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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 – Subscriber information service

Recommendation ITU-T J.380.6

ITU International Telecommunication Union

Recommendation ITU-T J.380.6

Digital program insertion – Advertising systems interfaces – Subscriber information service

Summary

Recommendation ITU-T J.380.6 describes the digital program insertion advertising systems interfaces subscriber information service (SIS) messaging and data type specification using XML, XML namespaces, and XML schema.

History

Edition	Recommendation	Approval	Study Group
1.0	ITU-T J.380.6	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.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

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/.

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Introduction

A subscriber information service (SIS) provides subscriber metadata query and notification services to its consumers. Using the interfaces defined by this Recommendation, logical service consumers may retrieve detailed information about subscribers known to an SIS implementation.

A subscriber information service may provide information about subscribers distilled from a variety of data sources – including, but not limited to:

A multiple system operator (MSO) subscriber management system (SMS) – that might contain information about geographical location and service tiers.

A third party supplied demographic database – that might contain information about subscriber interests, age group, income levels and family size.

A "Viewing History Database" – that might contain historical information about subscriber activity in viewing both programme content and advertising content.

These potential data sources are illustrated in Figure 1.

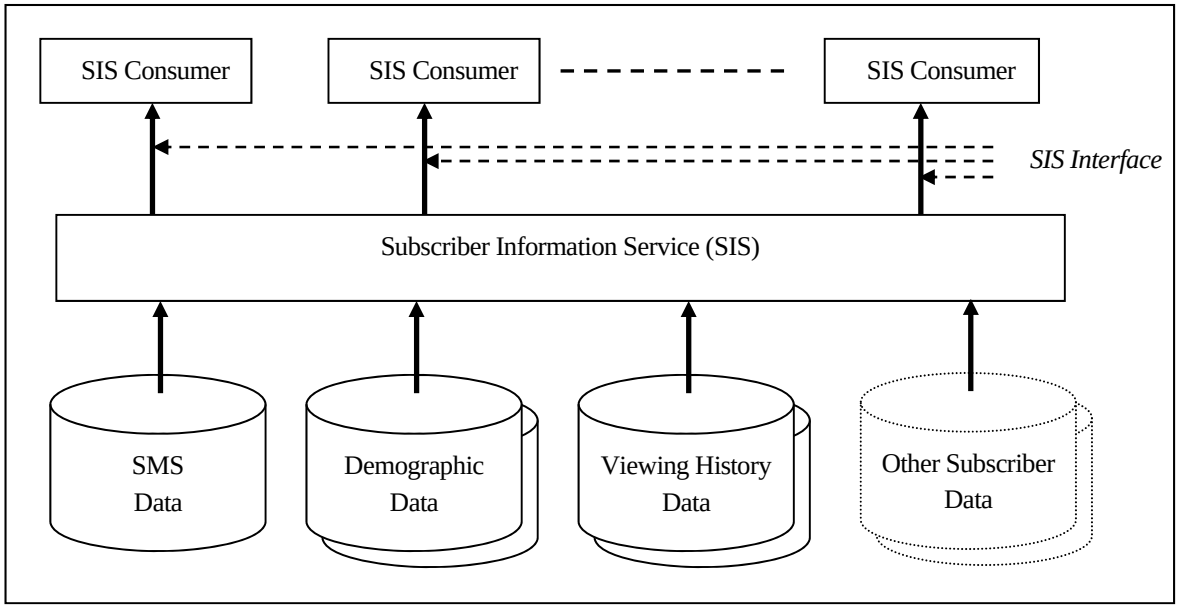


Figure 1 – Potential SIS data sources

The interface between an SIS implementation and its subscriber information data source(s) is outside the scope of this Recommendation.

A subscriber information service responds to queries run against the data gathered from its associated subscriber information data source(s), and can issue notification messages when any changes occur that would affect the results of queries previously registered by consumers.

An SIS query can answer three kinds of questions.

1. It can retrieve a list of qualifiers supported by the SIS implementation. Each qualifier in the list has an associated characterization of its value type, and the value's upper bound and lower bound where applicable. This kind of query may be used by any consumer of an SIS implementation.

2. Using the basic query mechanism, it can return a list of unique qualifiers that identify subscribers whose characteristics conform to the basic query selection criteria. This kind of query might be used by a campaign management system when determining population counts to meet campaign requirements, though its use is not restricted to that purpose.

3. Given a unique qualifier, return a qualifier set for that subscriber. This kind of query may be used by an Ad Management System (ADM) or an Ad Decision System (ADS) when delivering targeted advertising, though its use is not restricted to that purpose.

Figure 2 provides one example of several possible subscriber information service implementations with respect to the ITU-T J.380 logical services.

The SIS in this example is used to automate the publication of audience profile information to advertisers and to expedite rate card calculations. This is illustrated in Figure 2 below.

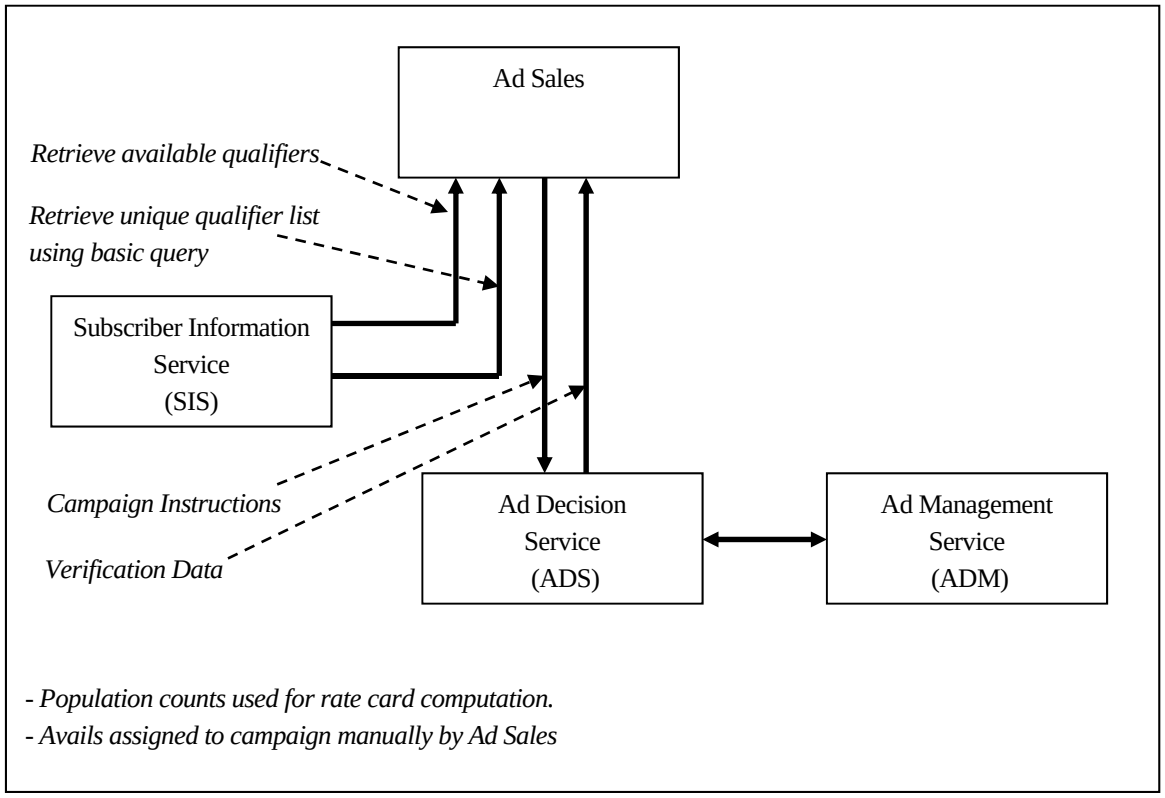


Figure 2 – Traditional (non-automated) ad sales

Figure 3 provides one example of several possible subscriber information service implementations with respect to the ITU-T J.380 logical services. In this example the ITU-T J.380.5 "Placement Opportunity Information Service (POIS)" is included in the implementation.

The subscriber information service is employed to automate the publishing of audience profile information to the campaign management system and for rate card calculations. The campaign management system integrates SIS information to attach qualifier lists to placement opportunities and automatically assign placement opportunities to a campaign as needed to satisfy the campaign requirements. This is illustrated in Figure 3 below.

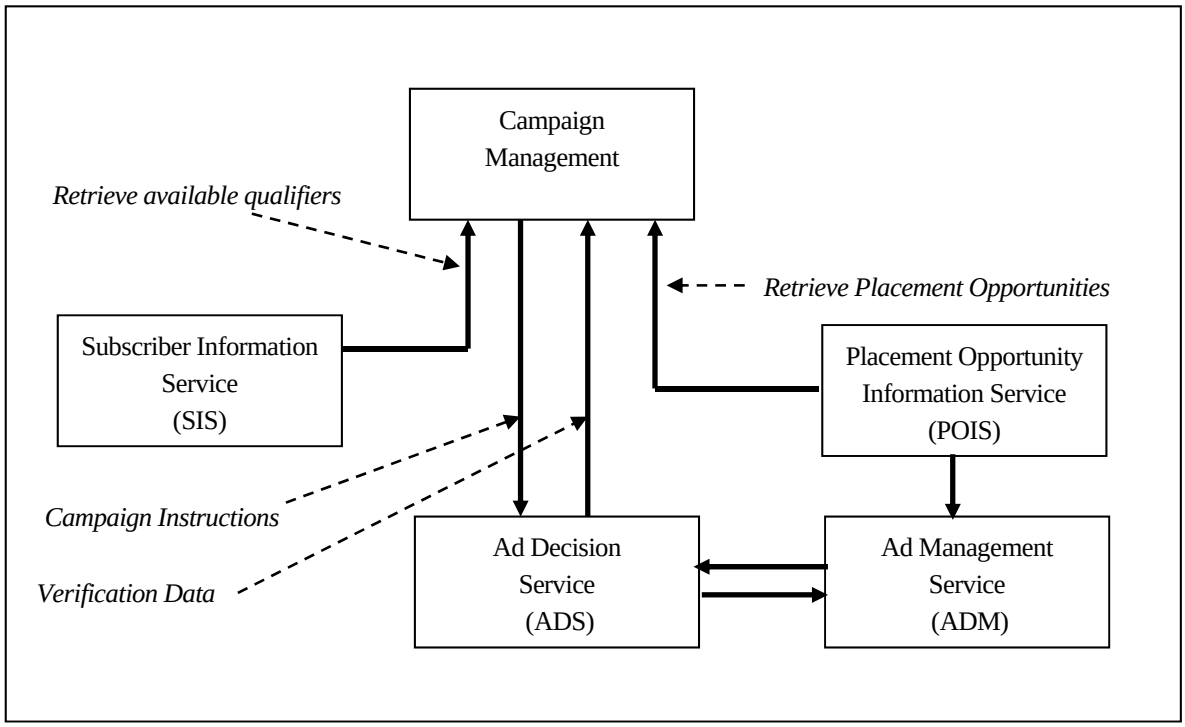


Figure 3 – Automated ad sales

In general there may be many SIS services accessed by multiple elements in an overall architecture. In the example shown in Figure 4, the campaign managers and corresponding ADS services access the SIS services to retrieve subscriber information for use in targeted ad placements. In addition the placement opportunity information system accesses SIS services to qualify and allocate placement opportunities to specific campaign managers and the ADM accesses these SIS services when sessions are created to include target code information in placement requests.

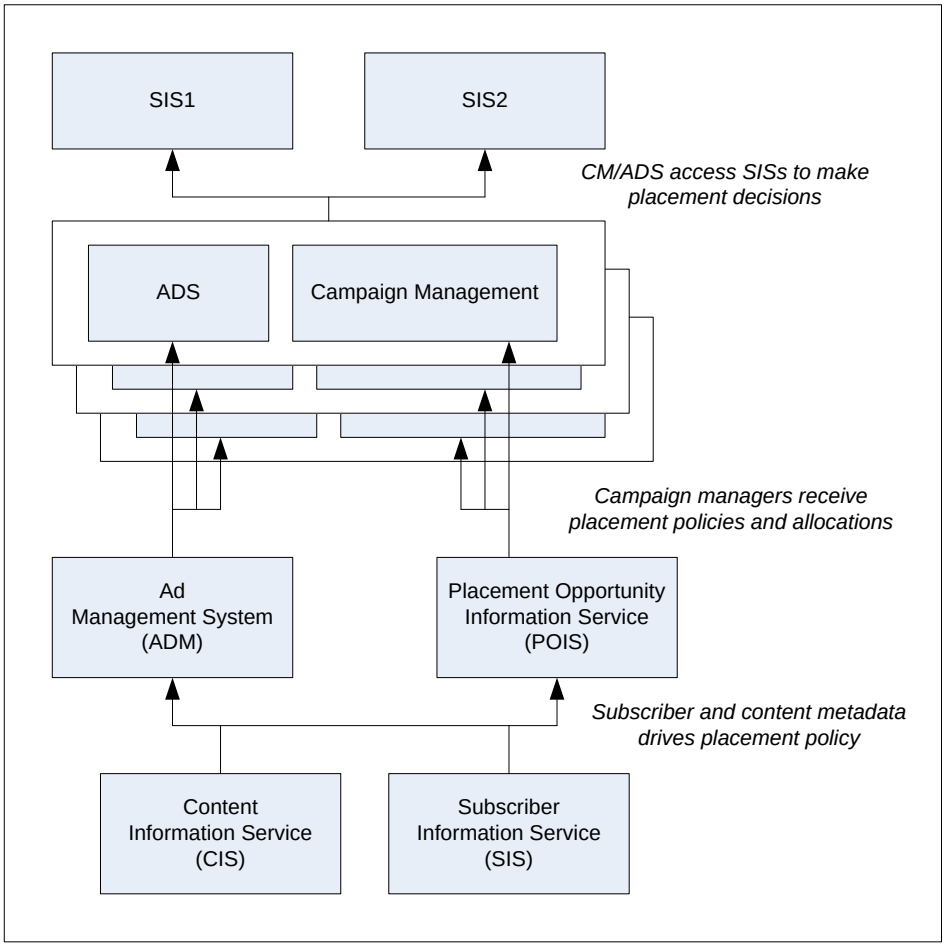


Figure 4 – Automated and targeted ad sales

Recommendation ITU-T J.380.6

Digital program insertion – Advertising systems interfaces – Subscriber information service

1 Scope

This Recommendation describes the digital program insertion advertising systems interfaces' SIS (subscriber information service) messaging and data type specification using XML, XML namespaces, and XML schema.

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

[ITU-T J.380.6] Recommendation ITU-T J.380.6 (2011), *Digital program insertion – Advertising systems interfaces – Subscriber information service*.

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

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

[SCTE 130-6 Schema] ANSI/SCTE 130-6-2010, *Digital Program Insertion – Advertising Systems Interfaces Part 6 – Subscriber Information Service (SIS)* schema file.

[SCTE 130-6 SIS WSDL] ANSI/SCTE 130-6-2010, *Digital Program Insertion – Advertising Systems Interfaces Part 6 – Subscriber Information Service (SIS)* Web Services Description Language file.

[XMLSchemaP1] W3C Recommendation (2004), *XML Schema Part 1: Structures (Second Edition)*.
<http://www.w3.org/TR/xmlschema-1/>

[XMLSchemaP2] W3C Recommendation (2004), *XML Schema Part 2: Datatypes (Second Edition)*.
<http://www.w3.org/TR/xmlschema-2/>

3 Definitions

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

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

– All ITU-T J.380.2 definitions are included herein. See [ITU-T J.380.2] for additional information.

– All ITU-T J.380.7 definitions are included herein. See [ITU-T J.380.7] for additional information.

– All ITU-T J.380.8 definitions are included herein. See [ITU-T J.380.8] for additional information.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 audience: The term "audience" is used to refer to a collection of one or more subscribers. A logical service that implements the SIS interface described in this document may often provide profile information about an audience. For example, a logical service may provide information about one or more audiences within a linear advertising zone rather than information about individual subscribers.

3.2.2 subscriber: The term subscriber is used to refer to one or more members of a viewing audience to whom advertising messages may be addressed. Depending on the transmission method and receiver technology employed, it may be possible to address an individual viewer, an entire household, or all households in a broadcast area such as a cable head-end, metropolitan market or some other aggregation.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

GIS Generalized Information Service

MSO Multiple System Operator

SIS Subscriber Information Service

SMS Subscriber Management System

5 Conventions

5.1 Notational conventions

5.1.1 Normative XML schema

This Recommendation employs the same notational conventions as [ITU-T J.380.2].

5.1.2 Document conventions

This Recommendation employs the same document conventions as [ITU-T J.380.2]. Refer to [ITU-T J.380.2] for an explanation of document conventions. For example, the XML schema illustration is explained there.

5.2 Processing conventions

Unknown/unrecognized/unsupported XML elements and attributes.

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

5.3 XML namespaces

This Recommendation uses the 'sis' prefix, as described in Table 4, 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]
sis	http://www.scte.org/schemas/130-6/2010/sis	This Recommendation
wsdl	http://www.scte.org/wsdl/130-6/2010/sis	This Recommendation
xsd	http://www.w3.org/2001/XMLSchema	See [XMLSchemaP1] and [XMLSchemaP2].

6 Subscriber information service messages

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

– Message format

– XML message carriage

– Transport mechanisms

– Message error handling

The ITU-T J.380.6 message interface shall include the messages defined by [ITU-T J.380.2] and messages derived from the message types defined in [ITU-T J.380.8].

6.1 @version Attribute

For all ITU-T J.380.6 messages, the @version attribute shall be set to the value "1.0" for this Recommendation's revision.

6.2 Request base message

All ITU-T J.380.6 top level ***request*** messages are derived from the request message types defined in [ITU-T J.380.8] that are derived 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 type.

6.2.1 Request base message attributes (Informative)

@messageId [Required, core:messageIdAttrType] – The message identifier. See [ITU-T J.380.2] for additional information.

@version [Required, core:versionAttrType] – The message specification version. See [ITU-T J.380.2] for additional information.

@identity [Required, core:identityAttrType] – The origin logical service identifier. See [ITU-T J.380.2] for additional information.

@system [Optional, core:systemAttrType] – The message source identifier. See [ITU-T J.380.2] for additional information.

@resend [Optional, core:resendAttrType] – Message retransmission identifier. See [ITU-T J.380.2] for additional information.

@##any [Optional] – Any additional attributes from any namespace.

6.2.2 Request base message elements (Informative)

core:InitiatorData [Optional] – Private data that shall be in the response message. See [ITU-T J.380.2] for additional details on the core:InitiatorData element.

6.3 Response base message

All ITU-T J.380.6 top level ***response*** messages are derived from the response message types defined in [ITU-T J.380.8] that are derived 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 type.

6.3.1 Base response message attributes (Informative)

@messageId [Required, core:messageIdAttrType] – The message identifier. See [ITU-T J.380.2] for additional information.

@version [Required, core:versionAttrType] – The message specification version. See [ITU-T J.380.2] for additional information.

@identity [Required, core:identityAttrType] – The origin logical service identifier. See [ITU-T J.380.2] for additional information.

@system [Optional, core:systemAttrType] – The message source identifier. See [ITU-T J.380.2] for additional information.

@messageRef [Required, core:messageRefAttrType] – A reference to the Request message element that initiated the message exchange. The value shall be the request message's @messageId attribute value. See [ITU-T J.380.2] for additional information on the core:messageRefAttrType.

@##any [Optional] – Any additional attributes.

6.3.2 Base response message elements (Informative)

core:InitiatorData [Optional] – Private data from the request message. See [ITU-T J.380.2] for additional details on the core:InitiatorData element.

core:StatusCode [Required] – A core:StatusCode element for communicating status information to the consumer. See [ITU-T J.380.2] for additional information.

6.4 Notification base message

All ITU-T J.380.6 top level ***notification*** messages are derived from the notification message types defined in [ITU-T J.380.8] that are derived 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 type.

6.4.1 Notification base message attributes (Informative)

@messageId [Required, core:messageIdAttrType] – The message identifier. See [ITU-T J.380.2] for additional information.

@version [Required, core:versionAttrType] – The message specification version. See [ITU-T J.380.2] for additional information.

@identity [Required, core:identityAttrType] – The origin logical service identifier. See [ITU-T J.380.2] for additional information.

@system [Optional, core:systemAttrType] – The message source identifier. See [ITU-T J.380.2] for additional information.

@resend [Optional, core:resendAttrType] – Message retransmission identifier. See [ITU-T J.380.2] for additional information.

@type [Required, gis:contentNotificationTypeEnumeration] – The @type attribute is an enumeration that indicates the kind of changes contained in the Notification message. For information on the values allowed for the @type attribute see [ITU-T J.380.8].

@##any [Optional] – Any additional attributes from any namespace.

6.4.2 Notification base message elements (Informative)

core:InitiatorData [Optional] – Private data that shall be returned in the Acknowledgement message. See [ITU-T J.380.2] for additional details on the core:InitiatorData element.

6.5 Acknowledgement base message

All ITU-T J.380.6 top level ***acknowledgement*** messages are derived from the acknowledgement message types defined in [ITU-T J.380.8] that are derived 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 type.

6.5.1 Acknowledgement base message attributes (Informative)

@messageId [Required, core:messageIdAttrType] – The message identifier. See [ITU-T J.380.2] for additional information.

@version [Required, core:versionAttrType] – The message specification version. See [ITU-T J.380.2] for additional information.

@identity [Required, core:identityAttrType] – The origin logical service identifier. See [ITU-T J.380.2] for additional information.

@system [Optional, core:systemAttrType] – The message source identifier. See [ITU-T J.380.2] for additional information.

@messageRef [Required, core:messageRefAttrType] – A reference to the notification message element that initiated the message exchange. The value shall be the notification message's @messageId attribute value. See [ITU-T J.380.2] for additional information on the core:messageRefAttrType.

@##any [Optional] – Any additional attributes from any namespace.

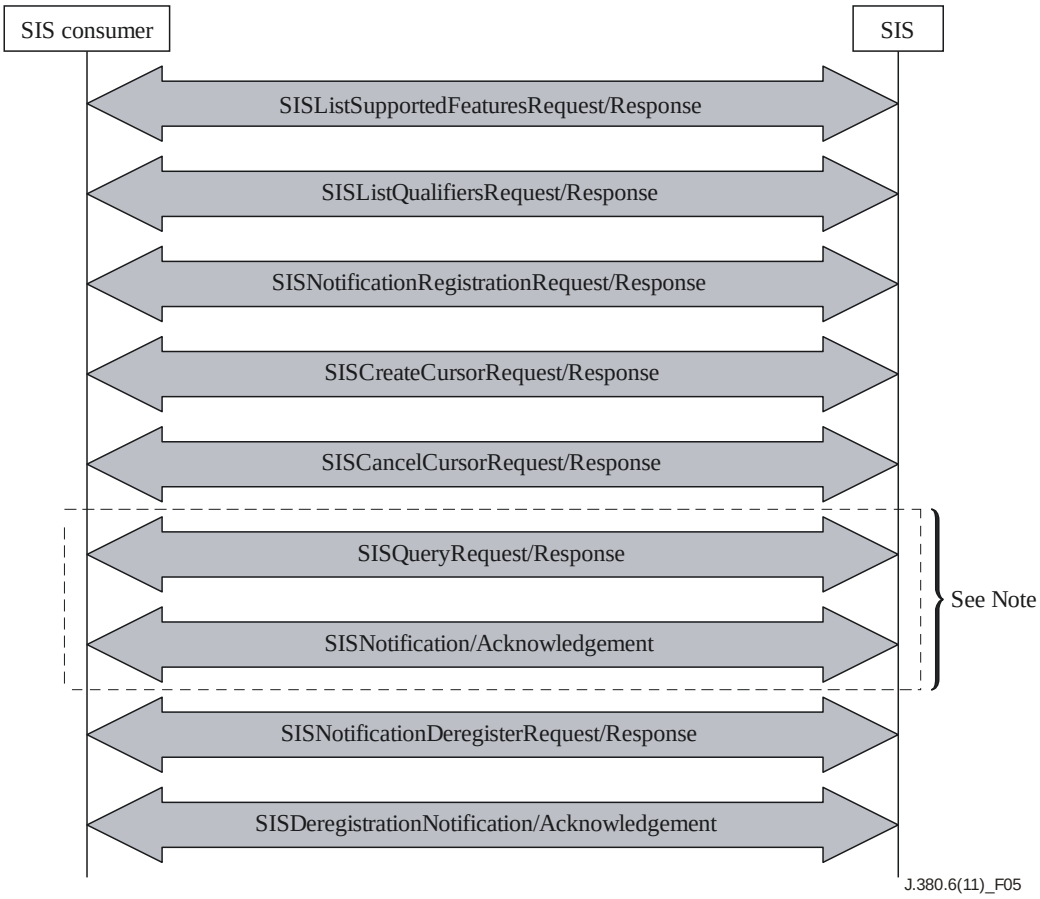
6.5.2 Acknowledgement base message elements (Informative)

core:InitiatorData [Optional] – Private data from the notification message. See [ITU-T J.380.2] for additional details on the core:InitiatorData element.

core:StatusCode [Required] – A core:StatusCode element for communicating status information to the consumer. See [ITU-T J.380.2] for additional information.

6.6 SIS message exchange

Figure 5 illustrates a typical message exchange between an SIS consumer and an SIS implementation and Table 2 provides a brief description of each SIS message.



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

Figure 5 – ITU-T J.380.6 Top level messages

Table 2 – ITU-T J.380.6 Top level messages

Message	Description
SISListSupportedFeaturesRequest	Request to retrieve a list of an advertising service's supported features
SISListSupportedFeaturesResponse	Response to ListSupportedFeaturesRequest
SISListQualifiersRequest	Request to retrieve detailed service data model information used in basic query construction and result interpretation
SISListQualifiersResponse	Response to ListQualifiersRequest
SISListNotificationRegistrationRequest	Request to list existing registrations
SISListNotificationRegistrationResponse	Response to ListNotificationRegistrationRequest
SISNotificationRegistrationRequest	Registration request for notification
SISNotificationRegistrationResponse	Response to NotificationRegistrationRequest
SISNotification	Notification message indicating a change to the result set of a registered query
SISNotificationAcknowledgement	Response to Notification
SISCreateCursorRequest	Request to create a cursor
SISCreateCursorResponse	Response to CreateCursorRequest
SISCancelCursorRequest	Request to cancel an existing cursor

Table 2 – ITU-T J.380.6 Top level messages

Message	Description
SISCancelCursorResponse	Response to CancelCursorRequest
SISQueryRequest	Request to acquire records from the SIS
SISQueryResponse	Response to QueryRequest
SISNotificationDeregisterRequest	Request to de-register a previously accepted registration
SISNotificationDeregisterResponse	Response to NotificationDeregisterRequest
SISDeregistrationNotification	Deregistration notification
SISDeregistrationAcknowledgement	Deregistration notification acknowledgement

6.7 SISListSupportedFeaturesRequest and SISListSupportedFeaturesResponse

The SISListSupportedFeaturesRequest and SISListSupportedFeaturesResponse messages allow consumers to inquire about the data models and advanced query languages supported by an SIS implementation.

6.7.1 SISListSupportedFeaturesRequest Message

The SISListSupportedFeaturesRequest message allows the consumer of a logical service to inquire about the data models and advanced query languages supported by an SIS implementation.

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

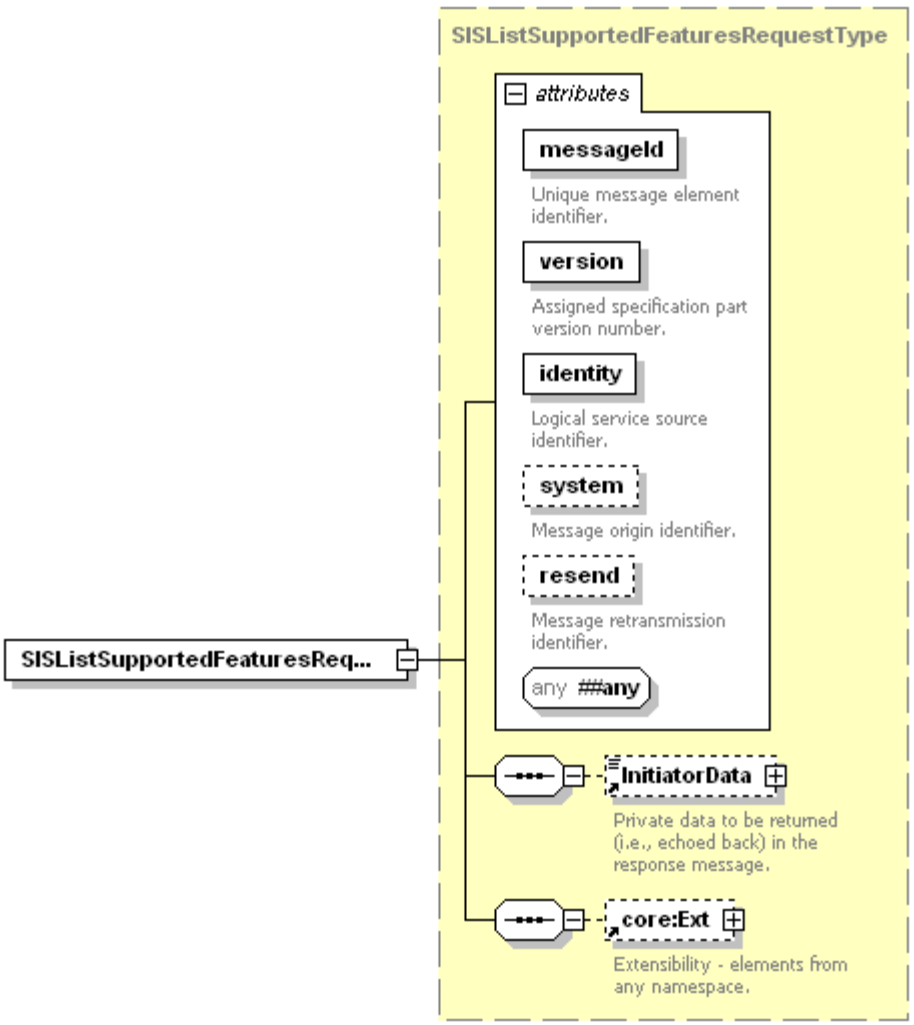


Figure 6 – SISListSupportedFeaturesRequest message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.7.2 SISListSupportedFeaturesResponse Message

The XML schema definition for this message is illustrated in Figure 7.

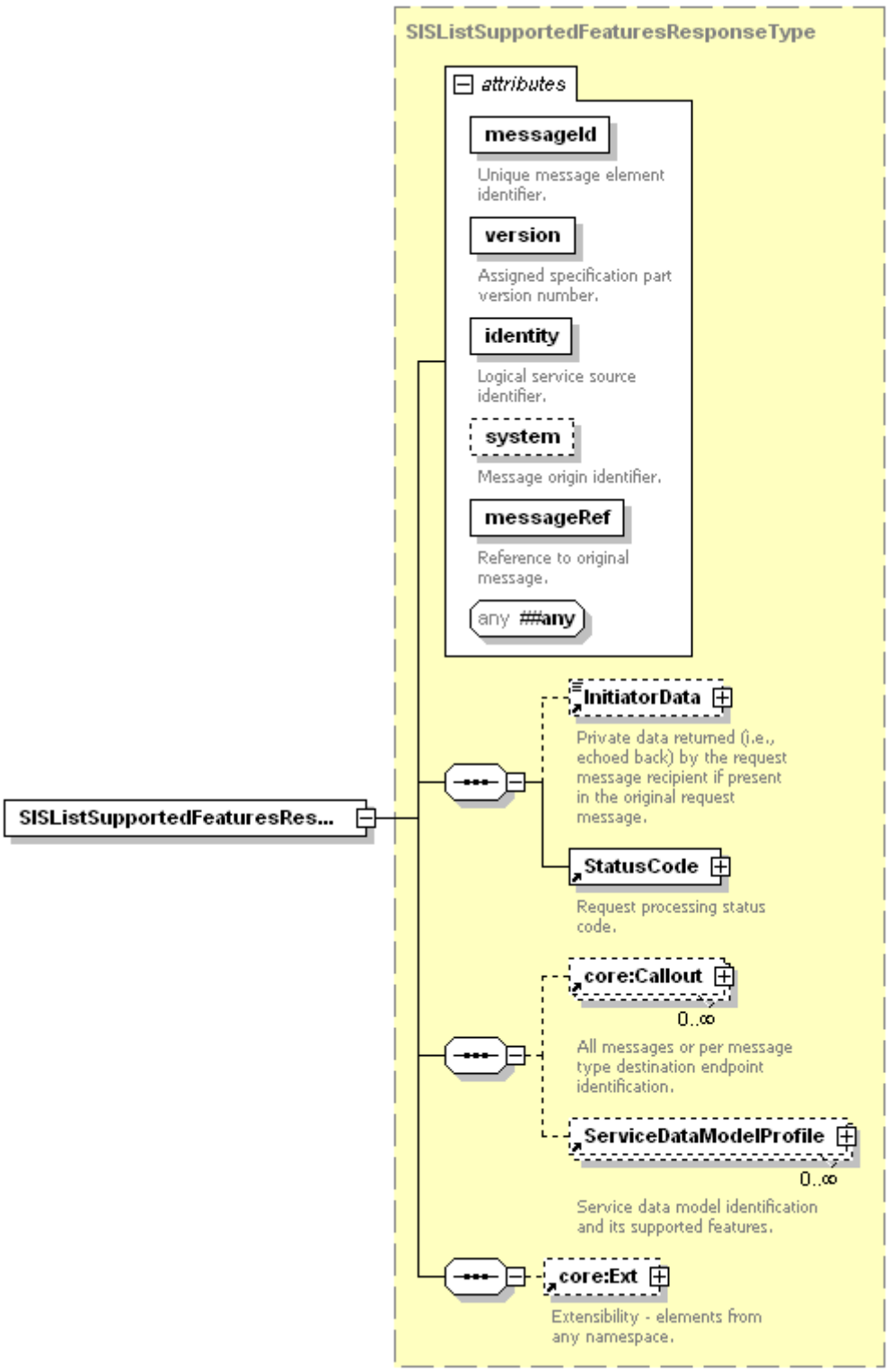


Figure 7 – SISListSupportedFeaturesResponse message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

An SIS implementation shall implement basic query support and may implement advanced query language support as defined by [ITU-T J.380.8]. Thus, the SISListSupportedFeaturesResponse message may contain information regarding both basic query qualifiers and advanced query languages.

Table 3 contains the values for the @message attribute of the core:Callout element. Values for the @message attribute should be used exactly as defined by Table 3.

Table 3 – core:Callout @message values

Value	Description
SISListQualifiersRequest	The address endpoint where SISListQualifiersRequest messages shall be sent.
SISNotificationRegistrationRequest	The address endpoint where SISNotificationRegistrationRequest messages shall be sent.
SISNotificationDeregisterRequest	The address endpoint where SISNotificationDeregisterRequest messages shall be sent.
SISListNotificationRegistrationRequest	The address endpoint where SISListNotificationRegistrationRequest messages shall be sent.
SISCreateCursorRequest	The address endpoint where SISCreateCursorRequest messages shall be sent.
SISCancelCursorRequest	The address endpoint where SISCancelCursorRequest messages shall be sent.
SISQueryRequest	The address endpoint where SISQueryRequest messages shall be sent.
ServiceStatusNotification	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:".

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.8 SISListQualifiersRequest and SISListQualifiersResponse

The SISListQualifiersRequest and SISListQualifiersResponse messages allow consumers to discover the subscriber information qualifiers associated with any SIS implementation's service data models that can be queried with the basic query interface.

6.8.1 SISListQualifiersRequest message

The SISListQualifiersRequest message allows the consumer of an SIS implementation to inquire about the qualifier names used by any service data model that can be queried using the basic query interface.

The XML schema definition for this message is illustrated in Figure 8.

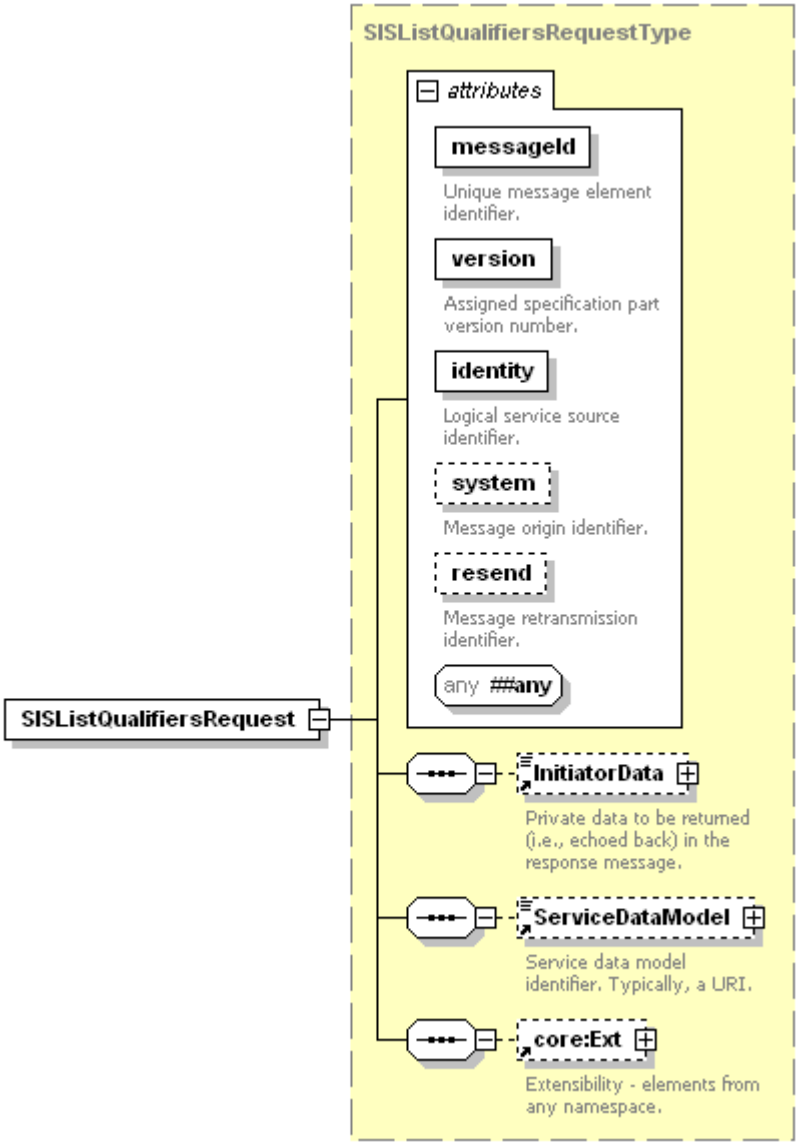


Figure 8 – SISListQualifiersRequest message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.8.2 SISListQualifiersResponse message

If the SIS implementation supports the service data model contained in the SISListQualifiersRequest message, the SISListQualifiersResponse 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 SIS implementation does not support the service data model contained in the SISListQualifiersRequest message, no BasicQueryDataModelDescription element shall be returned and the StatusCode element's @detailCode shall be set to core:ResourceNotFound.

The XML schema definition for this message is illustrated in Figure 9.

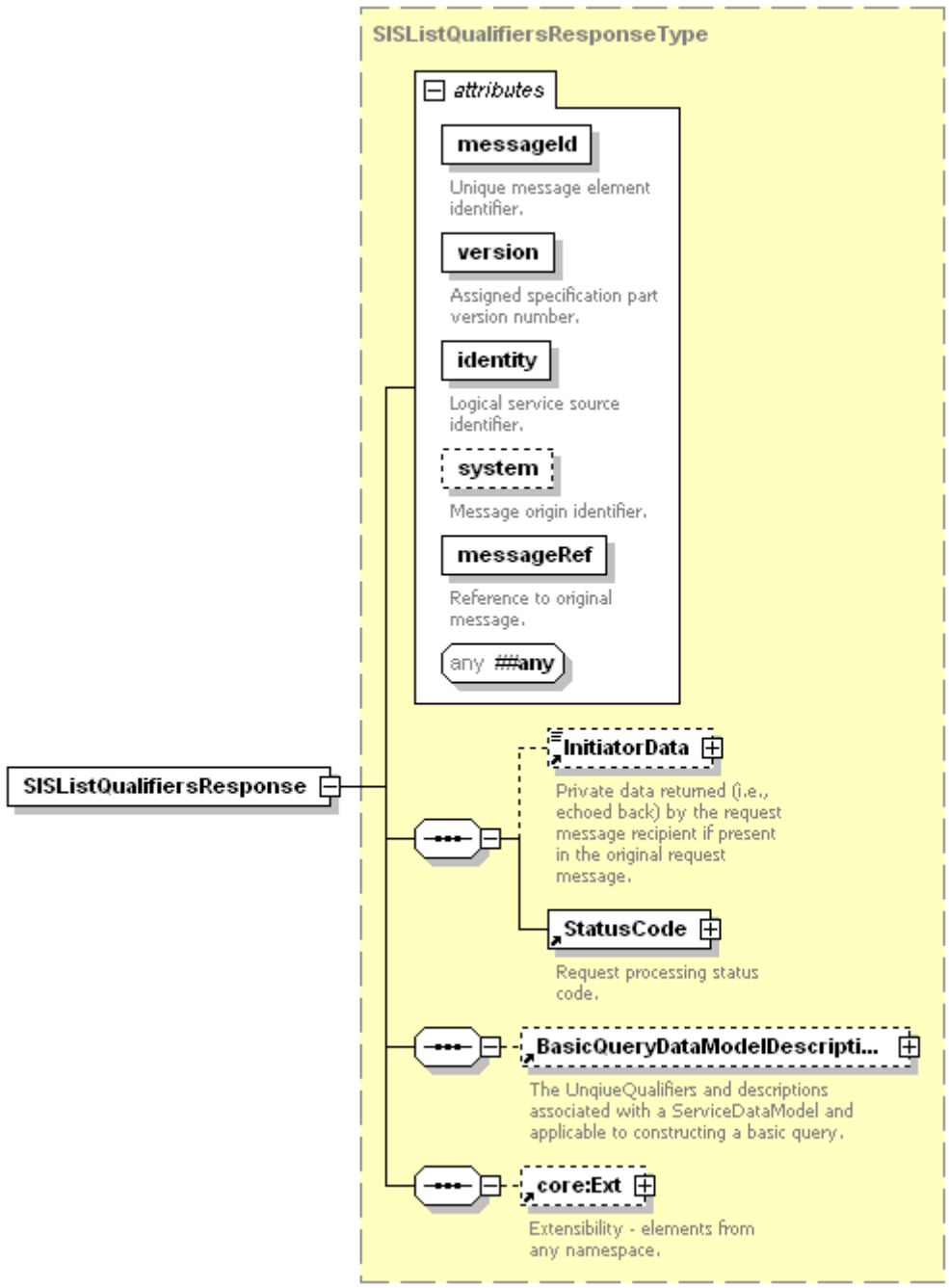


Figure 9 – SISListQualifiersResponse message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.9 SISListNotificationRegistrationRequest and SISListNotificationRegistrationResponse

A consumer of an SIS implementation may inquire about current registrations by using the SISListNotificationRegistrationRequest message. An SIS implementation shall respond to a SISListNotificationRegistrationRequest message with a SISListNotificationRegistrationResponse message. This permits the consumer to discover the active notification queries that were previously installed by one or more SISNotificationRegistrationRequest messages.

6.9.1 SISListNotificationRegistrationRequest message

The SISListNotificationRegistrationRequest message may be issued to an SIS implementation to retrieve information about active notification registrations.

The XML schema definition for this message is illustrated in Figure 10.

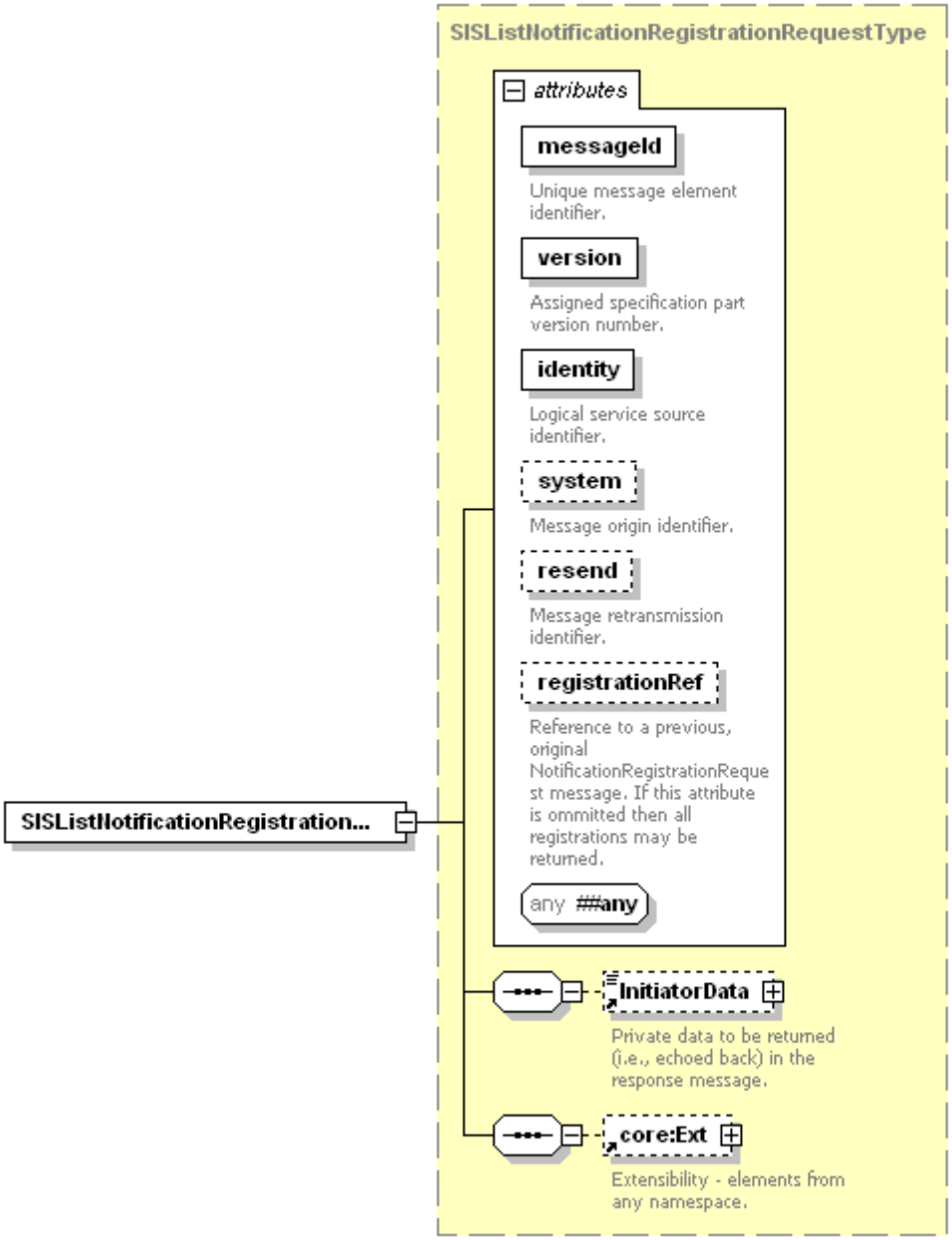


Figure 10 – SISListNotificationRegistrationRequest message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.9.2 SISListNotificationRegistrationResponse message

The SISListNotificationRegistrationResponse message is the response pair to a previously sent SISListNotificationRegistrationRequest message.

The XML schema definition for this message is illustrated in Figure 11.

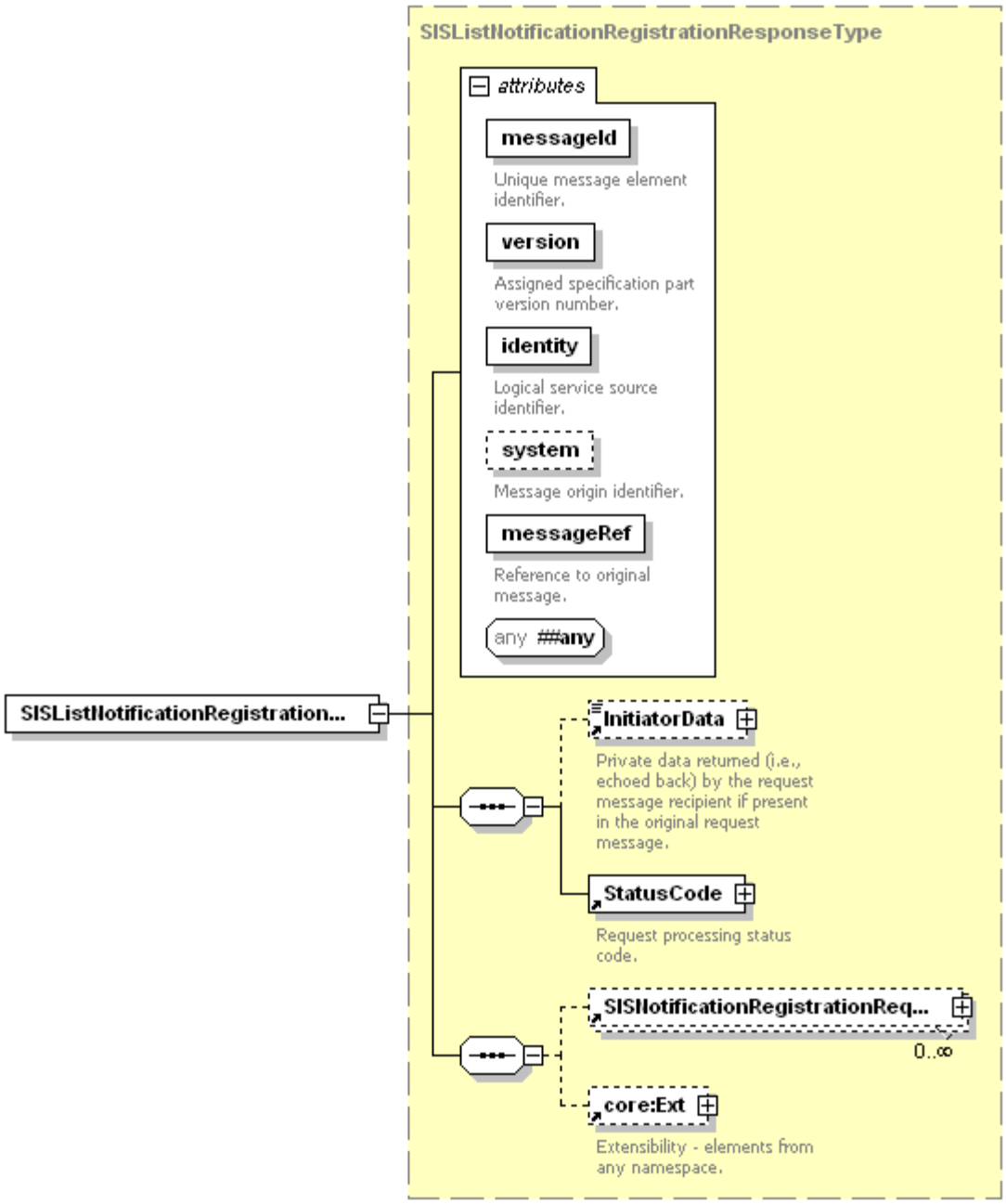


Figure 11 – SISListNotificationRegistrationResponse message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

SISNotificationRegistrationRequest [Optional] – The SISNotificationRegistrationRequest 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 SISNotificationRegistrationRequest element see the discussion of the NotificationRegistrationRequest element in [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.10 SISNotificationRegistrationRequest and SISNotificationRegistrationResponse

An SIS implementation shall support registration for notification message delivery as defined by [ITU-T J.380.8]. The SISNotificationRegistrationRequest message allows an SIS consumer to specify notification interests relative to a basic or an advanced query.

On receipt of an update, addition or deletion event from its underlying data store, an SIS implementation shall send an SISNotification message to any consumer with a current registered notification request whose query result set is affected by the update, addition, or deletion event.

6.10.1 SISNotificationRegistrationRequest message

The SISNotificationRegistrationRequest message allows a consumer to specify a set of notification interests by registering a query against SIS implementation's data model. These registered queries shall be examined by the SIS 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 consumer in the form of a SISNotification message.

The XML schema definition for this message is illustrated in Figure 12.

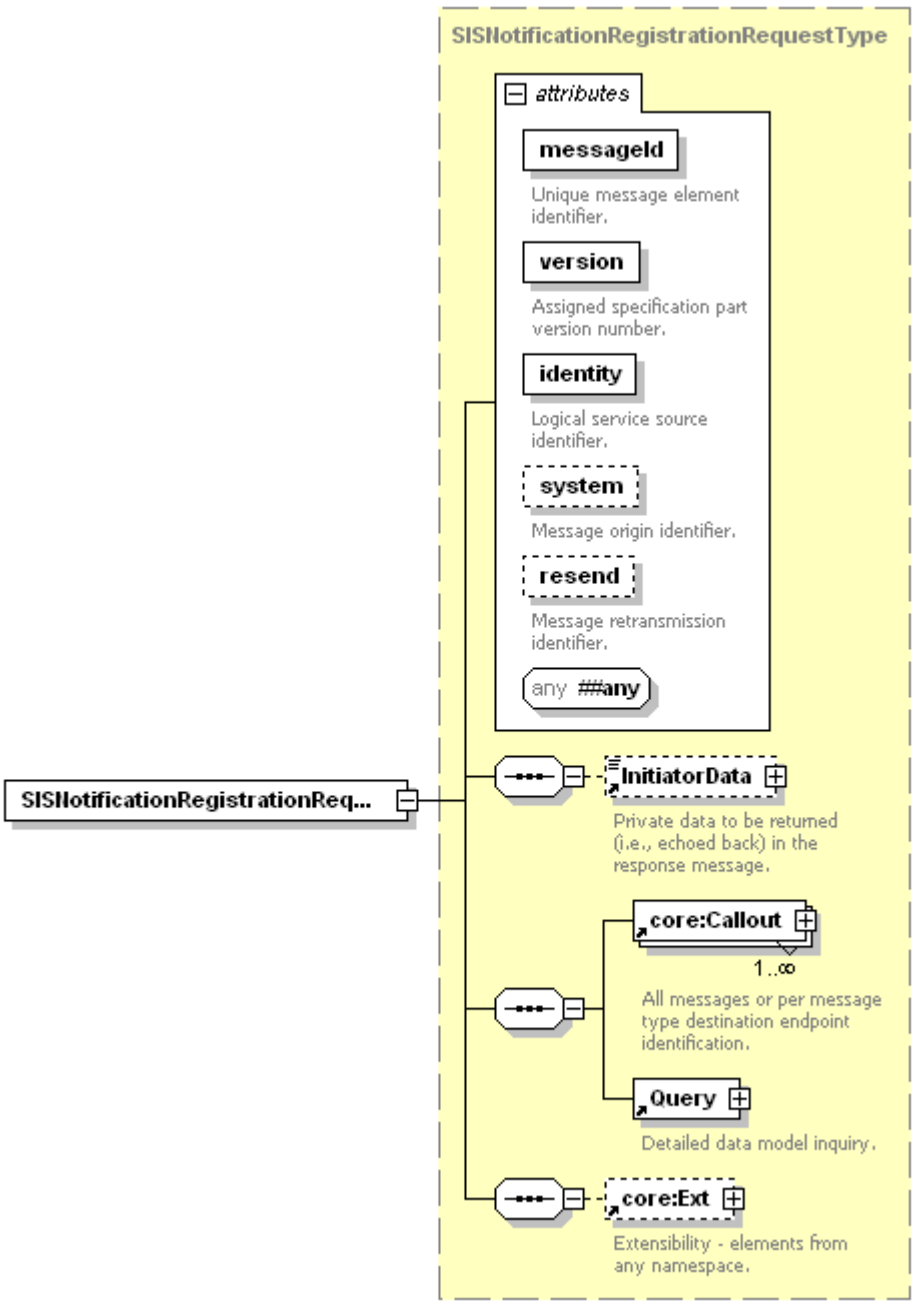


Figure 12 – SISNotificationRegistrationRequest message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

An SIS implementation shall recognize the values listed in Table 4 as values for the core:Callout @message attribute. Values for the @message attribute should be used exactly as defined in this table.

Table 4 – NotificationRegistrationRequest core:Callout @message values

@message Attribute Value	Description
SISNotification	Value associated with the address endpoint where Notification type messages shall be sent.
ServiceStatusNotification	Value associated with the address endpoint where core:ServiceStatusNotification messages shall be sent.
SISDeregistrationNotification	Value associated with the address endpoint where DeregistrationNotification type messages shall be sent.
…	User defined address endpoint is 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 SISNotificationRegistrationRequest 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. Either the SISNotification or the default endpoint shall be present in the NotificationRegistrationRequest core:Callout element sequence.

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.10.2 SISNotificationRegistrationResponse message

Upon completion of processing a SISNotificationRegistrationRequest message, an SIS implementation shall respond with a SISNotificationRegistrationResponse message.

The XML schema definition for this message is illustrated in Figure 13.

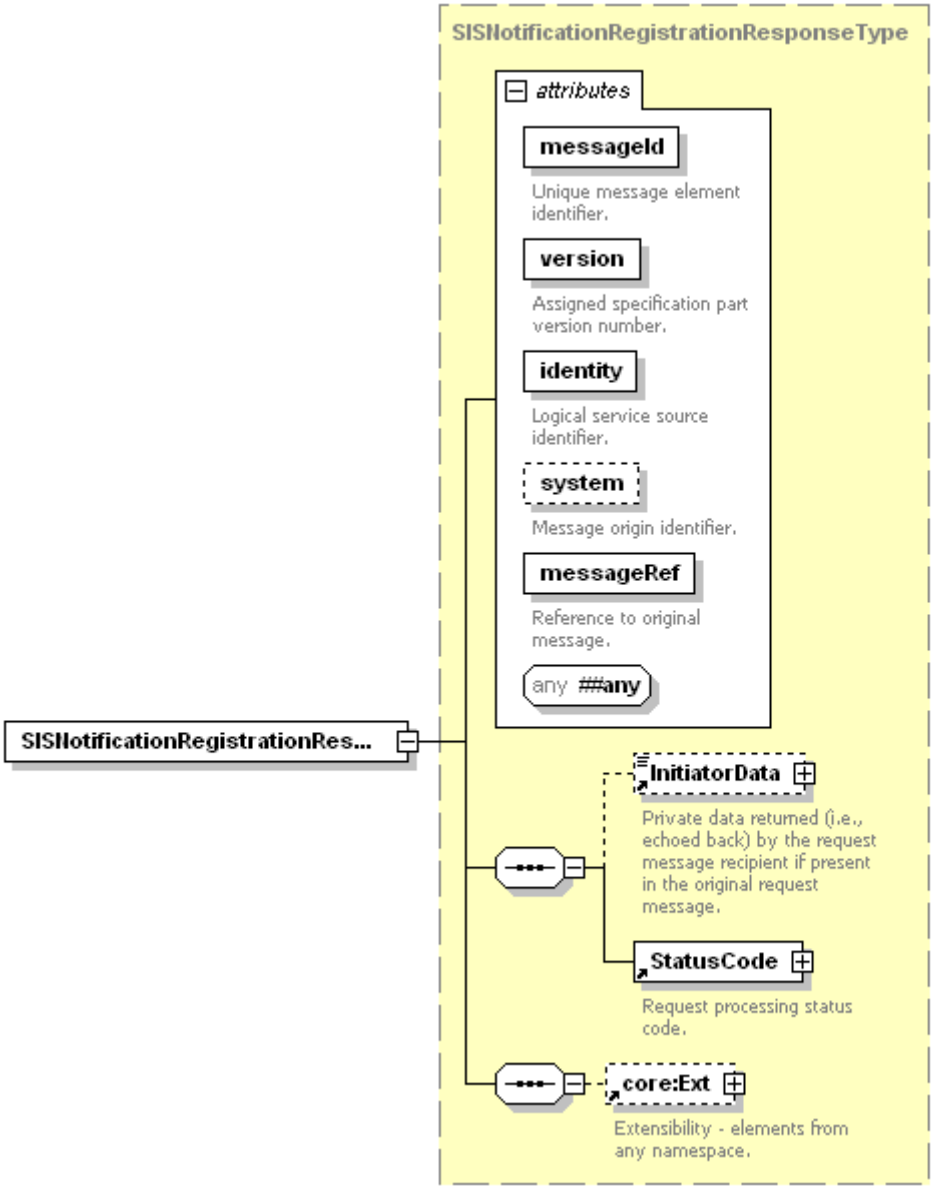


Figure 13 – SISNotificationRegistrationResponse message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.11 SISNotification and SISNotificationAcknowledgement

An SIS implementation shall support the exchange of SISNotification and SISNotificationAcknowledgement 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].

6.11.1 SISNotification message

Upon detection of a change in the result set of one or more queries registered with an SIS implementation, it shall send a SISNotification message to qualified, registered consumers as defined by [ITU-T J.380.8].

The XML schema definition for this message is illustrated in Figure 14.

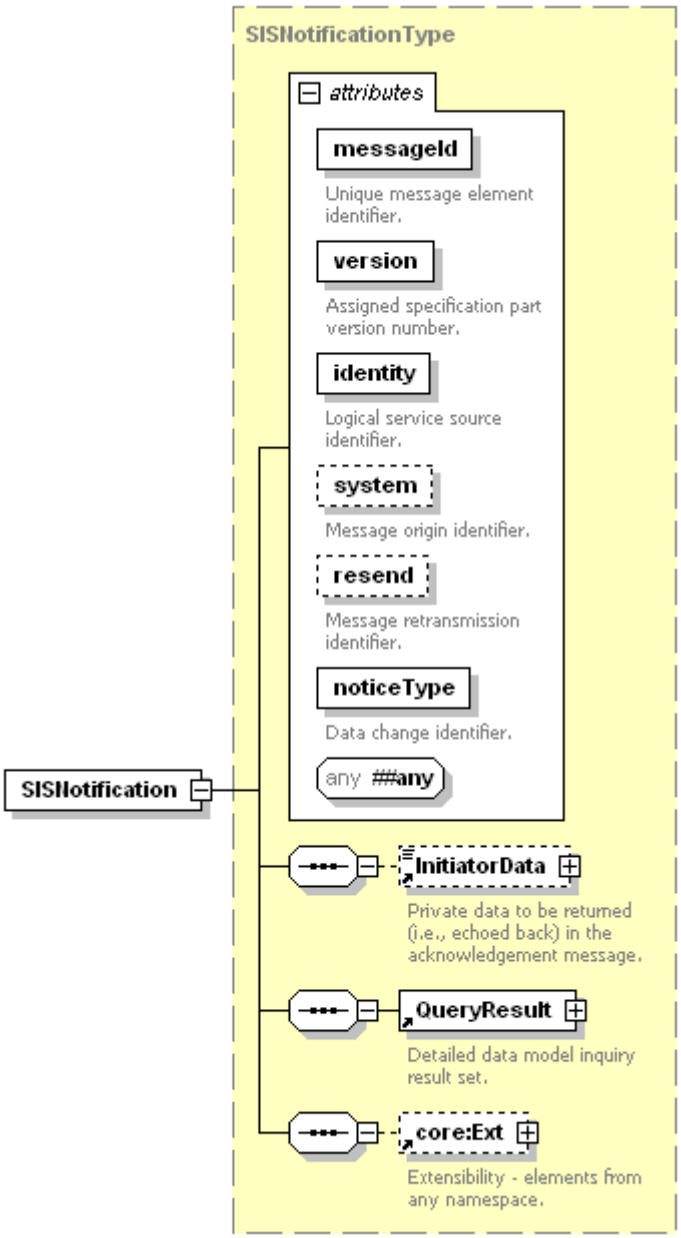


Figure 14 – SISNotification message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.11.2 SISNotificationAcknowledgement message

Upon the receipt of a SISNotification message, an SIS consumer shall respond with a SISNotificationAcknowledgement message.

The XML schema definition for this message is illustrated in Figure 15.

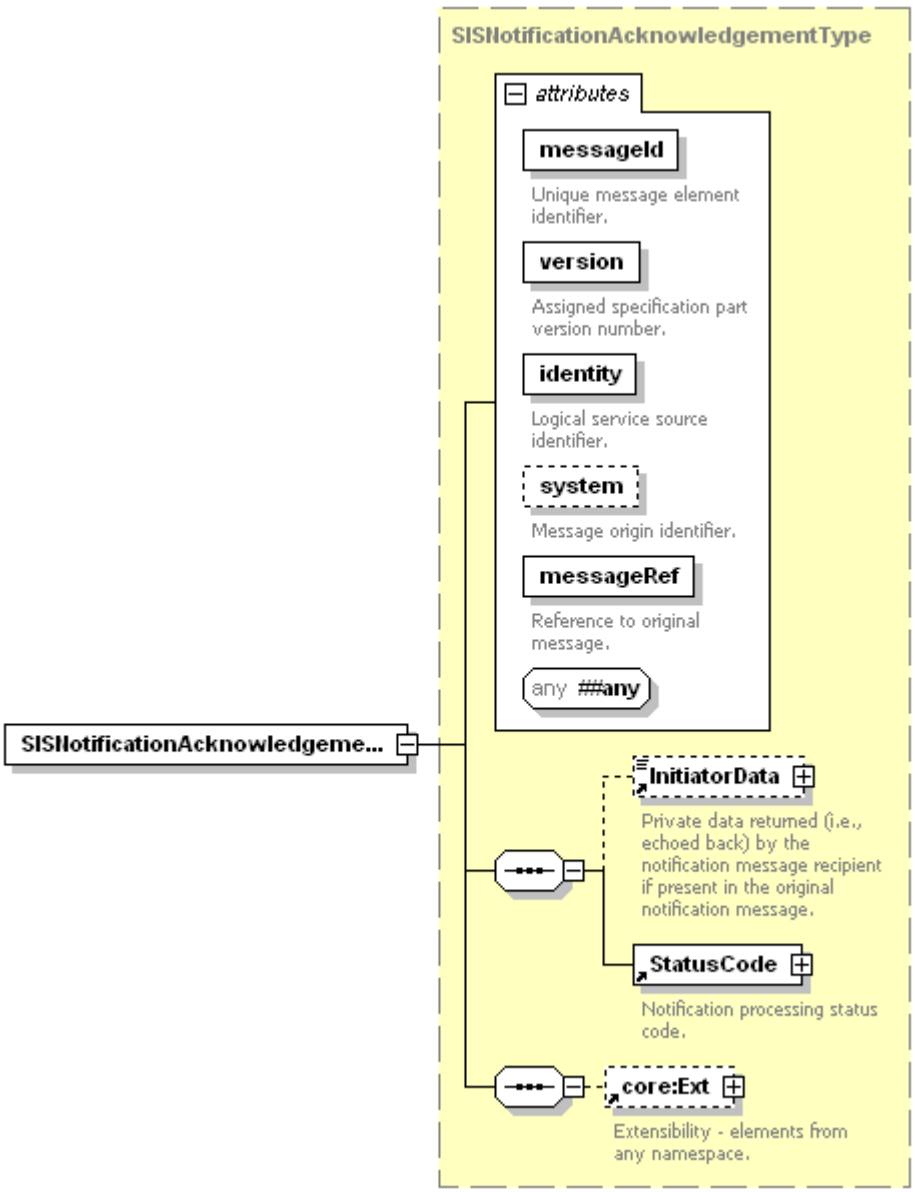


Figure 15 – SISNotificationAcknowledgement message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.12 SISCreateCursorRequest and SISCreateCursorRequest Response

An SIS implementation of cursor support shall conform to the description of cursor support described in [ITU-T J.380.8]. See [ITU-T J.380.8] for further information.

6.12.1 SISCreateCursorRequest message

The SISCreateCursorRequest message is used to create an instance of a static cursor on an SIS implementation.

The XML schema definition for this message is illustrated in Figure 16.

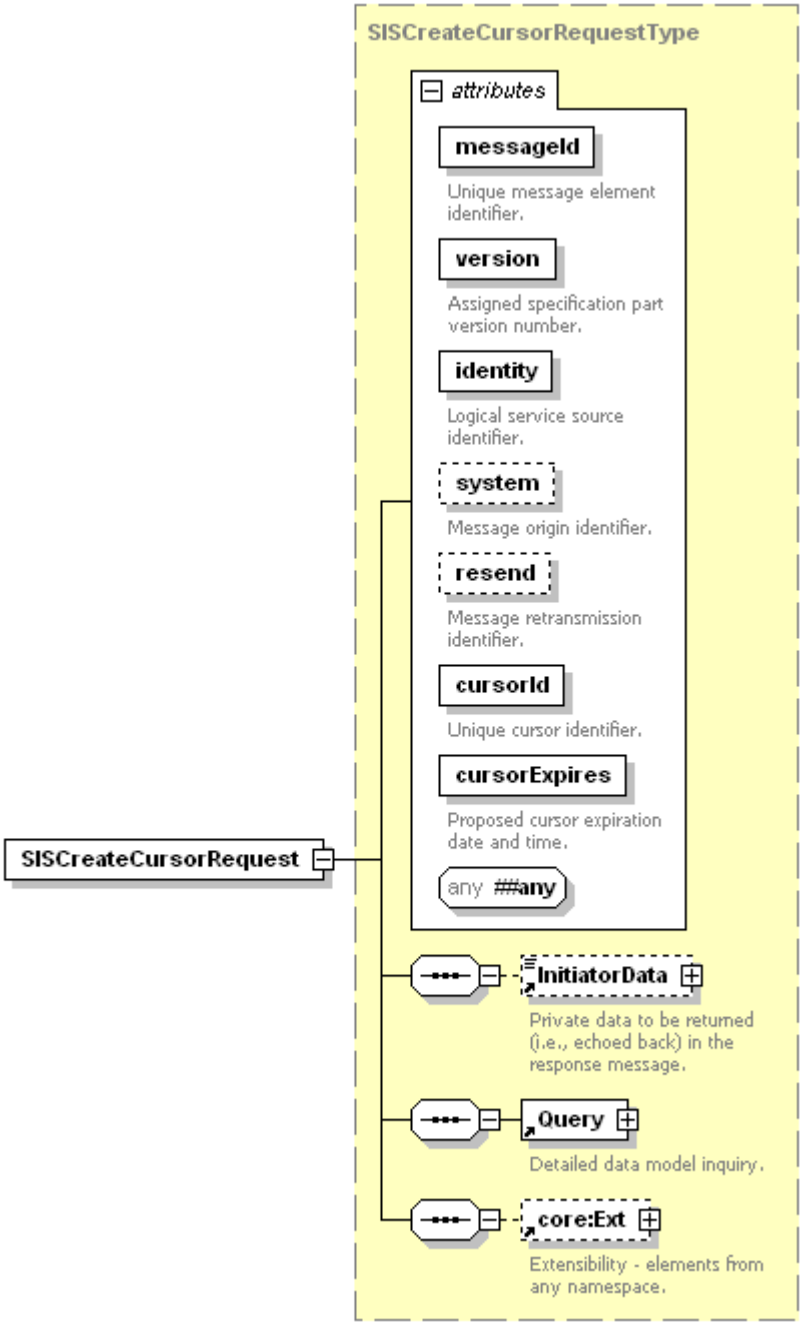


Figure 16 – SISCreateCursorRequest message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.12.2 SISCreateCursorResponse message

The XML schema definition for this message is illustrated in Figure 17.

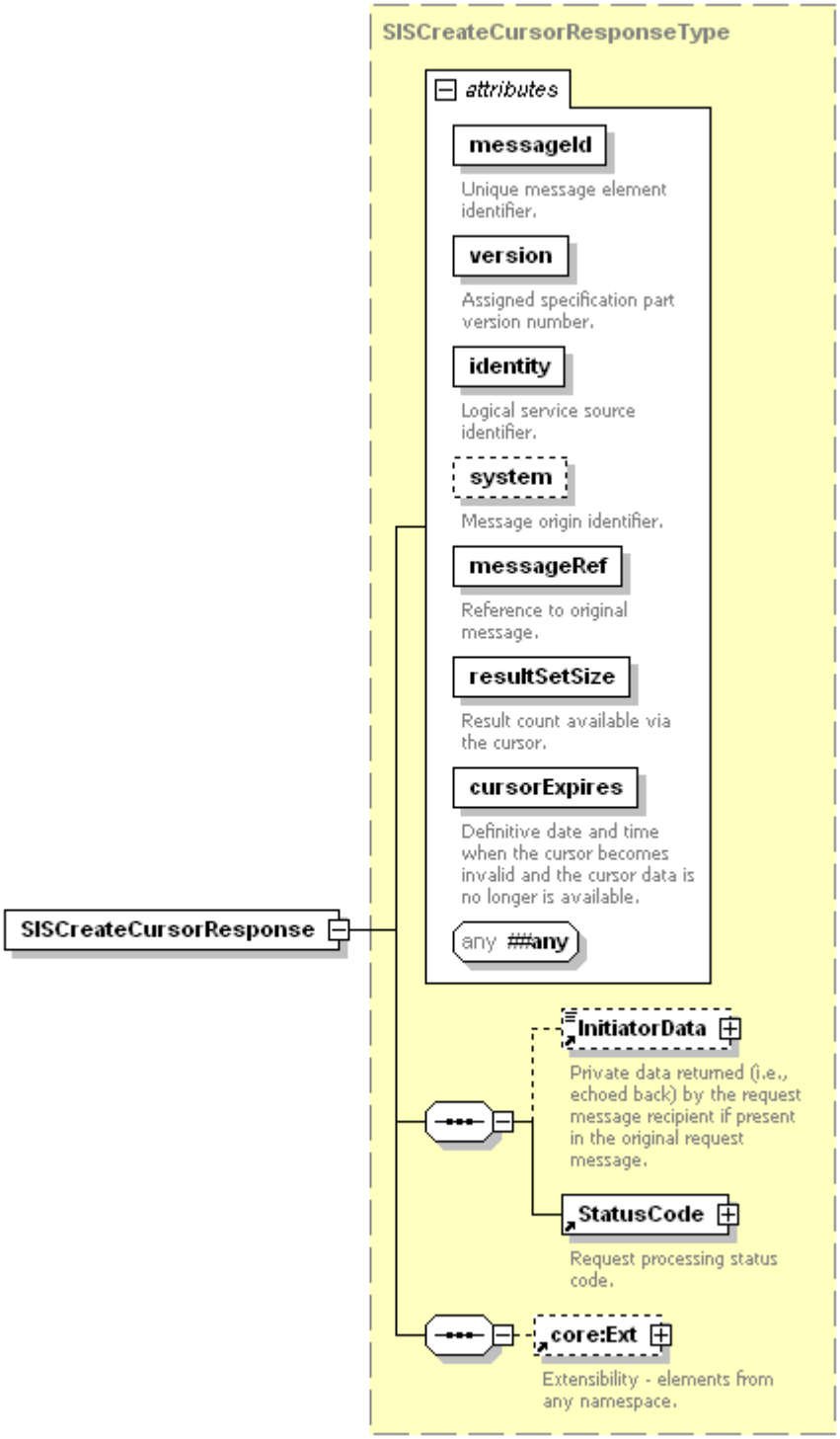


Figure 17 – SISCreateCursorResponse message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.13 SISCancelCursorRequest and SISCancelCursorResponse

An SIS implementation of cursor support shall conform to the description of cursor support described in [ITU-T J.380.8]. See [ITU-T J.380.8] for further information.

6.13.1 SISCancelCursorRequest message

This message allows a consumer of an SIS implementation to terminate a cursor before the cursor's expiration time.

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

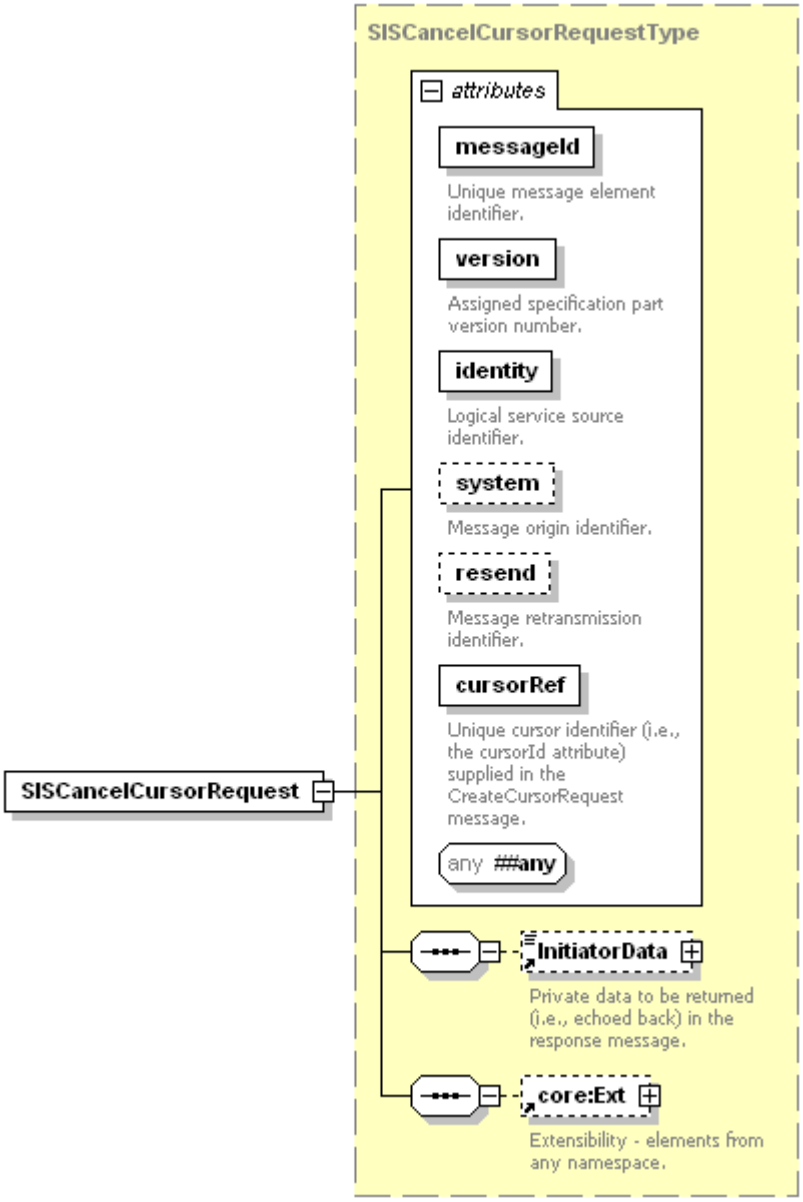


Figure 18 – SISCancelCursorRequest message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.13.2 SISCancelCursorResponse message

The XML schema definition for this message is illustrated in Figure 19.

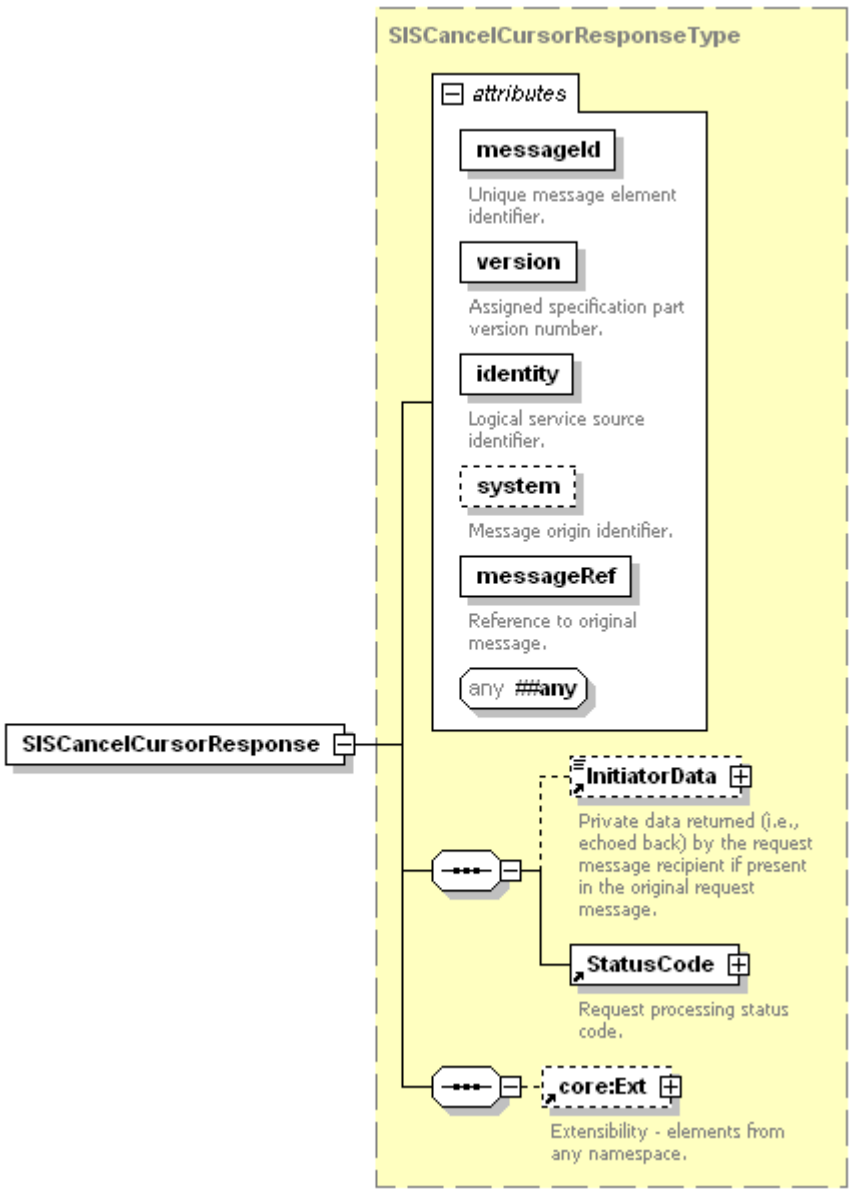


Figure 19 – SISCancelCursorResponse message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.14 SISQueryRequest and SISQueryResponse

The SISQueryRequest and SISQueryResponse messages are used by an SIS consumer to initiate queries against any of its data models. These messages support both basic and advanced query mechanisms and references to existing static cursor information.

6.14.1 SISQueryRequest message

The SISQueryRequest message is the primary mechanism for a consumer to execute a query on an SIS implementation's data model. This message contains either a Query element or a reference to a previously established cursor.

The XML schema definition for this message is illustrated in Figure 20.

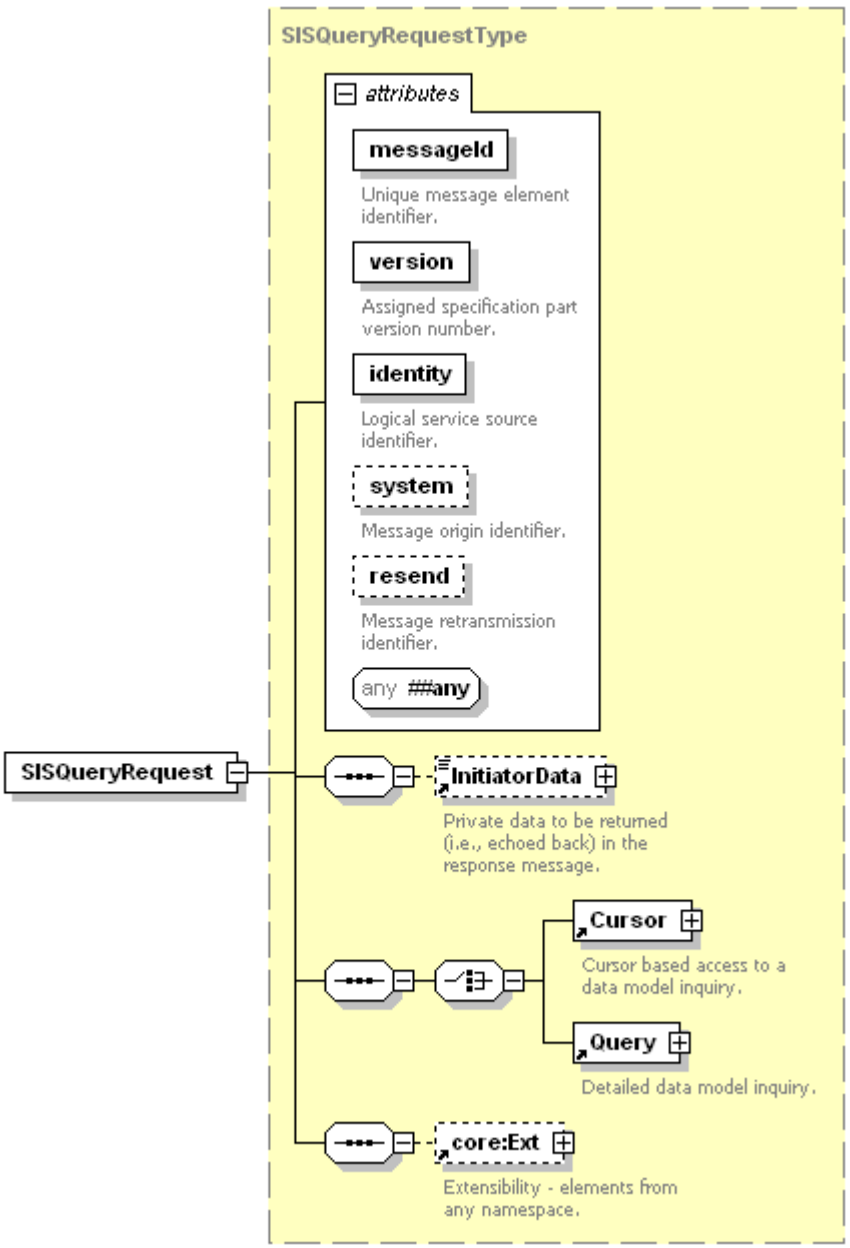


Figure 20 – SISQueryRequest message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.14.2 SISQueryResponse message

Upon receipt of an SISQueryRequest message, an SIS implementation shall respond with an SISQueryResponse message. This message contains the query results (advanced, basic or cursor) in the QueryResult element.

The XML schema definition for this message is illustrated in Figure 21.

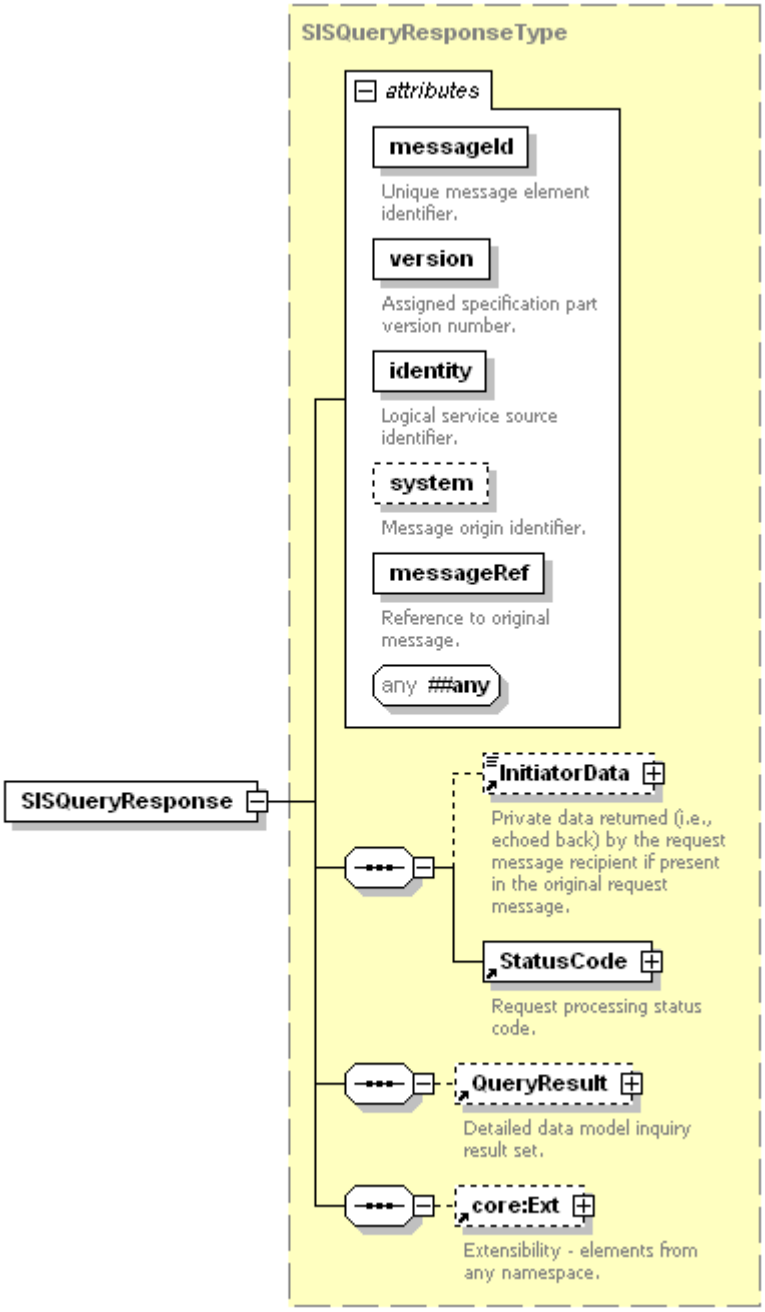


Figure 21 – SISQueryResponse message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.15 SISNotificationDeregisterRequest and SISNotificationDeregisterResponse

An SIS implementation shall allow a consumer to deregister a previously registered notification registration request message. This message exchange allows an SIS consumer to dynamically modify registration notifications using individual register and deregister commands.

6.15.1 SISNotificationDeregisterRequest message

The SISNotificationDeregisterRequest message removes an existing content notification registration from the advertising service.

The XML schema definition for this message is illustrated in Figure 22.

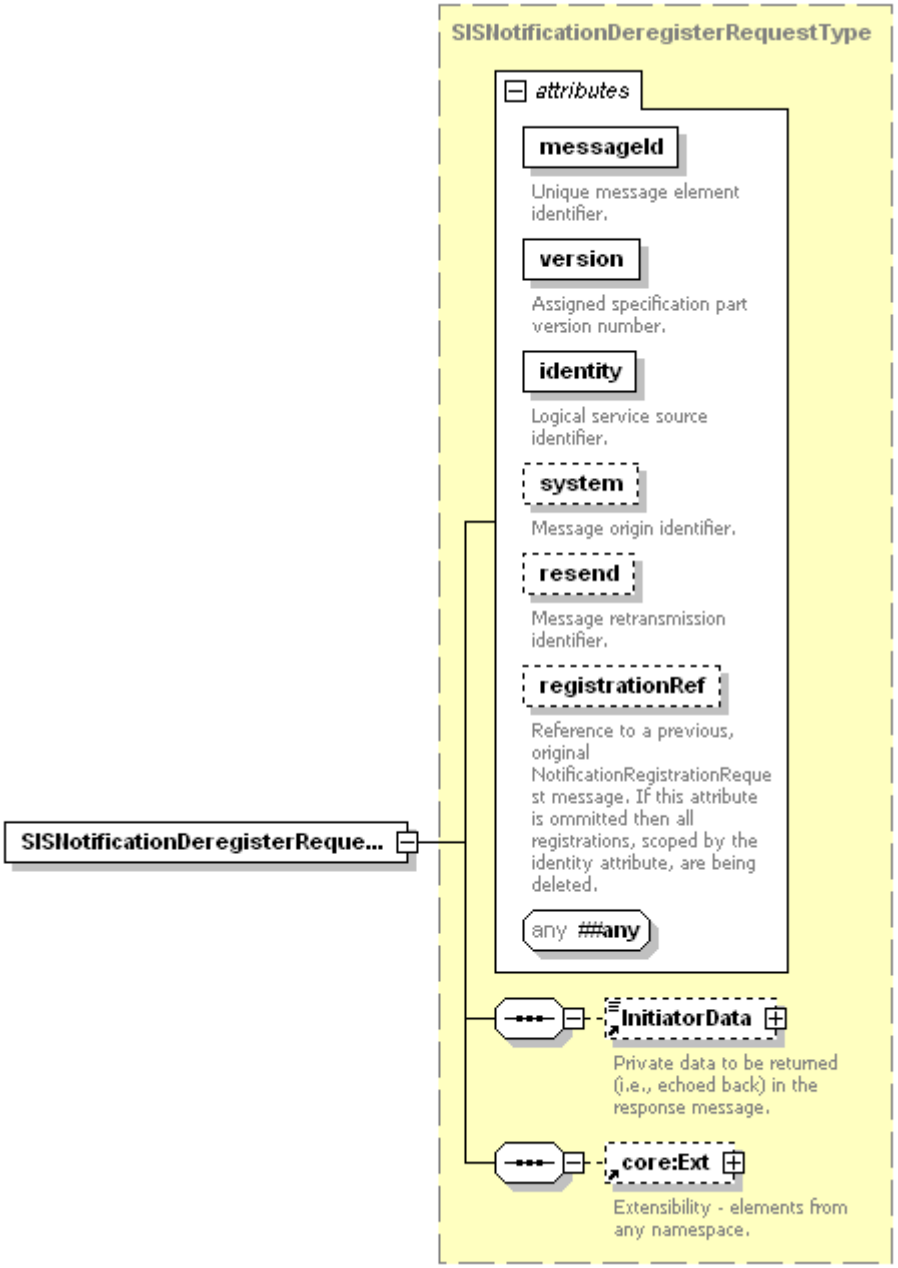


Figure 22 – SISNotificationDeregisterRequest message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.15.2 SISNotificationDeregisterResponse message

Upon receipt of an SISNotificationDeregisterRequest message from a consumer, an SIS implementation shall respond with a SISNotificationDeregisterResponse message.

The XML schema definition for this message is illustrated in Figure 23.

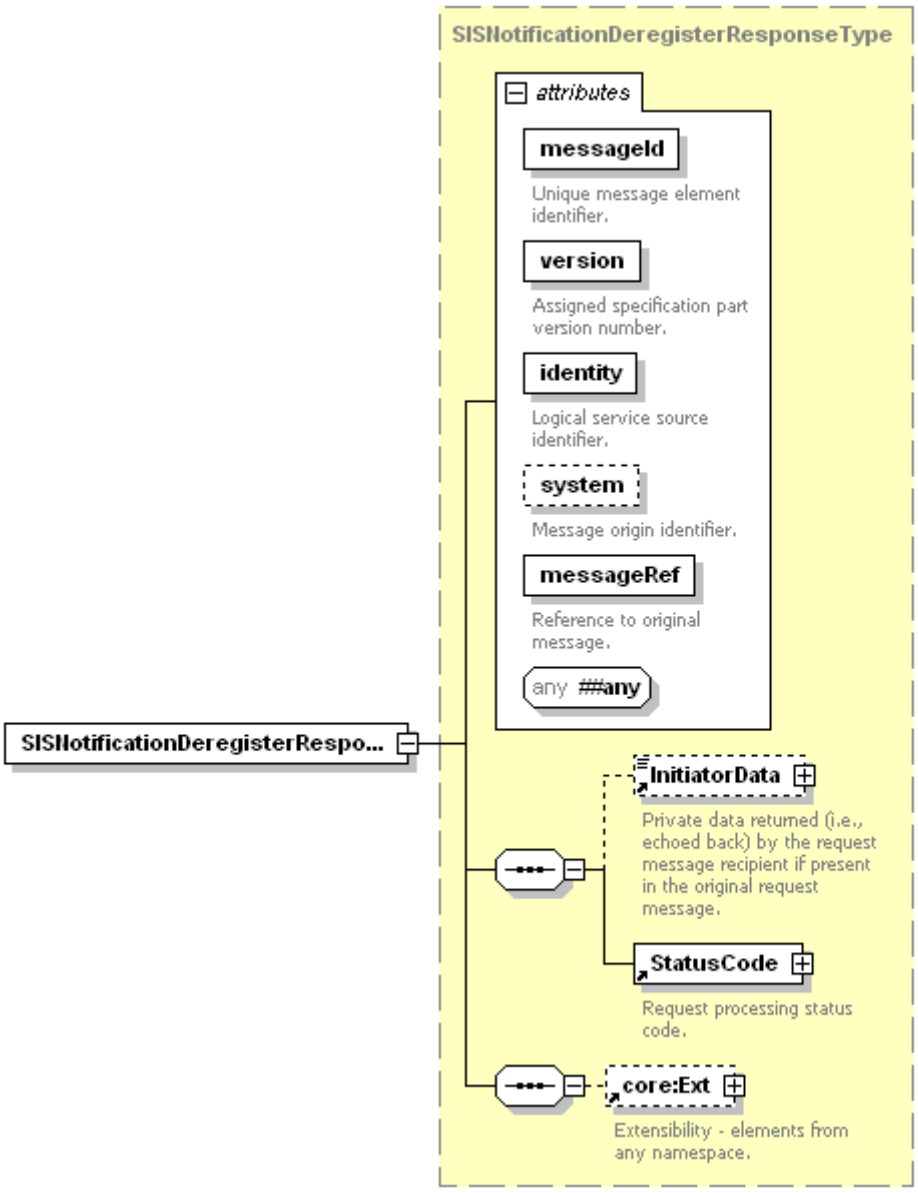


Figure 23 – SISNotificationDeregisterResponse message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.16 SISDeregistrationNotification and SISDeregistrationAcknowledgement

An SIS implementation shall have the ability to deregister consumers. Deregistration removes consumer registrations from the system and stops any notification traffic from being sent to the deregistered consumer.

Upon receipt of an SISDeregistrationNotification message, an SIS consumer shall reply with an SISDeregistrationAcknowledgement message.

6.16.1 SISDeregistrationNotification message

At any time, an SIS implementation may issue one or more SISDeregistrationNotification messages to registered SIS consumers. This informs the consumer that one or all of its active registrations (i.e., SISNotificationRegistrationRequest messages) have been terminated and no further notifications shall be expected related to those registrations.

The XML schema definition for this message is illustrated in Figure 24.

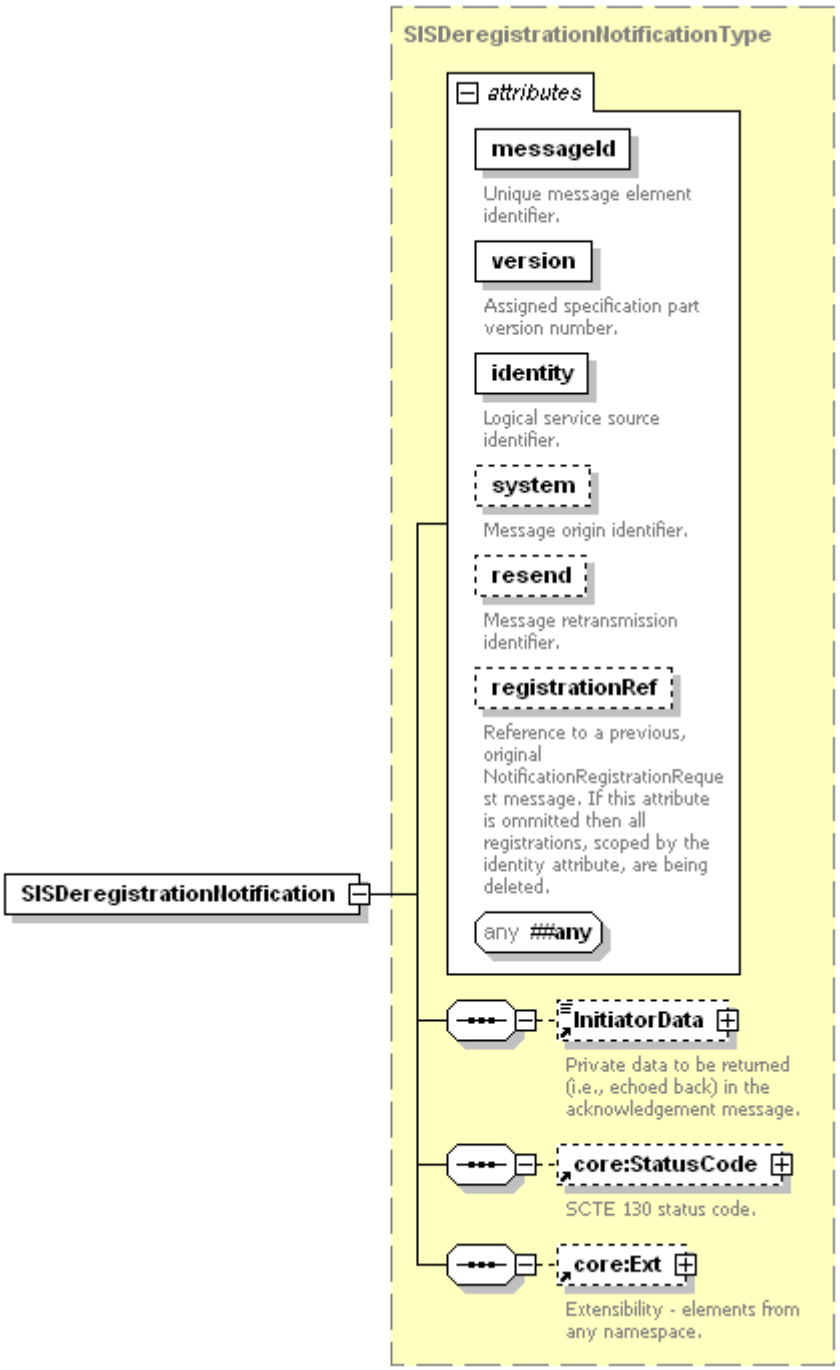


Figure 24 – SISDeregistrationNotification message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.16.2 SISDeregistrationAcknowledgement message

Upon receipt of a SISDeregistrationNotification message, an SIS consumer shall respond with an SISDeregistrationAcknowledgement message. This message informs the advertising service that the SISDeregistrationNotification message was received and processed by the intended consumer.

The XML schema definition for this message is illustrated in Figure 25.

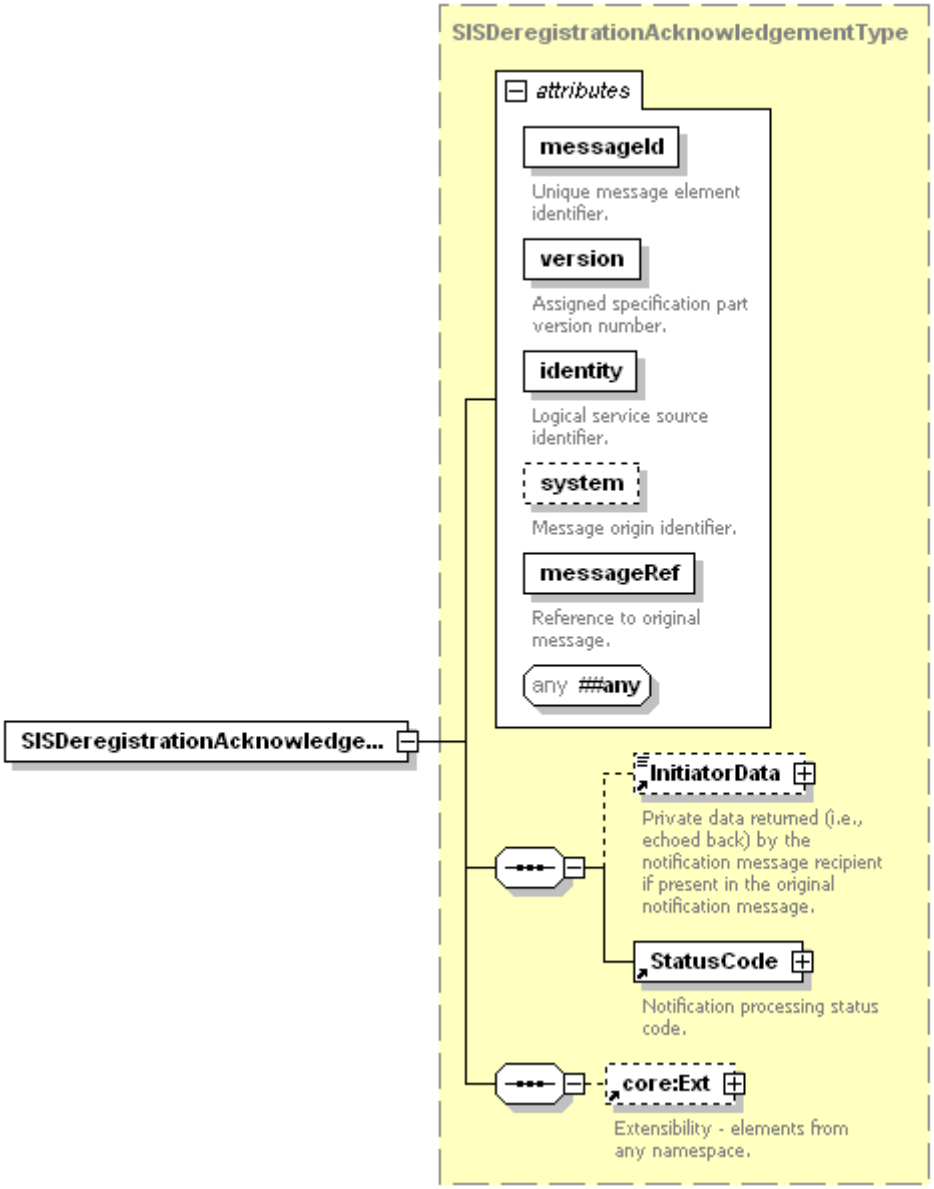


Figure 25 – SISDeregistrationAcknowledgement message XML schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [ITU-T J.380.8].

core:Ext [Optional] – Any additional elements from any namespace. For additional information on the core:Ext element see [ITU-T J.380.2].

6.17 Service check support

An SIS implementation shall support the service check message exchange, which includes the core:ServiceCheckRequest and core:ServiceCheckResponse messages as described by [ITU-T J.380.8]. See [ITU-T J.380.8] for further information.

The value of the @version attribute for the core:ServiceCheckRequest and core:ServiceCheckResponse messages shall be the value specified by [ITU-T J.380.2] rather than the value specified in Clause 6.1. See [ITU-T J.380.2] for further information.

6.18 Service status support

An SIS implementation shall support the service status message exchange, which includes the core:ServiceStatusNotification and core:ServiceStatusAcknowledgement messages as described by [ITU-T J.380.8]. See [ITU-T J.380.8] for further information.

The value of the @version attribute for the core:ServiceStatusNotification and core:ServiceStatusAcknowledgement messages shall be the value specified by [ITU-T J.380.2] rather than the value specified in clause 6.1. See [ITU-T J.380.2] for further information.

7 SIS element details

An SIS implementation shall be built using the generalized information service (GIS) interface defined by [ITU-T J.380.8].

Other than the message elements defined in clause 6, the ITU-T J.380.6 defines no elements in addition to those already defined by [ITU-T J.380.8].

8 SIS attribute types

An SIS implementation shall be built using the generalized information service (GIS) interface defined by [ITU-T J.380.8].

The SIS defines no attributes in addition to those already defined by the GIS [ITU-T J.380.8].

Annex A

WSDL

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

[ITU-T J.380.6] includes a separate WSDL document for the SIS and SIS client interfaces. See the WSDL document for details regarding 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.

Appendix I

Message examples

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

The following sections contain a selection of examples of SIS top level messages.

I.1 SIS list supported features request and response

The SISListSupportedFeaturesRequest is the only service end-point that is required to be available on the well-known address for an SIS implementation (see Figure I.1). All other service end-points may also be available at the well-known SIS address or available only on other, more specific, end-point addresses. The SISListSupportedFeaturesResponse message may contain a set of core:Callout elements which may include the additional addresses for specific services.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>

<SISListSupportedFeaturesRequest messageId="consumer-342" system="SISClient" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475311"

 xmlns="http://www.scte.org/schemas/130-6/2010/sis" 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/130-6/2009/sis SCTE_130-6_2010.xsd"/>
```

Figure I.1 – Example 1: SISListSupportedFeaturesRequest message

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<SISListSupportedFeaturesResponse messageId="sis-101" system="SISServer" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" messageRef="consumer-342"
xmlns="http://www.scte.org/schemas/130-6/2010/sis" 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/130-6/2010/sis SCTE_130-6_2010.xsd">

        <core:StatusCode class="0"/>

        <core:Callout>

            <core:Address type="SOAP1.1">http://10.250.30.22/SISServer</core:Address>

        </core:Callout>

        <gis:ServiceDataModelProfile>

        <gis:ServiceDataModel>http://SuperDemograpics.com</gis:ServiceDataModel>

            <gis:AdvancedQueryLanguage>XPath</gis:AdvancedQueryLanguage>

            <gis:AdvancedQueryLanguage>XQuery</gis:AdvancedQueryLanguage>

        </gis:ServiceDataModelProfile>

        <gis:ServiceDataModelProfile>

            <gis:ServiceDataModel>http://AdZoneDemograpics.com</gis:ServiceDataModel>

        </gis:ServiceDataModelProfile>

</SISListSupportedFeaturesResponse>
```

Figure I.2 – Example 2: SISListSupportedFeaturesResponse message

Figure I.2 contains an example of an SISListSupportedFeaturesResponse message. The single core:Callout element does not include an @message attribute. This indicates that all SIS service channel end-points are available through this well-known SIS address end-point.

Figure I.3 contains an SISListSupportedFeaturesResponse message that does contain core:Callout elements for several specific SIS service channel end-points.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<SISListSupportedFeaturesResponse messageId="sis-102" system="SISServer" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" messageRef="consumer-342"
xmlns="http://www.scte.org/schemas/130-6/2010/sis" 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/130-6/2010/sis SCTE_130-6_2010.xsd">

        <core:StatusCode class="0"/>

        <core:Callout>

            <core:Address type="SOAP1.1">http://10.250.30.22/SISServer</core:Address>

        </core:Callout>

        <core:Callout message="SISNotificationRegistrationRequest">

            <core:Address type="SOAP1.1">http://10.250.30.23/SISServer</core:Address>

        </core:Callout>

        <core:Callout message="SISNotificationDeregisterRequest">

            <core:Address type="SOAP1.1">http://10.250.30.24/SISServer</core:Address>

        </core:Callout>

        <gis:ServiceDataModelProfile>

            <gis:ServiceDataModel>http://SuperDemograpics.com</gis:ServiceDataModel>

            <gis:AdvancedQueryLanguage>XPath</gis:AdvancedQueryLanguage>

            <gis:AdvancedQueryLanguage>XQuery</gis:AdvancedQueryLanguage>

        </gis:ServiceDataModelProfile>

        <gis:ServiceDataModelProfile>

            <gis:ServiceDataModel>http://AdZoneDemograpics.com</gis:ServiceDataModel>

        </gis:ServiceDataModelProfile>

</SISListSupportedFeaturesResponse>
```

Figure I.3 – Example 3: ListSupportedFeaturesResponse message (multiple endpoints)

Figure I.3 contains three core:Callout elements. The first core:Callout element is the default core:Callout element. This element contains the default address for all SIS service channel message end-points.

Two additional core:Callout elements in this example indicate that the service channel end-points for the SISNotificationRegistrationRequest and SISNotificationDeregisterRequest messages are located on specific addresses, different from that of the default address(es).

See Table 2 for a list of all SIS service channel message end-points.

Note that in both Figures I.2 and I.3 the SIS implementation indicates that it supports two data models. The "SISDemographic V1.1" data model can be queried with the advanced query interface using either XPath or XQuery. The SISAdZoneDemographics data model can be queried only by using the basic query interface.

I.2 SIS list qualifiers request and response

The SISListQualifiersRequest message provides a way for a consumer of SIS services to discover the qualifiers supported by an SIS basic query data model and to learn the type and allowed values of each qualifier's value.

Figure I.4 contains an SISListQualifiersRequest message that is intended to discover the qualifiers for the "SuperDemographics" data model.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>

<SISListQualifiersRequest messageId="consumer-344" system="SISClient" version ="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475311"

 xmlns="http://www.scte.org/schemas/130-6/2010/sis" 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/130-6/2010/sis SCTE_130-6_2010.xsd">

  <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>

</SISListQualifiersRequest>
```

Figure I.4 – Example 4: SISListQualifiersRequest message

Figure I.5 contains the SISListQualifiersResponse message returned in response to the SISListQualifiersRequest message shown in Figure I.4.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<SISListQualifiersResponse messageId="sis-103" system="SISServer" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" messageRef="consumer-344"
xmlns="http://www.scte.org/schemas/130-6/2010/sis" 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/130-6/2010/sis SCTE_130-6_2010.xsd">

        <core:StatusCode class="0"/>

        <gis:BasicQueryDataModelDescription>

            <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>

            <gis:UniqueQualifierDeclaration>

                <gis:QualifierDeclaration name="MACAddress"/>

            </gis:UniqueQualifierDeclaration>

            <gis:QualifierDescription name="Age" valueType="enumeration">

                <gis:EnumerationValue>UnderTwenty</gis:EnumerationValue>

                <gis:EnumerationValue>TwentyToForty</gis:EnumerationValue>

                <gis:EnumerationValue>FortyToSixty</gis:EnumerationValue>

                <gis:EnumerationValue>OverSixty</gis:EnumerationValue>

            </gis:QualifierDescription>

            <gis:QualifierDescription name="Income" valueType="enumeration">

                <gis:EnumerationValue>Under50K</gis:EnumerationValue>

                <gis:EnumerationValue>50Kto100K</gis:EnumerationValue>

                <gis:EnumerationValue>100Kto200K</gis:EnumerationValue>

                <gis:EnumerationValue>Over200K</gis:EnumerationValue>

            </gis:QualifierDescription>

            <gis:QualifierDescription name="ZipPlusFour" valueType="string">

                <gis:MaxLength>10</gis:MaxLength>

            </gis:QualifierDescription>

            <gis:QualifierDescription name="MACAddress" valueType="string">

                <gis:MaxLength>17</gis:MaxLength>

            </gis:QualifierDescription>

            <gis:QualifierDescription name="CreditLimit" valueType="float"/>
```

```
            <gis:QualifierDescription name="SportsInterest" valueType="enumeration">
                <gis:EnumerationValue>Hockey</gis:EnumerationValue>
                <gis:EnumerationValue>Football</gis:EnumerationValue>
                <gis:EnumerationValue>Baseball</gis:EnumerationValue>
                <gis:EnumerationValue>Basketball</gis:EnumerationValue>
                <gis:EnumerationValue>Soccer</gis:EnumerationValue>
                <gis:EnumerationValue>Tennis</gis:EnumerationValue>
                <gis:EnumerationValue>Fishing</gis:EnumerationValue>
                <gis:EnumerationValue>Hunting</gis:EnumerationValue>
                <gis:EnumerationValue>None</gis:EnumerationValue>
            </gis:QualifierDescription>
        </gis:BasicQueryDataModelDescription>
</SISListQualifiersResponse>
```

Figure I.5 – Example 5: SISListQualifiersResponse message

In Figure I.5, we see that the "SuperDemographics" data model supports five qualifiers – Age, Income, ZipPlusFour, CreditLimit and SportsInterest plus the unique qualifier of "MACAddress".

The Age, Income and SportsInterest qualifier values are comprised of a set of enumerated strings. The ZipPlusFour qualifier value is an arbitrary string with a maximum length of 10 characters and the CreditLimit qualifier has a value of type "float". No minimum or maximum values are specified for the CreditLimit qualifier.

Figure I.6 contains an SISListQualifiersRequest message that is intended to discover the qualifiers for the "AdZoneDemographics" data model.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<SISListQualifiersRequest messageId="consumer-344" system="SISClient" version ="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475311"
 xmlns="http://www.scte.org/schemas/130-6/2010/sis" 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/130-6/2010/sis SCTE_130-6_2010.xsd">
 <gis:ServiceDataModel>http://AdZoneDemographics.com</gis:ServiceDataModel>
</SISListQualifiersRequest>
```

Figure I.6 – Example 6: SISListQualifiersRequest message

Figure I.7 contains the SISListQualifiersResponse message returned in response to the SISListQualifiersRequest message shown in Figure I.6.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<SISListQualifiersResponse messageId="sis-103" system="SISServer" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" messageRef="consumer-344"
xmlns="http://www.scte.org/schemas/130-6/2010/sis" 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/130-6/2010/sis SCTE_130-6_2010.xsd">
        <core:StatusCode class="0"/>
        <gis:BasicQueryDataModelDescription>
            <gis:ServiceDataModel>http://AdZoneDemographics.com</gis:ServiceDataModel>
```

```
            <gis:UniqueQualifierDeclaration>
                <gis:QualifierDeclaration name="AdZoneId"/>
            </gis:UniqueQualifierDeclaration>
            <gis:QualifierDescription valueType="enumeration" name="Age">
                <gis:EnumerationValue>UnderTwenty</gis:EnumerationValue>
                <gis:EnumerationValue>TwentyToForty</gis:EnumerationValue>
                <gis:EnumerationValue>FortyToSixty</gis:EnumerationValue>
                <gis:EnumerationValue>OverSixty</gis:EnumerationValue>
            </gis:QualifierDescription>
            <gis:QualifierDescription name="Income" valueType="enumeration">
                <gis:EnumerationValue>Under50K</gis:EnumerationValue>
                <gis:EnumerationValue>50Kto100K</gis:EnumerationValue>
                <gis:EnumerationValue>100Kto200K</gis:EnumerationValue>
                <gis:EnumerationValue>Over200K</gis:EnumerationValue>
            </gis:QualifierDescription>
            <gis:QualifierDescription name="ZipPlusFour" valueType="string">
                <gis:MaxLength>10</gis:MaxLength>
            </gis:QualifierDescription>
            <gis:QualifierDescription name="AdZoneId" valueType="string">
                <gis:MaxLength>76</gis:MaxLength>
            </gis:QualifierDescription>
            <gis:QualifierDescription name="CreditLimit" valueType="float">
                <gis:MinFloat>0.00</gis:MinFloat>
                <gis:MaxFloat>10000.00</gis:MaxFloat>
            </gis:QualifierDescription>
            <gis:QualifierDescription name="SportsInterest" valueType="enumeration">
                <gis:EnumerationValue>Football</gis:EnumerationValue>
                <gis:EnumerationValue>Baseball</gis:EnumerationValue>
                <gis:EnumerationValue>Basketball</gis:EnumerationValue>
                <gis:EnumerationValue>Soccer</gis:EnumerationValue>
                <gis:EnumerationValue>Tennis</gis:EnumerationValue>
                <gis:EnumerationValue>Fishing</gis:EnumerationValue>
                <gis:EnumerationValue>Hunting</gis:EnumerationValue>
                <gis:EnumerationValue>None</gis:EnumerationValue>
            </gis:QualifierDescription>
        </gis:BasicQueryDataModelDescription>
</SISListQualifiersResponse>
```

Figure I.7 – Example 7: SISListQualifiersResponse message

In Figure I.7, we see that the "AdZoneDemographics" data model also supports five qualifiers, Age, Income, ZipPlusFour, CreditLimit and SportsInterest in addition to the AdZoneId unique qualifier. In this case, the qualifiers and their values are characterizing an audience within an advertising zone rather than an individual subscriber.

I.3 SIS Query request and response

The SISQueryRequest is the workhorse of the SIS interface. This message provides consumers with a number of flexible query alternatives.

Figure I.8 uses the basic query mechanism to get a complete list of qualifiers for a subscriber using a gis:UniqueQualifier element.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<SISQueryRequest messageId="consumer-345" system="SISClient" version="1.0" identity="40DA910E-
01AF-5050-C7EA-5D7B4A475311" xmlns="http://www.scte.org/schemas/130-6/2010/sis"
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/130-6/2010/sis SCTE_130-6_2010.xsd">

        <gis:Query queryId="233" expandOutput="false">

            <gis:ServiceDataModel>http://SuperDemograpics.com</gis:ServiceDataModel>

            <gis:UniqueQualifier>

                <gis:Qualifier name="MACAddress" value="00-1e-c2-01-d3-2d"/>

            </gis:UniqueQualifier>

        </gis:Query>

</SISQueryRequest>
```

Figure I.8 – Example 8: SISQueryRequest message

The result of the previous query is illustrated in Figure I.9:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<SISQueryResponse messageId="sis-105" system="SISServer" version="1.0" identity="40DA910E-01AF-
5050-C7EA-5D7B4A475312"     messageRef="consumer-345"     xmlns="http://www.scte.org/schemas/130-
6/2010/sis"                              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/130-6/2010/sis SCTE_130-6_2010.xsd">

        <core:StatusCode class="0"/>

        <gis:QueryResult queryRef="233" resultSetSize="1" totalResultSetSize="1">

            <gis:BasicQueryResult>

                <gis:QualifierSet>

                    <gis:Qualifier name="MACAddress" value="00-1e-c2-01-d3-2d"/>

                    <gis:Qualifier name="Age" value="Under20"/>

                    <gis:Qualifier name="Income" value="Under50K"/>

                    <gis:Qualifier name="ZipPlusFour" value="01720"/>

                    <gis:Qualifier name="CreditLimit" value="100.00"/>

                    <gis:Qualifier name="SportsInterest" value="Basketball"/>

                </gis:QualifierSet>

            </gis:BasicQueryResult>

        </gis:QueryResult>

</SISQueryResponse>
```

Figure I.9 – Example 9: SISQueryResponse message

In Figure I.9 we see that the subscriber with MACAddress of "00-1e-c2-01-d3-2d" is less than 20 years old, has an annual income of less than $50,000, lives in the 01720 zip code area, has a credit limit of $100.00 and is primarily interested in basketball.

The SISQueryRequest message can also be used with a gis:QueryFilter element to obtain a list of gis:UniqueQualifierSet elements for one or more subscribers whose Qualifier elements satisfy the criteria specified by the filter.

Figure I.10 contains an SISQueryRequest with a gis:QueryFilter element that requests a list of gis:UniqueQualifierSet elements for all subscribers that are under twenty years old. Note that the expandOutput of the gis:Query element has a value of "false".

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<SISQueryRequest messageId="consumer-346" system="SISClient" version="1.0" identity="40DA910E-
01AF-5050-C7EA-5D7B4A475311" xmlns="http://www.scte.org/schemas/130-6/2010/sis"
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/130-6/2010/sis SCTE_130-6_2010.xsd">
        <gis:Query queryId="234" expandOutput="false">
            <gis:ServiceDataModel>http://SuperDemograpics.com</gis:ServiceDataModel>
            <gis:BasicQueryFilter>
                <gis:BasicFilterElement name="Age" value="Under20" valueIsRegex="false"/>
            </gis:BasicQueryFilter>
        </gis:Query>
</SISQueryRequest>
```

Figure I.10 – Example 10: SISQueryRequest message

The result of the query shown in Figure I.10 is shown in Figure I.11.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<SISQueryResponse messageId="sis-106" system="SISServer" version="1.0" identity="40DA910E-01AF-
5050-C7EA-5D7B4A475312" messageRef="consumer-346" xmlns="http://www.scte.org/schemas/130-
6/2010/sis" 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/130-6/2010/sis SCTE_130-6_2010.xsd">
        <core:StatusCode class="0"/>
        <gis:QueryResult resultSetSize="4" queryRef="234" totalResultSetSize="4">
            <gis:BasicQueryResult>
                <gis:UniqueQualifier>
                    <gis:Qualifier name="MACAddress" value="00-1e-c2-01-d3-2d"/>
                </gis:UniqueQualifier>
                <gis:UniqueQualifier>
                    <gis:Qualifier name="MACAddress" value="00-1e-c2-01-d3-46"/>
                </gis:UniqueQualifier>
                <gis:UniqueQualifier>
                    <gis:Qualifier name="MACAddress" value="00-50-56-c0-00-01"/>
                </gis:UniqueQualifier>
                <gis:UniqueQualifier>
                    <gis:Qualifier name="MACAddress" value="00-50-56-c0-00-06"/>
                </gis:UniqueQualifier>
            </gis:BasicQueryResult>
        </gis:QueryResult>
        <core:Ext/>
</SISQueryResponse>
```

Figure I.11 – Example 11: SISQueryResponse message

In Figure I.11 we see that there are four subscribers under the age of twenty and, since the gis:UniqueQualifierSet element in this data model is comprised of Qualifier elements with name="MACAddress". The MACAddress for each subscriber is returned in the gis:Qualifier element's value attribute.

Figure I.12 shows an SISQueryRequest message similar to that shown in Figure I.10 except that in Figure I.12 the expandOutput attribute of the gis:Query element is set to "true". When the expandOutput attribute value is set to "true", the result of the query contains the full list of gis:Qualifier elements for each subscriber. This is shown in Figure I.13.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<SISQueryRequest messageId="consumer-347" system="SISClient" version="1.0" identity="40DA910E-
01AF-5050-C7EA-5D7B4A475311" xmlns="http://www.scte.org/schemas/130-6/2010/sis"
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/130-6/2010/sis SCTE_130-6_2010.xsd">

        <gis:Query queryId="234" expandOutput="true">

            <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>

            <gis:BasicQueryFilter>

                <gis:BasicFilterElement name="Age" value="Under20" valueIsRegex="false"/>

            </gis:BasicQueryFilter>

        </gis:Query>

</SISQueryRequest>
```

Figure I.12 – Example 12: SISQueryRequest message

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<SISQueryResponse messageId="sis-107" system="SISServer" version="1.0" identity="40DA910E-01AF-
5050-C7EA-5D7B4A475312" messageRef="consumer-347" xmlns="http://www.scte.org/schemas/130-
6/2010/sis" 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/130-6/2010/sis SCTE_130-6_2010.xsd">

        <core:StatusCode class="0"/>

        <gis:QueryResult queryRef="234" resultSetSize="5" totalResultSetSize="5">

            <gis:BasicQueryResult>

                <gis:QualifierSet>

                    <gis:Qualifier name="MACAddress" value="00-1e-c2-01-d3-2d"/>

                    <gis:Qualifier name="Age" value="Under20"/>

                    <gis:Qualifier name="Income" value="Under50K"/>

                    <gis:Qualifier name="ZipPlusFour" value="01720"/>

                    <gis:Qualifier name="CreditLimit" value="100.00"/>

                    <gis:Qualifier name="SportsInterest" value="Basketball"/>

                </gis:QualifierSet>

                <gis:QualifierSet>

                    <gis:Qualifier name="MACAddress" value="00-1e-52-74-2e-6a"/>

                    <gis:Qualifier name="Age" value="Under20"/>

                    <gis:Qualifier name="Income" value="Under50K"/>

                    <gis:Qualifier name="ZipPlusFour" value="01847"/>

                    <gis:Qualifier name="CreditLimit" value="200.00"/>

                    <gis:Qualifier name="SportsInterest" value="Football"/>

                </gis:QualifierSet>
```

```
                <gis:QualifierSet>
                    <gis:Qualifier name="MACAddress" value="00-1e-52-74-2e-6d"/>
                    <gis:Qualifier name="Age" value="Under20"/>
                    <gis:Qualifier name="Income" value="Under50K"/>
                    <gis:Qualifier name="ZipPlusFour" value="01847"/>
                    <gis:Qualifier name="CreditLimit" value="100.00"/>
                    <gis:Qualifier name="SportsInterest" value="Tennis"/>
                </gis:QualifierSet>
                <gis:QualifierSet>
                    <gis:Qualifier name="MACAddress" value="00-50-56-c0-00-01"/>
                    <gis:Qualifier name="Age" value="Under20"/>
                    <gis:Qualifier name="Income" value="Under50K"/>
                    <gis:Qualifier name="ZipPlusFour" value="01720"/>
                    <gis:Qualifier name="CreditLimit" value="500.00"/>
                    <gis:Qualifier name="SportsInterest" value="Football"/>
                </gis:QualifierSet>
                <gis:QualifierSet>
                    <gis:Qualifier name="MACAddress" value="00-50-56-c0-00-08"/>
                    <gis:Qualifier name="Age" value="Under20"/>
                    <gis:Qualifier name="Income" value="Under50K"/>
                    <gis:Qualifier name="ZipPlusFour" value="01754"/>
                    <gis:Qualifier name="CreditLimit" value="50.00"/>
                    <gis:Qualifier name="SportsInterest" value="Fishing"/>
                </gis:QualifierSet>
            </gis:BasicQueryResult>
        </gis:QueryResult>
</SISQueryResponse>
```

Figure I.13 – Example 13: SISQueryResponse message

I.4 SIS notification registration request and notification

Figure I.14 shows a typical SISNotificationRegistrationRequest message example. Note that this example includes the core:Callout element for future SISNotification messages.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<SISNotificationRegistrationRequest messageId="consumer-348" system="SISClient" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475311" xmlns="http://www.scte.org/schemas/130-6/2010/sis"
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/130-6/2010/sis SCTE_130-6_2010.xsd">

        <core:Callout>

            <core:Address type="SOAP1.1">http://10.250.30.77/SISClient</core:Address>

        </core:Callout>

        <gis:Query queryId="query-10">

            <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>

            <gis:BasicQueryFilter>

                <gis:BasicFilterElement name="Age" value="Under20" valueIsRegex="false"/>

            </gis:BasicQueryFilter>

        </gis:Query>

</SISNotificationRegistrationRequest>
```

Figure I.14 – Example 14: SISNotificationRequest message

Two things of interest in Figure I.14 are the core:Callout @message attribute and the core:Address @type attribute. The @message attribute indicates to the logical service that SISNotification messages should be sent to the specified address. The @type attribute of the core:Address element indicates the type of the service endpoint found on the consumer side. In this case, the address type is "SOAP1.1" and the supplied address leads to a SOAP endpoint. See [ITU-T J.380.2] for additional information on the core:Address element.

SISNotification messages are sent to registered consumers when the underlying data store has been changed in a way that affects the result set of a previously registered query. Changes include the addition of new subscribers, the deletion of old subscribers or updates to existing subscribers.

Subscriber gis:QualifierSet elements that have changed in the content store are evaluated against registered consumer queries. Matches are packaged up into SISNotification messages and sent to the registered consumer.

The SISNotification message shown in Figure I.15 indicates that five new subscribers under the age of twenty have been added to the logical service's data store.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<SISNotification noticeType="new" messageId="sis-108" system="SISServer" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" xmlns="http://www.scte.org/schemas/130-6/2010/sis"
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/130-6/2010/sis SCTE_130-6_2010.xsd">

        <gis:QueryResult resultSetSize="5" queryRef="query-10" totalResultSetSize="5">

            <gis:BasicQueryResult>

                <gis:UniqueQualifier>

                    <gis:Qualifier name="MACAddress" value="00-1e-c2-01-d3-2d"/>

                </gis:UniqueQualifier>

                <gis:UniqueQualifier>

                    <gis:Qualifier name="MACAddress" value="00-1e-52-74-2e-6a"/>

                </gis:UniqueQualifier>

                <gis:UniqueQualifier>
```

```
                    <gis:Qualifier name="MACAddress" value="00-1e-52-74-2e-6d"/>
                </gis:UniqueQualifier>
                <gis:UniqueQualifier>
                    <gis:Qualifier name="MACAddress" value="00-50-56-c0-00-01"/>
                </gis:UniqueQualifier>
                <gis:UniqueQualifier>
                    <gis:Qualifier name="MACAddress" value="00-50-56-c0-00-08"/>
                </gis:UniqueQualifier>
            </gis:BasicQueryResult>
        </gis:QueryResult>
</SISNotification>
```

Figure I.15 – Example 15: SISNotification message

The SISNotification message shown in Figure I.16 indicates that one subscriber under the age of twenty has been deleted from the logical service's data store.

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<SISNotification noticeType="delete" messageId="39903" system="SISServer" version="1.0"
identity="40DA910E-01AF-5050-C7EA-5D7B4A475312" xmlns="http://www.scte.org/schemas/130-6/2010/sis"
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/130-6/2010/sis SCTE_130-6_2010.xsd">
        <gis:QueryResult resultSetSize="1" queryRef="query-10" totalResultSetSize="1">
            <gis:BasicQueryResult>
                <gis:UniqueQualifier>
                    <gis:Qualifier name="MACAddress" value="00-50-56-c0-00-01"/>
                </gis:UniqueQualifier>
            </gis:BasicQueryResult>
        </gis:QueryResult>
</SISNotification>
```

Figure I.16 – Example 16: SISNotification message

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