactType"/>
   <xs:complexType name="MsgContactType">
      <xs:sequence>
         <xs:element ref="Nick" minOccurs="0"/>
         <xs:element ref="LNick" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="LComment" minOccurs="0"/>
         <xs:element ref="MsgType" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="MsgMethod" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="MsgTechnology" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="MsgProvider" minOccurs="0"/>
         <xs:element ref="MsgAccount" minOccurs="0"/>
```

```
         <xs:element ref="MsgSubaccount" minOccurs="0"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="MsgType" type="DSTURI"/>
   <xs:element name="MsgMethod" type="DSTURI"/>
   <xs:element name="MsgTechnology">
      <xs:complexType>
         <xs:complexContent>
            <xs:extension base="DSTURI">
               <xs:attribute name="msgLimit" type="xs:integer" use="optional"/>
            </xs:extension>
         </xs:complexContent>
      </xs:complexType>
   </xs:element>
   <xs:element name="MsgProvider" type="DSTString"/>
   <xs:element name="MsgAccount" type="DSTString"/>
   <xs:element name="MsgSubaccount" type="DSTString"/>
   <xs:element name="Facade" type="FacadeType"/>
   <xs:complexType name="FacadeType">
      <xs:sequence>
         <xs:element ref="MugShot" minOccurs="0"/>
         <xs:element ref="WebSite" minOccurs="0"/>
         <xs:element ref="NamePronounced" minOccurs="0"/>
         <xs:element ref="GreetSound" minOccurs="0"/>
         <xs:element ref="GreetMeSound" minOccurs="0"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="MugShot" type="DSTURI"/>
   <xs:element name="WebSite" type="DSTURI"/>
   <xs:element name="NamePronounced" type="DSTURI"/>
   <xs:element name="GreetSound" type="DSTURI"/>
   <xs:element name="GreetMeSound" type="DSTURI"/>
   <xs:element name="Demographics" type="DemographicsType"/>
   <xs:complexType name="DemographicsType">
      <xs:sequence>
         <xs:element ref="DisplayLanguage" minOccurs="0"/>
         <xs:element ref="Language" minOccurs="0" maxOccurs="unbounded"/>
         <xs:element ref="Birthday" minOccurs="0"/>
         <xs:element ref="Age" minOccurs="0"/>
         <xs:element ref="TimeZone" minOccurs="0"/>
         <xs:element ref="Extension" minOccurs="0"/>
      </xs:sequence>
      <xs:attributeGroup ref="commonAttributes"/>
   </xs:complexType>
   <xs:element name="DisplayLanguage" type="DSTString"/>
   <xs:element name="Language" type="DSTString"/>
   <xs:element name="Birthday" type="DSTMonthDay"/>
   <xs:element name="Age" type="DSTInteger"/>
   <xs:element name="TimeZone" type="DSTString"/>
   <xs:element name="SignKey" type="KeyInfoType"/>
   <xs:element name="EncryptKey" type="KeyInfoType"/>
   <xs:element name="EmergencyContact" type="DSTString"/>
   <xs:element name="LEmergencyContact" type="DSTLocalizedString"/>
</xs:schema>
```

7. WSDL for ID-SIS-PP

The abstract Web Services Description Language (WSDL) declaration for the ID Personal Profile follows. The declaration states what is derived from [LibertyDST], namely that ID-SIS-PP is characterized by `Query` and `Modify` operations cast to namespace of ID-SIS-PP.

```
<?xml version="1.0" encoding="UTF-8"?>
<wsdl:definitions
      xmlns:typens="urn:liberty:id-sis-pp:wsdl:2005-05"
      xmlns:xsd="http://www.w3.org/2001/XMLSchema"
      xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
      xmlns:pp="urn:liberty:id-sis-pp:2005-05"
      xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
      xmlns="http://schemas.xmlsoap.org/wsdl/"
      targetNamespace="urn:liberty:id-sis-pp:wsdl:2005-05" name="pp">
   <types>
      <xsd:schema>
         <xsd:import
            namespace="urn:liberty:id-sis-pp:2005-05"
            schemaLocation="liberty-idsis-pp-v1.1.xsd"/>
      </xsd:schema>
   </types>
   <message name="Query">
      <part name="body" element="pp:Query"/>
   </message>
   <message name="QueryResponse">
      <part name="body" element="pp:QueryResponse"/>
   </message>
   <message name="Modify">
      <part name="body" element="pp:Modify"/>
   </message>
   <message name="ModifyResponse">
      <part name="body" element="pp:ModifyResponse"/>
   </message>
   <portType name="DataServicePort">
      <operation name="QueryOperation">
         <input message="pp:Query"/>
         <output message="pp:QueryResponse"/>
      </operation>
      <operation name="ModifyOperation">
         <input message="pp:Modify"/>
         <output message="pp:ModifyResponse"/>
      </operation>
   </portType>
</wsdl:definitions>
```

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