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SERIES J: CABLE NETWORKS AND TRANSMISSION OF TELEVISION, SOUND PROGRAMME AND OTHER MULTIMEDIA SIGNALS

Digital transmission of television signals

Digital program insertion – Advertising systems interfaces – Placement opportunity information service

Recommendation ITU-T J.380.5

International Telecommunication Union

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Digital program insertion – Advertising systems interfaces – Placement opportunity information service

Summary

Recommendation ITU-T J.380.5 defines the messaging protocol for the placement opportunity information service (POIS) consistent with other parts of the ITU-T J.380.x series of Recommendations. A POIS holds, maintains, and retains descriptions of content placement opportunities (typically for advertisements) and the interface supports query and notification operations for those opportunities.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T J.380.5	2011-11-13	9

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications, information and communication technologies (ICTs). The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure, e.g., interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementers are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database at http://www.itu.int/ITU-T/ipr/.

Table of Contents

List of Figures

List of Tables

Introduction

This Introduction provides an overview of the placement opportunity information service.

The POIS provides placement opportunity metadata through query and notification services to service endpoints. What a placement opportunity is and how it influences an advertising service is discussed in [b-ITU-T J.380.3]. Using the interface defined herein, service endpoints may retrieve detailed information about placement opportunities known to the queried POIS.

Figure 1 provides one example of a POIS in an ITU-T J.380 logical environment.

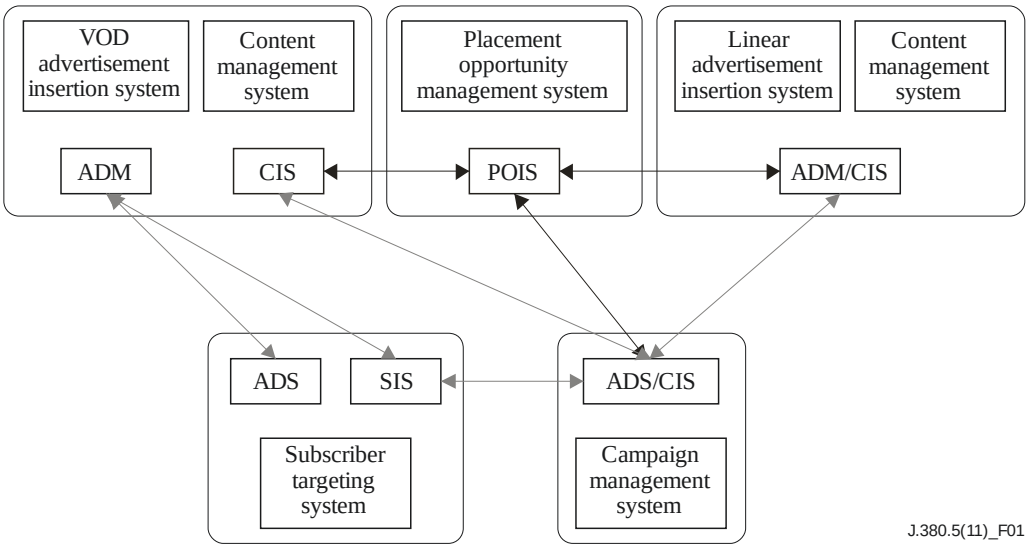


Figure 1 – Example ITU-T J.380 system landscape with POIS

As illustrated in Figure 1, a POIS answers queries concerning the placement opportunities it is aware of and issues notification messages for registered queries when placement opportunity changes are detected. How the placement opportunity information is obtained by a POIS is outside the scope of this Recommendation. The anticipated number of content streams is also outside the scope of this Recommendation. The existence of a POIS implementation as a logical service coexisting with other services or systems does not imply the referenced content is available.

Recommendation ITU-T J.380.5

Digital program insertion – Advertising systems interfaces – Placement opportunity information service

1 Scope

This Recommendation defines the messaging protocol for the placement opportunity information service (POIS) consistent with other parts of the ITU-T J.380.x series of Recommendations. A POIS holds, maintains, and retains descriptions of content placement opportunities (typically for advertisements) and the interface supports query and notification operations for those opportunities.

A POIS additionally contains features, characteristics and constraints for each placement opportunity, appropriate for the platform, rights, and policies including those of the content in which it exists. These placement opportunities may or may not be content specific and the traits and constraints may vary by network, geographic region, or other content distribution dimension.

This Recommendation defines a standardized interface for accessing the placement opportunity information known to a POIS.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

[ITU-T J.380.2] ITU-T J.380.2 (2011), *Digital program insertion – Advertising systems interfaces – Core data elements*.

[ITU-T J.380.7] ITU-T J.380.7 (2011), *Digital program insertion – Advertising systems interfaces – Message transport*.

[ITU-T J.380.8] ITU-T J.380.8 (2011), *Digital program insertion – Advertising systems interfaces – General information service*.

[W3C-XSD] W3C Recommendation (2004), *XML Schema Part 1: Structures Second Edition*.

[SCTE 130-5 Schema] ANSI/SCTE 130-5-2010, *Digital Program Insertion – Advertising Systems Interfaces: Part 5 – Placement Opportunity Information Service*, schema file.

[SCTE 130-5 WSDL] ANSI/SCTE 130-5-2010, *Digital Program Insertion – Advertising Systems Interfaces: Part 5 – Placement Opportunity Information Service*, Web Services Description Language file.

3 Definitions

Throughout this standard the terms below have specific meanings. Because some of the terms are defined in other ITU-T J.380.x series Recommendations having very specific technical meanings, the reader is referred to the original source for their definition. For terms defined by this standard, brief definitions are given below.

All [ITU-T J.380.2], [ITU-T J.380.7], and [ITU-T J.380.8] definitions are included herein. See [ITU-T J.380.2], [ITU-T J.380.7], and [ITU-T J.380.8] for additional information. This interface is an advertising service of [ITU-T J.380.8] and makes references accordingly. In the event of a conflict between [ITU-T J.380.8] and this Recommendation, this Recommendation's language shall be considered standard.

4 Abbreviations and acronyms

All [ITU-T J.380.2], [ITU-T J.380.7], and [ITU-T J.380.8] abbreviations are included herein. See [ITU-T J.380.2], [ITU-T J.380.7], and [ITU-T J.380.8] for additional information.

Further, this Recommendation uses the following abbreviations and acronyms:

POIS Placement Opportunity Information Service

5 Conventions

5.1 Normative XML schema

This Recommendation employs the same notational conventions as [ITU-T J.380.8]. Refer to [ITU-T J.380.8] for an explanation of notational conventions.

5.2 Document conventions

This Recommendation employs the same document conventions as [ITU-T J.380.8]. Refer to [ITU-T J.380.8] for an explanation of document conventions. For example, the XML schema illustration is explained there.

5.3 Processing conventions

Unknown/Unrecognized/Unsupported XML elements and attributes.

See [ITU-T J.380.2] for information.

5.4 XML namespaces

This Recommendation uses the 'pois' prefix for the interface associated with the specific XML namespace URI that shall be used by all implementations. Table 1 lists the prefix, the corresponding namespace, and a description of the defining Recommendation used herein.

Table 1 – XML namespace declarations

Prefix	Namespace	Description
core	http://www.scte.org/schemas/130-2/2008a/core	See [ITU-T J.380.2]
gis	http://www.scte.org/schemas/130-8/2010a/gis	See [ITU-T J.380.8]
pois	http://www.scte.org/schemas/130-5/2010/pois	This Recommendation
wsdl	http://www.scte.org/wsdl/130-5/2010/pois	This Recommendation
xsd	http://www.w3.org/2001/XMLSchema	See [W3C-XSD]

Unless otherwise stated, all references to XML elements illustrated in this Recommendation are from the 'pois' namespace. Elements from other namespaces will be prefixed with the name of the external namespace, e.g., <core:XXXX>.

6 Data model and query support

A POIS may support one or more placement opportunity data models as defined in [b-ITU-T J.380.3]. One or more of the data models may be available for query using the basic query syntax defined in [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

A POIS should include advanced query support for a data model as specified in [ITU-T J.380.8].

7 POIS messages

This Recommendation includes a query and a notification model for POIS to endpoint messaging. The model includes associated notification management functions such as registration, deregistration and active registration listing.

The following topics are covered by [ITU-T J.380.2] and by [ITU-T J.380.8].

– Message format

– XML message carriage

– Transport mechanisms

– Message error handling

This Recommendation considers all aspects defined therein to be normative and applicable herein. See [ITU-T J.380.2] and [ITU-T J.380.8] for additional information.

A POIS implementation shall be built using the general information service (GIS) interface defined by [ITU-T J.380.8]. The POIS message interface shall include the messages defined by [ITU-T J.380.2] and [ITU-T J.380.8].

7.1 @version attribute

For all ITU-T J.380.5 messages defined herein (i.e., those messages prefixed with the string "POIS"), the @version attribute shall be set to the value "1.0" for this version of the Recommendation. For messages defined by the core namespace, for example core:ServiceStatus and core:ServiceNotification, their @version attribute shall contain the value defined by the normatively referenced specification (e.g., "1.1"). See [ITU-T J.380.2] for additional information.

7.2 Request base message

All POIS top level request messages are derived from the request message types defined in [ITU-T J.380.8] which inherit from the core:Msg_RequestBaseType abstract base message type. See [ITU-T J.380.2] for details on the attributes and elements contained in this base message.

7.2.1 Request base message attributes

All request base message attributes are consistent with those listed in [ITU-T J.380.8].

7.2.2 Request base message elements

All request base message elements are consistent with those listed in [ITU-T J.380.8].

7.3 Response base message

All POIS top level response messages are derived from the response message types defined in [ITU-T J.380.8] which inherit from the core:Msg_ResponseBaseType abstract base message type. See [ITU-T J.380.2] for details on the attributes and elements contained in this base message.

7.3.1 Base response message attributes

All response base message attributes are consistent with those listed in [ITU-T J.380.8].

7.3.2 Base response message elements

All response base message elements are consistent with those listed in [ITU-T J.380.8], except those elements listed below.

7.4 Notification base message

All POIS top level notification messages are derived from the notification message types defined in [ITU-T J.380.8] which inherit from the core:Msg_NotificationBaseType abstract base message type. See [ITU-T J.380.2] for details on the attributes and elements contained in this base message.

7.4.1 Notification base message attributes

All notification base message attributes are consistent with those listed in [ITU-T J.380.8].

7.4.2 Notification base message elements

All notification base message elements are consistent with those listed in [ITU-T J.380.8].

7.5 Acknowledgement base message

All POIS top level acknowledgement messages are derived from the acknowledgement message types defined in [ITU-T J.380.8] which inherit from the core:Msg_AcknowledgementBaseType abstract base message type. See [ITU-T J.380.2] for details on the attributes and elements contained in this base message.

7.5.1 Acknowledgement base message attributes

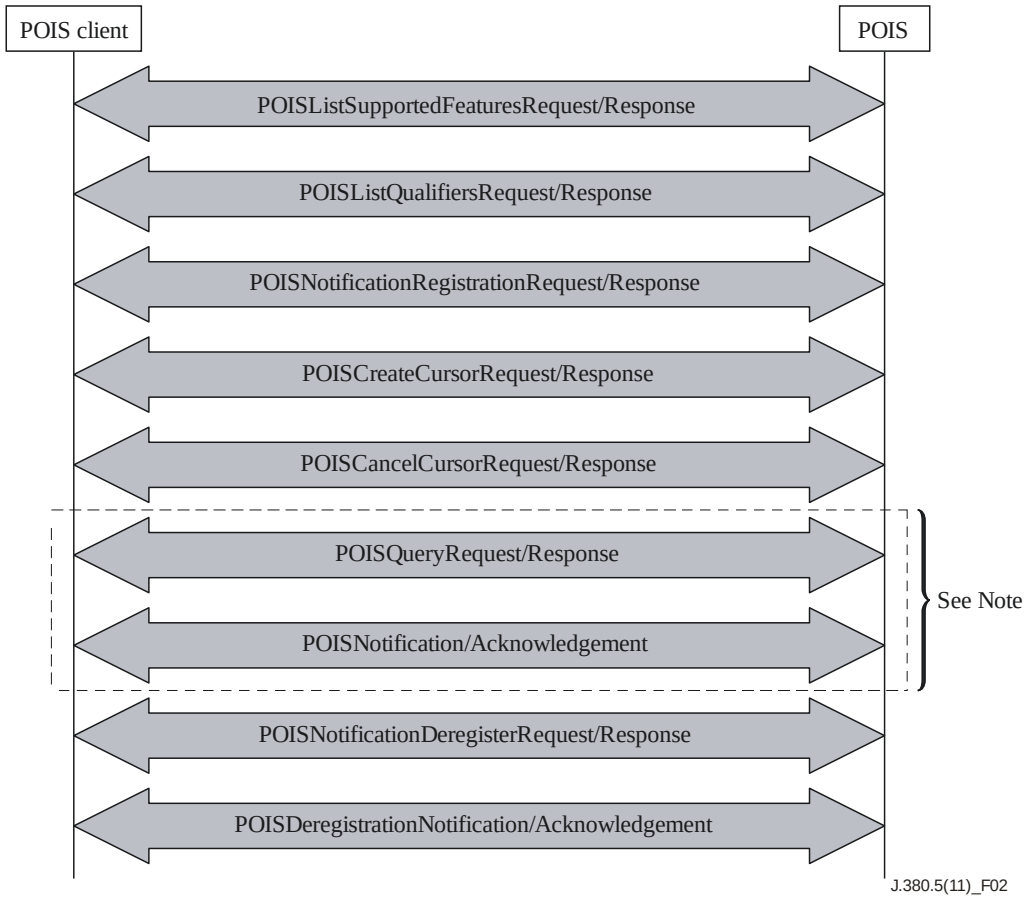
All acknowledgement base message attributes are consistent with those listed in [ITU-T J.380.8].

7.5.2 Acknowledgement base message elements

All acknowledgement base message elements are consistent with those listed in [ITU-T J.380.8].

7.6 POIS message exchange

Figure 2 illustrates a typical message exchange between a POIS client and a POIS implementation.



NOTE – The query and notification exchange may occur repeatedly between logical service channel set-up and tear down.

Figure 2 – POIS top level messages exchanges

Table 2 provides brief description of each POIS message.

Table 2 – POIS top level messages

Message	Description
POISListSupportedFeaturesRequest	Request to retrieve a list of the POIS's supported features.
POISListSupportedFeaturesResponse	Response to POISListSupportedFeaturesRequest.
POISListQualifiersRequest	Request to retrieve a list of names that can be used to construct basic queries using name/value pairs.
POISListQualifiersResponse	Response to POISListQualifiersRequest.
POISListNotificationRegistrationRequest	Request to list existing registrations.
POISListNotificationRegistrationResponse	Response to POISListNotificationRegistrationRequest.
POISNotificationRegistrationRequest	Registration request for notification.
POISNotificationRegistrationResponse	Response to POISNotificationRegistrationRequest.
POISNotification	Notification message indicating a change to the result set of a registered query.
POISNotificationAcknowledgement	Response to POISNotification.
POISQueryRequest	Request to acquire records from the POIS.
POISQueryResponse	Response to POISQueryRequest.

Table 2 – POIS top level messages

Message	Description
POISCreateCursorRequest	Request to create a cursor.
POISCreateCursorResponse	Response to POISCreateCursorRequest.
POISCancelCursorRequest	Request to cancel an existing cursor.
POISCancelCursorResponse	Response to POISCancelCursorRequest.
POISNotificationDeregisterRequest	Request to de-register a previously accepted registration.
POISNotificationDeregisterResponse	Response to POISNotificationDeregisterRequest.
POISDeregistrationNotification	Deregistration notification.
POISDeregistrationAcknowledgement	Deregistration notification acknowledgement.

7.7 POISListSupportedFeaturesRequest and response messages

The ListSupportedFeaturesRequest and ListSupportedFeaturesResponse messages allow clients to inquire about the data models and advanced query languages supported by a POIS implementation. A POIS implementation shall implement the appropriate basic query support per clause 10 and should implement advanced query language support as defined by [ITU-T J.380.8]. See clause 6 and [ITU-T J.380.8] for additional information.

7.7.1 POISListSupportedFeaturesRequest message

The POISListSupportedFeaturesRequest message allows a POIS client to inquire about the data models and advanced query languages supported by a POIS implementation.

Figure 3 illustrates the POISListSupportedFeaturesRequest message's schema.

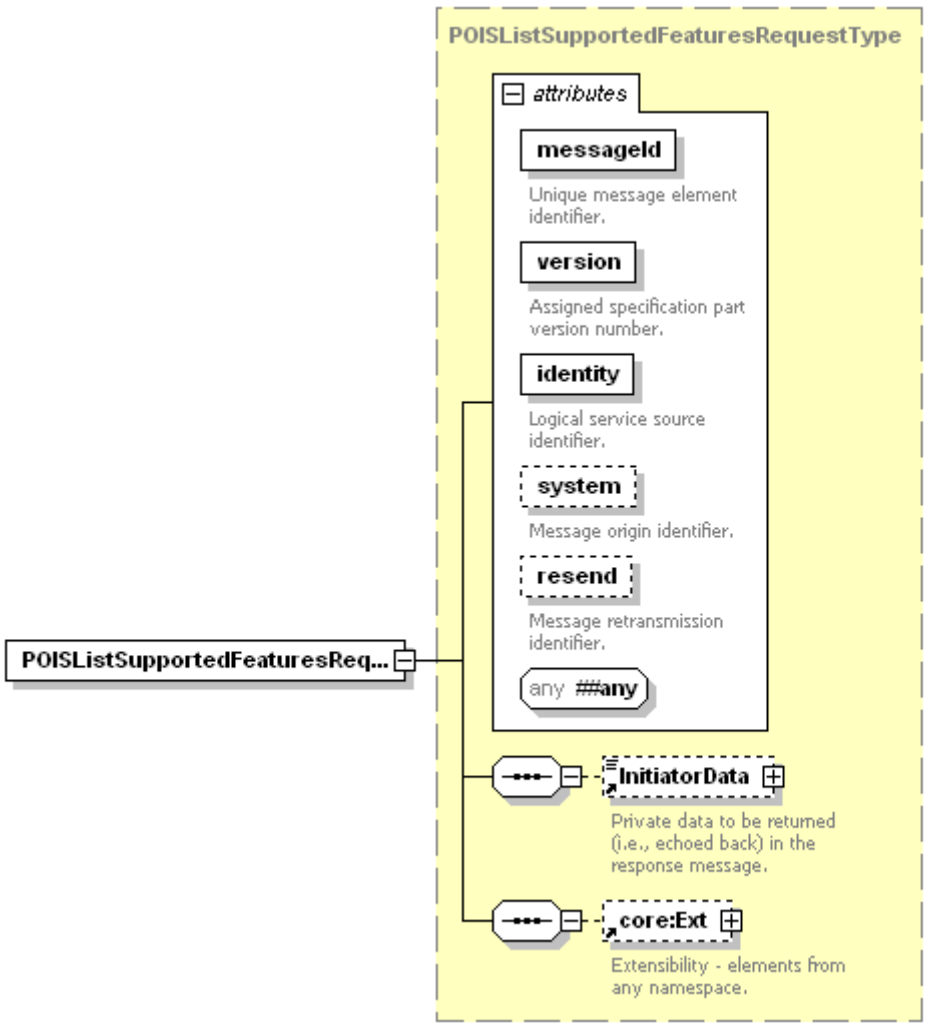


Figure 3 – POISListSupportedFeaturesRequest message

This POIS interface adds only a single core:Ext to the gis:ListSupportedFeaturesRequestType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.7.2 POISListSupportedFeaturesResponse message

A successful return status in the POISListSupportedFeaturesResponse message indicates the message shall contain at a minimum the following elements:

A single core:Callout element containing one or more core:Address element(s) supplying an endpoint for additional services as specified by Table 3. See [ITU-T J.380.2] and [ITU-T J.380.8] for additional information.

One ServiceDataModelProfile element describing a data model supported by a POIS. Additional ServiceDataModelProfile elements may appear for supplementary POIS supported data models and all data models are outside the scope of this Recommendation.

Figure 4 illustrates the POISListSupportedFeaturesResponse message's schema.

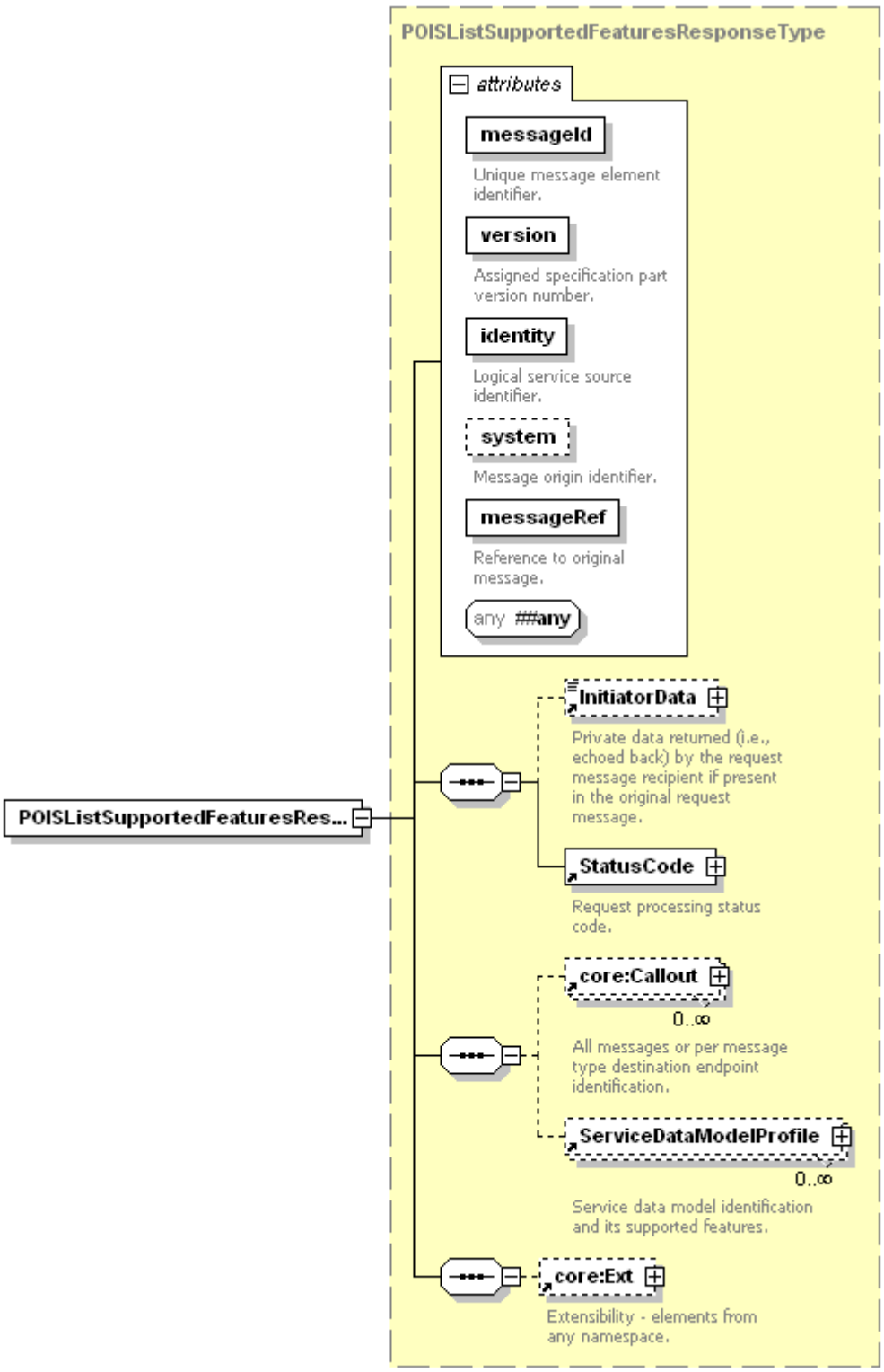


Figure 4 – POISListSupportedFeaturesResponse message

This POIS interface adds only a single core:Ext to the gis:ListSupportedFeaturesResponseType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

Table 3 contains the values for the @message attribute of the core:Callout element. Values for the @message attribute shall appear exactly as defined by this table.

Table 3 – POISListSupportedFeaturesResponse/core:Callout @message values

Value	Description
POISListQualifiersRequest	Value associated with the address endpoint where POISListQualifiersRequest messages shall be sent.
POISNotificationRegistrationRequest	Value associated with the address endpoint where POISNotificationRegistrationRequest messages shall be sent.
POISNotificationDeregisterRequest	Value associated with the address endpoint where POISNotificationDeregisterRequest messages shall be sent.
POISListNotificationRegistrationRequest	Value associated with the address endpoint where POISListNotificationRegistrationRequest messages shall be sent.
POISCreateCursorRequest	Value associated with the address endpoint where POISCreateCursorRequest messages shall be sent.
POISCancelCursorRequest	Value associated with the address endpoint where POISCancelCursorRequest messages shall be sent.
POISQueryRequest	Value associated with the address endpoint where POISQueryRequest messages shall be sent.
ServiceStatusNotification	Value associated with the address endpoint where core:ServiceStatusNotification messages shall be sent.
…	User defined address endpoint outside of the scope of this Recommendation. The string shall be prefixed with the text "private:".

All message values listed in Table 3 and not present in the POISListSupportedFeaturesRequest message's core:Callout XML element sequence shall be available through the default endpoint if present. The default endpoint is identified by a core:Callout element not having the @message attribute. See [ITU-T J.380.2] for additional information.

7.8 POISListQualifiersRequest and response messages

The POISListQualifiersRequest and POISListQualifiersResponse messages allow clients to discover the Placement Opportunity information qualifiers associated with a POIS implementation's service data models which may be queried with the basic query interface.

7.8.1 POISListQualifiersRequest message

The POISListQualifiersRequest message allows a POIS consumer to inquire about the qualifier names used by a service data model available for query using the basic query interface.

Figure 5 illustrates the POISListQualifiersRequest message's schema.

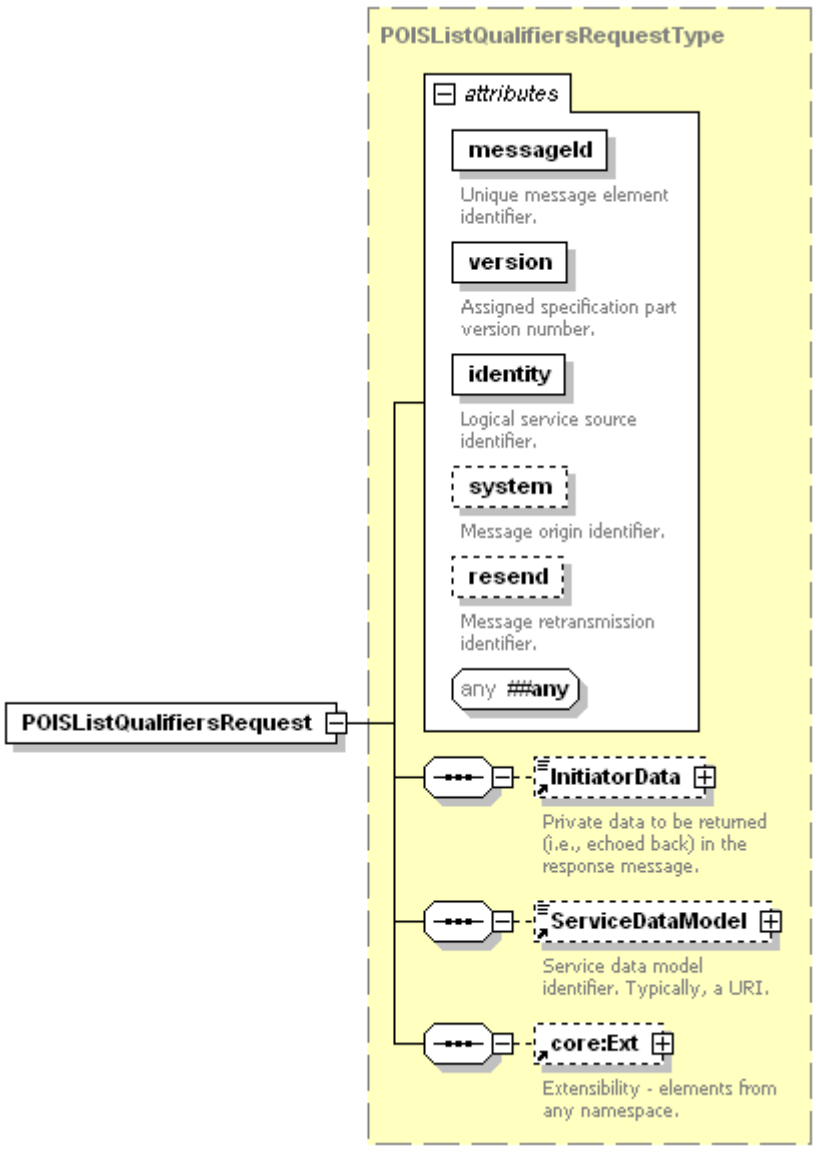


Figure 5 – POISListQualifiersRequest message

This POIS interface adds only a single core:Ext to the gis:ListQualifiersRequestType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.8.2 POISListQualifiersResponse message

If the POIS implementation supports the service data model specified in the POISListQualifiersRequest message's ServiceDataModel element, the POISListQualifiersResponse message shall contain, at a minimum, a single BasicQueryDataModelDescription element. See [ITU-T J.380.8] for additional information on the BasicQueryDataModelDescription element.

If the POIS implementation does not support the service data model contained in the POISListQualifiersRequest/ServiceDataModel element, no BasicQueryDataModelDescription element shall be returned and the StatusCode element's @detailCode shall be set to core:ResourceNotFound.

The XML schema definition for the POISListQualifiersResponse message is illustrated in Figure 6.

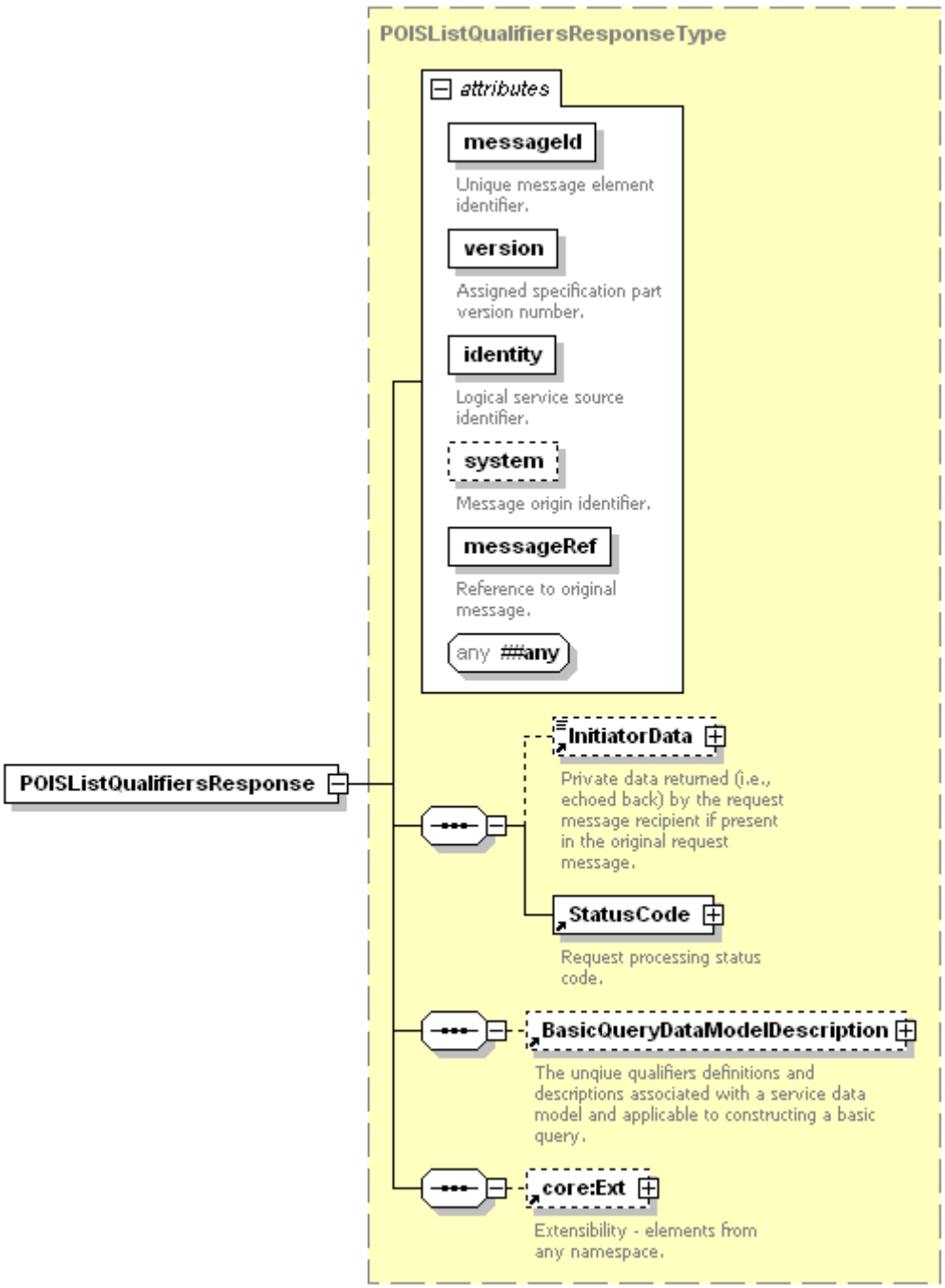


Figure 6 – POISListQualifiersResponse message

This POIS interface adds only a single core:Ext to the gis:ListQualifiersResponseType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.9 POISListNotificationRegistrationRequest and response messages

A POIS client may inquire about current registrations by using the POISListNotificationRegistrationRequest message. A POIS implementation shall respond to the POISListNotificationRegistrationRequest message with a POISListNotificationRegistrationResponse message. This allows the client to discover the active notification queries previously installed by one or more POISNotificationRegistrationRequest messages.

7.9.1 POISListNotificationRegistrationRequest message

The POISListNotificationRegistrationRequest message may be issued to retrieve information about active notification registrations using the support inquiry control attributes. See [ITU-T J.380.8] for additional information.

Figure 7 illustrates the POISListNotificationRegistrationRequest message's schema.

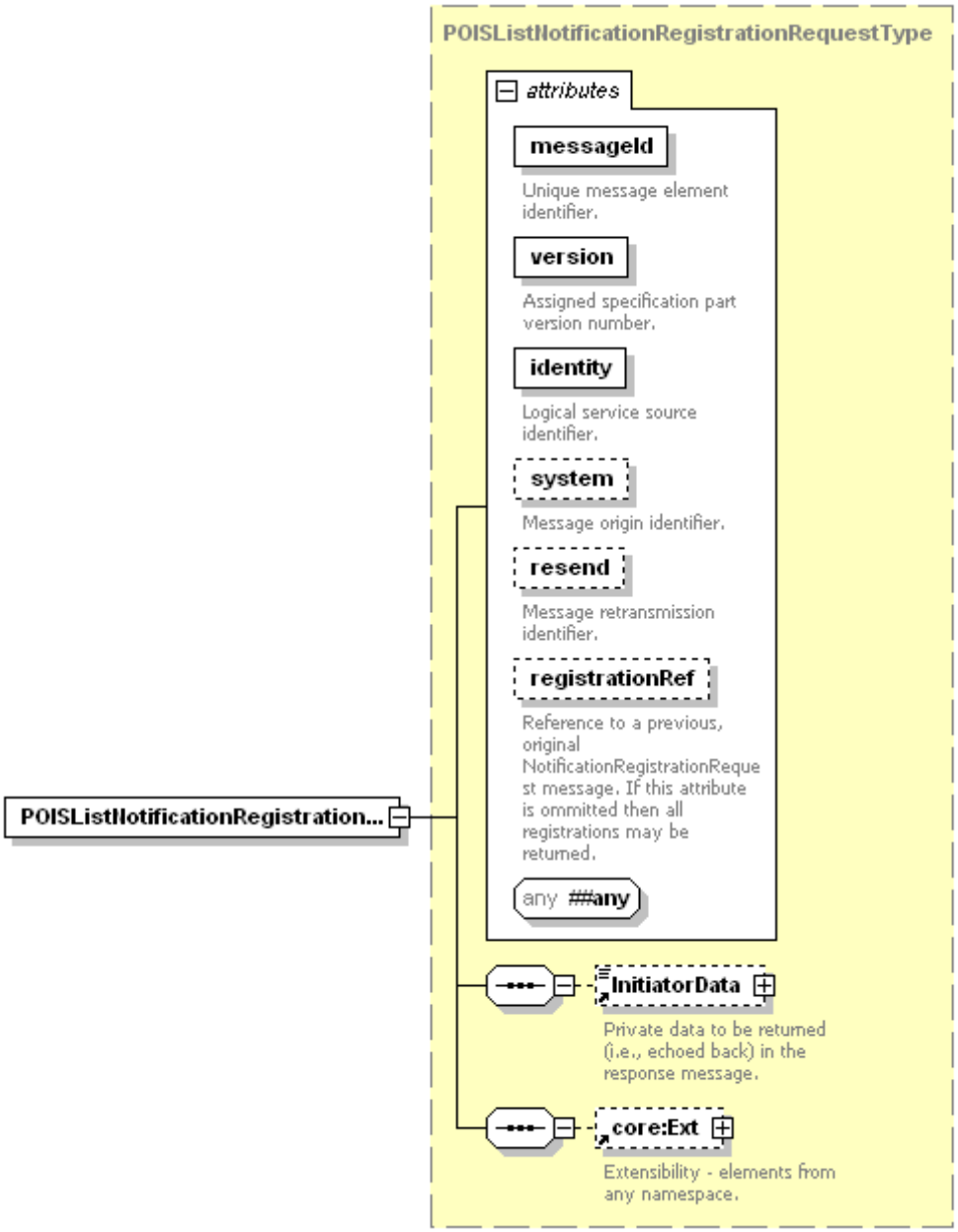


Figure 7 – POISListNotificationRegistrationRequest message

This POIS interface adds only a single core:Ext to the gis:ListNotificationRegistrationRequestType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.9.2 POISListNotificationRegistrationResponse message

The POISListNotificationRegistrationResponse message is the return message to a POISListNotificationRegistrationRequest message. The response message contains the active POISNotificationRegistrationRequest messages as appropriate for the inquiry.

Figure 8 illustrates the POISListNotificationRegistrationResponse message's schema.

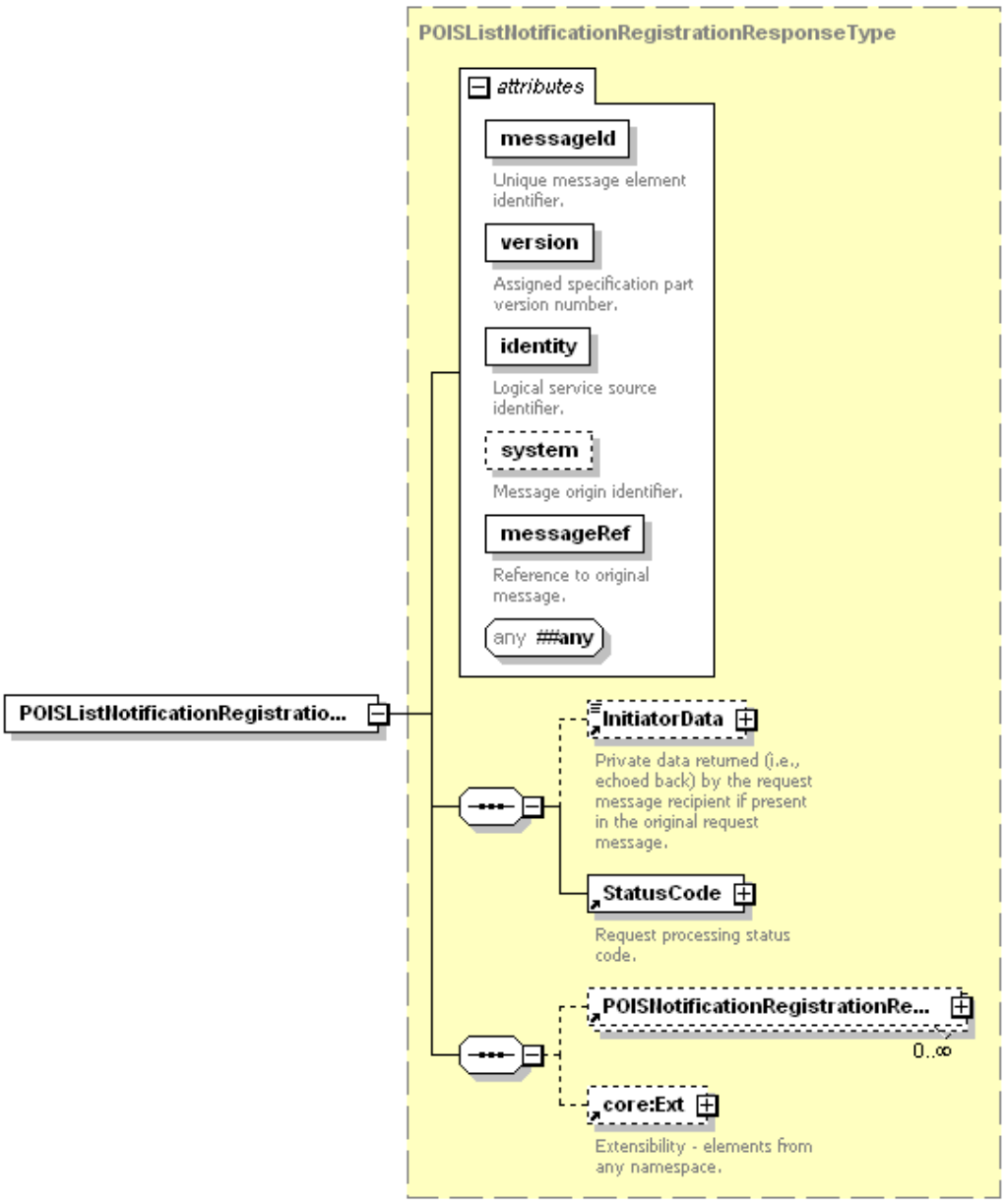


Figure 8 – POISListNotificationRegistrationResponse message

This POIS interface adds zero or more POISNotificationRegistrationRequest elements and a single core:Ext to the gis: NotificationRegistrationResponseType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] and below for additional information.

POISNotificationRegistrationRequest [Optional] – The POISNotificationRegistrationRequest element shall be a recoded copy of the accepted registration. The message element order does not convey any information (e.g., element order does not reflect registration order). For more information on the POISNotificationRegistrationRequest element see clause 7.10.1 and the discussion of the gis:NotificationRegistrationRequest type in [ITU-T J.380.8].

7.10 POISNotificationRegistrationRequest and response messages

A POIS implementation shall support registration for notification message delivery as defined by [ITU-T J.380.8]. The POISNotificationRegistrationRequest message allows a POIS client to specify notification interests using a basic or an advanced query.

On receipt of an update, addition or deletion event from its underlying data store, a POIS implementation shall send a notification message to each matching registered POIS consumer.

7.10.1 POISNotificationRegistrationRequest message

The POISNotificationRegistrationRequest message allows a client to specify a set of notification interests by registering a query against a POIS implementation's data model. These registered queries shall be examined by the POIS implementation relative to changes in any data relevant to the query. If any change to the data causes a change to the query result for a previously registered query, a notification containing the new result shall be sent to the client in the form of a POISNotification message.

Figure 9 illustrates the POISNotificationRegistrationRequest message's schema.

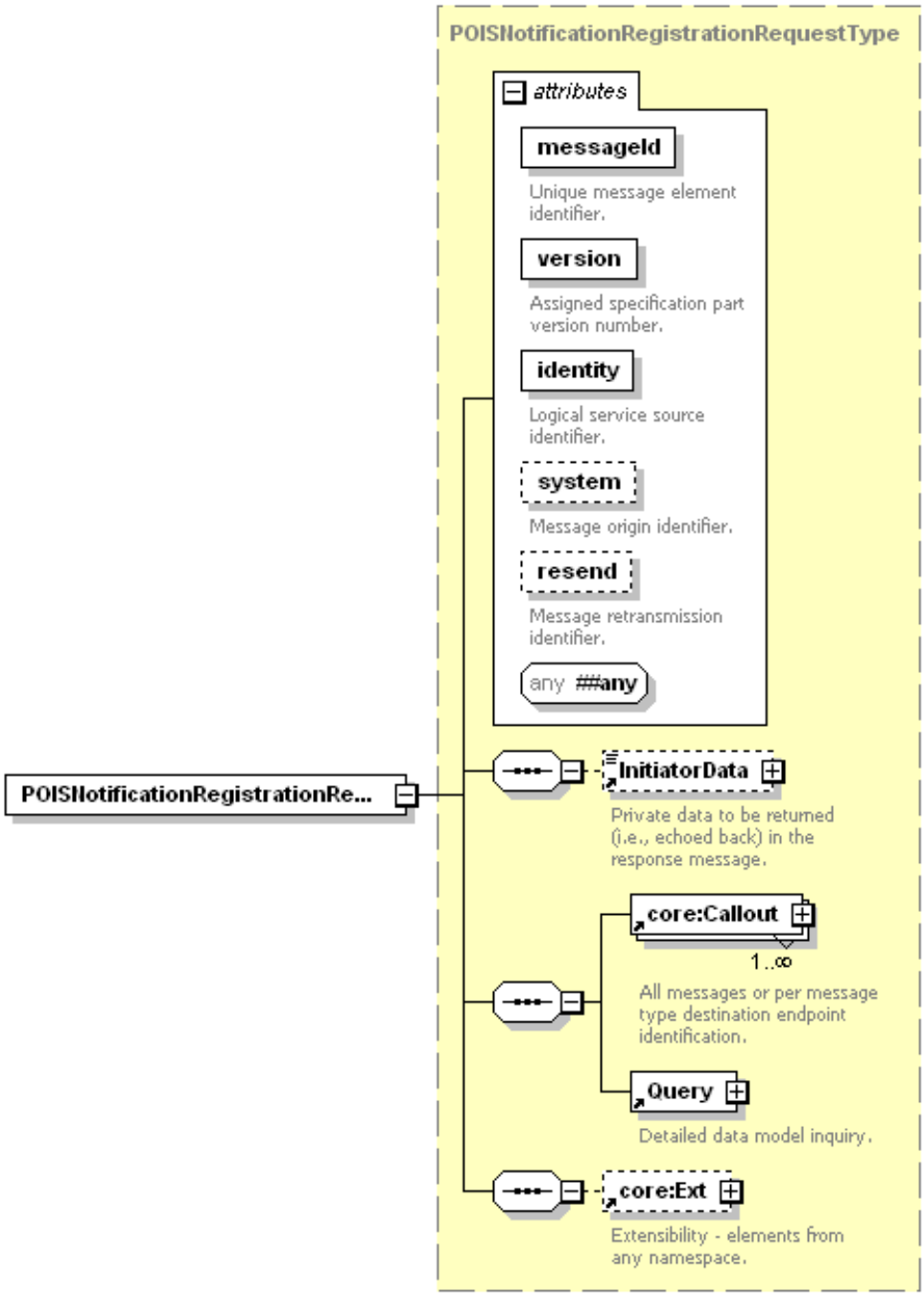


Figure 9 – POISNotificationRegistrationRequest message

This POIS interface adds a single core:Ext to the [ITU-T J.380.8] gis:NotificationRegistrationRequestType. See [ITU-T J.380.8] for additional information.

Additionally, a POIS implementation shall recognize the values listed in Table 4 as values for the core:Callout @message attribute. Values for the @message attribute shall appear exactly as defined in this table.

Table 4 – NotificationRegistrationRequest/core:Callout @message values

@message Attribute Value	Description
POISNotification	Value associated with the address endpoint where POISNotification messages shall be sent.
ServiceStatusNotification	Value associated with the address endpoint where core:ServiceStatusNotification messages shall be sent.
POISDeregistrationNotification	Value associated with the address endpoint where POISDeregistrationNotification messages shall be sent.
…	User defined address endpoint outside of the scope of this Recommendation. The string shall be prefixed with the text "private:".

All message values listed in Table 4 and not present in the POISNotificationRegistrationRequest message's core:Callout XML element sequence shall be available through the default endpoint if present. The default endpoint is identified by a core:Callout element not having the @message attribute. See [ITU-T J.380.2] for additional information.

7.10.2 POISNotificationRegistrationResponse message

Upon completion of processing a POISNotificationRegistrationRequest message, the POIS service shall respond with a POISNotificationRegistrationResponse message.

Figure 10 illustrates the POISNotificationRegistrationResponse message's schema.

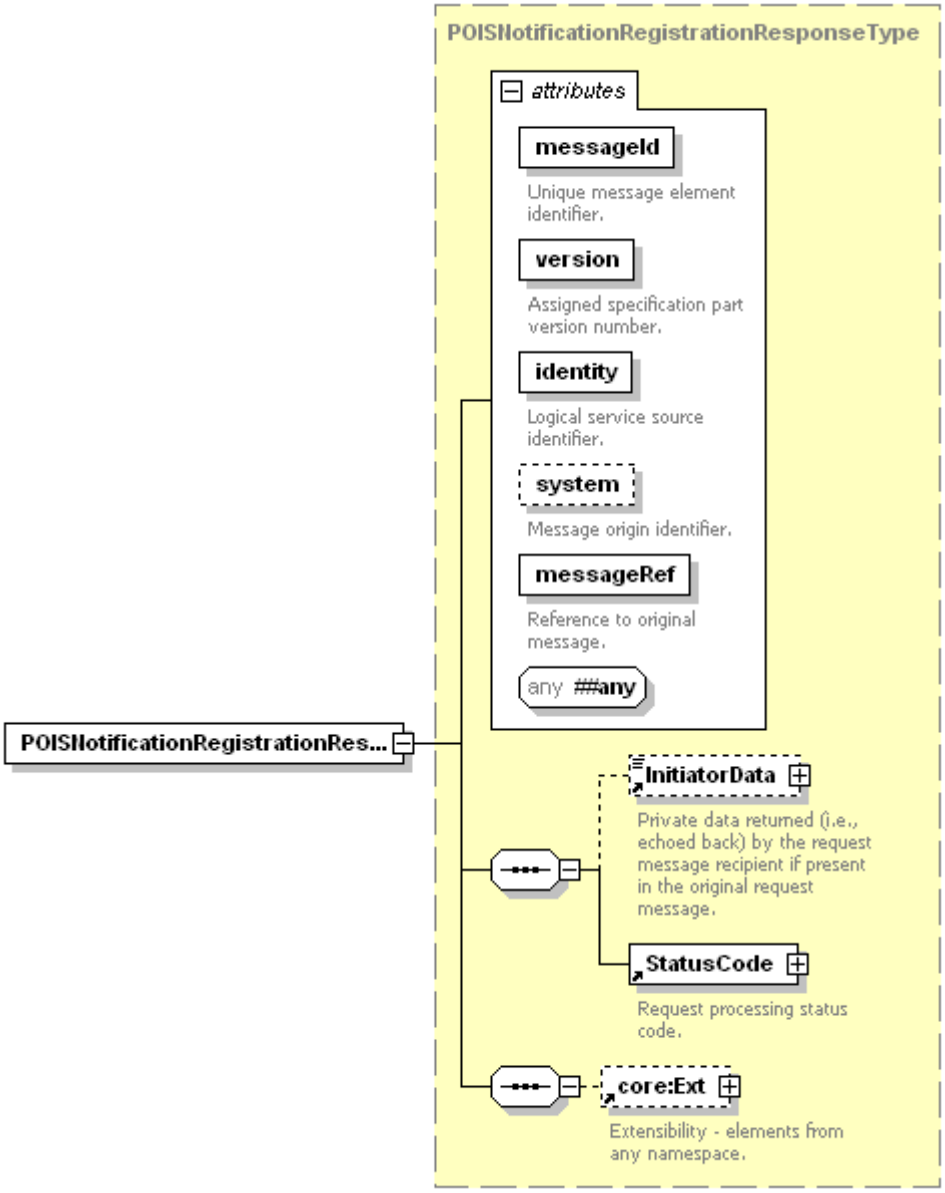


Figure 10 – POISNotificationRegistrationResponse message

This POIS interface adds only a single core:Ext to the gis:NotificationRegistrationResponseType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.11 POISNotification and Acknowledgement messages

A POIS implementation shall support the exchange of POISNotification and POISNotificationAcknowledgement messages with registered consumers for the purpose of notifying the consumer of changes in data relevant to the consumer's registered queries as defined by [ITU-T J.380.8].

7.11.1 POISNotification message

Upon detection of a change in the result set of one or more queries registered with a POIS implementation, the POIS shall send a POISNotification message to qualified, registered clients.

The XML schema for the POISNotification message is illustrated in Figure 11.

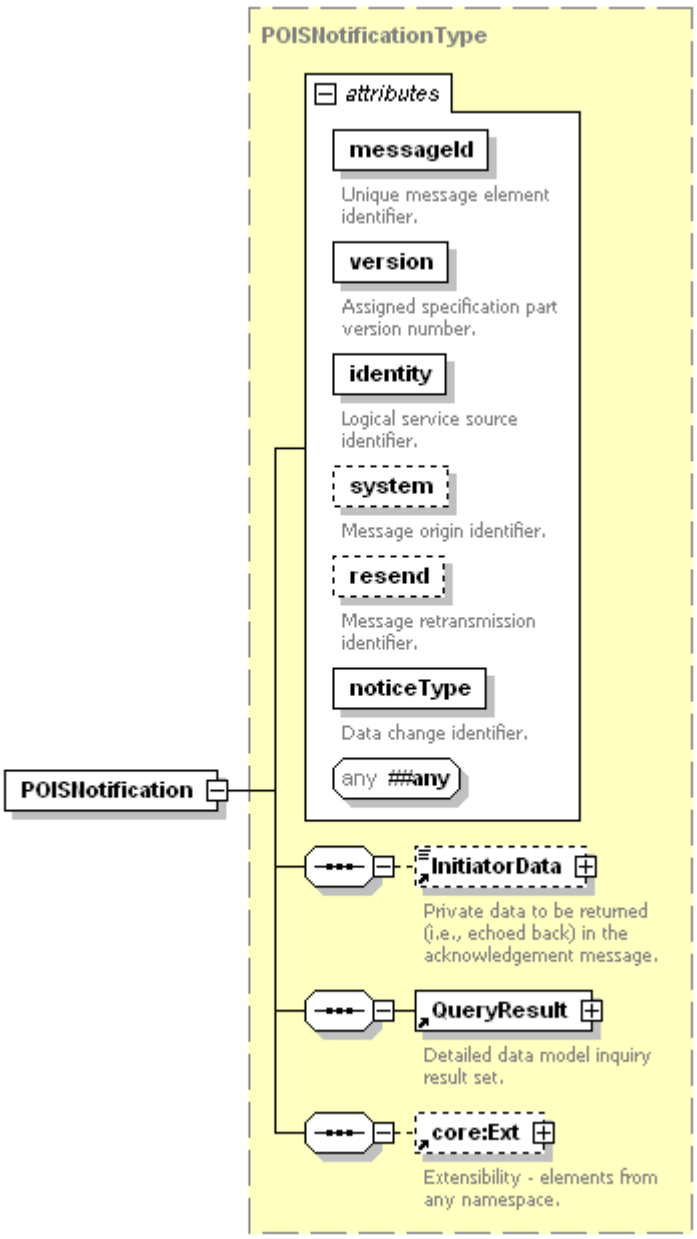


Figure 11 – POISNotification message

This POIS interface adds only a single core:Ext to the gis:NotificationType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

NOTE – The gis:BasicQueryResultAbstract element located within the QueryResult element shall be substituted for by a data model specific results element which extends from the gis:BasicQueryResultAbstract element. The element present is dependent upon the data model being queried and the query parameters.

7.11.2 POISNotificationAcknowledgement message

Upon receipt of a POISNotification message, a POIS client shall respond with a POISNotificationAcknowledgement message.

Figure 12 illustrates the POISNotificationAcknowledgement message's schema.

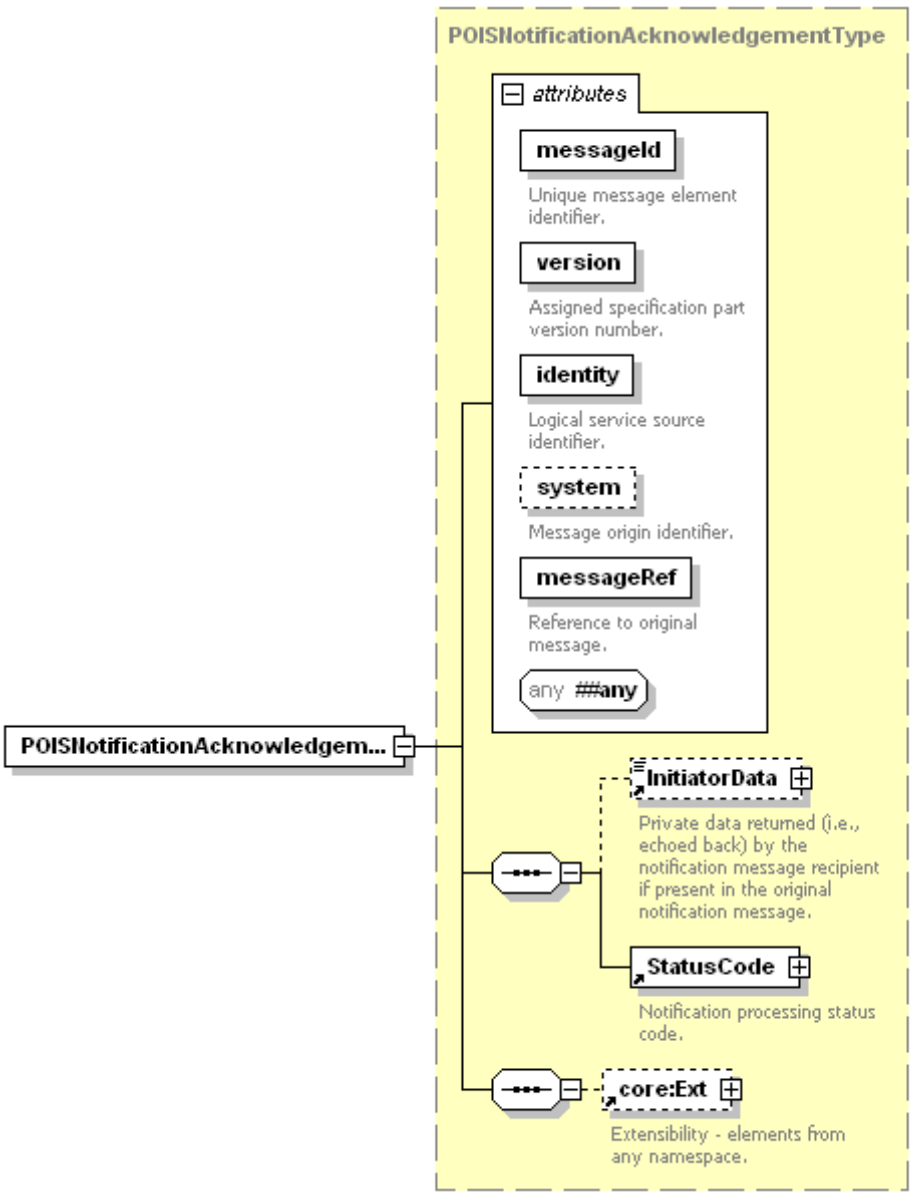


Figure 12 – POISNotificationAcknowledgement message

This POIS interface adds only a single core:Ext to the gis:NotificationAcknowledgementType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.12 POISCreateCursorRequest and response messages

A POIS implementation shall support cursors of static placement opportunity information for both basic and advanced queries, which shall exist for a specified duration. Upon creation of a cursor using the POIS interface, the data information in the cursor shall remain static relative to the referenced data store.

Cursors have a limited life span, which is first requested by the client, but may be overridden by the POIS. As part of the cursor request message, the client shall specify a @cursorExpires core:dateTimeTimezoneType attribute. This date and time is a request to a POIS for a specific end date and time for the cursor identified by the @cursorId attribute. In order to maintain overall system health, a POIS implementation may choose to override a requested cursor expires end date and time and substitute a different, implementation specific, cursor expires end date and time.

7.12.1 POISCreateCursorRequest message

The POISCreateCursorRequest message is used to create an instance of a static cursor on a POIS implementation.

Figure 13 illustrates the POISCreateCursorRequest message's schema.

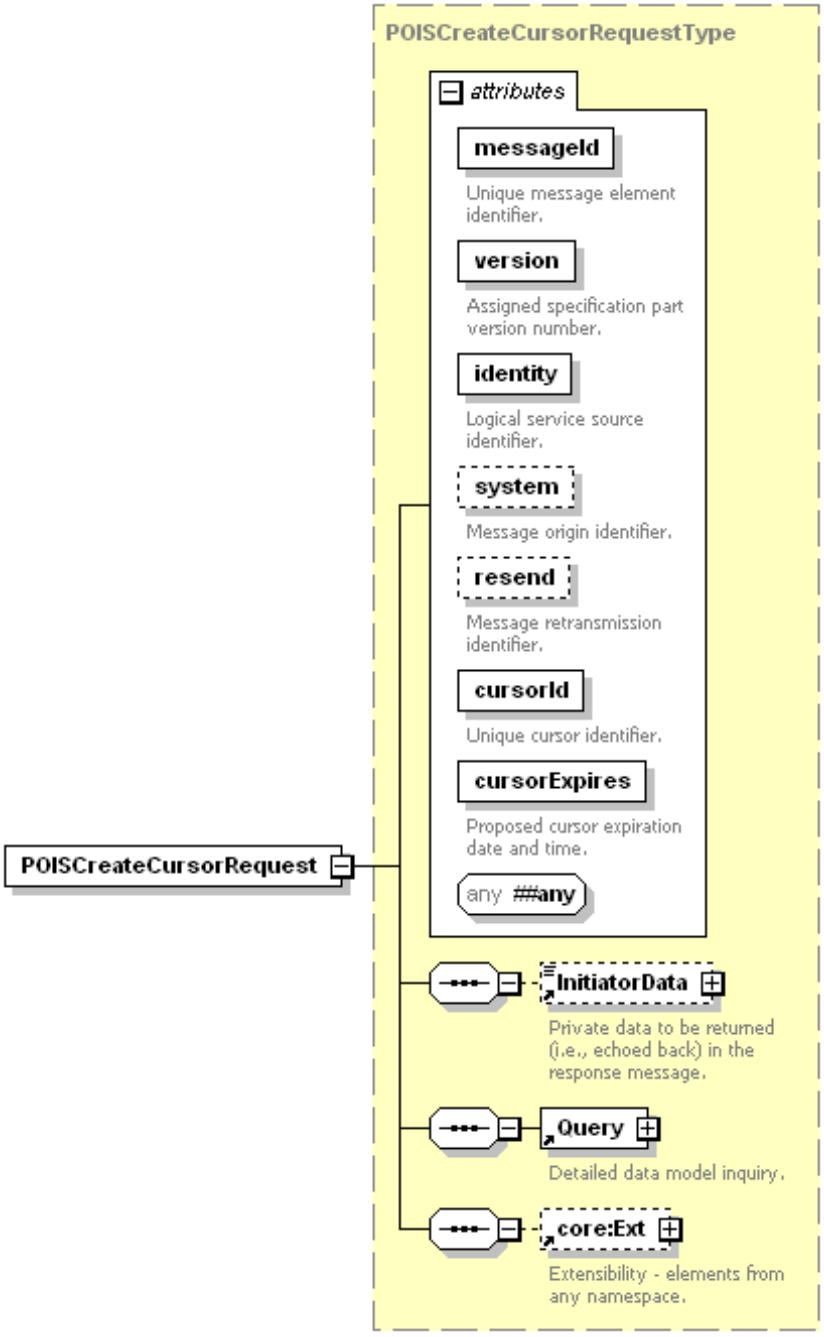


Figure 13 – POISCreateCursorRequest message

This POIS interface adds only a single core:Ext to the [ITU-T J.380.8] gis:CreateCursorRequestType. See [ITU-T J.380.8] for additional information.

7.12.2 POISCreateCursorResponse message

Upon receipt of a POISCreateCursorRequest message, a POIS implementation shall attempt to create the required cursor and shall respond to the client with a POISCreateCursorResponse

message. If the query is not successful (i.e., the POISCreateCursorReponse message's core:StatusCode value does not equate to success) then the cursor shall not be established.

Figure 14 illustrates the POISCreateCursorResponse message's schema.

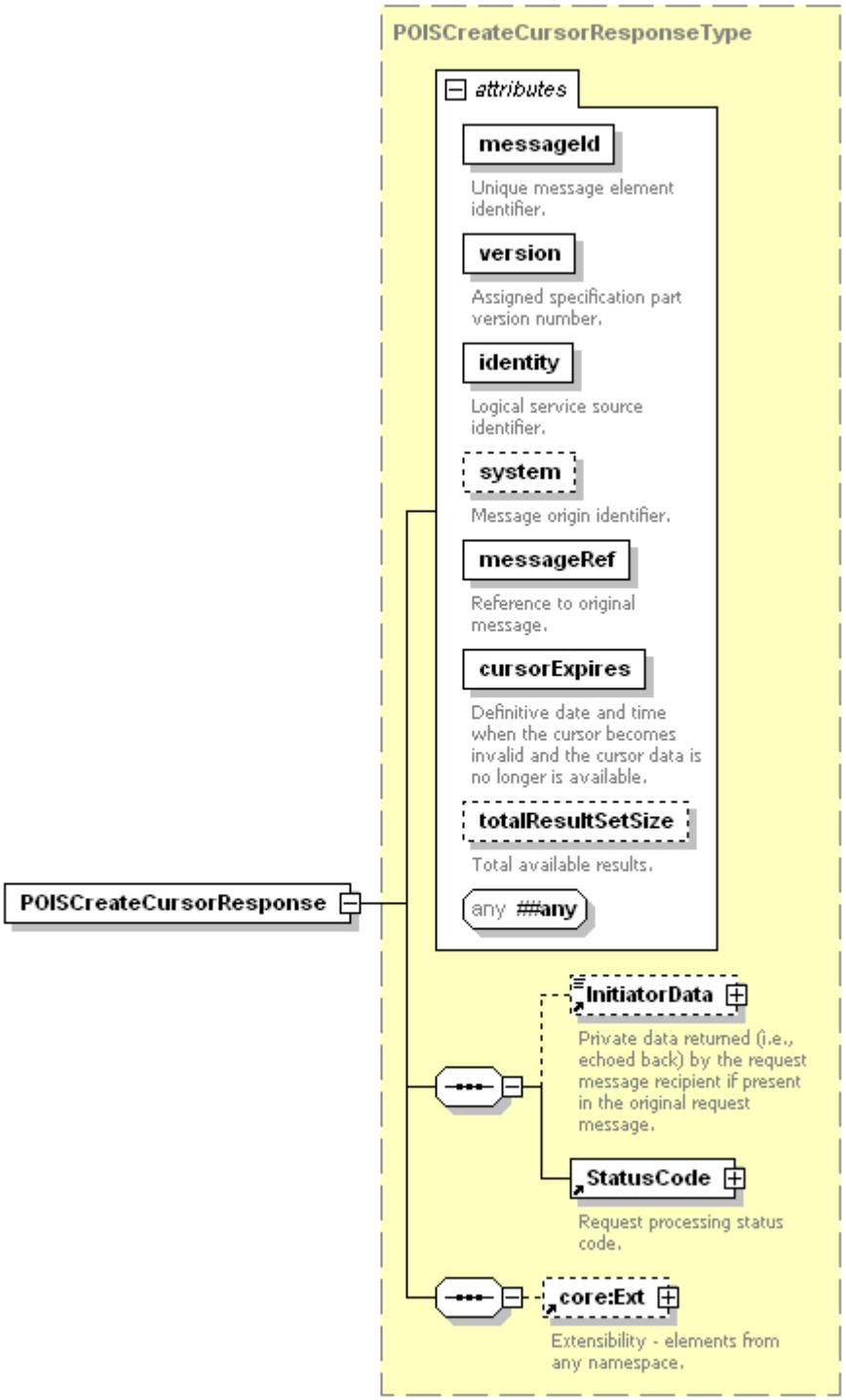


Figure 14 – POISCreateCursorResponse message

This POIS interface adds only a single core:Ext to the gis:CreateCursorResponseType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.13 POISCancelCursorRequest and response messages

A POIS implementation shall allow a client to cancel an existing cursor before the expiration time has passed.

A POIS client may complete interacting with a cursor before the cursor actually expires, and may choose to terminate the cursor. Once a cursor has been terminated or has expired, the POIS may release resources associated with the cursor.

7.13.1 POISCancelCursorRequest message

This message allows a client of a POIS implementation to terminate a cursor before the cursor's expiration time.

Figure 15 illustrates the POISCancelCursorRequest message's schema.

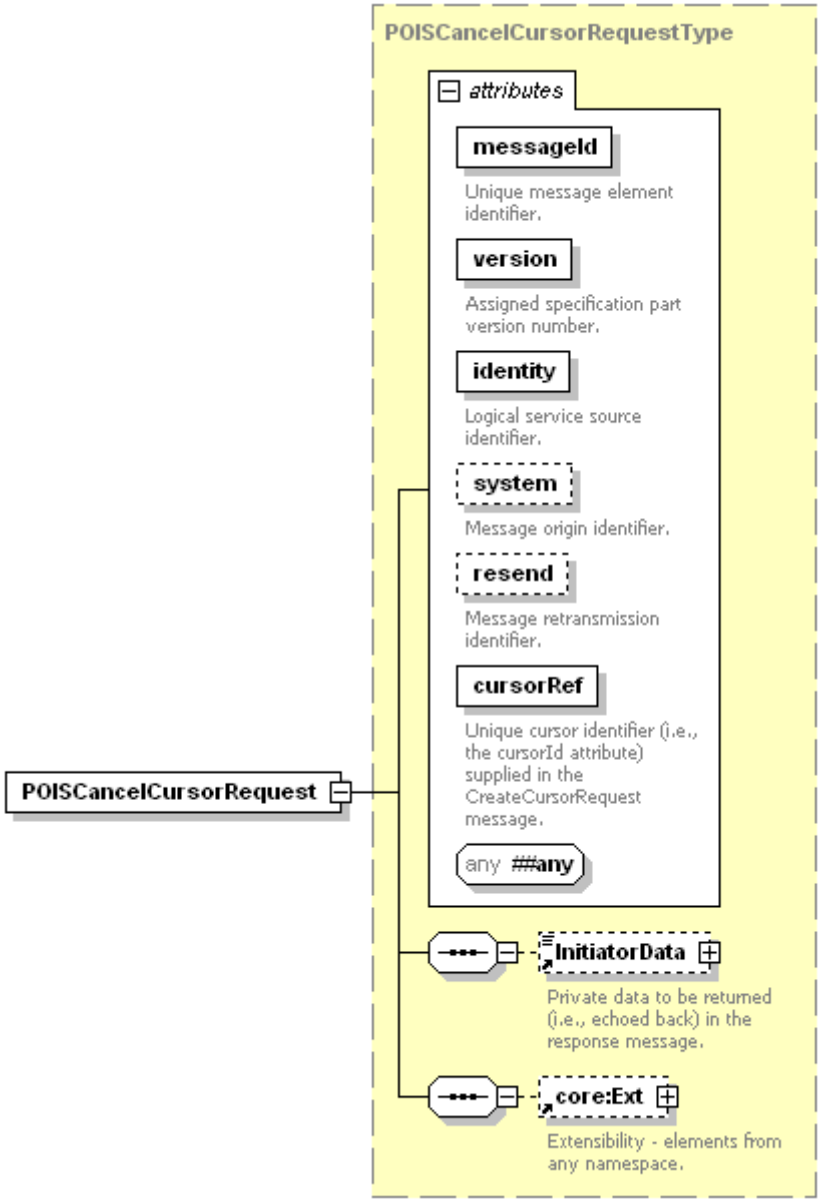


Figure 15 – POISCancelCursorRequest message

This POIS interface adds only a single core:Ext to the gis:CancelCursorRequestType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.13.2 POISCancelCursorResponse message

Upon receipt of a POISCancelCursorRequest message, a POIS implementation shall terminate the cursor identified by the @cursorRef attribute, and shall return a POISCancelCursorResponse message.

Figure 16 illustrates the POISCancelCursorResponse message's schema.

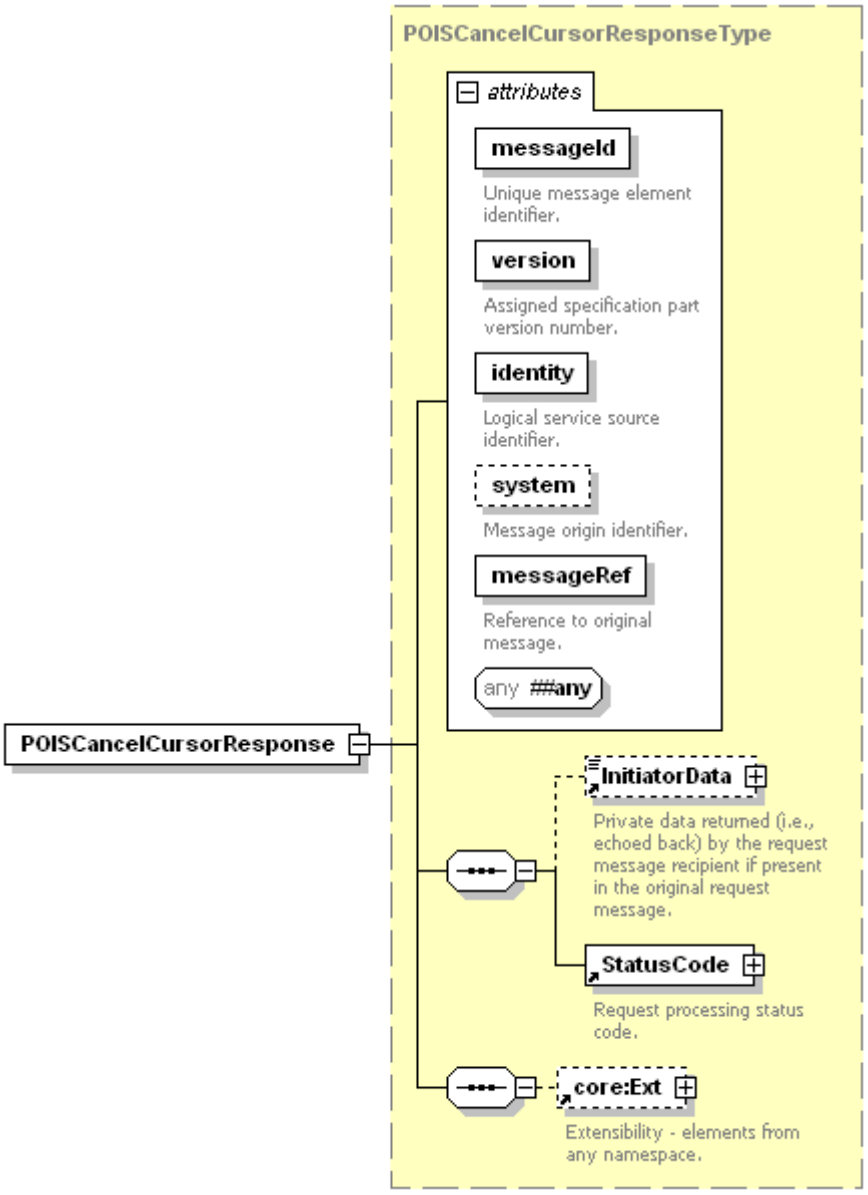


Figure 16 – POISCancelCursorResponse message

This POIS interface adds only a single core:Ext to the gis:CancelCursorResponseType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.14 POISQueryRequest and response messages

The POISQueryRequest and POISQueryResponse messages are used to initiate a query and receive results against the queried data model. The POISQueryRequest message supports both basic and advanced query mechanisms and references to existing static cursor information.

Basic queries leverage a limited key/value regular expression grammar. Advanced query support should be supported by all POIS implementations. Advanced queries allow for customized queries,

using specific query languages, to be executed directly against the POIS data model representation. Results from advanced queries shall be returned to the service consumer without intermediate formatting by a POIS.

7.14.1 POISQueryRequest message

The POISQueryRequest message is the primary mechanism for a client to execute a query against a POIS implementation's data model. This message contains either a Query Element or a reference to a previously established cursor.

Figure 17 illustrates the POISQueryRequest message's schema.

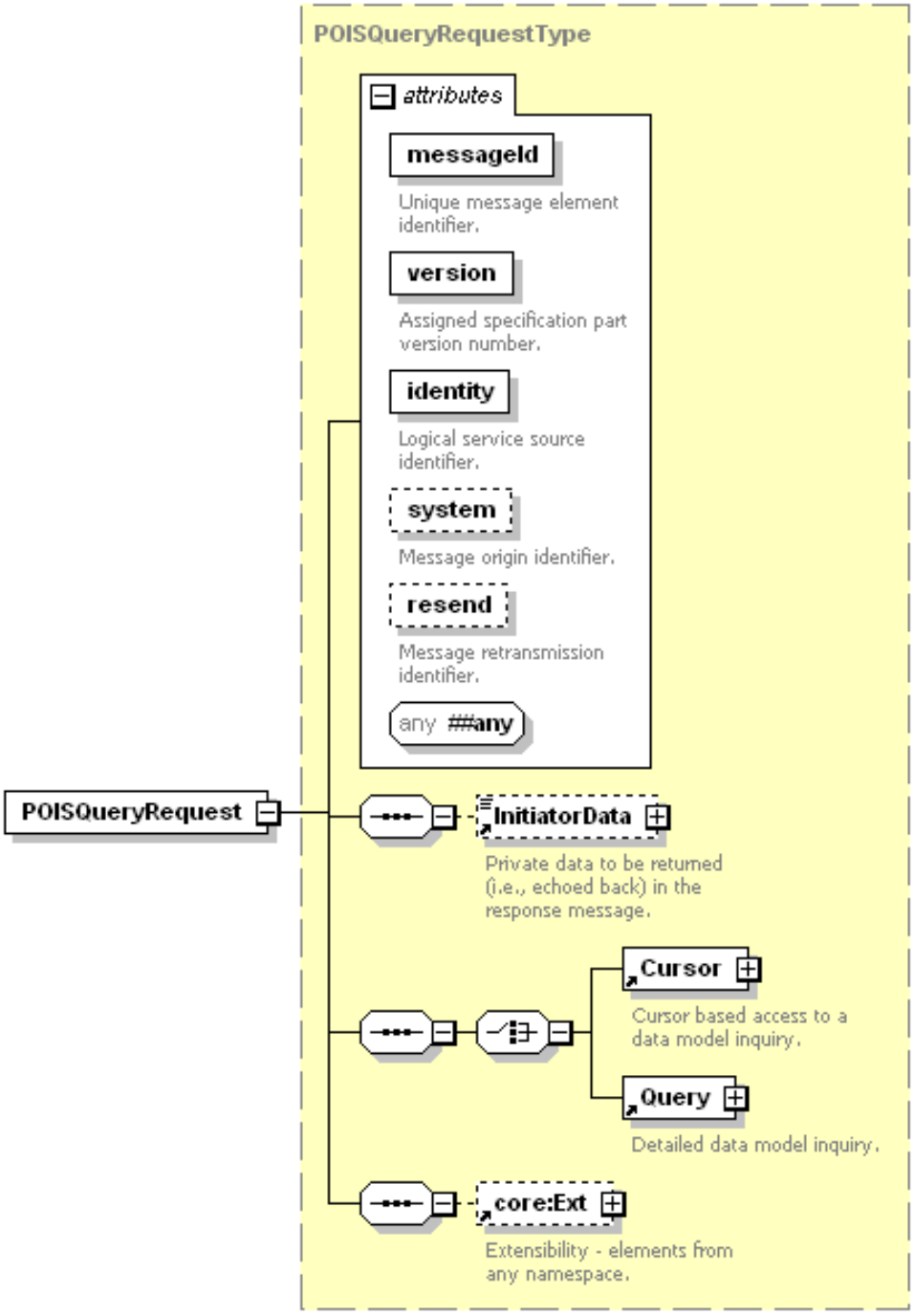


Figure 17 – POISQueryRequest message

This POIS interface adds only a single core:Ext to the [ITU-T J.380.8] gis:QueryRequestType. See [ITU-T J.380.8] for additional information.

7.14.2 POISQueryResponse message

Upon receipt of a POISQueryRequest message, a POIS implementation shall respond with a POISQueryResponse message. The response message contains the query results (basic, cursor, or advanced) in the QueryResult element.

The XML schema definition for this message is illustrated in Figure 18.

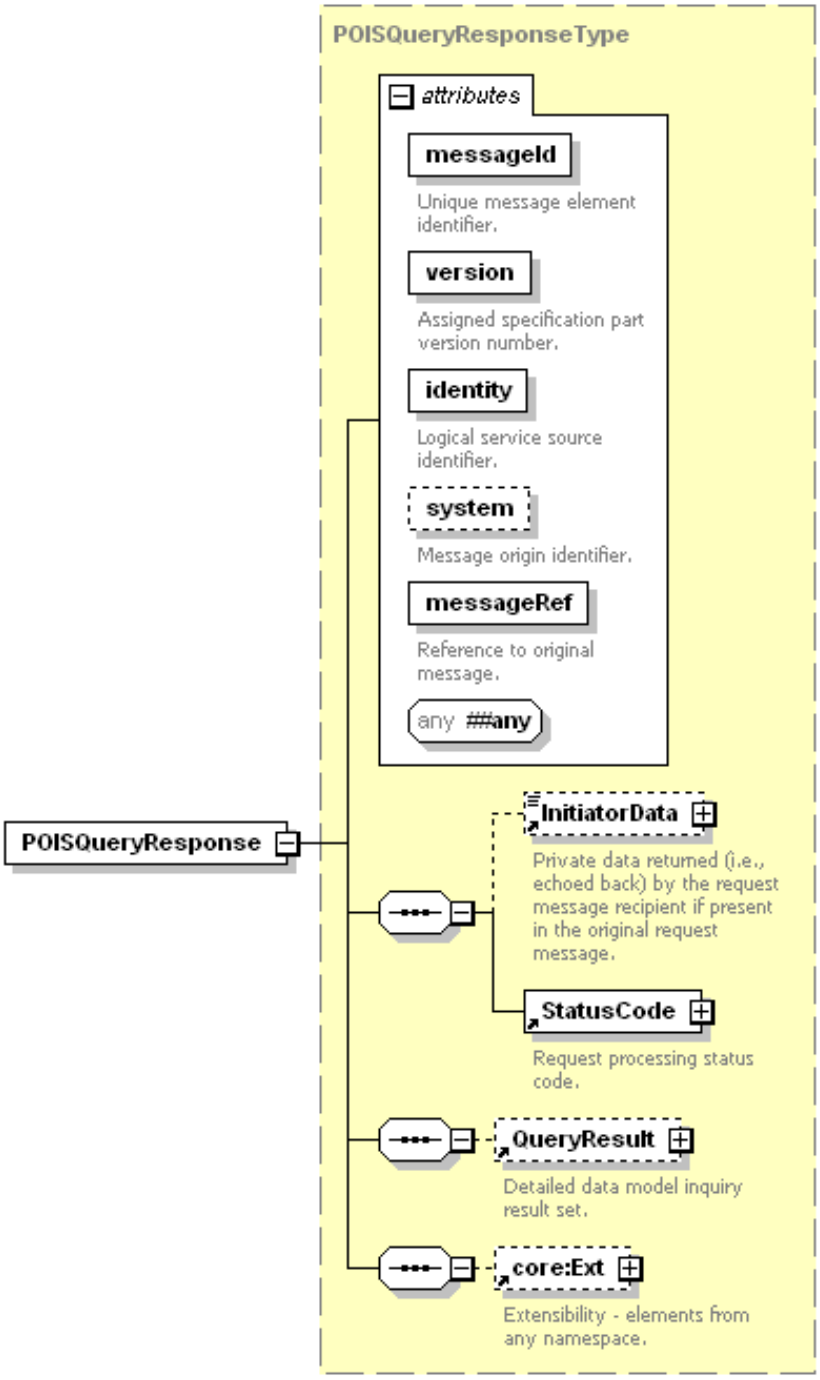


Figure 18 – POISQueryResponse message

This POIS interface adds only a single core:Ext to the [ITU-T J.380.8] gis:QueryResponseType. See [ITU-T J.380.8] for additional information.

NOTE – The gis:BasicQueryResultAbstract element located within the QueryResult element shall be substituted for by a data model specific results element which extends from the gis:BasicQueryResultAbstract element. The element present is dependent upon the data model being queried and the query parameters.

7.15 POISNotificationDeregisterRequest and Response messages

A POIS implementation shall allow a client to de-register a previously registered POISNotificationRegistrationRequest message. This message exchange allows a POIS client to dynamically modify registration notifications using individual register and deregister commands.

7.15.1 POISNotificationDeregisterRequest message

The POISNotificationDeregisterRequest message removes an existing POISNotificationRegistrationRequest from a POIS.

Figure 19 illustrates the POISNotificationDeregisterRequest message's schema.

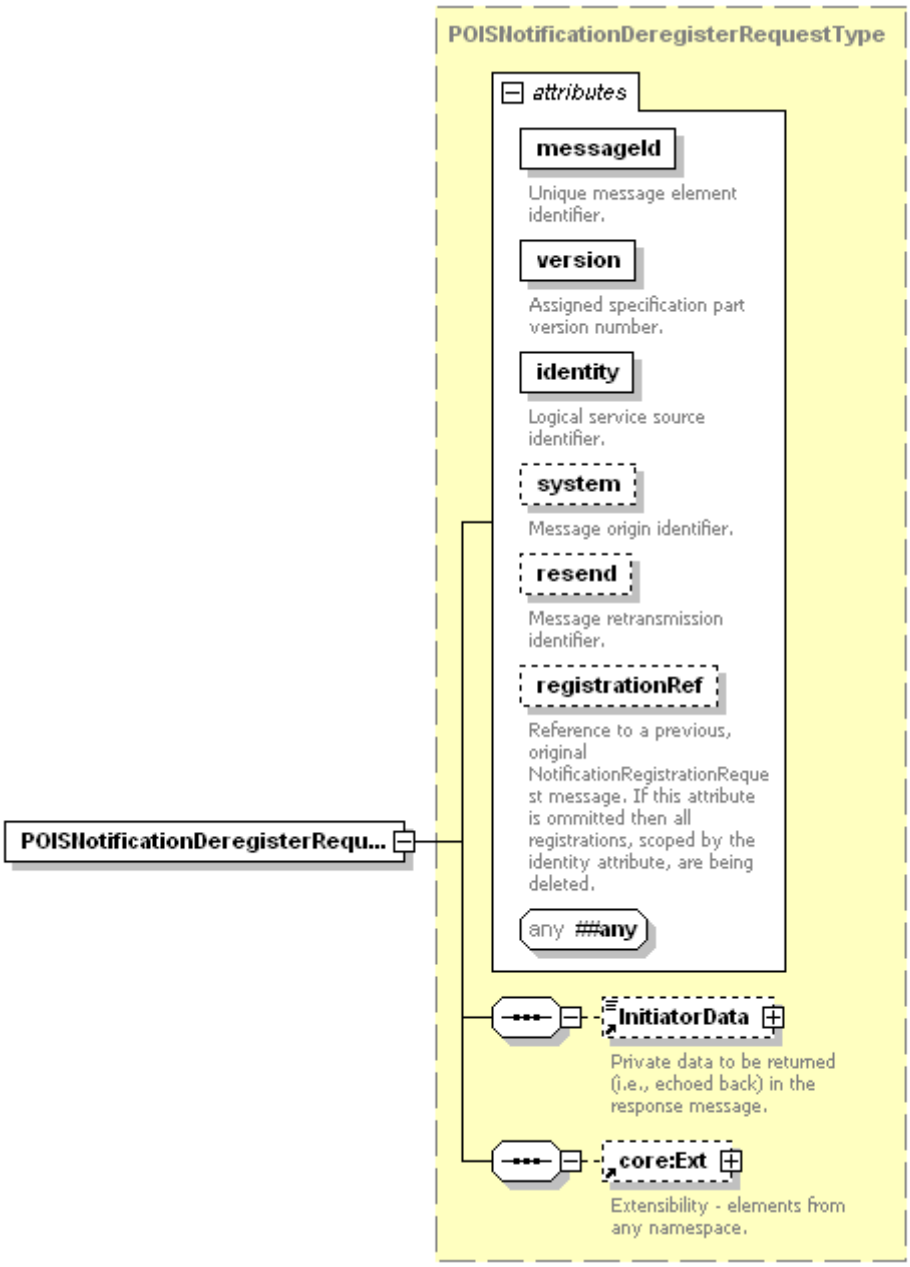


Figure 19 – POISNotificationDeregisterRequest message

This POIS interface adds only a single core:Ext to the gis:NotificationDeregisterRequestType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.15.2 POISNotificationDeregisterResponse message

Upon receipt of a POISNotificationDeregisterRequest message from a client, a POIS implementation shall respond with a POISNotificationDeregisterResponse message.

Figure 20 illustrates the POISNotificationDeregisterResponse message's schema.

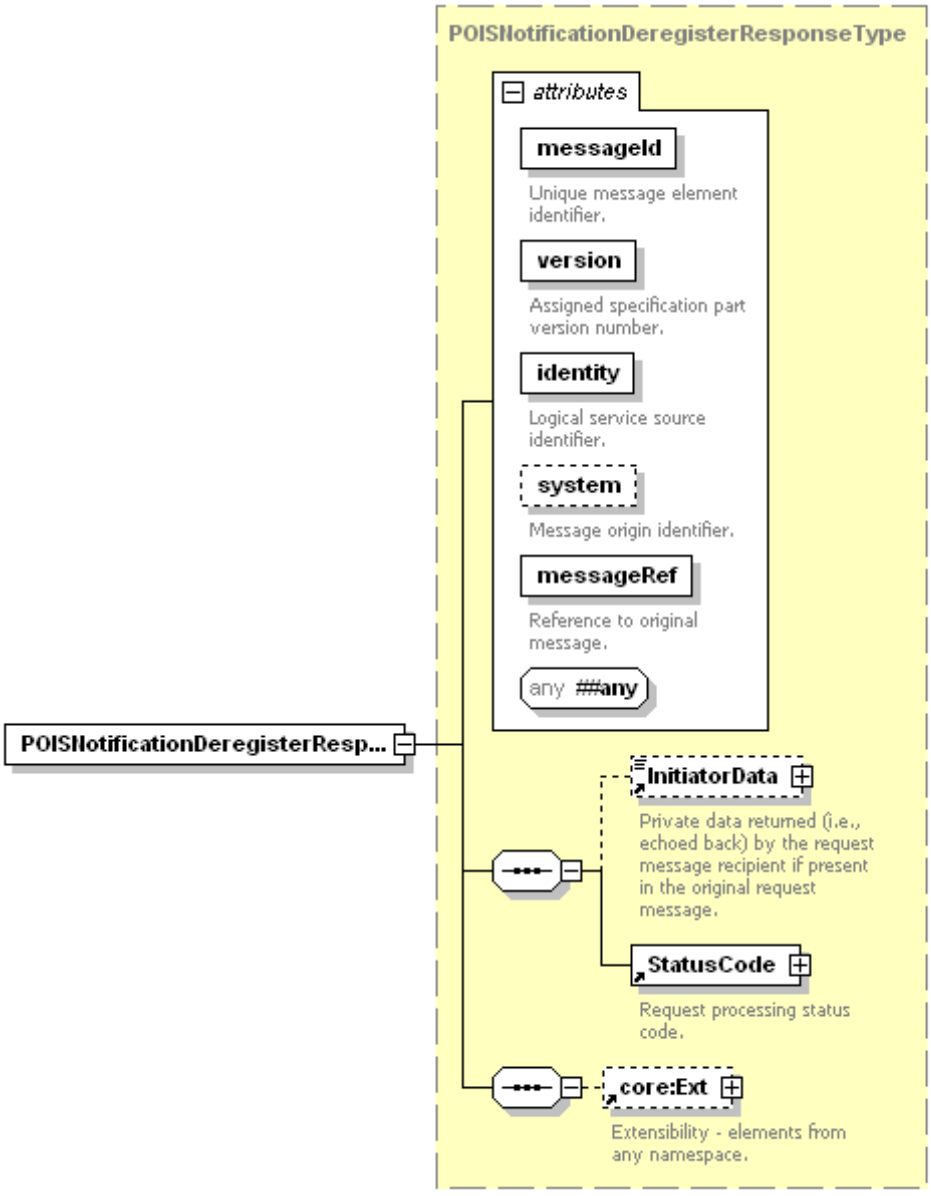


Figure 20 – POISNotificationDeregisterResponse message

This POIS interface adds only a single core:Ext to the gis:NotificationDeregisterResponseType defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.16 POISDeregistrationNotification and acknowledgement messages

A POIS implementation shall have the ability to deregister clients. Deregistration removes client registrations from the system and stops any Placement Opportunity notification traffic from being sent to the deregistered client.

Upon receipt of a POISDeregistrationNotification message, a POIS client shall reply with a POISDeregistrationAcknowledgement message.

7.16.1 POISDeregistrationNotification message

At any time, a POIS implementation may issue one or more POISDeregistrationNotification messages to registered POIS clients. This informs the client that one or all of their active registrations (i.e., POISNotificationRegistrationRequest messages) have been terminated and no further notifications shall be expected related to those registrations.

Figure 21 illustrates the POISDeregistrationNotification message's schema.

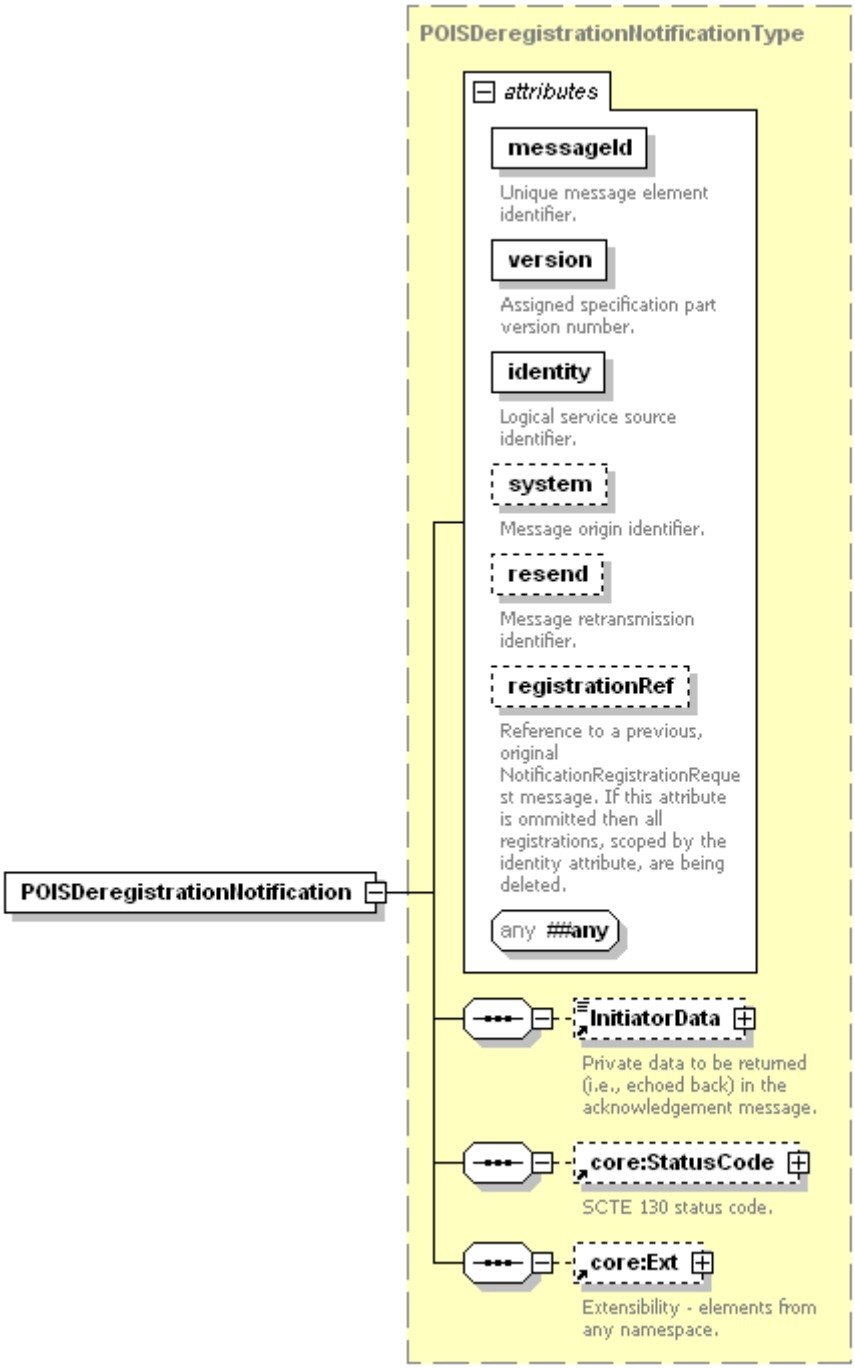


Figure 21 – POISDeregistrationNotification message

This POIS interface adds only a single core:Ext to the gis:DeregistrationNotification defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.16.2 POISDeregistrationAcknowledgement message

Upon receipt of a POISDeregistrationNotification message, a POIS client shall respond with a POISDeregistrationAcknowledgement message. This message informs a POIS that the notification message was received by the intended client and processed.

Figure 22 illustrates the POISDeregistrationAcknowledgement message's schema.

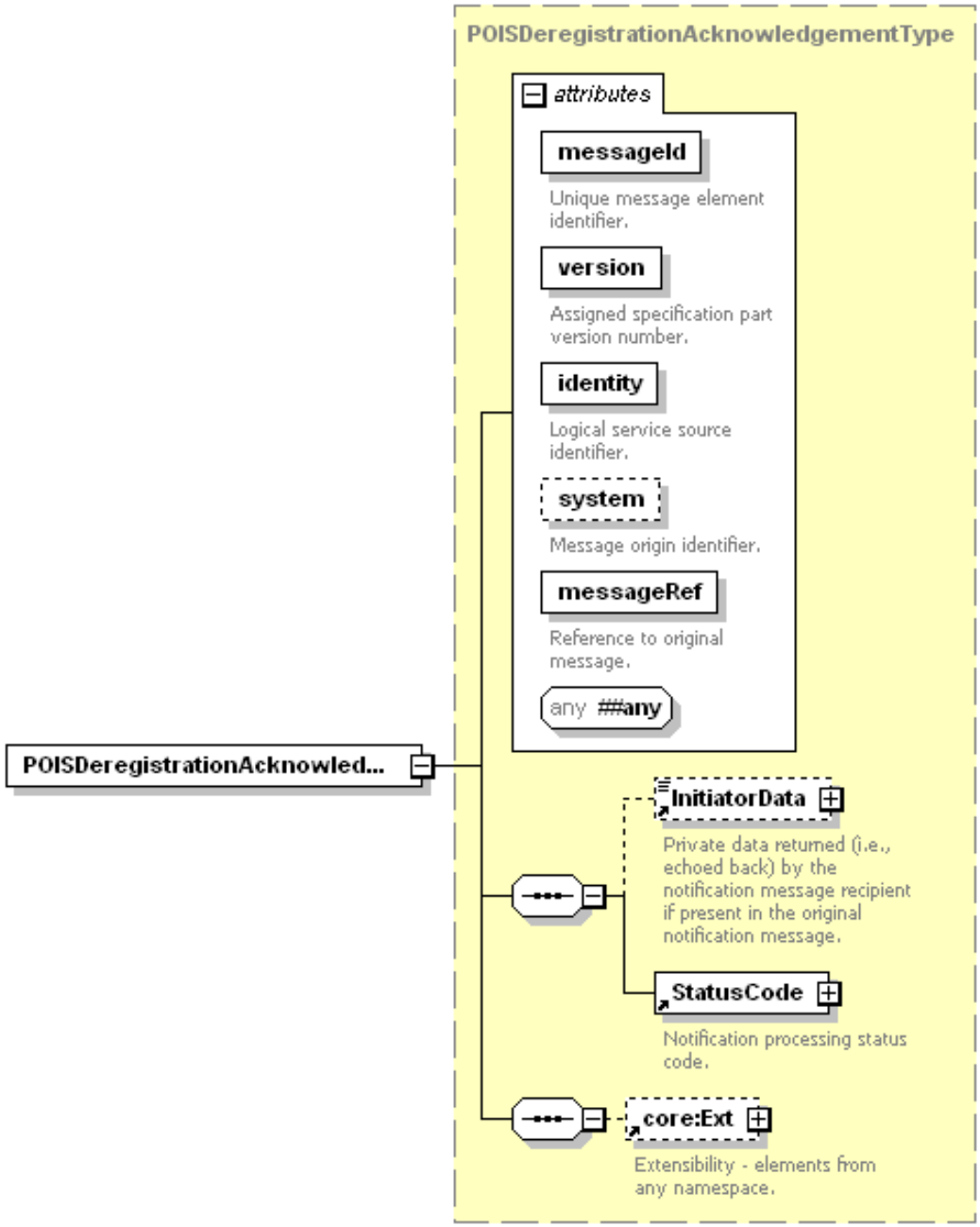


Figure 22 – POISDeregistrationAcknowledgement message

This POIS interface adds only a single core:Ext to the gis:DeregistrationAcknowledgement defined by [ITU-T J.380.8]. See [ITU-T J.380.8] for additional information.

7.17 Service check support

A POIS implementation shall support the core:ServiceCheck message exchange, which includes the core:ServiceCheckRequest and core:ServiceCheckResponse messages as defined by [ITU-T J.380.2].

7.18 Service status support

A POIS implementation shall support the core:ServiceStatus message exchange, which includes the core:ServiceStatusNotification and core:ServiceStatusAcknowledgement messages as defined by [ITU-T J.380.2].

8 POIS attribute types

A POIS implementation shall be built using the general information service (GIS) interface defined by [ITU-T J.380.8]. The POIS defines no attributes in addition to those already defined by the general information service [ITU-T J.380.8].

9 POIS elements

A POIS implementation shall be built using the general information service (GIS) interface defined by [ITU-T J.380.8]. The POIS defines no elements in addition to those already defined by the general information service [ITU-T J.380.8].

Annex A

Web Services Description Language (WSDL)

(This annex forms an integral part of this Recommendation.)

The XML code in [SCTE 130-5 WSDL] contains the WSDL definitions for the POIS and POIS client interfaces, in particular the wsdl:portType definitions for the service endpoints along with the service definitions, binding types, and input/output parameter mappings. Table 1 specifies the normative WSDL XML namespace using the prefix 'wsdl'. [ITU-T J.380.7] provides additional WSDL specification details. See [ITU-T J.380.7] for more information. See [SCTE 130-5 WSDL] for all other details.

Appendix I

Examples

(This appendix does not form an integral part of this Recommendation.)

The following examples use the [ITU-T J.380.3] placement opportunity data model (i.e., P3-PODM) as their example data model. These examples are for illustrative purposes only and may not accurately reflect the normative P3-PODM specification.

I.1 POISListSupportedFeaturesRequest and response message examples

XML Example 1 illustrates a POIS client's request for the placement opportunity service's supported features.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<POISListSupportedFeaturesRequest messageId="consumer-342" system="POISClient"
version="1.0" identity="40DA910E-01AF-5050-C7EA-5D7B4A475311"
 xmlns="http://www.scte.org/schemas/130-5/2010/pois"
xmlns:core="http://www.scte.org/schemas/130-2/2008a/core"
xmlns:gis="http://www.scte.org/schemas/130-8/2010a/gis"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.scte.org/schemas/130-5/2010/pois SCTE_130-5_2010.xsd"/>
```

XML Example 1

XML Example 2 illustrates a POIS implementation's response to XML Example 1 query containing a data model and a single default endpoint handling all messaging.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<POISListSupportedFeaturesResponse messageId="pois-101" system="POISServer" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" messageRef="consumer-342"
 xmlns="http://www.scte.org/schemas/130-5/2010/pois"
 xmlns:core="http://www.scte.org/schemas/130-2/2008a/core"
 xmlns:gis="http://www.scte.org/schemas/130-8/2010a/gis"
 xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
 xsi:schemaLocation="http://www.scte.org/schemas/130-5/2010/pois SCTE_130-5_2010.xsd">
  <core:StatusCode class="0"/>
  <core:Callout>
    <core:Address type="SOAP1.1">http://10.250.30.22/POISServer</core:Address>
  </core:Callout>
  <gis:ServiceDataModelProfile>
    <gis:ServiceDataModel>http://www.scte.org/schemas/130-
3/2008a/adm/podm</gis:ServiceDataModel>
  </gis:ServiceDataModelProfile>
</POISListSupportedFeaturesResponse>
```

XML Example 2

I.2 POISListUniqueQualifiersRequest and response message examples

XML Example 3 illustrates a POIS client's request for the unique qualifiers for a data model.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<POISListQualifiersRequest messageId="consumer-344" system="POISClient" version ="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475311"
 xmlns="http://www.scte.org/schemas/130-5/2010/pois"
xmlns:core="http://www.scte.org/schemas/130-2/2008a/core"
xmlns:gis="http://www.scte.org/schemas/130-8/2010a/gis"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.scte.org/schemas/130-5/2010/pois SCTE_130-5_2010.xsd">
  <gis:ServiceDataModel>http://www.scte.org/schemas/130-
3/2008a/adm/podm</gis:ServiceDataModel>
</POISListQualifiersRequest>
```

XML Example 3

XML Example 4 illustrates a POIS implementation's response when it supports a basic query data model for the specified service data model.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<POISListQualifiersResponse messageId="pois-103" system="POISServer" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" messageRef="consumer-344"
xmlns="http://www.scte.org/schemas/130-5/2010/pois"
xmlns:core="http://www.scte.org/schemas/130-2/2008a/core"
xmlns:gis="http://www.scte.org/schemas/130-8/2010a/gis"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.scte.org/schemas/130-5/2010/pois SCTE_130-5_2010.xsd">
  <core:StatusCode class="0"/>
  <gis:BasicQueryDataModelDescription>
    <gis:ServiceDataModel>http://www.scte.org/schemas/130-
3/2008a/adm/podm</gis:ServiceDataModel>
    <gis:UniqueQualifierDeclaration uniqueQualifierName="P3-PODM">
      <gis:QualifierDeclaration name="poid"/>
    </gis:UniqueQualifierDeclaration>
    <gis:QualifierDescription name="poid" valueType="string"/>
  </gis:BasicQueryDataModelDescription>
</POISListQualifiersResponse>
```

XML Example 4

I.3 POISQueryRequest and response message examples

XML Example 5 is a query for all placement opportunities in the position of preRoll or postRoll in a video on demand example.

```
<?xml version="1.0" encoding="UTF-8"?>
<POISQueryRequest messageId="consumer-123" system="POISClient" identity="40DA910E-01AF-
5050-C7EA-5D7B4A475757" version="1.0"
xmlns="http://www.scte.org/schemas/130-5/2010/pois"
xmlns:gis="http://www.scte.org/schemas/130-8/2010a/gis"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.scte.org/schemas/130-5/2010/pois SCTE_130-5_2010.xsd">
    <gis:Query queryId="pois-98765" expandOutput="true" uniqueQualifierNameRef="P3-PODM">
    <gis:ServiceDataModel>"http://www.scte.org/schemas/130-
3/2008a/adm/podm"</gis:ServiceDataModel>
    <gis:BasicQueryFilter>
      <gis:BasicFilterElement value="preRoll" name="position"/>
    </gis:BasicQueryFilter>
    <gis:BasicQueryFilter>
      <gis:BasicFilterElement value="postRoll" name="position"/>
    </gis:BasicQueryFilter>
  </gis:Query>
</POISQueryRequest>
```

XML Example 5

XML Example 6 is an example POIS implementation's response to the query.

```
<?xml version="1.0" encoding="UTF-8"?>
<POISQueryResponse version="1." messageId="server-124" messageRef="consumer-123"
system="POISServer" identity="50DA910E-01AF-5050-C7EA-5D7B4A475759"
xmlns="http://www.scte.org/schemas/130-5/2010/pois"
xmlns:gis="http://www.scte.org/schemas/130-8/2010a/gis"
xmlns:podm="http://www.scte.org/schemas/130-3/2008a/adm/podm"
xmlns:core="http://www.scte.org/schemas/130-2/2008a/core"
xmlns:adm="http://www.scte.org/schemas/130-3/2008a/adm">
  <core:StatusCode class="0"/>
  <gis:QueryResult resultSetSize="2568" queryRef="pois-98765">
    <podm:PODMBasicQueryResult>
      <podm:PlacementOpportunityV2 serviceRegistrationRef="-" id="THS00000000000000009">
        <adm:Entertainment>
          <core:Content>
            <core:AssetRef providerID="tbs.com" assetID="TVN00000000000000009"/>
          </core:Content>
        </adm:Entertainment>
        <adm:OpportunityBinding opportunityType="preRoll" opportunitiesExpected="2"
opportunityNumber="1"/>
        <podm:OpportunityConstraintsV2>
          <core:AdType>30-Second-Spot</core:AdType>
          <core:Duration>PT30S</core:Duration>
        </podm:OpportunityConstraintsV2>
      </podm:PlacementOpportunityV2>
      <!-- -->
      <!-- 2566 more results not shown. -->
      <!-- -->
      <podm:PlacementOpportunityV2 serviceRegistrationRef="-" id="THS00000000000000010">
        <adm:Entertainment>
          <core:Content>
            <core:AssetRef providerID="tbs.com" assetID="TVN00000000000000009"/>
          </core:Content>
        </adm:Entertainment>
        <adm:OpportunityBinding opportunityType="postRoll" opportunitiesExpected="2"
opportunityNumber="2"/>
        <podm:OpportunityConstraintsV2>
          <core:AdType>60-Second-Spot</core:AdType>
          <core:Duration>PT60S</core:Duration>
        </podm:OpportunityConstraintsV2>
      </podm:PlacementOpportunityV2>
    </podm:PODMBasicQueryResult>
  </gis:QueryResult>
</POISQueryResponse>
```

XML Example 6

Bibliography

[b-ITU-T J.380.1] Recommendation ITU-T J.380.1 (2011), *Digital Program Insertion – Advertising Systems Interfaces – Overview*.

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