MedBiquitous Healthcare Professional Profile Services Specifications Document

Version: 0.1
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Version History

Version No.	Date	Changed By	Changes Made
0.1	18 Apr 2008	Valerie Smothers & Ben Azan	Initial draft

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Acknowledgements

MedBiquitous wishes to acknowledge the help of the MedBiquitous Professional Profile Working Group members and other individuals that contributed to the creation of this document, including:

- Archana Aida, American Board of Pediatrics
- Ben Azan, MedBiquitous
- Skip Bartolanzo, American Board of Pediatrics
- Tom Brantigan, TMA Resources
- Peter Greene, MD, MedBiquitous
- Jim Jahrling, American Board of Medical Specialties
- Paul Jolly, Association of American Medical Colleges
- Donald Jones, American College of Chest Physicians
- Laura Martin, American Board of Pediatrics
- Joseph O'Conner, Educational Commission for Foreign Medical Graduates
- Jody Poet, MedBiquitous
- Monica Quiroz, American Medical Association
- Kelly Reddick, American Board of Pediatrics
- Pam Shellner, American Association of Critical Care Nurses
- Valerie Smothers, MedBiquitous
- Cyndi Streun, Federation of State Medical Boards
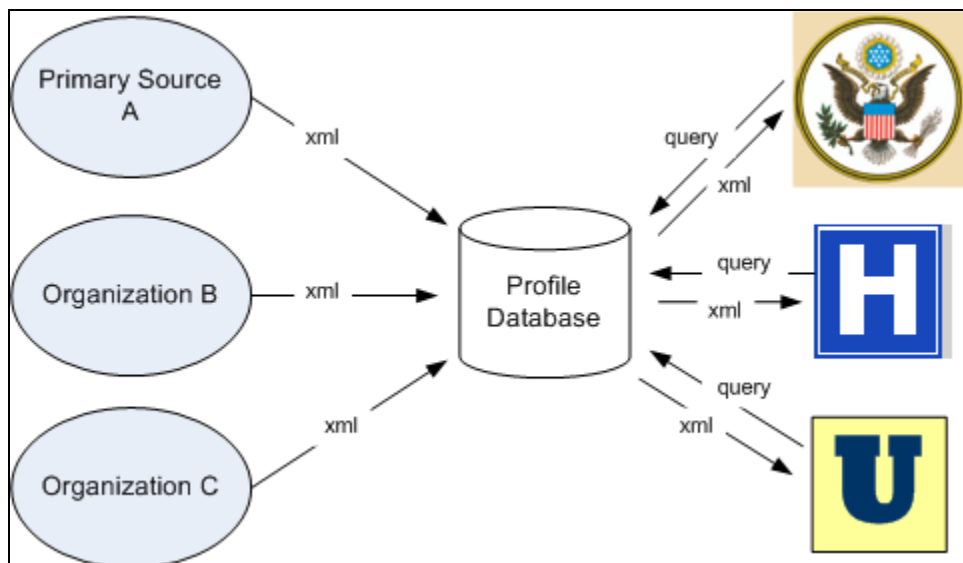- Todd Tischendorf, CE City
- Toby Vandermark

Joel Farrell, IBM, Chair of the MedBiquitous Technical Steering Committee, and Scott Hinkelman have contributed their expertise to ensure that this specification is well-designed and interoperable with related industry standards.

Introduction

This document describes the MedBiquitous Healthcare Professional Profile Services in detail. It is intended for use by any one who wants to create, implement, or create interoperable tools for Web services implementations based on this specification. The status of the document is indicated at the bottom of the page; draft documents are subject to review and approval through the MedBiquitous Standards Development Process (see http://www.medbiq.org/working_groups/consortium_process/MedBiquitousANSIProcess.pdf).

The objective of this Healthcare Professional Profile Services description is to provide a consistent means of exchanging profile data for healthcare professionals. This data includes name, address, education, training, certification, and license information among other things. Healthcare Professional Profile Services leverage the Healthcare Professional Profile Specification, which provides a consistent format for the data payload of the Web service. This functionality can be useful for credentialing and data aggregation among related organizations, such as specialty boards or licensing boards.

The diagram below shows an organization using Healthcare Professional Profile Services to collect data from various partner organizations and provide credentialing services to government, hospitals, and universities.
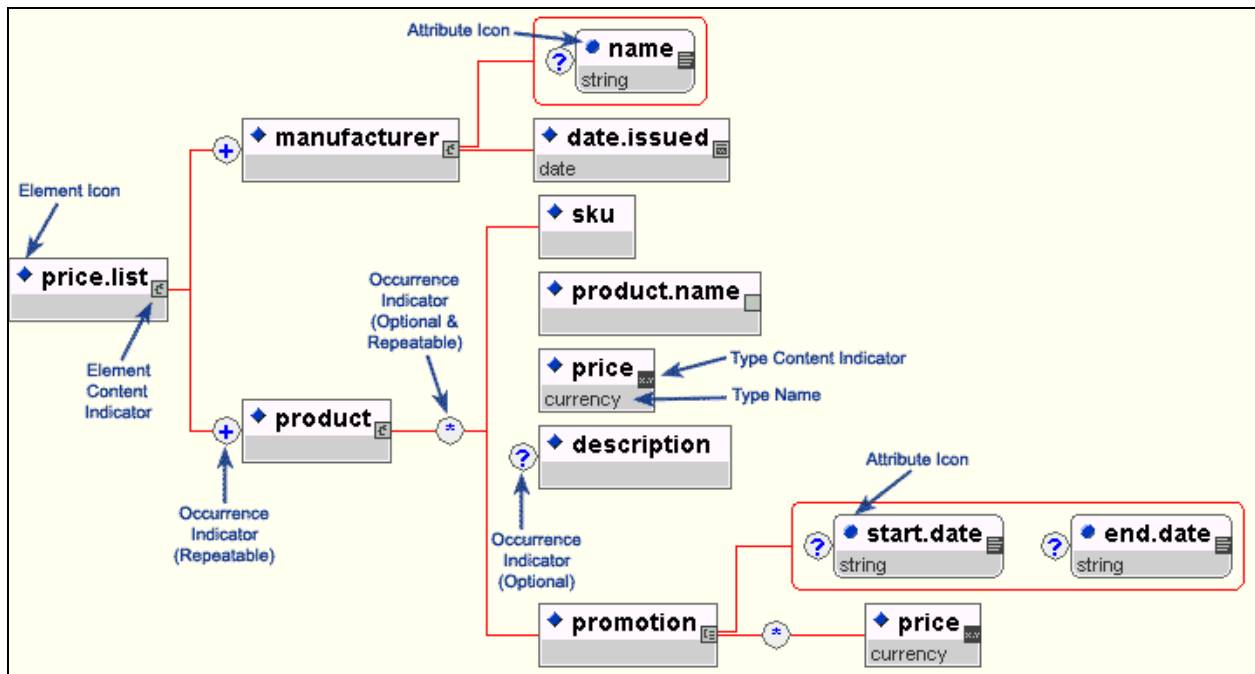

Using Professional Profile Services to Aggregate and Disseminate Healthcare Professional Profile Data

Documentation Conventions

This document uses the following conventions.

Documentation Conventions

Convention	Description
`monospaced type`	Sample XML tags, code, schema, or portion thereof
BoldText	When used with an XML tag name, indicates that the element contains sub-elements
Italicized Text	When used in an XML tag description, an attribute of the XML tag.
Tag description	Shading indicated that the tag is further described elsewhere in the document

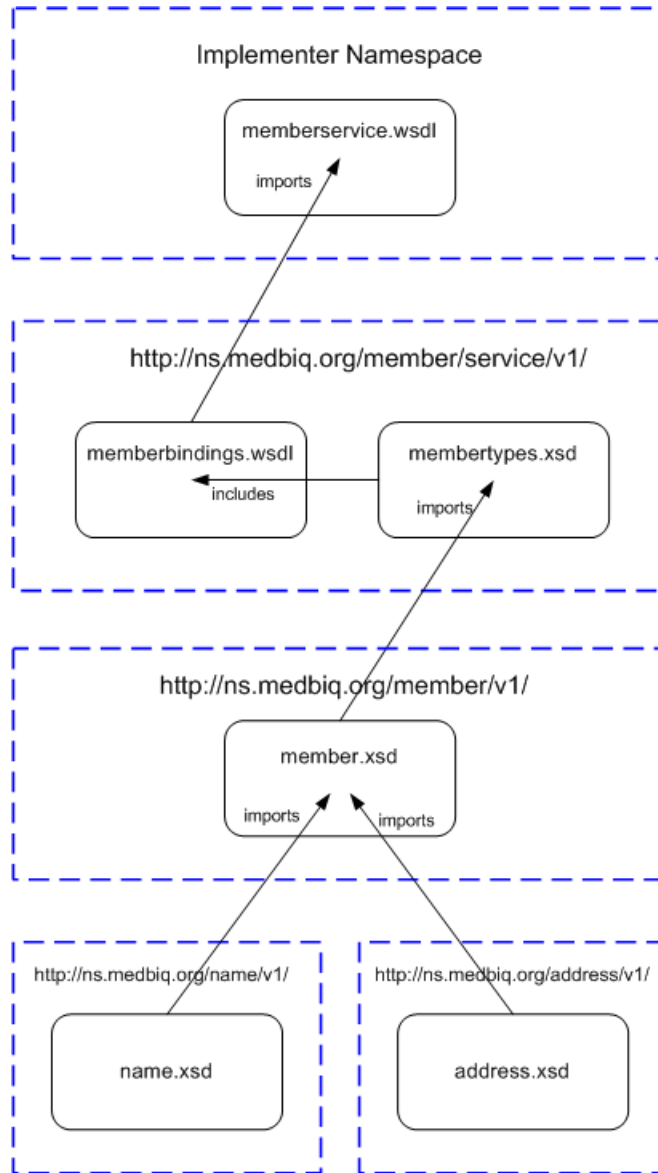The following graphical standards are used for the XML diagrams in this document.

Graphical Standards from TIBCO's Turbo XML, Copyright TIBCO Software Inc.

Web Services Files

Web services are formally described in Web Services Description Language documents, or WSDL files. WSDL files are based on XML, and they provide the information needed to connect to a specific implementation of a Web service. By standardizing WSDL files, MedBiquitous is providing a key element necessary for interoperability among disparate systems.

The elements in WSDL files are described as being in two groups: abstract and concrete. The abstract elements describe the operations that the Web service can perform and include a description of the messages that are passed between the Web services provider and the Web services consumer. The concrete elements tell the client how to physically connect to the Web service. The location of the Web service is described by concrete elements.

To facilitate implementation of our Web services, MedBiquitous separates the abstract and concrete descriptions. The Web service provider need only modify one file: memberservice.wsdl. This is the file that specifies the location of the Web service. The memberservice.wsdl includes the other Web services files that describe the operations, messages, and SOAP style of the Web service. By isolating the implementation-specific elements in this manner, MedBiquitous is maximizing Web services interoperability and minimizing the code modified by Web services implementers. The following diagram shows how the different files are unified by the memberservice.wsdl file.

Professional Profile Service Files and Namespace

Journal Service and associated files are described in the following table:

Healthcare Professional Profile Service Files

File name	Description	Namespace	Dependencies
membertypes.xsd	An XML schema that provides a consistent structure for the content of the Web services messages.	http://ns.medbiq.org/member/service/v1/	Imports member.xsd
memberbindings.wsdl	A WSDL document describing the messages, operations, and SOAP binding of the web service.	http://ns.medbiq.org/member/service/v1/	Includes membertypes.xsd
memberservice.wsdl	A WSDL document that contains the location of a specific Healthcare Professional Profile Service implementation.	Determined by implementer	Imports memberbindings.wsdl
member.xsd	An XML schema that provides a consistent format for healthcare professional profile data.	http://ns.medbiq.org/member/v1/	Imports name.xsd and address.xsd
name.xsd	An XML schema that provides a consistent format for a person name.	http://ns.medbiq.org/name/v1/	___
address.xsd	An XML schema that provides a consistent format for a postal address.	http://ns.medbiq.org/address/v1/	___

MedBiquitous WSDL files used a wrapped document literal style. Message contents may be validated by an XML schema, and request messages use the operation name as the root element.

The remainder of this document describes those membertypes.xsd, memberbindings.wsdl, and memberservice.wsdl and how to use them to implement the MedBiquitous Healthcare Professional Profile Service.

Healthcare Professional Profile Service Description

Operations

The operations included in the MedBiquitous Healthcare Professional Profile Service are described in the following table.

Healthcare Professional Profile Service Operations

Operation	Description	Messages
readMember	Provides profile data to the requester based on a subset of profile data provided for the query.	readMemberRequest (input)
		readMemberResponse (output)
updateMember	Updates profile data within the receiving system.	updateMemberRequest (input)
		updateMemberResponse (output)
createMember	Creates one or more new profile records within the receiving system.	createMemberRequest (input)
		createMemberResponse (output)
deleteMember	Deletes one or more profile records within the receiving system.	deleteMemberRequest (input)
		deleteMemberResponse (output)

Note: The Healthcare Professional Profile Service supports sending multiple profile records in one message, but for robust error handling, single record exchange is recommended.

Messages

The following table shows the corresponding root element from the Member Types schema for each web service message.

Healthcare Professional Profile Service Messages

Message	Root element	Description
readMemberRequest	readMember	A request for profile data.
readMemberResponse	readMemberResponse	Professional profile data for one or more individuals.
updateMemberRequest	updateMember	A command to update a profile record.
updateMemberResponse	updateMemberResponse	A message describing the success or failure of the update.
createMemberRequest	createMember	A command to create a new profile record.
createMemberResponse	createMemberResponse	A message describing the success or failure of the new record creation.
deleteMemberRequest	deleteMember	A command to delete a profile record.
deleteMemberResponse	deleteMemberResponse	A message describing the success or failure of the record deletion.

Healthcare Professional Porfile Service also uses the common fault messages described in the following table.

Binding Information

The following table provides information on the WSDL and SOAP binding for the Healthcare Professional Profile Service.

Journal Service Operations

Operation	Description
WSDL Binding name	MemberServiceSoapBinding
Transport	http
SOAP binding style	Document
SOAP body use	Literal (no encoding)

Member Types Schema Description

The following sections explain the Member Types schema membertypes.xsd in detail. Member Types provides a consistent structure for the content of the Web services messages.

All the elements having sub-elements will be defined in separate sections. All elements without sub-elements will be defined within the appropriate element sections that use them.

All elements using the prefix m: are from the Healthcare Professional Profile schema.
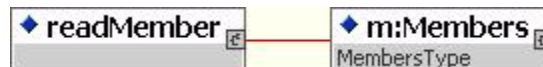
Data Elements

The Member Types schema includes the following container elements, each of which corresponds to a Web services message. These elements contain subelements. For request messages, the element name is identical to the name of the operation that is being invoked.

1. readMember
2. readMemberResponse
3. updateMember
4. updateMemberResponse
5. createMember
6. createMemberResponse
7. deleteMember
8. deleteMemberResponse

Any of these elements may be the root element of the schema, depending on which type of message is being sent.

1   readMember

The readMember element is the root element for the message that invokes the readMember operation, which provides profile data to the requester.
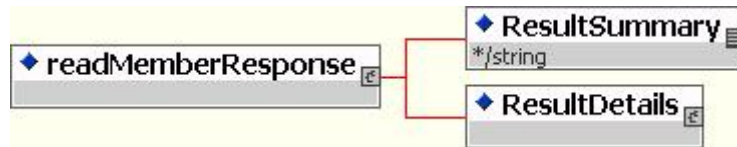
The readMember element has the sub-element Members, which is from the member.xsd schema. Members contains profile data that is used as the basis of a query. For more information on the Members datatype, see the Healthcare Professional Profile Specifications and Description Document version 1.0. Members must occur once and only once in the readMember message.

Example:

```
To be added
```

2 readMemberResponse

The readMemberResponse element is the root element for the message responding to the readMember message. The readMemberResponse message provides profile to the requester.

readMemberResponse Element Information

Element	Description	Required	Multiplicity	Datatype
readMemberResponse	readMemberResponse is the root element. It contains subelements that describe the results of the query and provide data to the requester.	Required	1	Container
ResultSummary	ResultSummary is the subelement of readMemberResponse. It describes the success or failure of the operation. Valid values are: Success, Partial success, Failure.	Required	1	Restricted
ResultDetails	ResultDetails is the subelement of readmemberResponse. It describes the success or failure of the operation in more detail. See section ResultDetails for more information.	Required	1	Container

Example:
```
<code>
```

2.1 **ResultDetails**

The ResultDetails provide profile data, match information, and failure reasons for the operation when applicable.

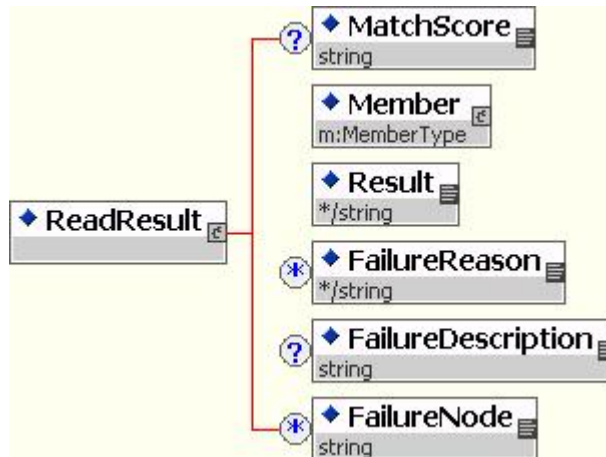ResultDetails Element Information

Element	Description	Required	Multiplicity	Datatype
ResultDetails	ResultDetails is the subelement of readmemberResponse. It describes the success or failure of the operation in more detail.	Required	1	Container
ReadResult	ReadResult is the subelement of ResultDetails. It provides profile data for a single person matching the request criteria along with further result information. See section ReadResult for more information.	Required	1 or more	Container

Example:
```
<code>
```

2.2   **ReadResult**

ReadResult Element Information

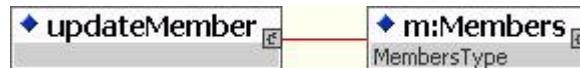| Element	Description	Required	Multiplicity	Datatype
ReadResult	ReadResult is the subelement of ResultDetails. It provides profile data for a single person matching the request criteria along with further result information.	Required	1 or more	Container

Element	Description	Required	Multiplicity	Datatype
MatchScore	MatchScore is a subelement of ResultDetails. It describes the score awarded to this individual record using point-based system for scoring match criteria.	Optional	0 or 1	String
Member	Member is a subelement of ResultDetails. It contains subelements that describe an individual's profile data in detail. For more information, see the document "Healthcare Professional Profile Specifications and Description Document."	Required	1	Container (see the Healthcare Professional Profile Specifications and Description Document version 1.0)
Result	Result is a subelement of ResultDetails. It describes whether or not the request succeeded or failed in matching a profile record. Valid values are Success and Failure.	Required	1	Restricted
FailureReason	FailureReason is a subelement of ResultDetails. It describes the reason for the request failure if the request did fail. Valid values are: Missing data, Invalid data, No member match, Multiple member matches, Operation not supported, Unspecified failure.	Optional	0 or more	Restricted
FailureDescription	FailureDescription is a subelement of ResultDetails. It describes the reason for the request failure in more detail.	Optional	0 or 1	String

Element	Description	Required	Multiplicity	Datatype
FailureNode	FailureNode is a subelement of ResultDetails. It identifies a node within the readMember Web Service message that caused the failure. The FailureNode should be an X-Path expression. See section Identifying Nodes Through XPath.	Optional	0 or more	String

Example:
```
<code>
```

3   *updateMember*

The updateMember element is the root element for the message that invokes the updateMember operation, which updates profile data with new information provided by the requester.
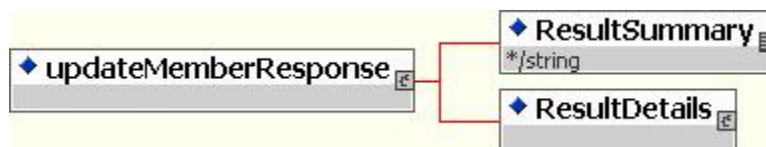
The updateMember element has the sub-element Members, which is from the member.xsd schema. Members contains profile data that is used as the basis of a query. For more information on the Members datatype, see the Healthcare Professional Profile Specifications and Description Document version 1.0. Members must occur once and only once in the updateMember message.

Example:

```
To be added
```

4   *updateMemberResponse*

The updateMemberResponse element is the root element for the message responding to the updateMember message. The updateMemberResponse message describes the success of failure of the update operation.

updateMemberResponse Element Information

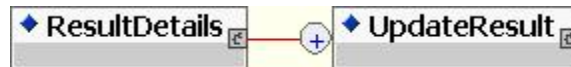| Element	Description	Required	Multiplicity	Datatype

Element	Description	Required	Multiplicity	Datatype
updateMemberResponse	updateMemberResponse is the root element. It contains subelements that describe the results of the update.	Required	1	Container
ResultSummary	ResultSummary is the subelement of updatememberResponse. It describes the success or failure of the operation. Valid values are: Success, Partial success, Failure.	Required	1	Restricted
ResultDetails	ResultDetails is the subelement of updatememberResponse. It describes the success or failure of the operation in more detail. See subsection ResultDetails for more information.	Required	1	Container

Example:
```
<code>
```

4.1   ResultDetails

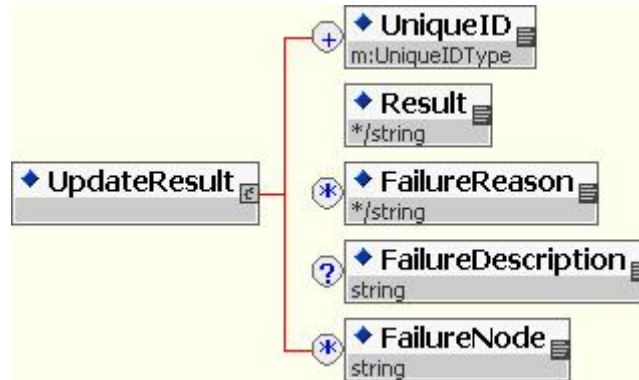ResultDetails describes the success or failure of the updateMember operation in more detail.

ResultDetails Element Information

Element	Description	Required	Multiplicity	Datatype
ResultDetails	ResultDetails is the subelement of updateMemberResponse. It describes the success or failure of the operation in more detail.	Required	1	Container
UpdateResult	UpdateResult is the subelement of ResultDetails. It describes update results for one or more profile records in detail. See section UpdateResult for more information.	Required	1 or more	Container

4.2 UpdateResult

UpdateResult describes the updateMember operation results in more detail.

UpdateResult Element Information

Element	Description	Required	Multiplicity	Datatype
UpdateResult	UpdateResult is the subelement of ResultDetails. It describes update results for one or more profile records in detail.	Required	1 or more	Container
UniqueID	UniqueID is the subelement of UpdateResult. It provides the unique identifier for one individual profile that the operation attempted to update.	Required	1 or more	UniqueID Type For a complete description of the UniqueID datatype, see the Member section of the Healthcare Professional Profile Specifications and Description Document.
Result	Result is a subelement of ResultDetails. It describes whether or not the request succeeded or failed in updating a profile record. Valid values are Success and Failure.	Required	1	Restricted

Element	Description	Required	Multiplicity	Datatype
FailureReason	FailureReason is a subelement of ResultDetails. It describes the reason for the request failure if the request did fail. Valid values are: Missing data, Invalid data, No member match, Multiple member matches, Operation not supported, Unspecified failure.	Optional	0 or more	Restricted
FailureDescription	FailureDescription is a subelement of ResultDetails. It describes the reason for the request failure in more detail.	Optional	0 or 1	String
FailureNode	FailureNode is a subelement of ResultDetails. It identifies a node within the updateMember Web Service message that caused the failure. The FailureNode should be an X-Path expression. See section Identifying Nodes Through XPath.	Optional	0 or more	String

5   createMember

The createMember element is the root element for the message that invokes the createMember operation, which creates a new member profile with the data provided by the requester.
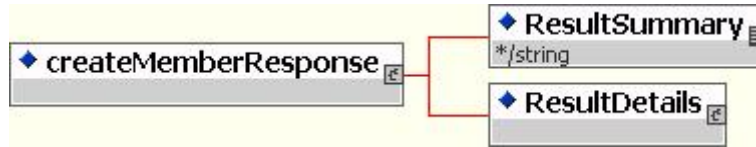
The createMember element has the sub-element Members, which is from the member.xsd schema. Members contains profile data that is used as the basis of a query. For more information on the Members datatype, see the Healthcare Professional Profile Specifications and Description Document version 1.0. Members must occur once and only once in the createMember message.

Example:

```
To be added
```

6　createMemberResponse

The createMemberResponse element is the root element for the message responding to the createMember message. The createMemberResponse message describes the success or failure of the update operation.

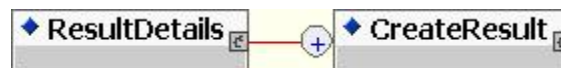
createMemberResponse Element Information

Element	Description	Required	Multiplicity	Datatype
createMemberResponse	createMemberResponse is the root element. It contains subelements that describe the results of the createMember operation.	Required	1	Container
ResultSummary	ResultSummary is the subelement of createMemberResponse. It describes the success or failure of the operation. Valid values are: Success, Partial success, Failure.	Required	1	Restricted
ResultDetails	ResultDetails is the subelement of creatememberResponse. It describes the success or failure of the operation in more detail. See subsection ResultDetails for more information.	Required	1	Container

Example:
```
<code>
```

6.1　ResultDetails

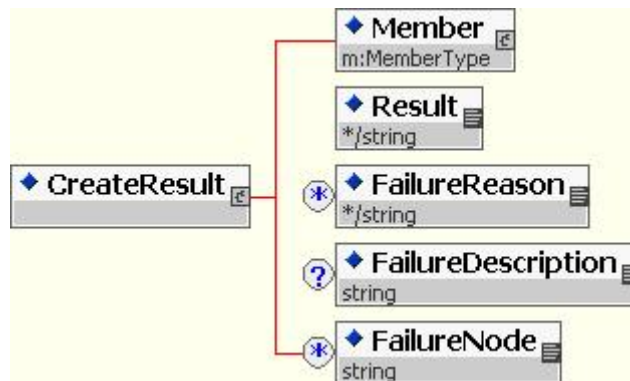ResultDetails describes the success or failure of the createMember operation in more detail.

CreateResult Element Information

Element	Description	Required	Multiplicity	Datatype
ResultDetails	ResultDetails is the subelement of CreateMemberResponse. It describes the success or failure of the operation in more detail.	Required	1	Container
CreateResult	CreateResult is the subelement of ResultDetails. It describes profile record creation results for one profile record in detail. See section CreateResult for more information.	Required	1 or more	Container

6.2　**CreateResult**

CreateResult describes profile record creation results for one profile record in detail.
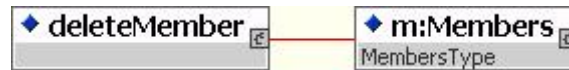

CreateResult Element Information

Element	Description	Required	Multiplicity	Datatype
CreateResult	CreateResult is the subelement of ResultDetails. It describes profile record creation results for one profile record in detail.	Required	1 or more	Container

Element	Description	Required	Multiplicity	Datatype
Member	Member is a subelement of ResultDetails. It contains subelements that describe an individual's profile data in detail. For more information, see the document "Healthcare Professional Profile Specifications and Description Document."	Required	1	Container (see the Healthcare Professional Profile Specifications and Description Document version 1.0)
Result	Result is a subelement of ResultDetails. It describes whether or not the create request succeeded or failed in creating a new profile record. Valid values are Success and Failure.	Required	1	Restricted
FailureReason	FailureReason is a subelement of ResultDetails. It describes the reason for the failure if the request did fail. Valid values are: Missing data, Invalid data, No member match, Multiple member matches, Operation not supported, Unspecified failure.	Optional	0 or more	Restricted
FailureDescription	FailureDescription is a subelement of ResultDetails. It describes the reason for the request failure in more detail.	Optional	0 or 1	String
FailureNode	FailureNode is a subelement of ResultDetails. It identifies a node within the createMember Web Service message that caused the failure. The FailureNode should be an X-Path expression. See section Identifying Nodes Through XPath.	Optional	0 or more	String

7 deleteMember

The deleteMember element is the root element for the message that invokes the deleteMember operation, which deletes the profile specified by the requester.
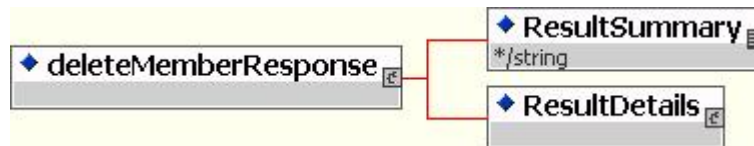
The deleteMember element has the sub-element Members, which is from the member.xsd schema. Members contains profile data that is used to describe the profile record to be deleted. For more information on the Members datatype, see the Healthcare Professional Profile Specifications and Description Document version 1.0. Members must occur once and only once in the deleteMember message.

Example:

```
To be added
```

8 deleteMemberResponse

The deleteMemberResponse element is the root element for the message responding to the deleteMember message. The deleteMemberResponse message provides detailed information about the success or failure of the operation.

deleteMemberResponse Element Information

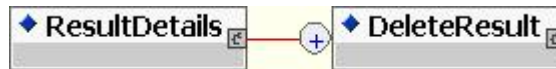| Element	Description	Required	Multiplicity	Datatype
deleteMemberResponse	deleteMemberResponse is the root element. It contains subelements that describe the results of the operation.	Required	1	Container
ResultSummary	ResultSummary is the subelement of deletememberResponse. It describes the success or failure of the operation overall. Valid values are: Success, Partial success, Failure.	Required	1	Restricted

Element	Description	Required	Multiplicity	Datatype
ResultDetails	ResultDetails is the subelement of deleteMemberResponse. It describes the success or failure of the operation in more detail. See subsection ResultDetails for more information.	Required	1	Container

Example:
```
<code>
```

8.1   ResultDetails

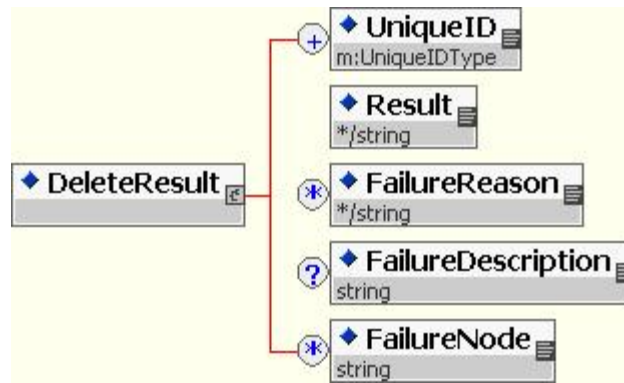ResultDetails describes the success or failure of the deleteMember operation in more detail.

ResultDetails Element Information

Element	Description	Required	Multiplicity	Datatype
ResultDetails	ResultDetails is the subelement of DeleteMemberResponse. It describes the success or failure of the operation in more detail.	Required	1	Container
DeleteResult	DeleteResult is the subelement of ResultDetails. It describes operation results for one or more profile records. See section DeleteResult for more information.	Required	1 or more	Container

8.2   DeleteResult

DeleteResult describes operation results for one or more profile records.

DeleteResult Element Information

Element	Description	Required	Multiplicity	Datatype
DeleteResult	DeleteResult is the subelement of ResultDetails. It describes delete results for one or more profile records in detail.	Required	1 or more	Container
UniqueID	UniqueID is the subelement of DeleteResult. It provides the unique identifier for one individual profile that the operation attempted to delete.	Required	1 or more	UniqueID Type For a complete description of the UniqueID datatype, see the Member section of the Healthcare Professional Profile Specifications and Description Document.
Result	Result is a subelement of ResultDetails. It describes whether or not the request succeeded or failed in deleting a profile record. Valid values are Success and Failure.	Required	1	Restricted

Element	Description	Required	Multiplicity	Datatype
FailureReason	FailureReason is a subelement of ResultDetails. It describes the reason for the request failure if the request did fail. Valid values are: Missing data, Invalid data, No member match, Multiple member matches, Operation not supported, Unspecified failure.	Optional	0 or more	Restricted
FailureDescription	FailureDescription is a subelement of ResultDetails. It describes the reason for the request failure in more detail.	Optional	0 or 1	String
FailureNode	FailureNode is a subelement of ResultDetails. It identifies a node within the deleteMember Web Service message that caused the failure. The FailureNode should be an X-Path expression. See section Identifying Nodes Through XPath.	Optional	0 or more	String

XPath is a language for finding information in an XML document. XPath is used to navigate through elements and attributes in an XML document. It is a W3C Standard.

The Healthcare Professional Profile Services specification uses XPath to point to places within an XML request message that cause request failure. For example, if the BirthDate element in a request message uses an invalid date format, that could cause the request to fail. The FailureNode element in the response message would point to the BirthDate element to indicate it as the point of failure.

Basics construction of Xpath expression:

/SomeElement/SomeSubElement…………………...Selects all SomeSubElements that are sub-elements of SomeElement.

/SomeElement/SomeSubElement[@test = 'x']…… Selects all SomeSubElements that have an attribute named 'test' with a value of 'x' that are sub-elements of SomeElement.

The following example references a BirthDate element within a readMember request:

```
/readMember/m:Members/m:Member/m:PersonalInfo/m:BirthDate
```

Other Schema

Identifying Nodes through XPath

XPath is a language for finding information in an XML document. XPath is used to navigate through elements and attributes in an XML document. It is a W3C Standard.

The Healthcare Professional Profile Services specification uses XPath to point to places within an XML request message that cause request failure. For example, if the BirthDate element in a request message uses an invalid date format, that could cause the request to fail. The FailureNode element in the response message would point to the BirthDate element to indicate it as the point of failure.

Basics construction of Xpath expression:

/SomeElement/SomeSubElement…………………...Selects all SomeSubElements that are sub-elements of SomeElement.

/SomeElement/SomeSubElement[@test = 'x']…… Selects all SomeSubElements that have an attribute named 'test' with a value of 'x' that are sub-elements of SomeElement.

The following example references a BirthDate element within a readMember request:

```
/readMember/m:Members/m:Member/m:PersonalInfo/m:BirthDate
```

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Other Schema

Other Schema Referenced

fdaca

Sample XML Documents

`<to be completed>`

References

To be completed