

Errata Notice on Schema Locations

March 17, 2022

This standard makes use of namespace locations with a form of <http://www.scte.org/schemas/xyz/>*, where “xyz” is the location of the specific schema being referenced. Due to limitations on the current SCTE website, those specific locations are not available.

To find such schemas:

1. Go to the standards download page at <https://www.scte.org/standards/library/catalog/>
2. Search for the standard number (xyz in the above example)
3. Select the document from the table
4. Scroll to the “Supporting Documentation” section of the document webpage.

The schema will be listed within the Supporting Documentation section.

This notice will be removed once the exact namespace values are functional.

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S T A N D A R D S

Digital Video Subcommittee

AMERICAN NATIONAL STANDARD

ANSI/SCTE 130-6 2020

Digital Program Insertion–Advertising Systems Interfaces
Part 6–Subscriber Information Service (SIS)

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Digital Program Insertion Advertising Systems Interfaces - Part 6 Subscriber Information Service (SIS)

1.0 SCOPE

This document, SCTE 130 Part 6, describes the Digital Program Insertion Advertising Systems Interfaces' SIS (Subscriber Information Service) messaging and data type specification using XML, XML Namespaces, and XML Schema.

2.0 REFERENCES

2.1 Normative References

The following standards contain provisions that, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

[SCTE130-2]	SCTE 130-2 2020 Digital Program Insertion — Advertising Systems Interfaces Part 2 — Core Data Elements
[SCTE130-7]	SCTE 130-7 2015 Digital Program Insertion — Advertising Systems Interfaces Part 7 — Message Transport
[SCTE 130-8]	SCTE 130-8 2020 Digital Program Insertion — Advertising Systems Interfaces Part 8 — General Information Service
[W3C-XSD]	XML Schema Part 1: Structures Second Edition

All normative references found in [SCTE130-2] are included and apply to this document. See [SCTE130-2] for additional information.

All normative references found in [SCTE130-7] are included and apply to this document. See [SCTE130-7] for additional information.

All normative references found in [SCTE 130-8] are included and apply to this document. See [SCTE 130-8] for additional information.

2.2 Informative References

The following documents *may* provide valuable information to the reader but are not required when complying with this standard.

[SCTE130-1]	SCTE 130-1: Digital Program Insertion—Advertising Systems Interfaces Part 1—Overview
[SCTE 130-5]	SCTE 130-5: Placement Opportunity Information Service (POIS)
[W3C-XPath]	XPath—W3C REC: XML Path Language (XPath) Version 1.0. November 16, 1999
[W3C-XQuery]	XQuery—W3C REF: An XML Query Language (XQuery) Version 1.0. January 23, 2007

3.0 COMPLIANCE NOTATION

<i>shall</i>	This word or the adjective “ <i>required</i> ” means that the item is an absolute requirement of this document.
<i>shall not</i>	This phrase means that the item is an absolute prohibition of this document.
<i>forbidden</i>	This word means the value specified <i>shall</i> never be used.
<i>should</i>	This word or the adjective “ <i>recommended</i> ” means that there may exist valid reasons in particular circumstances to ignore this item, but the full implications should be understood and the case carefully weighted before choosing a different course.
<i>should not</i>	This phrase means that there may exist valid reasons in particular circumstances when the listed behavior is acceptable or even useful, but the full implications should be understood and the case carefully weighed before implementing any behavior described with this label.
<i>may</i>	This word or the adjective “ <i>optional</i> ” means that this item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because it enhances the product, for example; another vendor may omit the same item.
<i>deprecated</i>	Use is permissible for legacy purposes only. Deprecated features may be removed from future versions of this document. Implementations should avoid use of deprecated features.

4.0 DEFINITIONS AND ACRONYMS

Throughout this standard the terms below have specific meanings. Because some of the terms are defined by other SCTE documents 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 [SCTE130-2] definitions are included herein. See [SCTE130-2] for additional information.

All [SCTE130-7] definitions are included herein. See [SCTE130-7] for additional information.

All [SCTE 130-8] definitions are included herein. See [SCTE 130-8] for additional information.

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.

Subscriber: This document uses the term subscriber 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.

5.0 ABBREVIATIONS

All [SCTE130-2] abbreviations are included herein. See [SCTE130-2] for additional information.

All [SCTE130-7] abbreviations are included herein. See [SCTE130-7] for additional information.

All [SCTE 130-8] abbreviations are included herein. See [SCTE 130-8] for additional information.

6.0 SUBSCRIBER INFORMATION SERVICE OVERVIEW (INFORMATIVE)

A Subscriber Information Service (SIS) provides subscriber metadata query and notification services to its consumers. Using the interfaces defined by this specification, 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

1. An MSO Subscriber Management System (SMS) — that might contain information about geographical location and service tiers.
2. A Third Party supplied demographic database — that might contain information about subscriber interests, age group, income levels and family size.
3. A “Viewing History Database” — that might contain historical information about subscriber activity in viewing both Program content and Advertising content.

These potential data sources are illustrated in Figure 1.

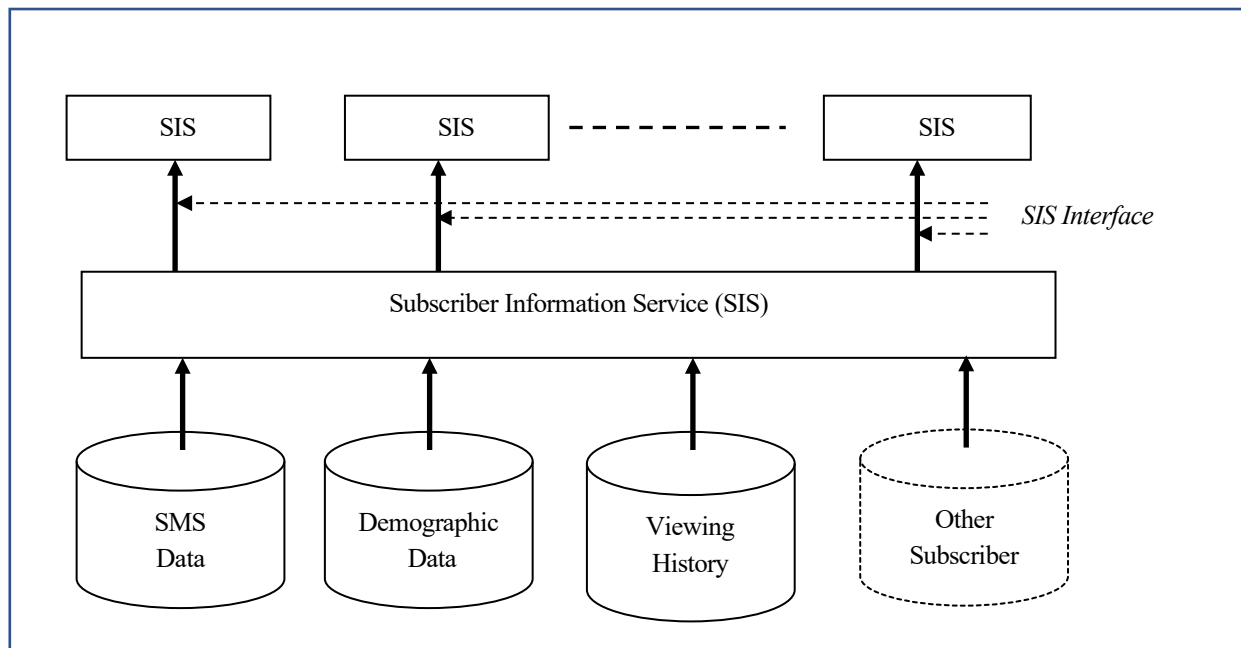


Figure 1. Potential SIS Data Sources

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

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 SCTE 130 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.

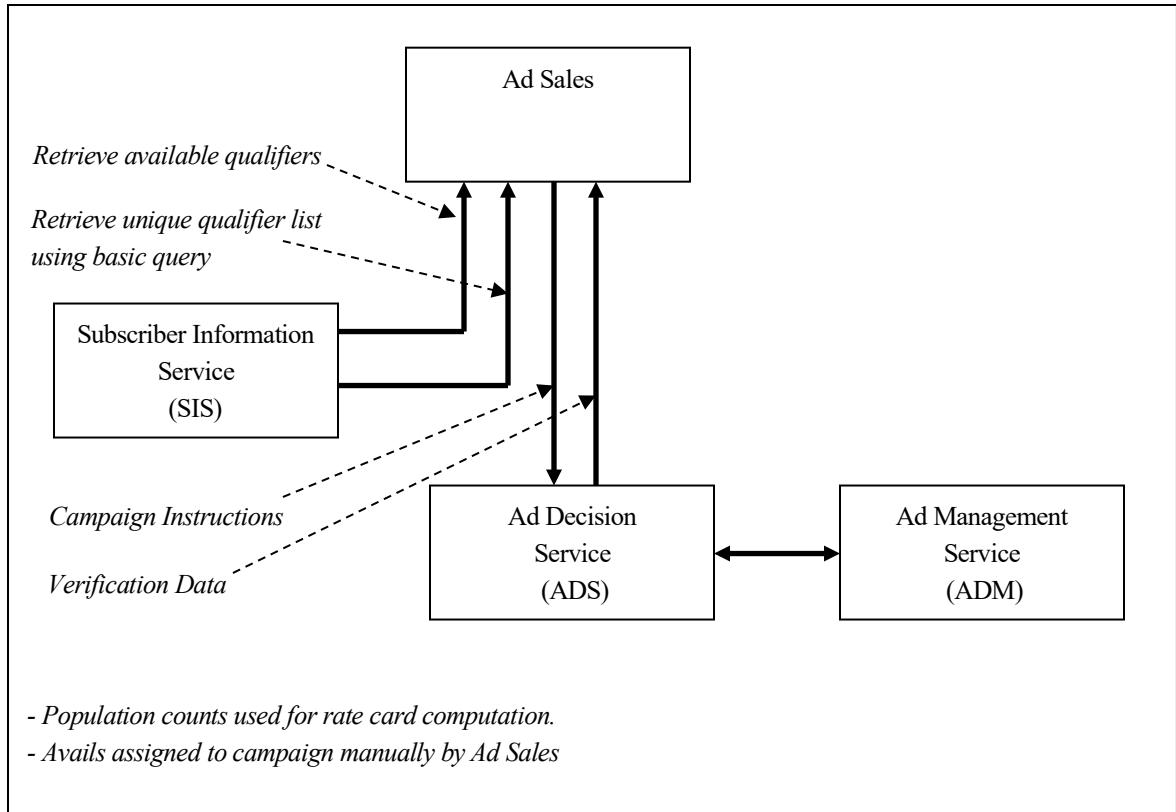


Figure 2. Traditional (Non-Automated) Ad Sales

Figure 3 provides one example of several possible subscriber information service implementations with respect to the SCTE 130 logical services. In this example the SCTE 130 Part 5 “Placement Opportunity Information Service (POIS)” [SCTE 130-5] 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.

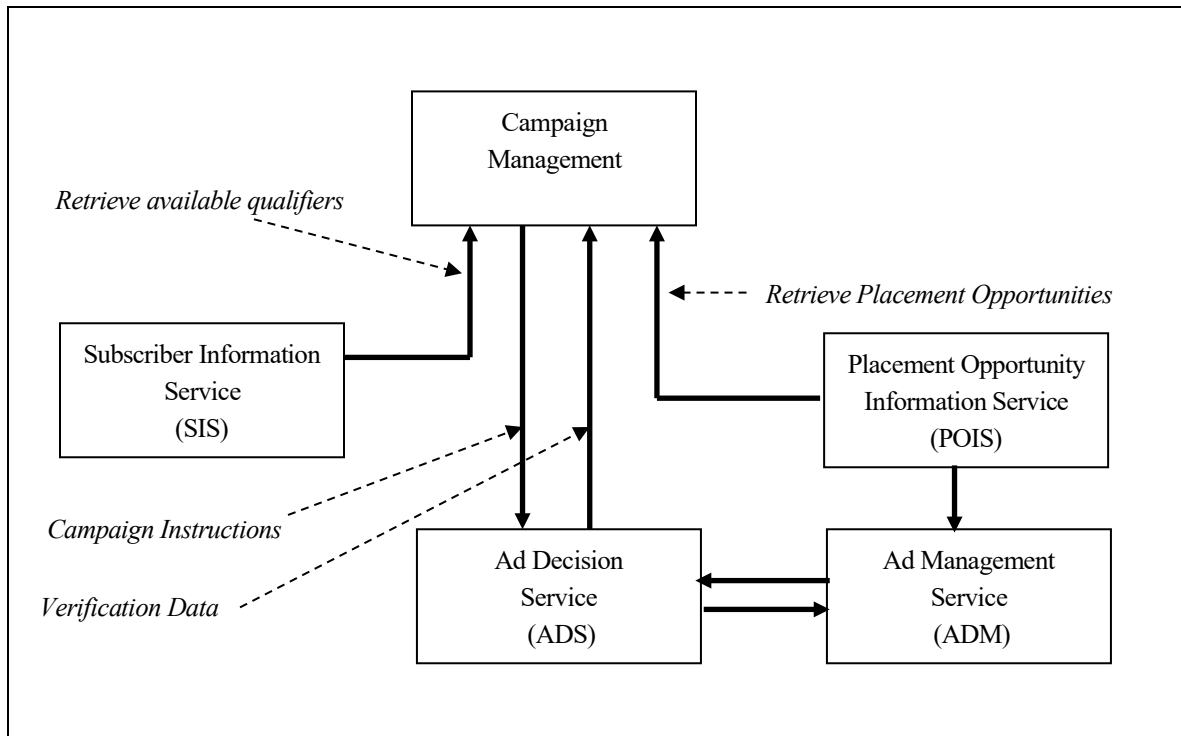


Figure 3. Automated Ad Sales

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.

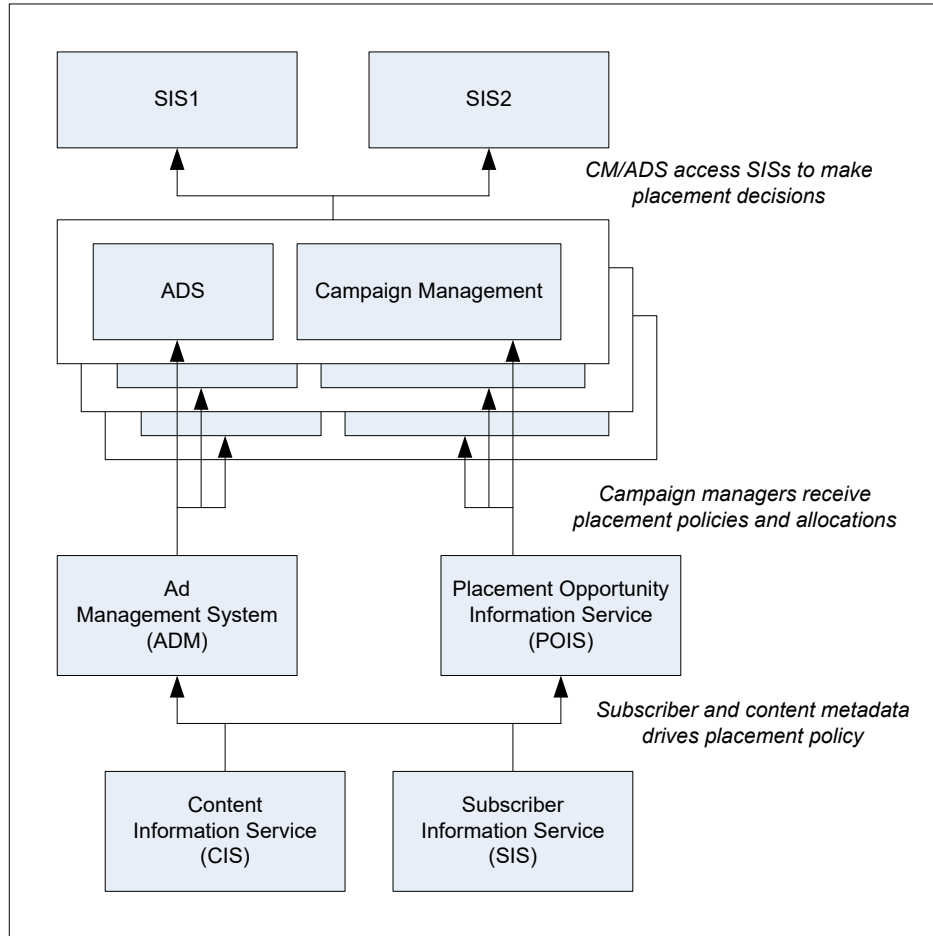


Figure 4. Automated and Targeted Ad Sales

7.0 NOTATIONAL CONVENTIONS

7.1 Normative XML Schema

SCTE 130 Part 6 employs the same notational conventions as [SCTE130-2]. Refer to [SCTE130-2] for an explanation of notational conventions.

7.2 Document Conventions

SCTE 130 Part 6 employs the same document conventions as [SCTE130-2]. Refer to [SCTE130-2] for an explanation of document conventions. For example, the XML schema illustration is explained there.

8.0 PROCESSING CONVENTIONS

8.1 Unknown/Unrecognized/Unsupported XML Elements and Attributes

See [SCTE130-2] for information.

9.0 XML NAMESPACES

This specification uses the ‘sis’ prefix, as described in Table 1, 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 specification used herein.

Standard	XML Schema Prefix	XML Schema Elements	Value
2020 (latest)	core (SCTE 130-2)	Schema namespace	http://www.scte.org/schemas/130-2/2008a/core ¹
		Schema version attribute	20200321
		Schema filename	SCTE_130-2_core_20200321.xsd
	gis (SCTE 130-8)	Schema namespace	http://www.scte.org/schemas/130-8/2011/gis ²
		Schema version attribute	20200325
		Schema filename	SCTE_130-8_gis_20200325.xsd
			Schema namespace

¹ While this specification has a ratified year of 2020, the XML schema/XSD namespace has a year of 2008a, which is the year the XSD and this specification’s syntax was initially ratified. All subsequent changes have been backwards compatible and thus, the namespace has not changed.

² While this specification has a ratified year of 2020, the XML schema/XSD namespace has a year of 2011, which is the year the XSD and this specification’s syntax was initially ratified. All subsequent changes have been backwards compatible and thus, the namespace has not changed.

³ Same as footnote 2.

	mut (SCTE 130-8 Appendix F)	Schema version attribute	20200325
		Schema filename	SCTE_130-8_mutable_20200325.xsd
	sis (This doc.)	Schema namespace	http://www.scte.org/schemas/130-6/2011/sis ⁴
		Schema version attribute	20200326
		Schema filename	SCTE_130-6_sis_20200326.xsd
	sismut (This doc. Appendix C)	Schema namespace	http://www.scte.org/schemas/130-6/2011/sis/mutable ⁵
		Schema version attribute	20200326
		Schema filename	SCTE_130-6_mutable_20200326.xsd
	XML foundation. See [W3C-XSD] .	xsd	Schema namespace

Table 1. XML Namespace Declarations

10.0 SUBSCRIBER INFORMATION SERVICE MESSAGES

The following topics are covered by [SCTE130-2] and by [SCTE 130-8]. This specification considers all aspects defined therein to be normative and applicable herein. See [SCTE130-2] and [SCTE 130-8] for additional information.

- Message format

⁴ While this specification has a ratified year of 2020, the XML schema/XSD namespace has a year of 2011, which is the year the XSD and this specification's syntax was initially ratified. All subsequent changes have been backwards compatible and thus, the namespace has not changed.

⁵ Same as footnote 4.

- XML message carriage
- Transport mechanisms
- Message error handling

The SCTE 130 Part 6 message interface *shall* include the messages defined by [SCTE130-2] and messages derived from the message types defined in [SCTE 130-8].

10.1 @version Attribute

For all SCTE 130 Part 6 messages, the @version attribute *shall* be set to the value “1.0” for this document’s revision.

10.2 Request Base Message

All SCTE 130 Part 6 top level *request* messages are derived from the request message types defined in [SCTE 130-8] that are derived from the core:Msg_RequestBaseType abstract base message type. See [SCTE130-2] for details on the attributes and elements contained in this base message type.

10.2.1 Request Base Message Attributes (INFORMATIVE)

@messageId [Required, core:messageIdAttrType] — The message identifier. See [SCTE130-2] for additional information.

@version [Required, core:versionAttrType] — The message specification version. See [SCTE130-2] for additional information.

@identity [Required, core:identityAttrType] — The origin logical service identifier. See [SCTE130-2] for additional information.

@system [Optional, core:systemAttrType] — The message source identifier. See [SCTE130-2] for additional information.

@resend [Optional, core:resendAttrType] — Message retransmission identifier. See [SCTE130-2] for additional information.

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

10.2.2 Request Base Message Elements (INFORMATIVE)

core:InitiatorData [Optional] — Private data that *shall* be in the response message. See [SCTE130-2] for additional details on the core:InitiatorData element.

10.3 Response Base Message

All SCTE 130 Part 6 top level *response* messages are derived from the response message types defined in [SCTE 130-8] that are derived from the core:Msg_ResponseBaseType abstract base message type. See [SCTE130-2] for details on the attributes and elements contained in this base message type.

10.3.1 Base Response Message Attributes (INFORMATIVE)

@messageId [Required, core:messageIdAttrType] — The message identifier. See [SCTE130-2] for additional information.

@version [Required, core:versionAttrType] — The message specification version. See [SCTE130-2] for additional information.

@identity [Required, core:identityAttrType] — The origin logical service identifier. See [SCTE130-2] for additional information.

@system [Optional, core:systemAttrType] — The message source identifier. See [SCTE130-2] 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 [SCTE130-2] for additional information on the core:messageRefAttrType.

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

10.3.2 Base Response Message Elements (INFORMATIVE)

core:InitiatorData [Optional] — Private data from the Request message. See [SCTE130-2] for additional details on the core:InitiatorData element.

core:StatusCode [Required] — A core:StatusCode element for communicating status information to the consumer. See [SCTE130-2] for additional information.

10.4 Notification Base Message

All SCTE 130 Part 6 top level *notification* messages are derived from the notification message types defined in [SCTE 130-8] that are derived from the core:Msg_NotificationBaseType abstract base message type. See [SCTE130-2] for details on the attributes and elements contained in this base message type.

10.4.1 Notification Base Message Attributes (INFORMATIVE)

@messageId [Required, core:messageIdAttrType] — The message identifier. See [SCTE130-2] for additional information.

@version [Required, core:versionAttrType] — The message specification version. See [SCTE130-2] for additional information.

@identity [Required, core:identityAttrType] — The origin logical service identifier. See [SCTE130-2] for additional information.

@system [Optional, core:systemAttrType] — The message source identifier. See [SCTE130-2] for additional information.

@resend [Optional, core:resendAttrType] — Message retransmission identifier. See [SCTE130-2] 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 [SCTE 130-8].

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

10.4.2 Notification Base Message Elements (INFORMATIVE)

core:InitiatorData [Optional] — Private data that *shall* be returned in the Acknowledgement message. See [SCTE130-2] for additional details on the core:InitiatorData element.

10.5 Acknowledgement Base Message

All SCTE 130 Part 6 top level *acknowledgement* messages are derived from the acknowledgement message types defined in [SCTE 130-8] that are derived from the core:Msg_AcknowledgementBaseType abstract base message type. See [SCTE130-2] for details on the attributes and elements contained in this base message type.

10.5.1 Acknowledgement Base Message Attributes (INFORMATIVE)

@messageId [Required, core:messageIdAttrType] — The message identifier. See [SCTE130-2] for additional information.

@version [Required, core:versionAttrType] — The message specification version. See [SCTE130-2] for additional information.

@identity [Required, core:identityAttrType] — The origin logical service identifier. See [SCTE130-2] for additional information.

@system [Optional, core:systemAttrType] — The message source identifier. See [SCTE130-2] 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 [SCTE130-2] for additional information on the core:messageRefAttrType.

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

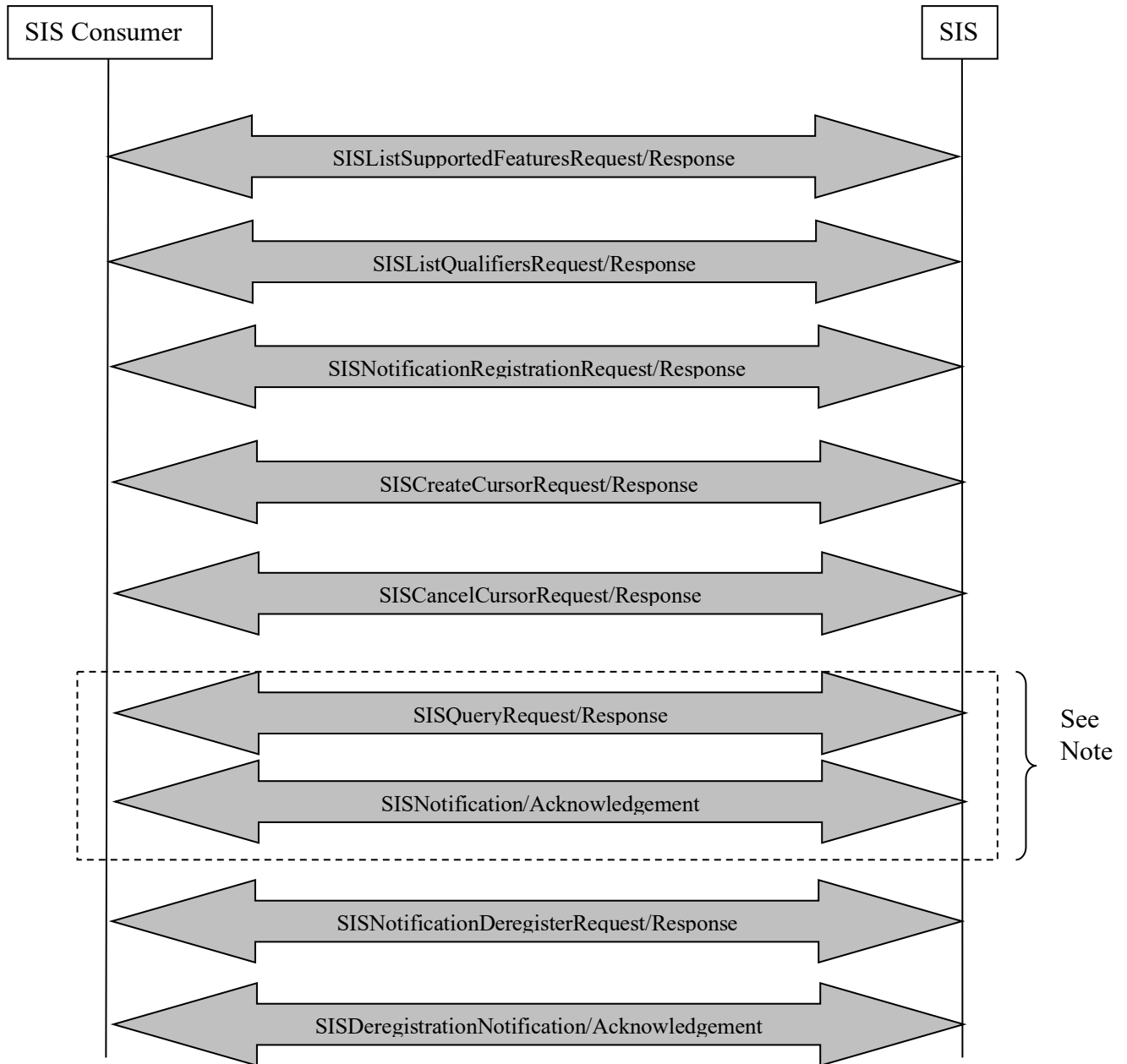
10.5.2 Acknowledgement Base Message Elements (INFORMATIVE)

core:InitiatorData [Optional] — Private data from the Notification message. See [SCTE130-2] for additional details on the core:InitiatorData element.

core:StatusCode [Required] — A core:StatusCode element for communicating status information to the consumer. See [SCTE130-2] for additional information.

10.6 SIS Message Exchange

Figure 5 **Error! Reference source not found.** illustrates a typical message exchange between an SIS consumer and an SIS implementation.



Note: *The Query and Notification exchange may happen repeatedly between logical service channel setup and tear down.*

Figure 5. SCTE 130 Part 6 Top Level Messages

Table 2 provides a brief description of each SIS message.

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
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

Table 2. SCTE 130 Part 6 Top Level Messages

10.7 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.

10.7.1 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.

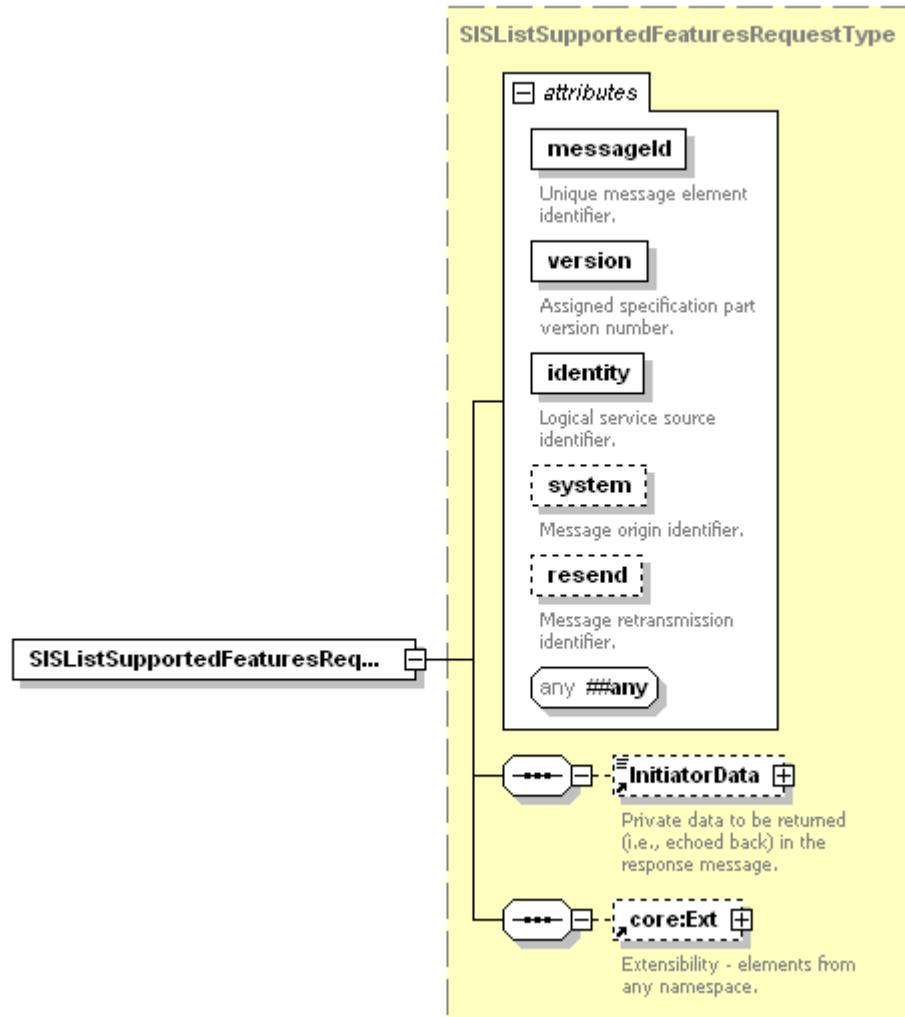


Figure 6. SISListSupportedFeaturesRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the `core:Ext` element see [SCTE130-2].

10.7.2 SISListSupportedFeaturesResponse Message

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

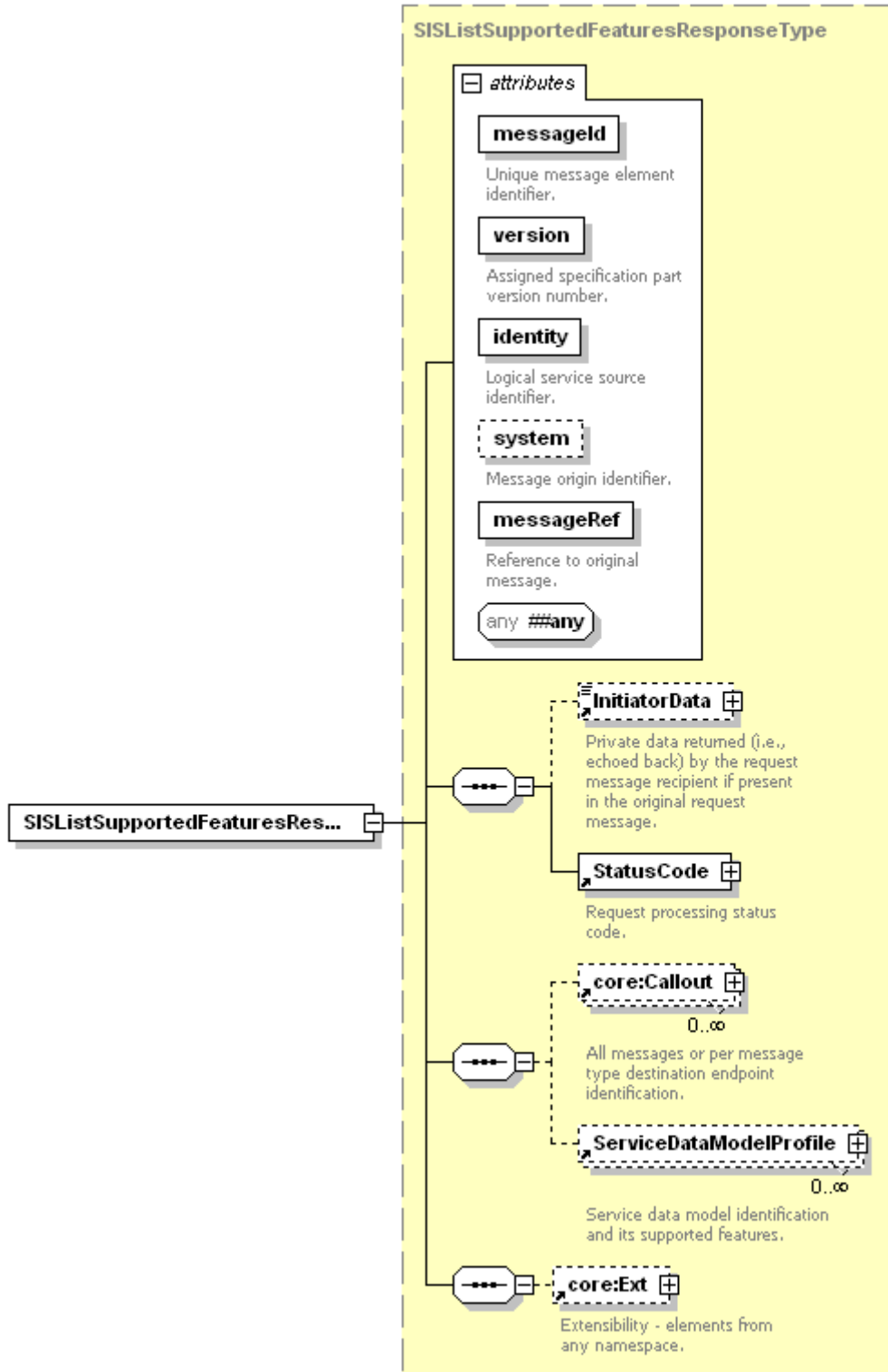


Figure 7. SISListSupportedFeaturesResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

An SIS implementation *shall* implement basic query support and *may* implement advanced query language support as defined by [SCTE 130-8]. 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.

Value	Description
SISListQualifiersRequest	The address endpoint where SISListQualifiersRequest messages <i>shall</i> be sent.
SISNotificationRegistrationRequest	The address endpoint where SISNotificationRegistrationRequest messages <i>shall</i> be sent.
SISNotificationDeregisterRequest	The address endpoint where SISNotificationDeregisterRequest messages <i>shall</i> be sent.
SISListNotificationRegistrationRequest	The address endpoint where SISListNotificationRegistrationRequest messages <i>shall</i> be sent.
SISCreateCursorRequest	The address endpoint where SISCreateCursorRequest messages <i>shall</i> be sent.
SISCancelCursorRequest	The address endpoint where SISCancelCursorRequest messages <i>shall</i> be sent.
SISQueryRequest	The address endpoint where SISQueryRequest messages <i>shall</i> be sent.
ServiceStatusNotification	The address endpoint where core:ServiceStatusNotification messages <i>shall</i> be sent.
...	User defined address endpoint outside of the scope of this specification. The string <i>shall</i> be prefixed with the text "private:".

Table 3. core:Callout @message Values

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.8 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.

10.8.1 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.

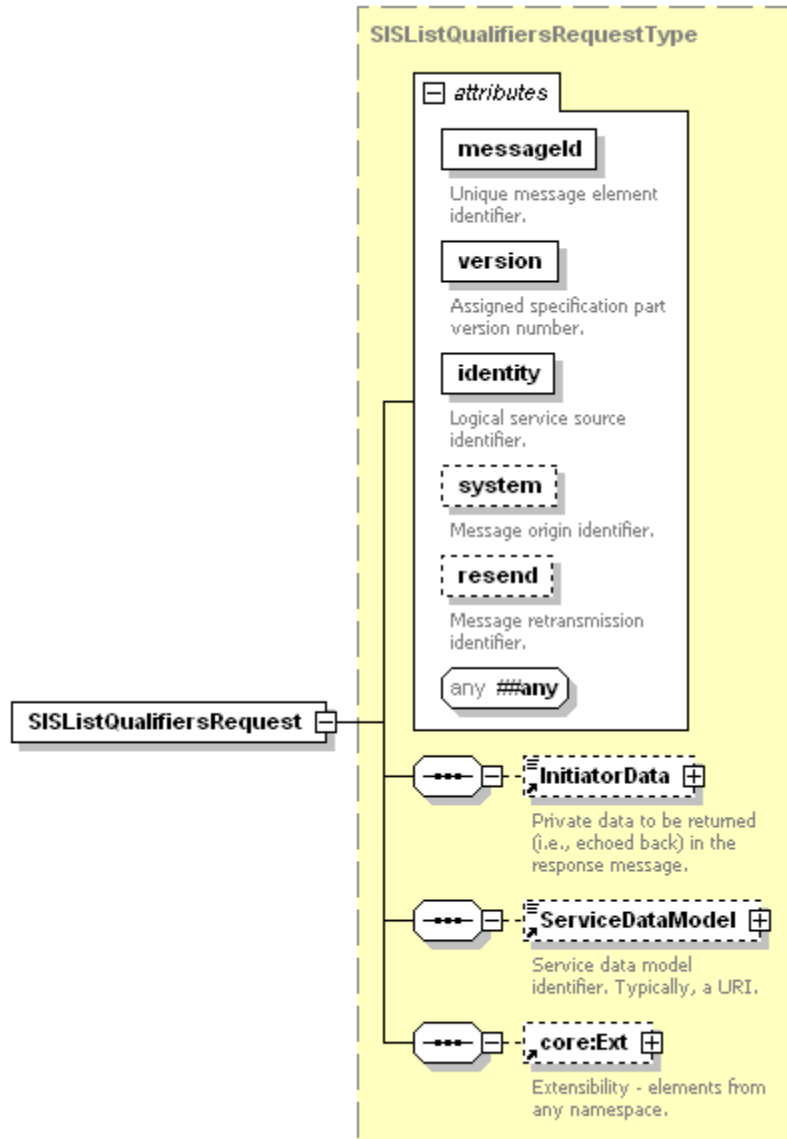


Figure 8. SISListQualifiersRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the `core:Ext` element see [SCTE130-2].

10.8.2 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 [SCTE 130-8] 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.

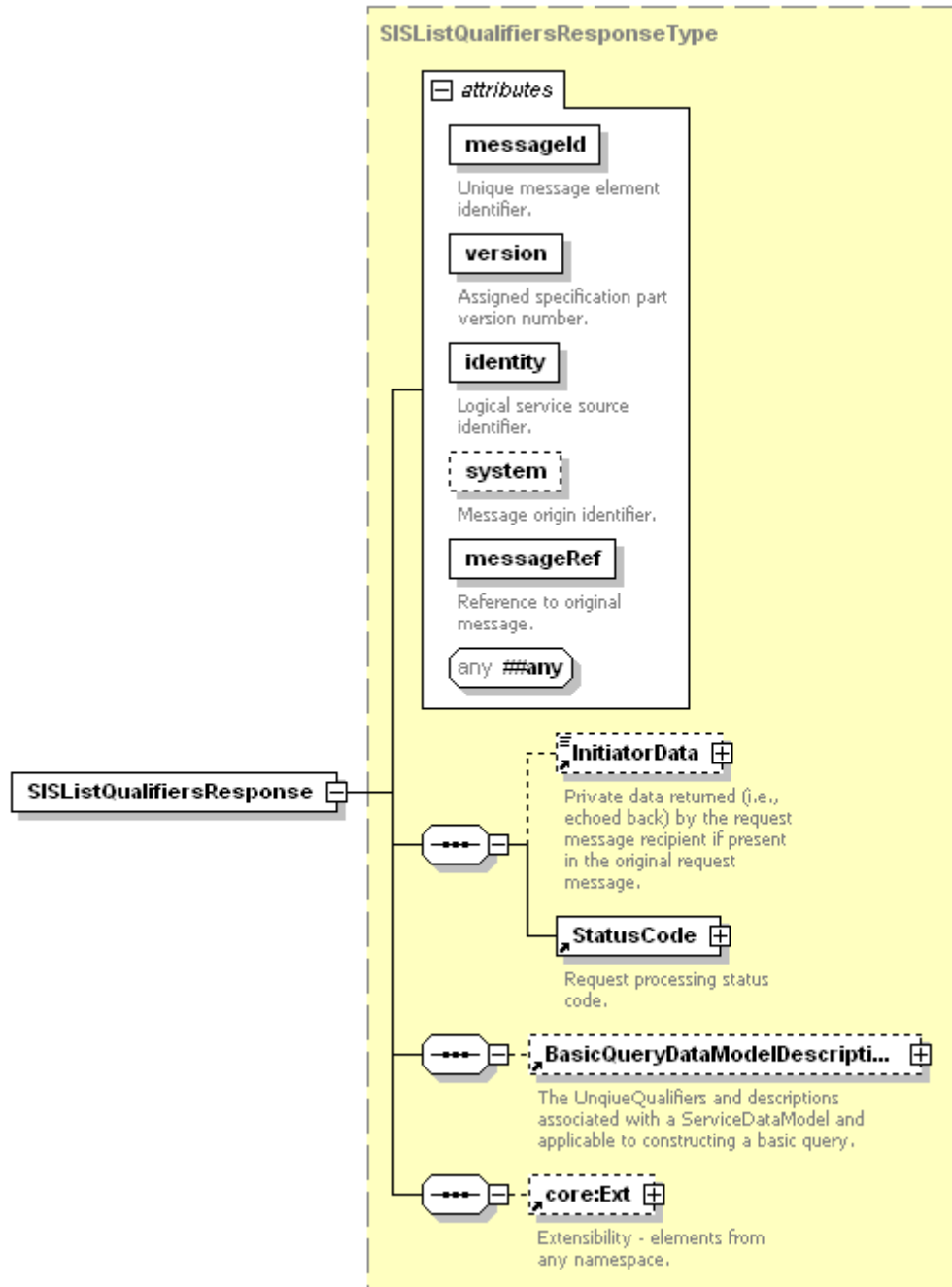


Figure 9. SISListQualifiersResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.9 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.

10.9.1 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.

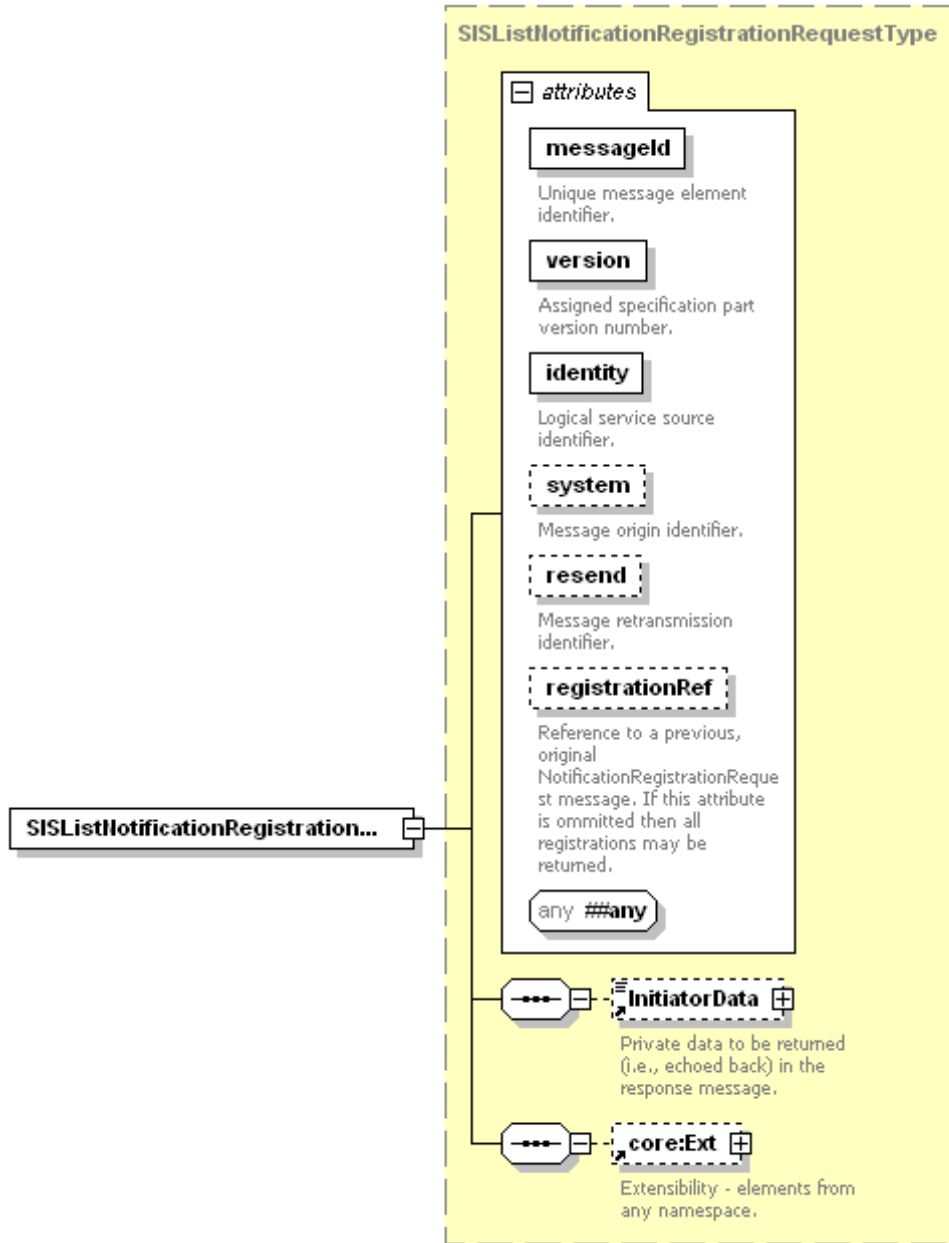


Figure 10. SISListNotificationRegistrationRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] —Any additional elements from any namespace. For additional information on the `core:Ext` element see [SCTE130-2].

10.9.2 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.

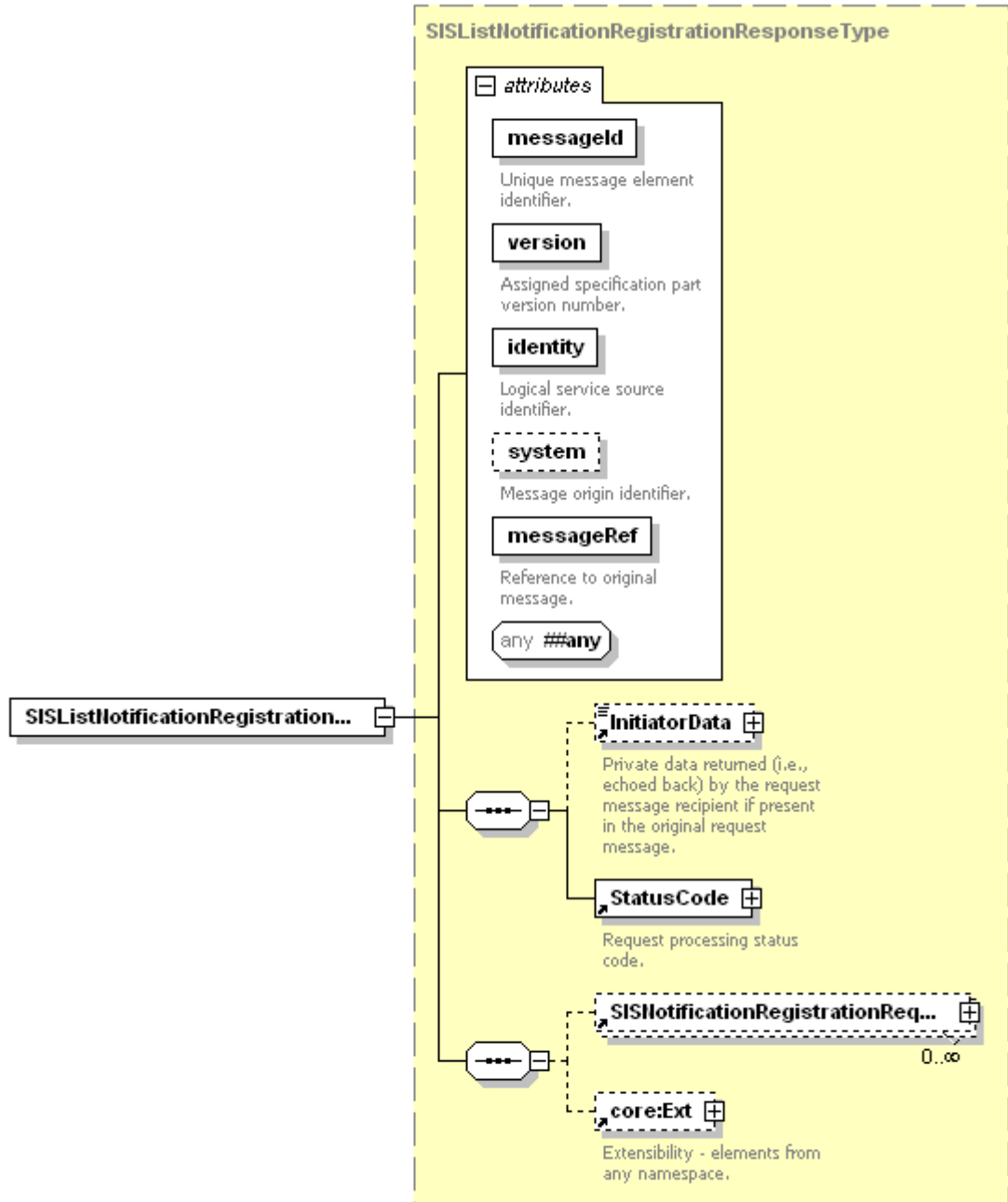


Figure 11. SISListNotificationRegistrationResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

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 [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.10 SISNotificationRegistrationRequest and SISNotificationRegistrationResponse

An SIS implementation *shall* support registration for notification message delivery as defined by [SCTE 130-8]. 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 a SISNotification message to any consumer with a current registered notification request whose query result set is affected by the update, addition, or deletion event.

10.10.1 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.

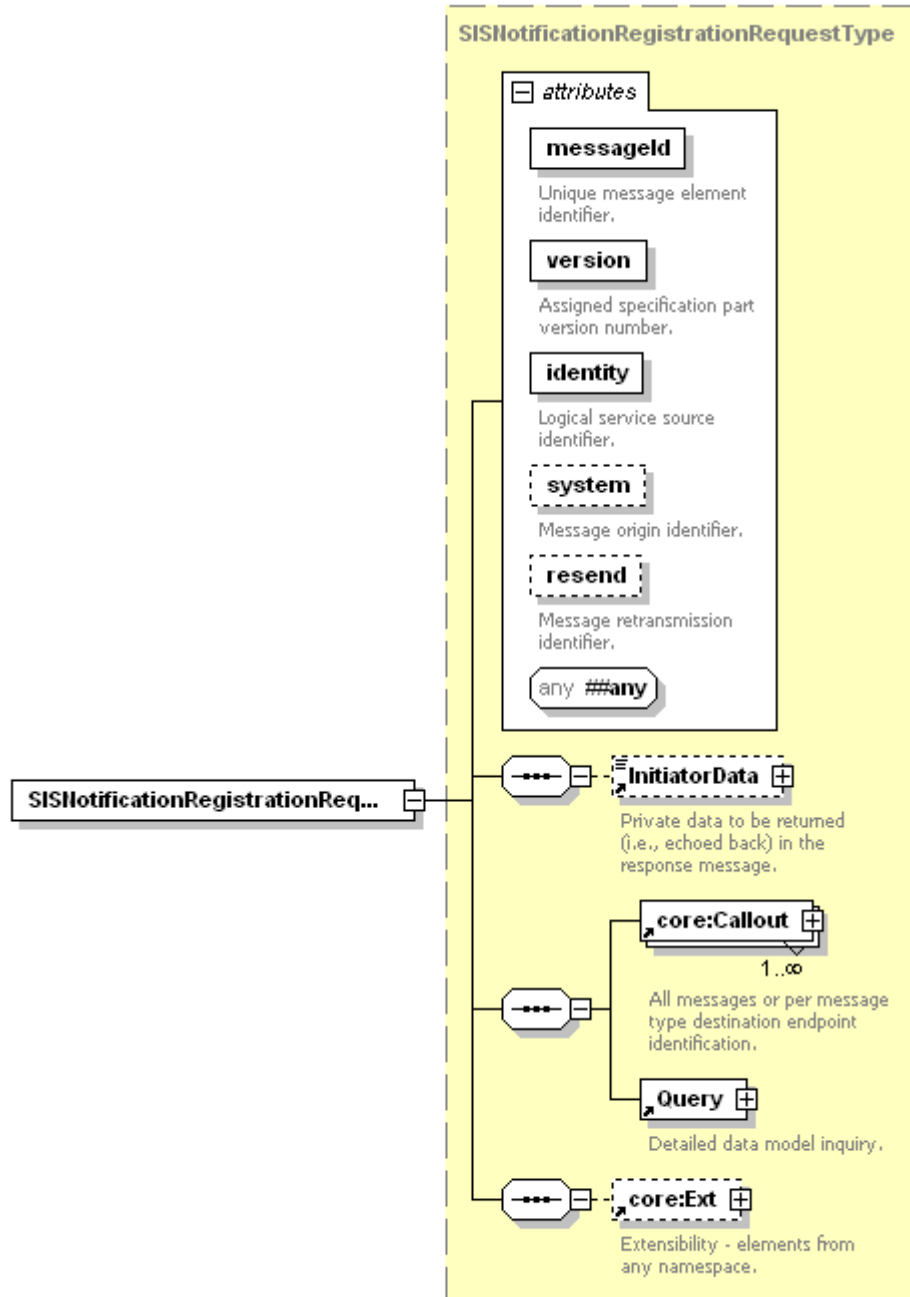


Figure 12. SISNotificationRegistrationRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

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.

@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 outside of the scope of this specification. The string shall be prefixed with the text “private:”.

Table 4. NotificationRegistrationRequest core:Callout @message Values

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 [SCTE130-2] 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 [SCTE130-2].

10.10.2 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.

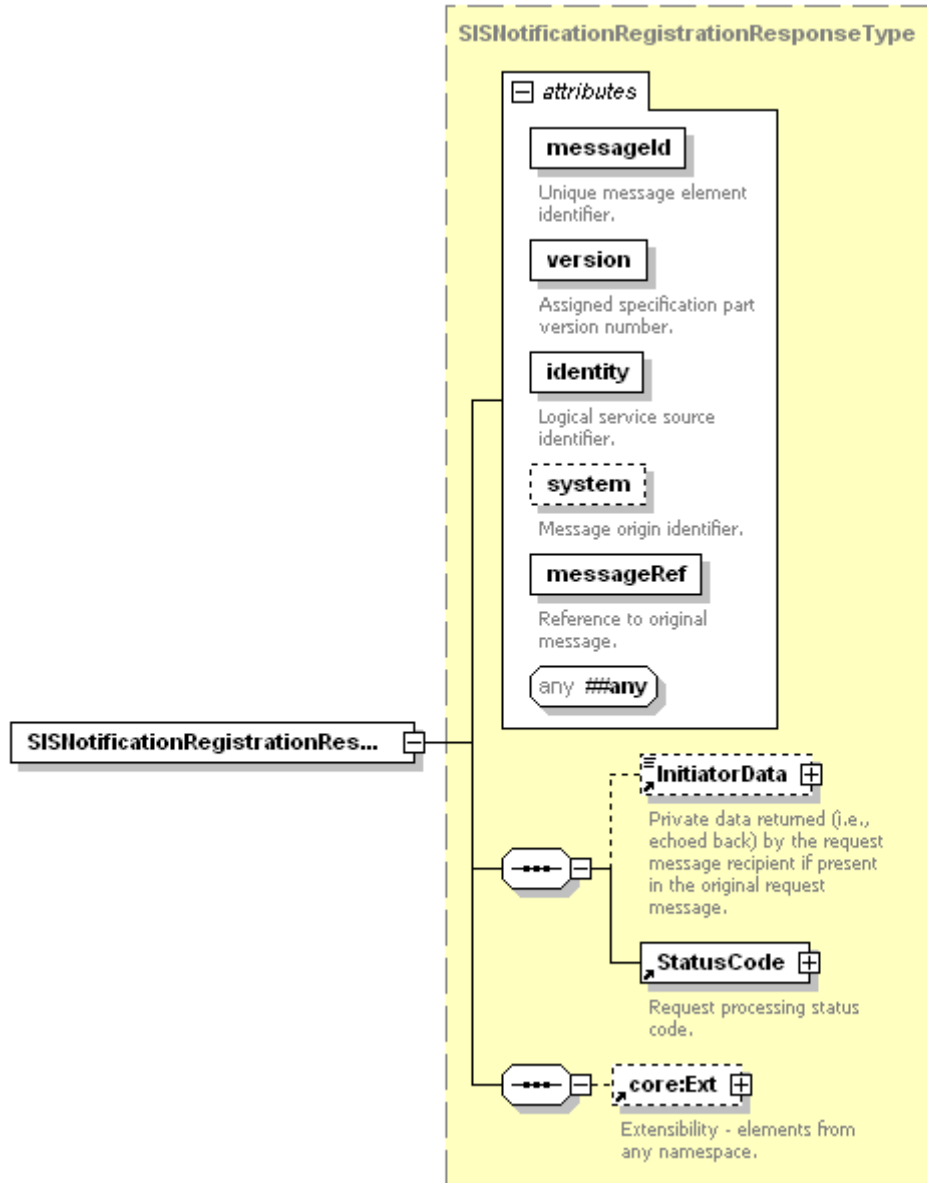


Figure 13. SISNotificationRegistrationResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE130-2].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.11 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 [SCTE 130-8].

10.11.1 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 [SCTE 130-8].

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

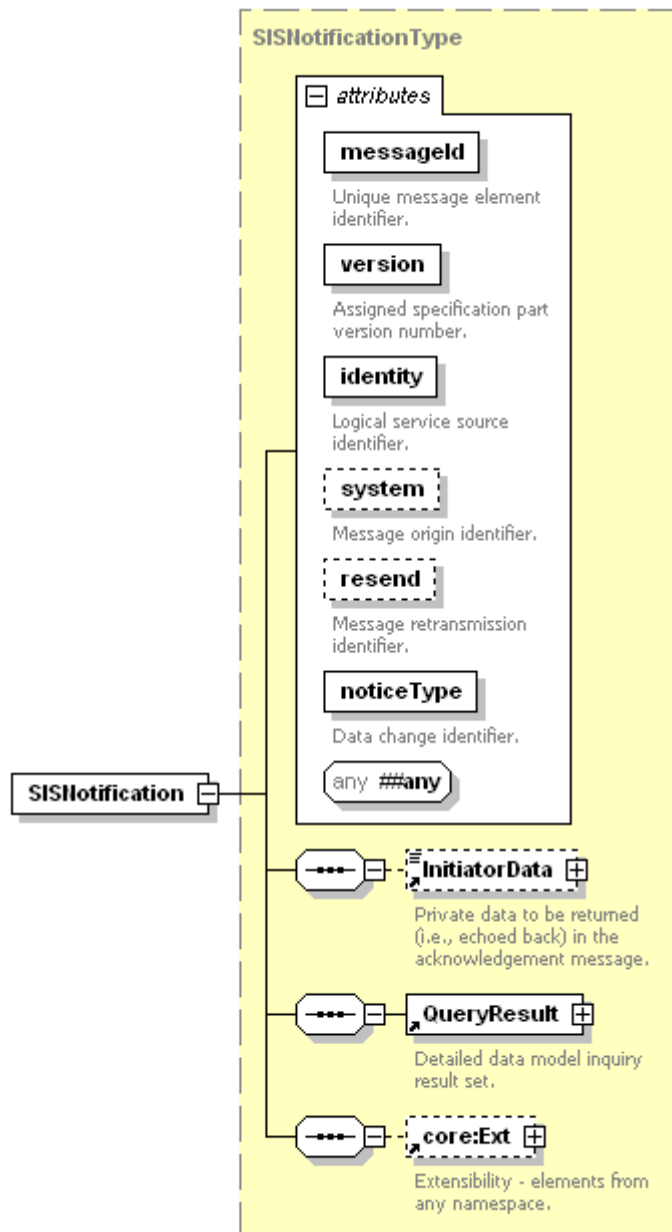


Figure 14. SISNotification Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.11.2 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.

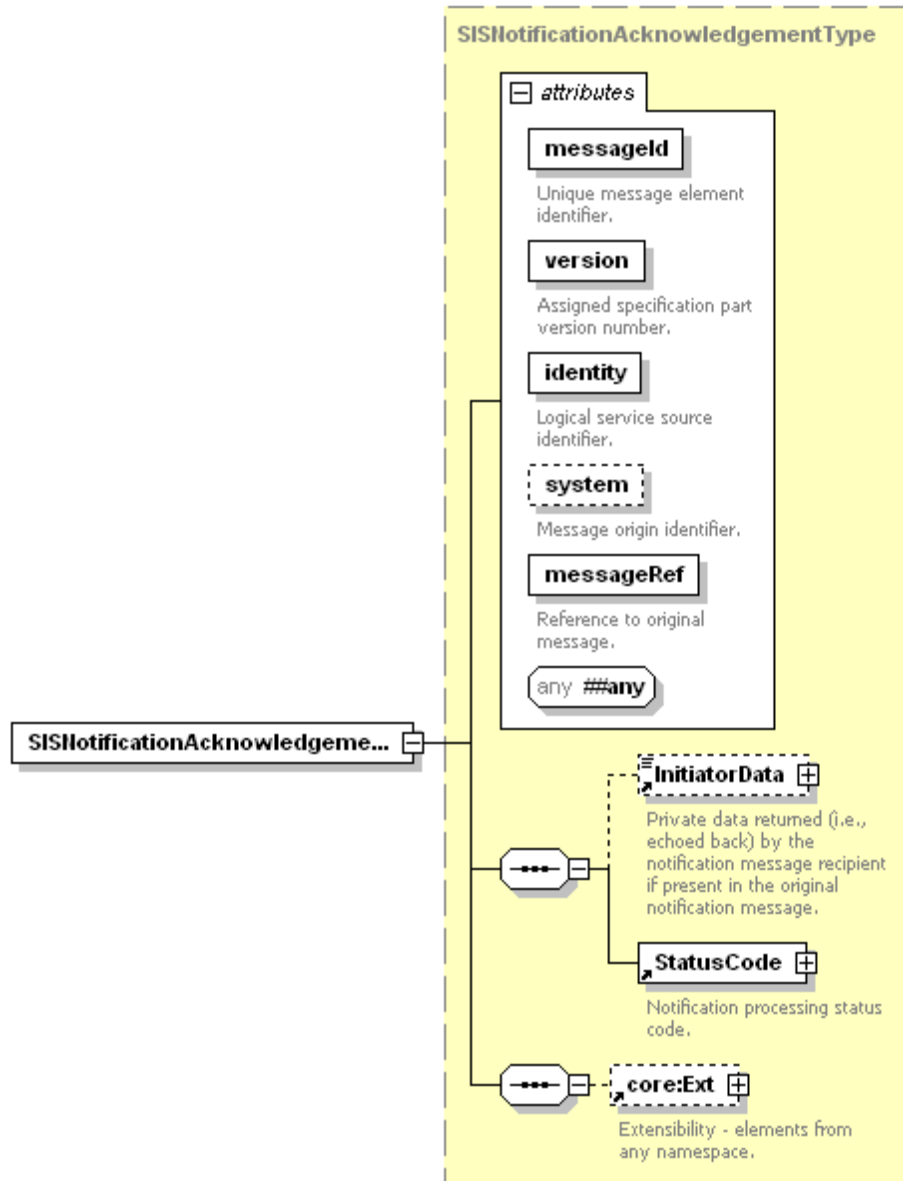


Figure 15. SISNotificationAcknowledgement Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.12 SISCreateCursorRequest and SISCreateCursorResponse

An SIS implementation of cursor support *shall* conform to the description of cursor support described in [SCTE 130-8]. See [SCTE 130-8] for further information.

10.12.1 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.

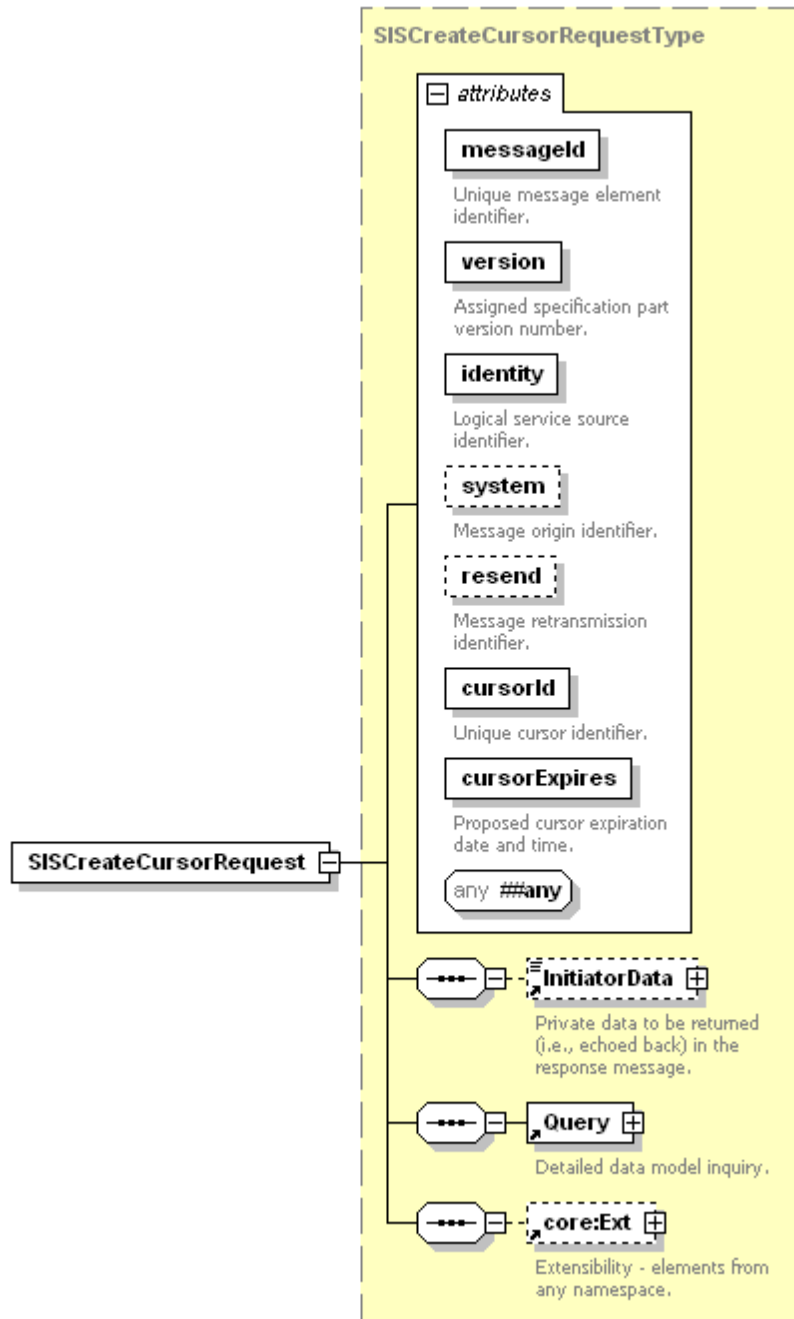


Figure 16. SISCreateCursorRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.12.2 SISCreateCursorPosition Message

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

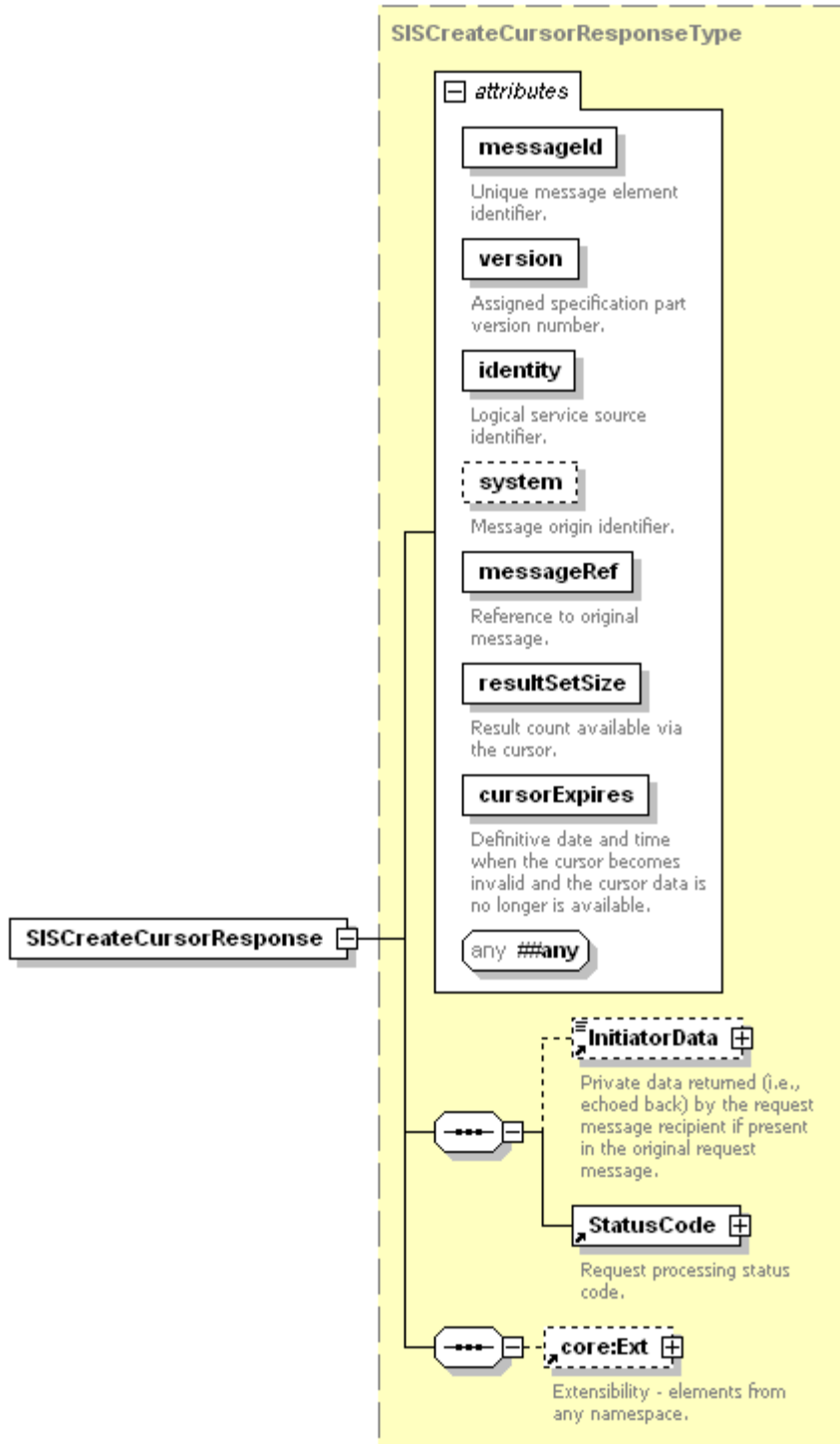


Figure 17. SISCreateCursorResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.13 SISCancelCursorRequest and SISCancelCursorResponse

An SIS implementation of cursor support *shall* conform to the description of cursor support described in [SCTE 130-8]. See [SCTE 130-8] for further information.

10.13.1 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.

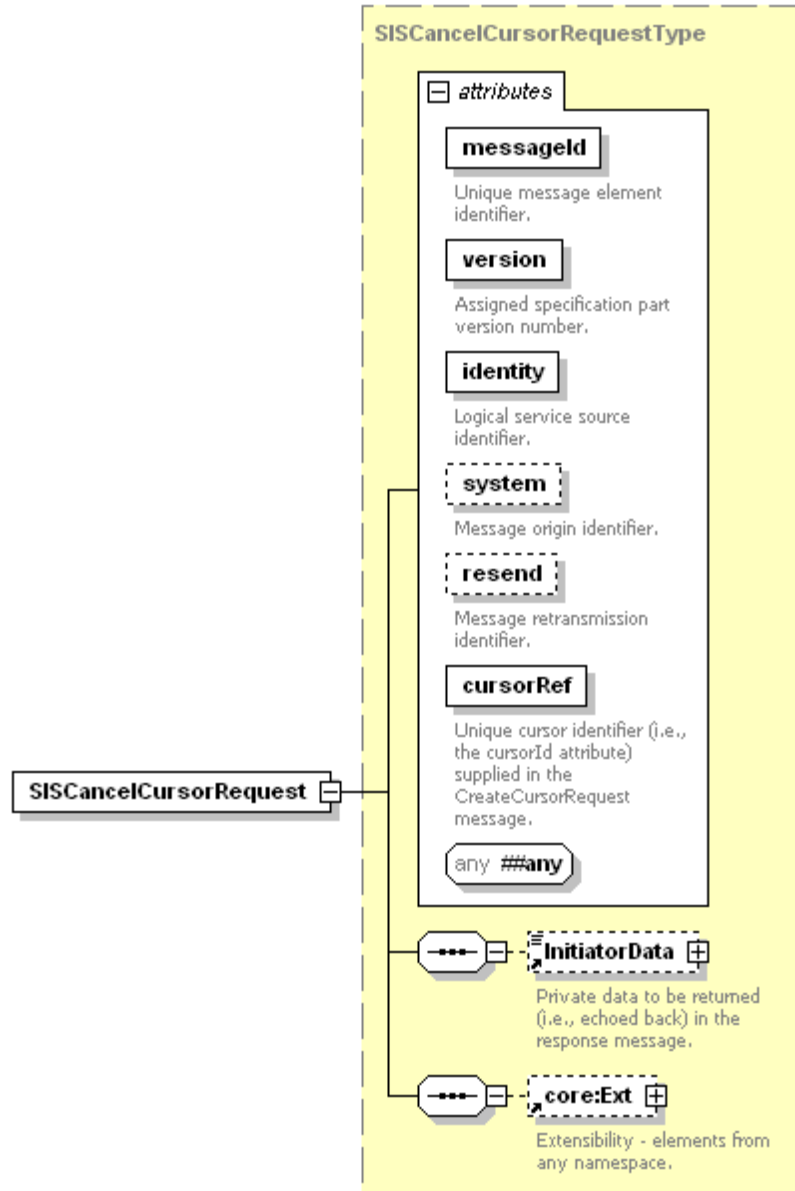


Figure 18. SISCancelCursorRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.13.2 SISCancelCursorResponse Message

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

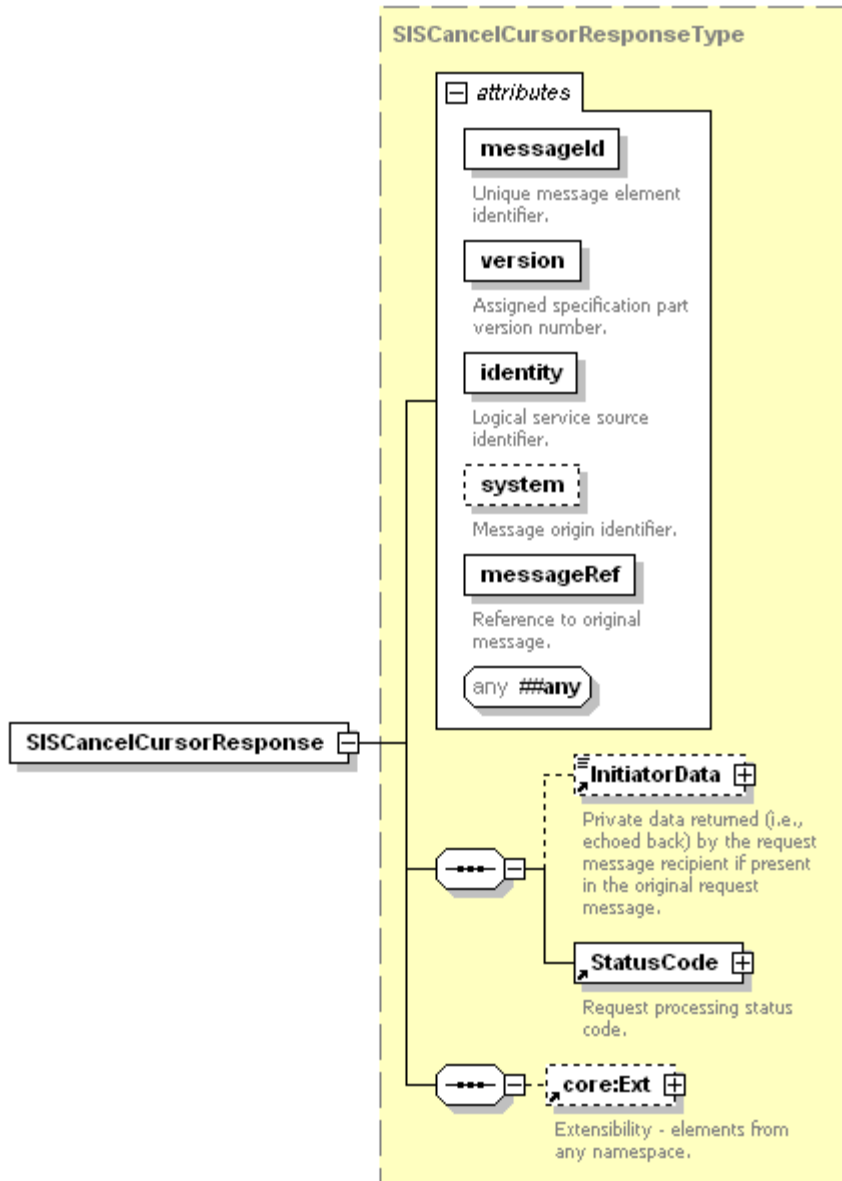


Figure 19. SISCancelCursorResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE130-2].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.14 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.

10.14.1 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.

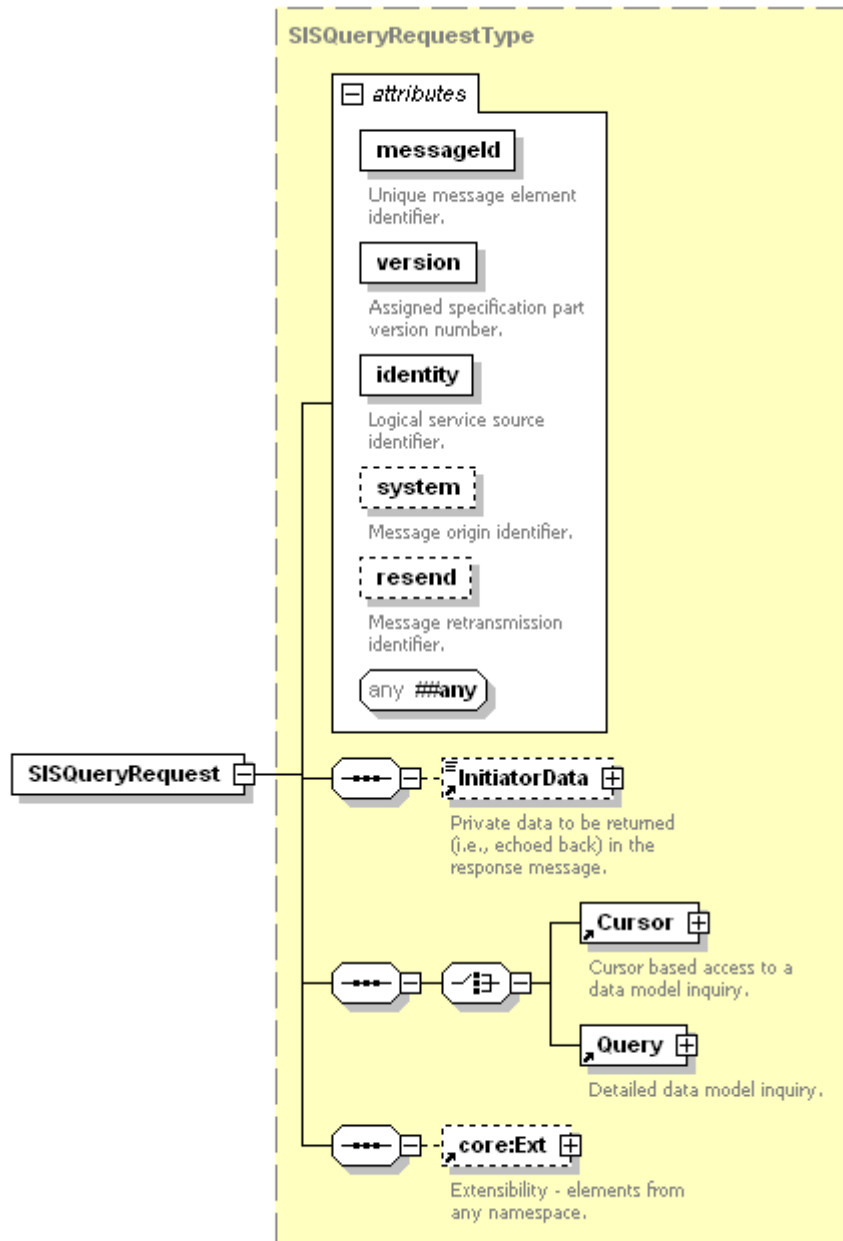


Figure 20. SISQueryRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE 130-8].

10.14.2 SISQueryResponse Message

Upon receipt of a SISQueryRequest message, an SIS implementation *shall* respond with a 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.

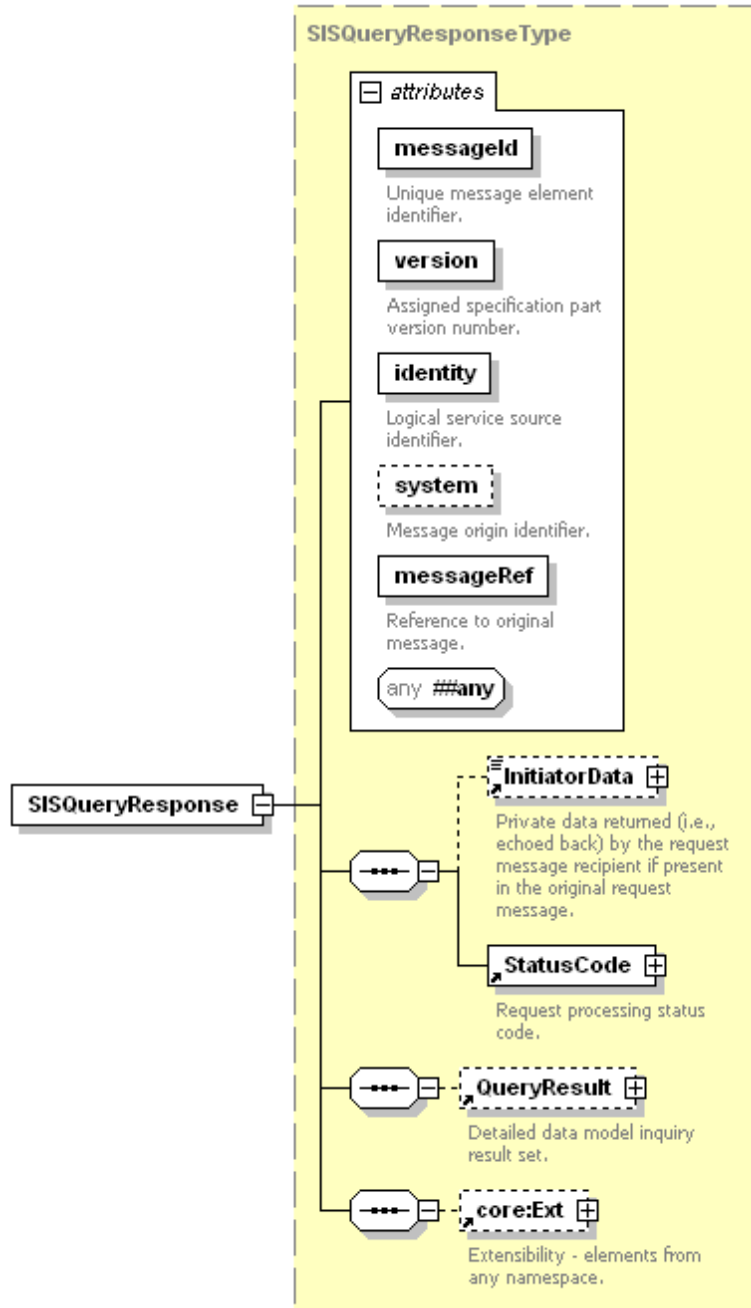


Figure 21. SISQueryResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.15 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.

10.15.1 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.

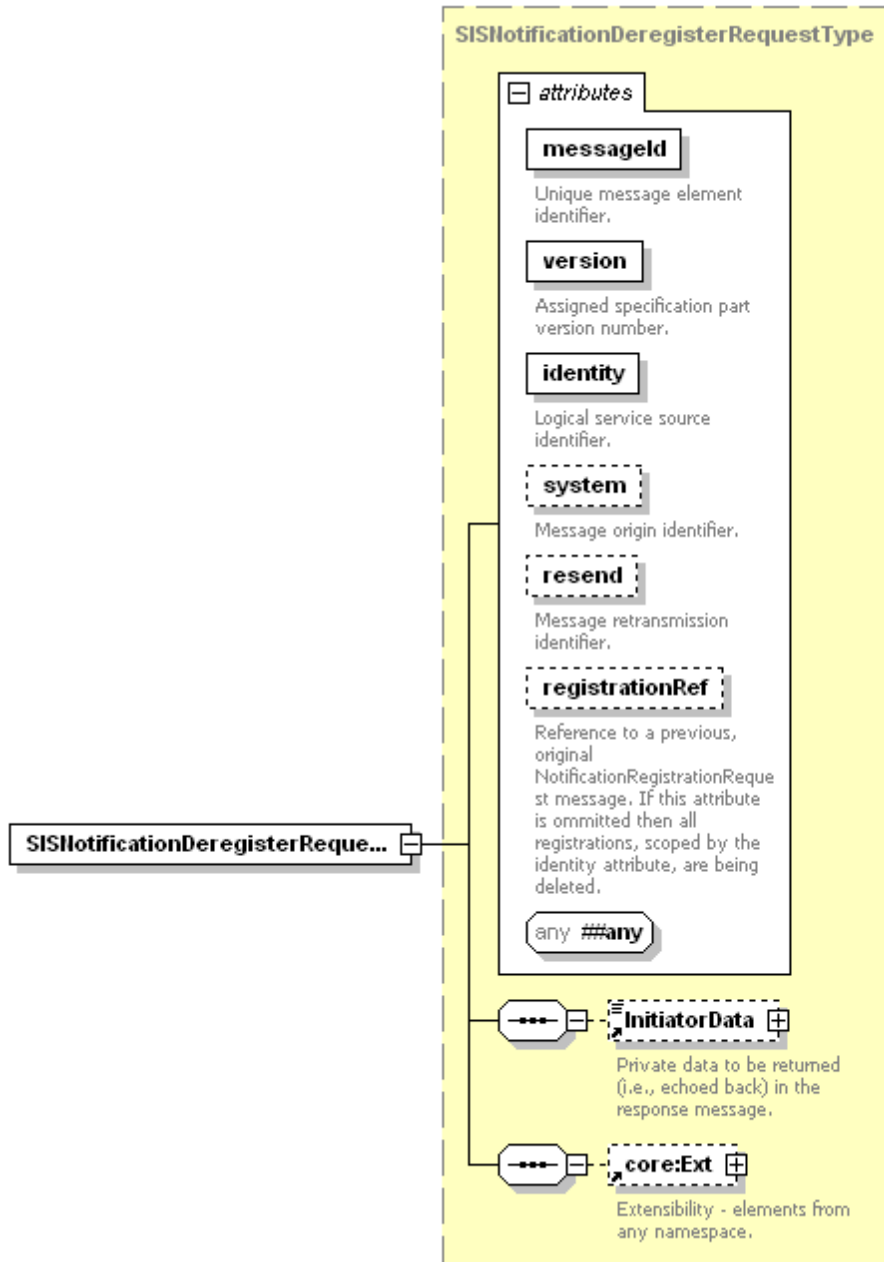


Figure 22. SISNotificationDeregisterRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.15.2 SISNotificationDeregisterResponse Message

Upon receipt of a 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.

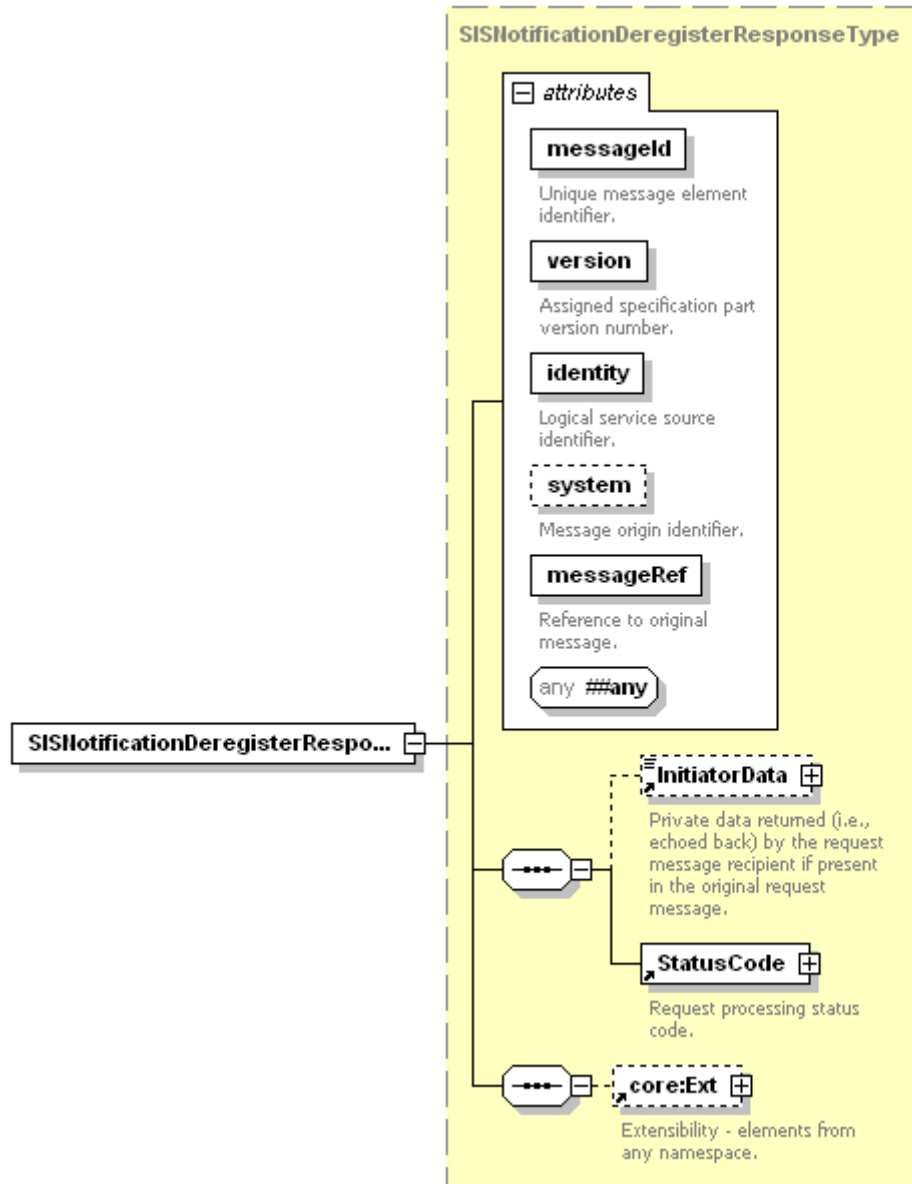


Figure 23. SISNotificationDeregisterResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

10.16 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 a SISDeregistrationNotification message, an SIS consumer **shall** reply with a SISDeregistrationAcknowledgement message.

10.16.1 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.

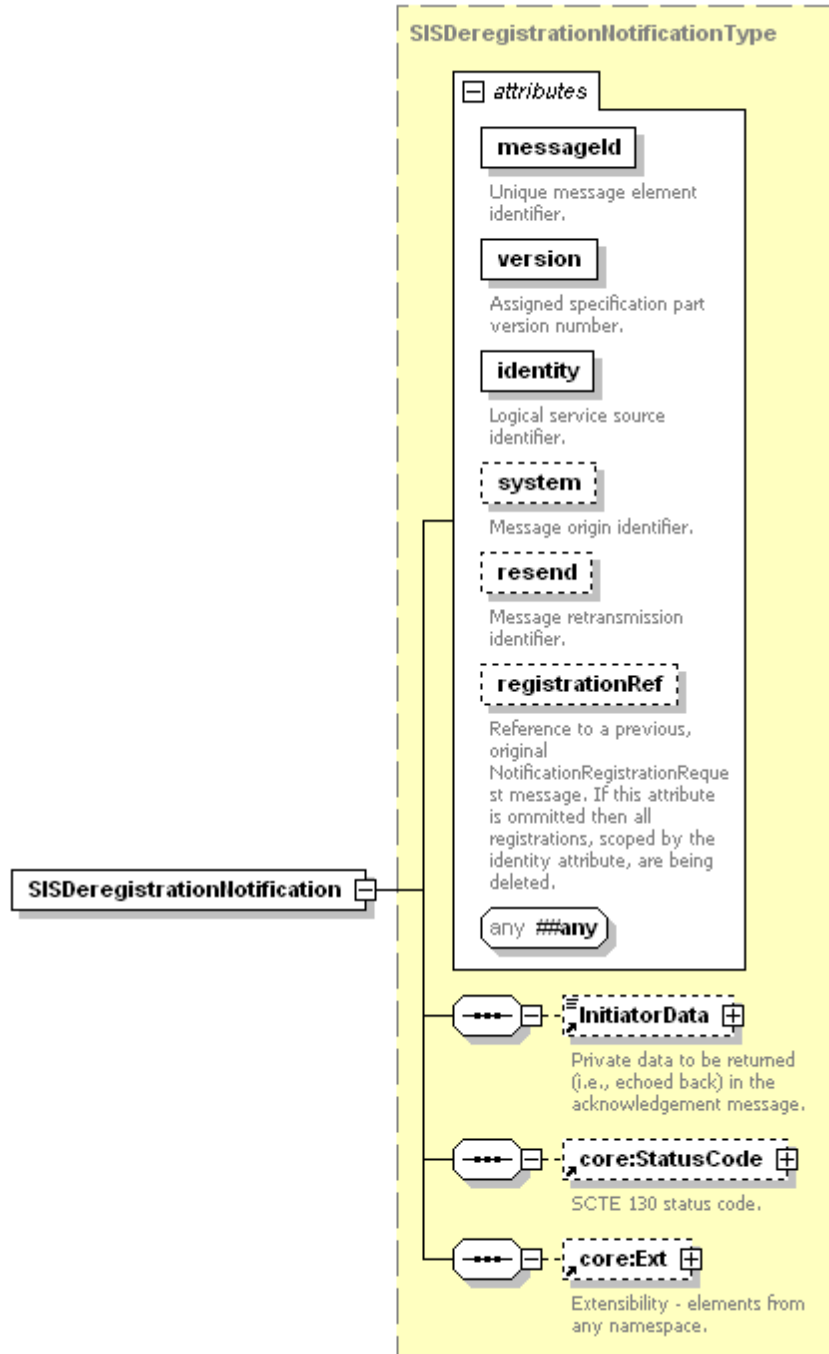


Figure 24. SISDeregistrationNotification Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE 130-8].

10.16.2 SISDeregistrationAcknowledgement Message

Upon receipt of a SISDeregistrationNotification message, an SIS consumer *shall* respond with a 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.

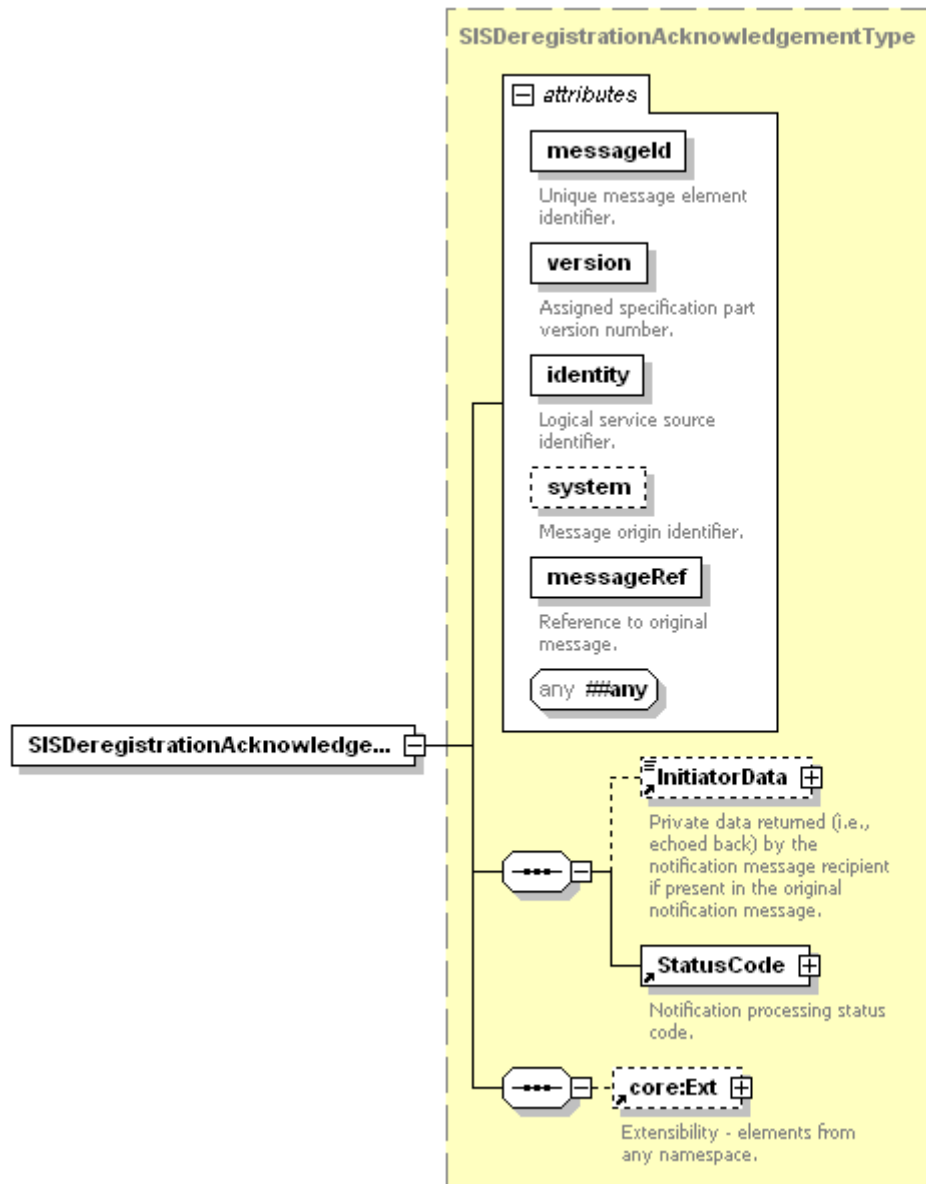


Figure 25. SISDeregistrationAcknowledgement Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE 130-8].

10.17 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 [SCTE 130-8]. See [SCTE 130-8] for further information.

The value of the @version attribute for the core:ServiceCheckRequest and core:ServiceCheckResponse messages *shall* be the value specified by [SCTE130-2] rather than the value specified in Section 10.1. See [SCTE130-2] for further information.

10.18 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 [SCTE 130-8]. See [SCTE 130-8] for further information.

The value of the @version attribute for the core:ServiceStatusNotification and core:ServiceStatusAcknowledgement messages *shall* be the value specified by [SCTE130-2] rather than the value specified in Section 10.1. See [SCTE130-2] for further information.

11.0 SIS ELEMENT DETAILS

An SIS implementation *shall* be built using the Generalized Information Service (GIS) interface defined by [SCTE 130-8].

Other than the message elements defined in Section 10.0, the SCTE 130 Part 6 defines no elements in addition to those already defined by [SCTE 130-8].

12.0 SIS ATTRIBUTE TYPES

An SIS implementation *shall* be built using the Generalized Information Service (GIS) interface defined by [SCTE 130-8].

The SIS defines no attributes in addition to those already defined by the General Information Service [SCTE 130-8].

APPENDIX A: MESSAGE EXAMPLES (INFORMATIVE)

The following sections contain a selection of examples of SIS top level messages. The section assumes the following namespace declarations, which are omitted from the examples.

- `xmlns="http://www.scte.org/schemas/130-6/2011/sis"`
- `xmlns:core="http://www.scte.org/schemas/130-2/2008a/core"`
- `xmlns:gis="http://www.scte.org/schemas/130-8/2011/gis"`

A.1 SIS List Supported Features Request and Response

The `SISListSupportedFeaturesRequest` is the only service endpoint that is required to be available on the well-known address for an SIS implementation. All other service endpoints *may* also be available at the well-known SIS address or available only on other, more specific, endpoint addresses. The `SISListSupportedFeaturesResponse` message *may* contain a set of `core:Callout` elements which *may* include the additional addresses for specific services.

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

Example 1. `SISListSupportedFeaturesRequest` Message

```

<SISListSupportedFeaturesResponse messageId="sis-101" system="SISServer"
    version="1.0"
    identity="40DA910E-01AF-5050-C7EA-5D7B4A475312"
    messageRef="consumer-342">
  <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://SuperDemoGraphics.com</gis:ServiceDataModel>
    <gis:AdvancedQueryLanguage>XPath</gis:AdvancedQueryLanguage>
    <gis:AdvancedQueryLanguage>XQuery</gis:AdvancedQueryLanguage>
  </gis:ServiceDataModelProfile>
  <gis:ServiceDataModelProfile>

  <gis:ServiceDataModel>http://AdZoneDemoGraphics.com</gis:ServiceDataModel>
  </gis:ServiceDataModelProfile>
</SISListSupportedFeaturesResponse>

```

Example 2. SISListSupportedFeaturesResponse Message

Example 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 endpoints are available through this well-known SIS address endpoint.

Example 3 contains a SISListSupportedFeaturesResponse message that does contain core:Callout elements for several specific SIS service channel endpoints.

```

<SISListSupportedFeaturesResponse messageId="sis-102" system="SISServer"
    version="1.0"
    identity="40DA910E-01AF-5050-C7EA-5D7B4A475312"
    messageRef="consumer-342">
  <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://SuperDemoGraphics.com</gis:ServiceDataModel>
      <gis:AdvancedQueryLanguage>XPath</gis:AdvancedQueryLanguage>
      <gis:AdvancedQueryLanguage>XQuery</gis:AdvancedQueryLanguage>
    </gis:ServiceDataModelProfile>
    <gis:ServiceDataModelProfile>

<gis:ServiceDataModel>http://AdZoneDemoGraphics.com</gis:ServiceDataModel>
    </gis:ServiceDataModelProfile>
  </SISListSupportedFeaturesResponse>

```

Example 3. ListSupportedFeaturesResponse Message (multiple endpoints)

Example 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 endpoints.

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(s).

See Table 2 for a list of all SIS service channel message endpoints.

Note that in both Example 2 and Example 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.

A.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.

Example 4 contains a SISListQualifiersRequest message that's intended to discover the qualifiers for the "SuperDemographics" data model.

```
<SISListQualifiersRequest messageId="consumer-344" system="SISClient"
  version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>
</SISListQualifiersRequest>
```

Example 4. SISListQualifiersRequest Message

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

```

<SISListQualifiersResponse messageId="sis-103" system="SISServer" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475312"
  messageRef="consumer-344">
  <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>

```

Example 5. SISListQualifiersResponse Message

In Example 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.

Example 6 contains an SISListQualifiersRequest message that's intended to discover the qualifiers for the "AdZoneDemographics" data model.

```
<SISListQualifiersRequest messageId="consumer-344" system="SISClient"
    version="1.0"
    identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
<gis:ServiceDataModel>http://AdZoneDemographics.com</gis:ServiceDataModel>
</SISListQualifiersRequest>
```

Example 6. SISListQualifiersRequest Message

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

```

<SISListQualifiersResponse messageId="sis-103" system="SISServer" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475312"
  messageRef="consumer-344">
  <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>

```

Example 7. SISListQualifiersResponse Message

In Example 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.

A.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.

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

```
<SISQueryRequest messageId="consumer-345" system="SISClient" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <gis:Query queryId="233" expandOutput="false">

<gis:ServiceDataModel>http://SuperDemoGraphics.com</gis:ServiceDataModel>
  <gis:UniqueQualifier>
    <gis:Qualifier name="MACAddress" value="00-1e-c2-01-d3-2d"/>
  </gis:UniqueQualifier>
</gis:Query>
</SISQueryRequest>
```

Example 8. SISQueryRequest Message

The result of the previous query is illustrated in Example 9:

```
<SISQueryResponse messageId="sis-105" system="SISServer" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475312"
  messageRef="consumer-345">
<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>
```

Example 9. SISQueryResponse Message

In Example 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 that \$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.

Example 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".

```
<SISQueryRequest messageId="consumer-346" system="SISClient" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <gis:Query queryId="234" expandOutput="false">

<gis:ServiceDataModel>http://SuperDemoGraphics.com</gis:ServiceDataModel>
  <gis:BasicQueryFilter>
    <gis:BasicFilterElement name="Age" value="Under20"
      valueIsRegex="false"/>
  </gis:BasicQueryFilter>
</gis:Query>
</SISQueryRequest>
```

Example 10. SISQueryRequest Message

The result of the query shown in Example 10 is shown in Example 11.

```
<SISQueryResponse messageId="sis-106" system="SISServer" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475312"
  messageRef="consumer-346">
  <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>
</SISQueryResponse>
```

Example 11. SISQueryResponse Message

In Example 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.

Example 12 shows an `SISQueryRequest` message similar to that shown in Example 10 except that in Example 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 Example 13.

```
<SISQueryRequest messageId="consumer-347" system="SISClient" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <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>
```

Example 12. SISQueryRequest Message

```

<SISQueryResponse messageId="sis-107" system="SISServer" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475312"
  messageRef="consumer-347">
  <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>

```

Example 13. SISQueryResponse Message

A.4 SIS Notification Registration Request and Notification

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

```

<SISNotificationRegistrationRequest messageId="consumer-348"
system="SISClient"
      version="1.0"
      identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <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>

```

Example 14. SISNotificationRequest Message

Two things of interest in Example 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 [[SCTE130-2](#)] 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 Example 15 indicates that five new subscribers under the age of twenty have been added to the logical service's data store.

```

<SISNotification noticeType="new" messageId="sis-108" system="SISServer"
  version="1.0" identity="40DA910E-01AF-5050-C7EA-
5D7B4A475312">
  <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>

```

Example 15. SISNotification Message

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

```

<SISNotification noticeType="delete" messageId="39903" system="SISServer"
  version="1.0" identity="40DA910E-01AF-5050-C7EA-
5D7B4A475312">
  <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>

```

Example 16. SISNotification Message

APPENDIX B: WSDL (NORMATIVE)

SCTE 130 Part 6 (this document) 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'. SCTE 130 Part 7 provides additional WSDL specification details. See [SCTE130-7] for more information.

APPENDIX C. MUTABLE SIS INTERFACE (NORMATIVE)**C.1 Scope**

This appendix defines the Mutable SIS interface extension consistent with the SCTE 130 standard including the Part 6 Subscriber Information Service (SIS) interface defined previously herein. The Mutable SIS, a.k.a., the writable SIS interface, provides XML types, elements and attributes enabling an information service Consumer/Client to modify a service data model's definition or its content.

The Mutable SIS is optional. A logical service implementing the SIS *may* define this extension as mandatory, optional, or excluded at its discretion. If a logical service includes the Mutable SIS extension as either optional or mandatory, this appendix **shall** be required and all its contents **shall** be considered normative.

C.2 Introduction

A logical service implements the Mutable SIS interface to allow altering of:

- A service data model by adding or removing existing qualifiers
- A service data model description by modifying an existing qualifier's description
- A service data model's qualifier value by changing the data through operations such as increment, decrement, assignment, etc.

The Mutable SIS service is a concrete implementation of the Mutable GIS interface and it fully adheres to the logic and principles defined by Mutable GIS. Please refer to the [SCTE 130-8] Section F.2 for an introduction on the principles and message exchange between Consumer and Logical Service for the mutable interface.

Since the Mutable GIS is an abstract specification, it does not define actual messages, but only message types. Mutable SIS defines concrete messages based on the message types defined by Mutable GIS. As a notational convention, the messages defined by Mutable SIS **shall** prepend the Mutable GIS message types they extend with the string "SIS". Thus the SISMutableOperationRequest message **shall** be of type SISMutableOperationRequestType which is an extension of mut:MutableOperationRequestType.

C.3 XML Namespaces

Beyond the SIS namespaces defined in SCTE 130 Part 6, this appendix uses the 'sismut' prefix, as described in Table 1 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 standard used herein.

Unless otherwise stated, all references to XML elements illustrated in this appendix are from the 'sismut' namespace. Elements from other namespaces **shall** be prefixed with the name of the external namespace, e.g. <core:XXX>.

C.3.1 Message Version Attribute

The message version attribute value for the mutable message additions shall be the value defined in Section 10.1.

C.4 Enhanced SIS Messages

Table 5 identifies messages defined by SCTE 130 Part 6 (this document) that are normatively modified via substitution by the Mutable SIS. A service implementing the mutable SIS *shall* substitute the Mutable SIS enhanced XML elements in place of the native SIS or GIS elements.

Message	Description
SISListSupportedFeaturesResponse	Adds a description of mutable specific features via the mandatory inclusion of mut:MutableServiceDataModelProfile element
SISListQualifiersResponse	Adds descriptions of mutable qualifiers via the mandatory inclusion of mut:MutableQualifierDescription element

Table 5. SIS Messages Altered by the Mutable SIS

The following sections detail the SIS defined message types enhanced by mandatory XML element substitution.

C.4.1 SISListSupportedFeatures Messages

The SISListSupportedFeaturesRequest and SISListSupportedFeaturesResponse messages allow consumers to inquire about the service data models and advanced query languages supported by a logical service. The Mutable SIS informs an information service Consumer if a service data model is mutable by substituting the gis:ServiceDataModelProfile element with the mut:MutableServiceDataModelProfile element in the SISListSupportedFeaturesResponse message. The mut:MutableServiceDataModelProfile element describes the mutable service data model including its mutable characteristics. See [SCTE 130-8] for more information on mut:MutableServiceDataModelProfile element.

Additionally, a Mutable SIS *shall* supply the additional core:Callout elements associated with the Mutable SIS message type endpoints. If an information service is using a default message endpoint supporting the Mutable SIS endpoints, no additional core:Callout elements are required. Otherwise, the information service specific extension values derived from Table 6. Mutable SIS Messages *shall* additionally be included in the core:Callout element sequence.

C.4.2 SISListQualifiers Messages

The SISListQualifiersRequest and SISListQualifiersResponse messages allow Consumers to discover the qualifiers associated with service data models that are queryable using the basic query interface. A logical service supporting the Mutable SIS *shall* indicate in the SISListQualifiersResponse message which service data model qualifiers are mutable. This indication *shall* be accomplished utilizing the mut:MutableQualifierDescription element substituted for the gis:QualifierDescription element. See [SCTE 130-8] for more information on mut:MutableQualifierDescription element.

If a specific service data model does not support the basic query interface, the SISListQualifiersResponse message *shall* return an error.

C.5 SIS Mutable Messages

Table 6 identifies the messages specific to Mutable SIS.

Message	Description
SISMutableOperationRequest	A self-contained request to modify a service data model definition and/or service data model qualifier values
SISMutableOperationResponse	Response to a SISMutableOperationRequest
SISBatchCreateRequest	Creates a multi-message mutable operations construct (i.e., a batch).
SISBatchCreateResponse	Response to a SISBatchCreateRequest. Returns the batch identifier.
SISBatchItemRequest	Request to add mutable operations to a batch
SISBatchItemResponse	Response to a SISBatchItemRequest
SISBatchOperationRequest	Request to start or cancel the batch of mutable operations
SISBatchOperationResponse	Response to a SISBatchOperationRequest
SISListBatchRequest	Request for information about one or more created mutable operation batches
SISListBatchResponse	Response to a SISListBatchRequest
SISMutableOperationNotification	Asynchronous notification message providing completion status relative to a self-contained SISMutableOperationRequest
SISMutableOperationAcknowledgement	Response to a SISMutableOperationNotification
SISBatchNotification	Asynchronous notification message providing completion status relative to a multi-message batch operation created via a SISBatchCreateRequest
SISBatchAcknowledgement	Response to a SISBatchNotification

Table 6. Mutable SIS Messages

C.5.1 SIS Mutable Operation Messages

The SISMutableOperation message exchange initiates an execution of a mutable operation sequence defined within the request message body. The operational sequence *may* provide completion status either synchronously or asynchronously as indicated within the request message. An asynchronously completing operation sequence provides completion status using the SISMutableOperationNotification message type. See Section C.5.6 for more information on the SISMutableOperationNotification message exchange.

C.5.1.1 SISMutableOperationRequest Message

The SISMutableOperationRequest message requests modifications to a service data model and/or service data model's qualifier values. The message type includes transaction control information.

The XML schema definition for this message is illustrated in Figure 26.

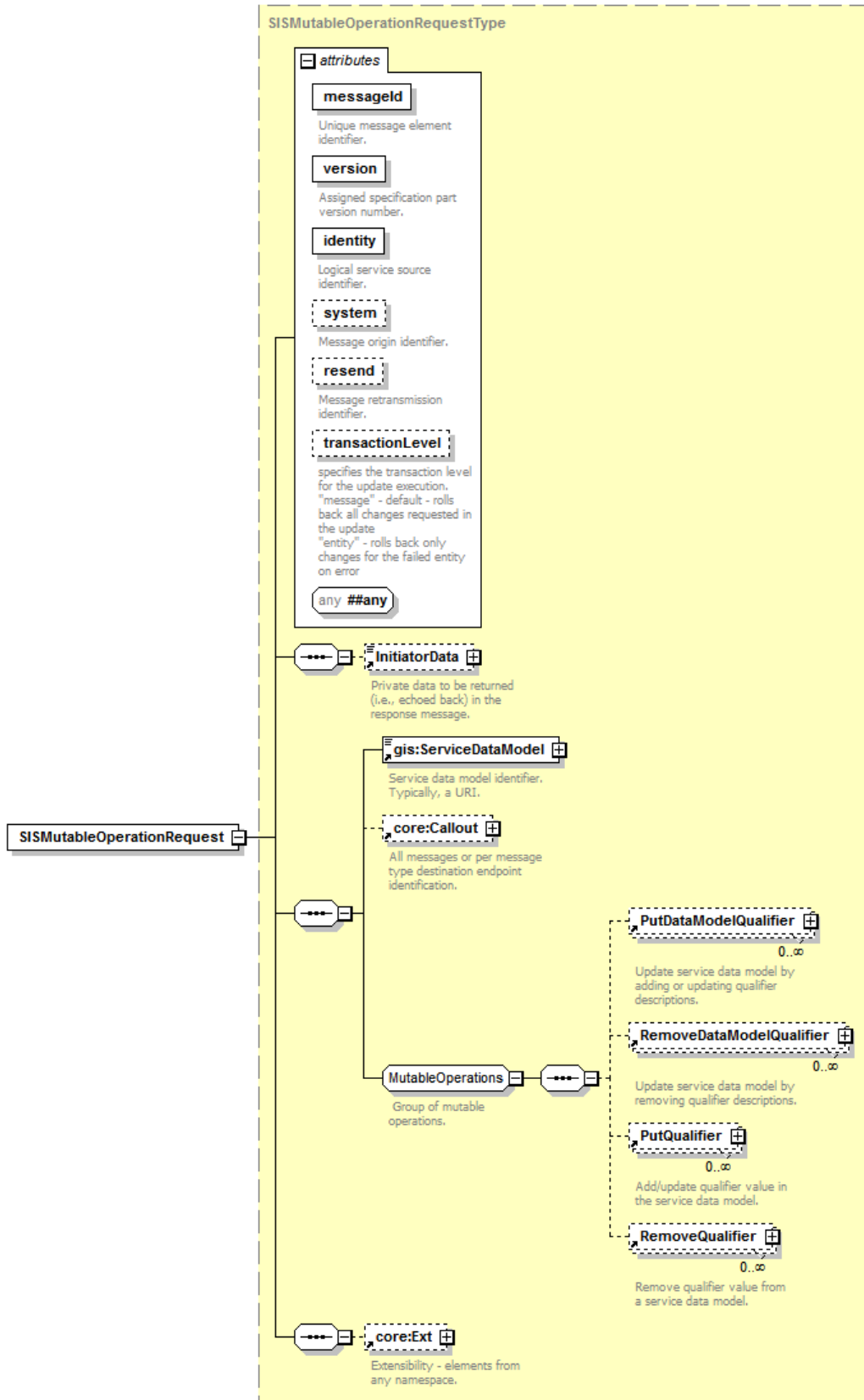


Figure 26. SISMutableOperationRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.1.2 SISMutableOperationResponse Message

Upon receipt of a SISMutableOperationRequest message, the information service *shall* respond with a SISMutableOperationResponse message.

The XML schema definition for this message is illustrated in Figure 27.

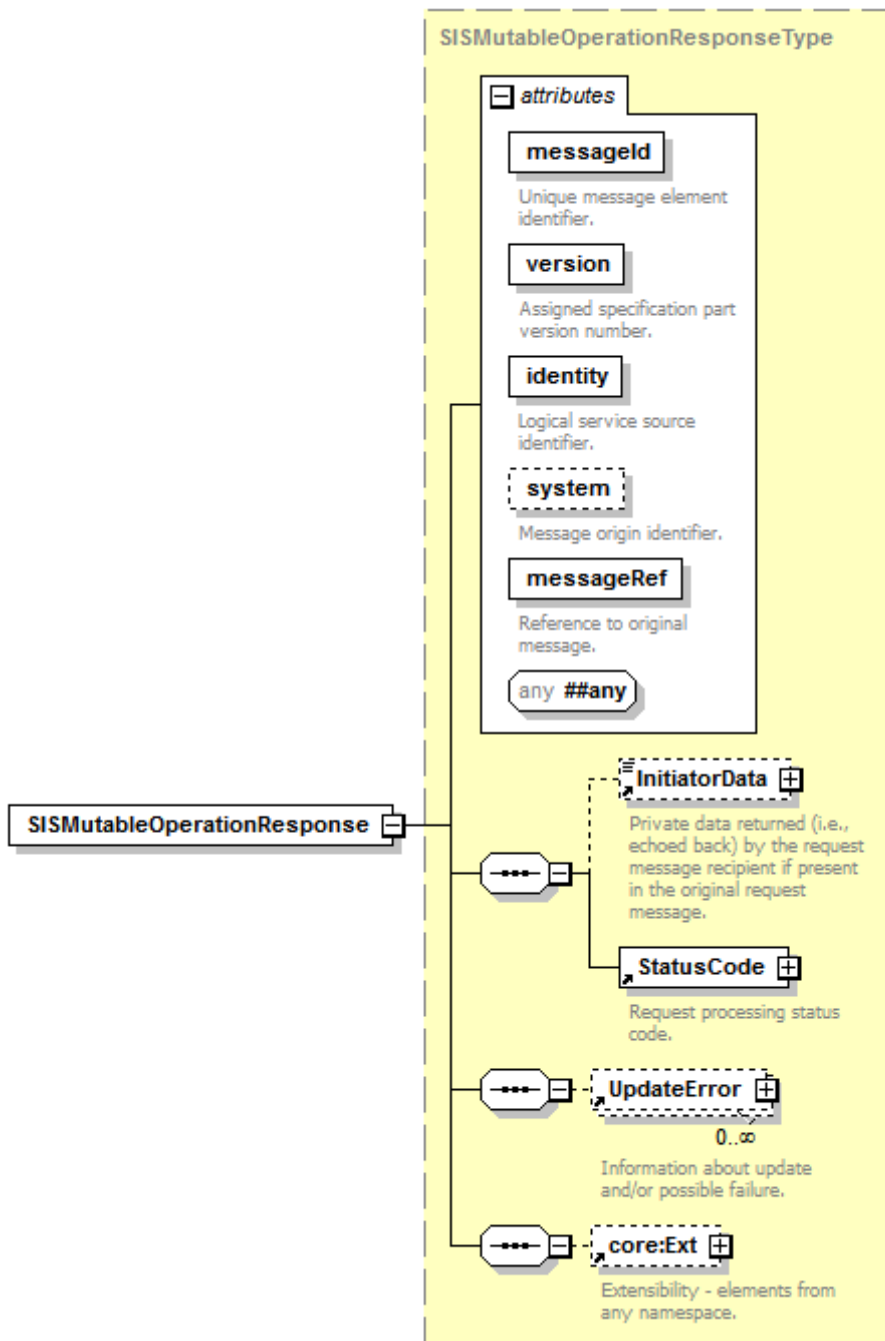


Figure 27. SISMutableOperationResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.2 SIS Batch Create Messages

The SISBatchCreate message exchange is the first message pair exchanged in a multi-message sequence to define a multi-operation mutable transaction. The SISBatchCreate message exchange initiates the mutable operation. Upon successful creation of the batch, the logical service provides an identifier for the batch known as @batchId. This identifier *shall* be referenced in all subsequent message exchanges about the batch.

C.5.2.1 SISBatchCreateRequest Message

The SISBatchCreateRequest message allows a logical service Consumer to setup a batch mutable operation consisting of modifications to a service data model and/or service data model's qualifier values. The message type includes a reference to the service data model updated by the batch mutable operation.

The XML schema definition for this message is illustrated in Figure 28.

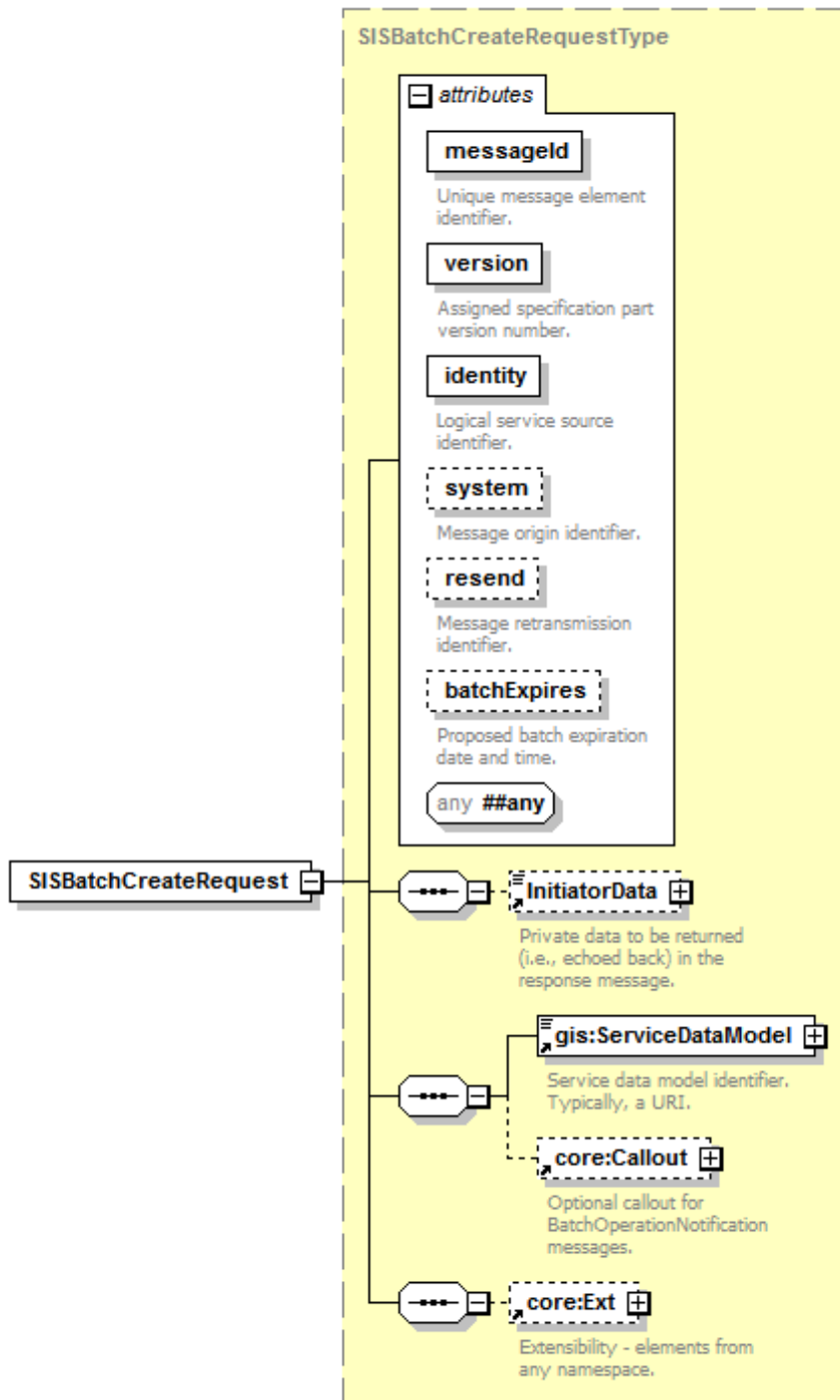


Figure 28. SISBatchCreateRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE 130-2].

C.5.2.2 SISBatchCreateResponseMessage

Upon receipt of a SISBatchCreateRequest message type, a logical service *shall* respond with a SISBatchCreateResponse message type. The response provides the Consumer with a batch identifier that *shall* be used in all subsequent message exchanges referencing the batch.

The XML schema definition for this message is illustrated in Figure 29.

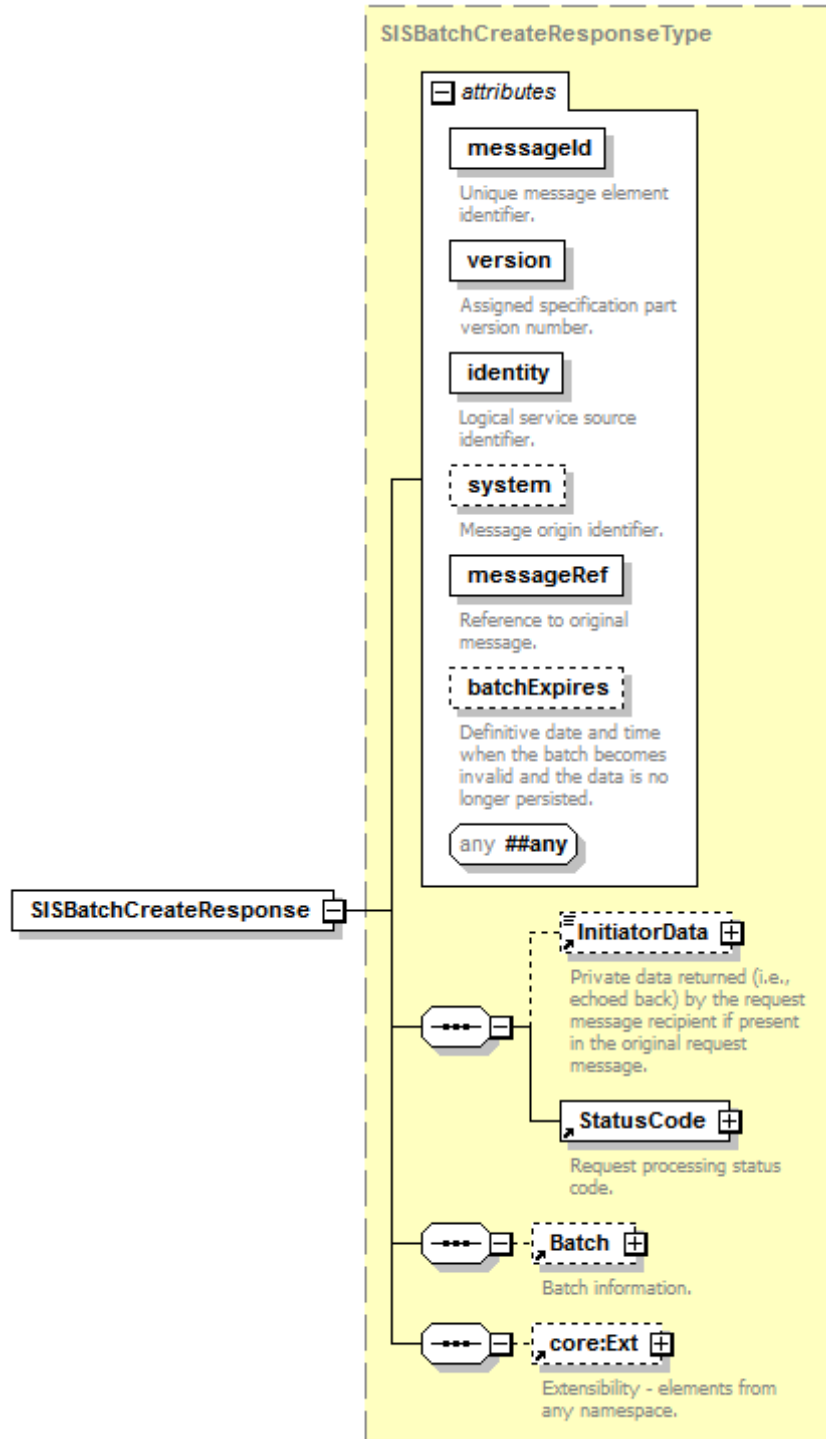


Figure 29. SISBatchCreateResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE130-2].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.3 SIS Batch Item Messages

After creating a batch, a Consumer sends zero or more SISBatchItemRequest messages that add service data model changes to the mutable operation. Each SISBatchItemRequest is processed synchronously by the information service that *shall* accept the changes without actually performing the requested updates to the service data model. Instead, the changes are cached locally by the information service pending a SISBatchOperation message exchange.

C.5.3.1 SISBatchItemRequest Message

The Consumer references the batch in the request via @batchIdRef. The logical service *shall* add the supplied mutable operations to the referenced batch and this information *shall not* be applied to the service data model until a batch execute request is received. See C.5.4.1 for more information about batch execute request.

The XML schema definition for this message is illustrated in Figure 30.

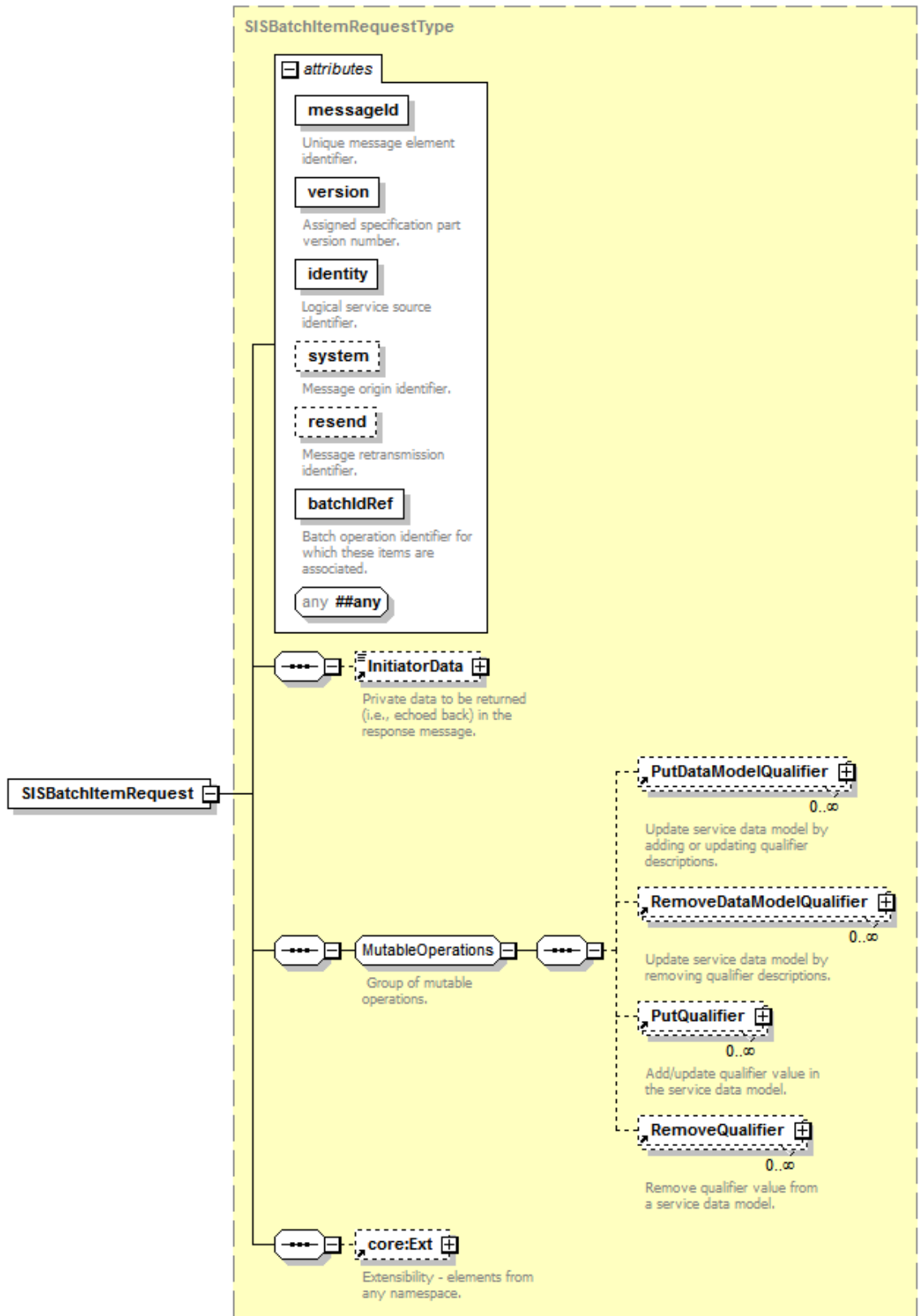


Figure 30. SISBatchItemRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.3.2 SISBatchItemResponse Message

Upon receipt of the SISBatchItemRequest message type, a logical service *shall* respond with the SISBatchItemResponse message type. The core:StatusCode element indicates if the request message type's mutable operations were accepted. It *shall not* provide any form of mutable operation completion status.

The XML schema definition for this message is illustrated in Figure 31.

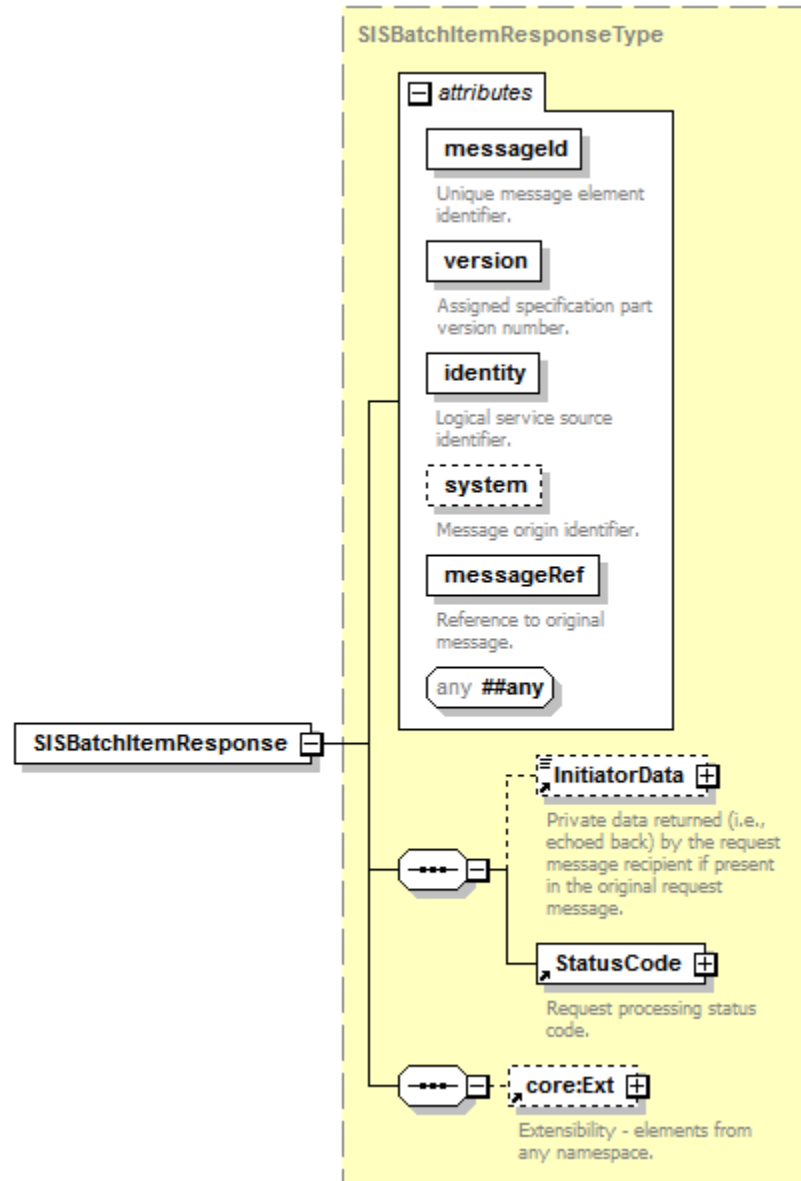


Figure 31. SISBatchItemResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.4 SIS Batch Operation Messages

The SISBatchOperation message exchange is the third and final step from the batch message sequence. A logical service Consumer uses the SISBatchOperation message exchange to start or cancel the execution of a batch mutable operation.

C.5.4.1 SISBatchOperationRequest Message

The operational sequence *may* provide completion status either synchronously or asynchronously as indicated within the request message. An asynchronously completing operation sequence provides completion status using the SISBatchNotification message.

The SISBatchOperationRequest message *shall* commence (start) or cancel a specified batch of mutable operations previously delivered via zero or more SISBatchItemRequest message types. The start and cancel operations are mutually exclusive. If a batch has been started, it can no longer be cancelled by the Consumer. Also, once a batch has been started, a Consumer cannot modify its instructions.

The XML schema definition for this message is illustrated in Figure 32.

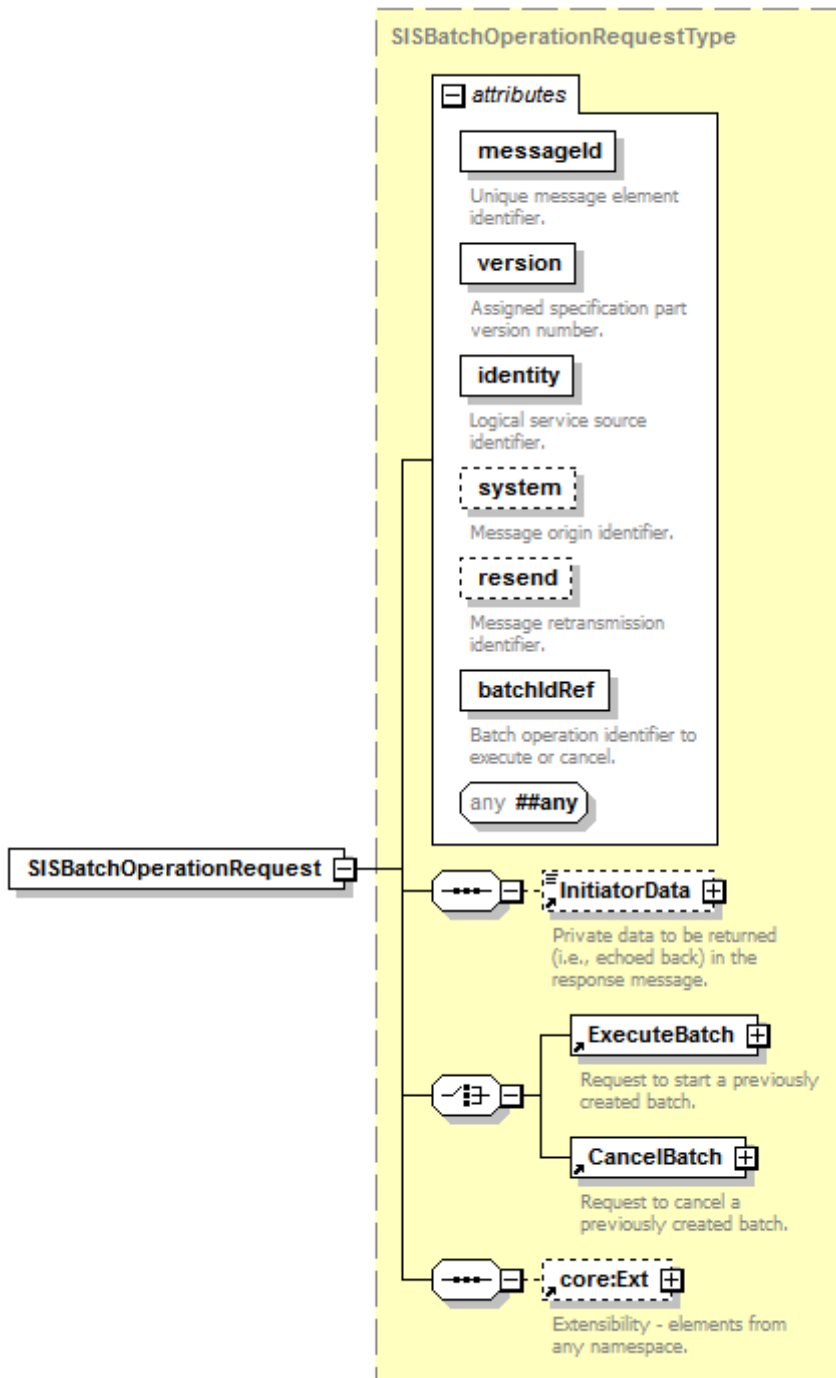


Figure 32. SISBatchOperationRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.4.2 SISBatchOperationResponse Message

Upon receipt of the SISBatchOperationRequest message, a logical service implementing the mutable SIS *shall* respond with the SISBatchOperationResponse message.

The XML schema definition for this message is illustrated in Figure 33.

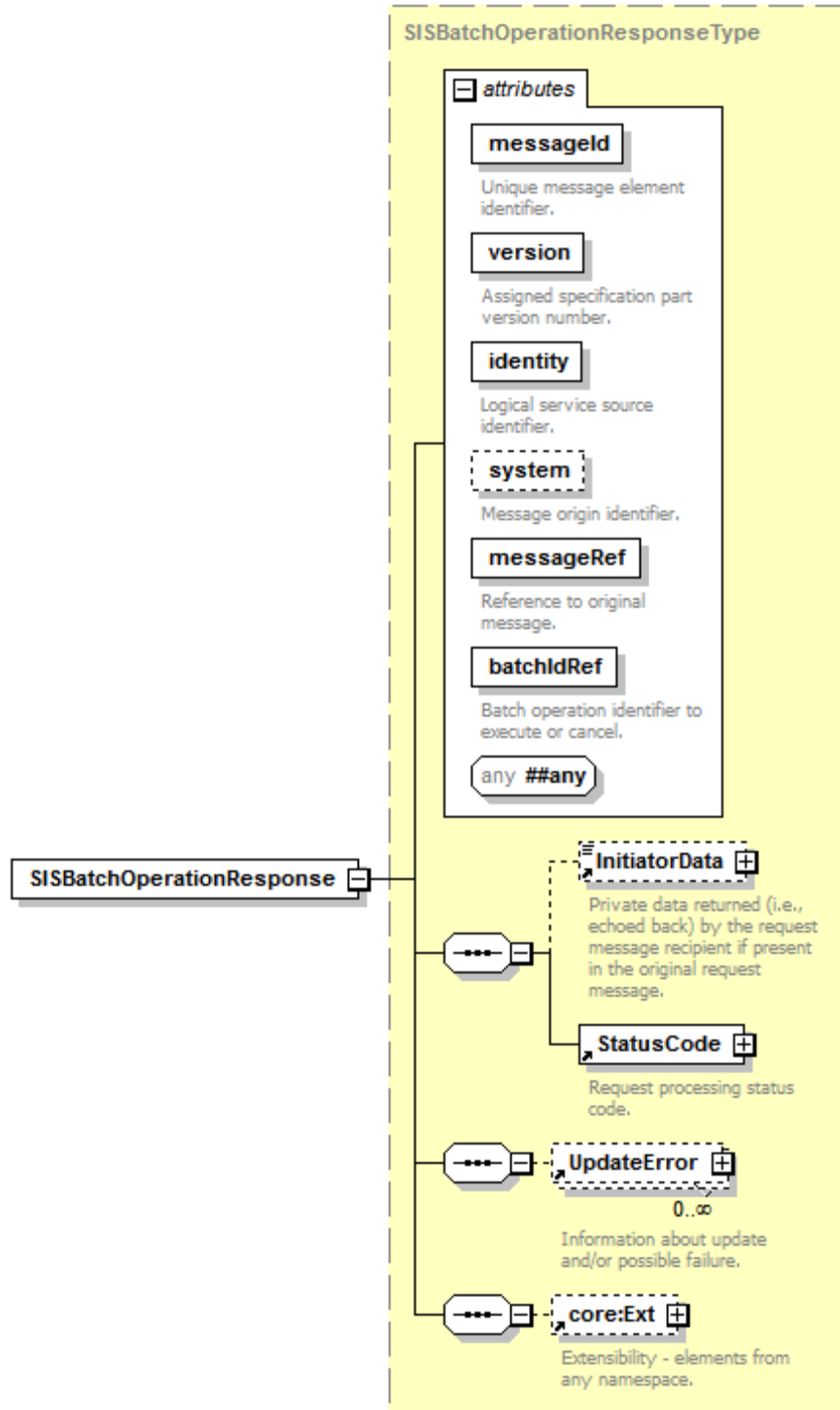


Figure 33. SISBatchOperationResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE 130-8].

C.5.5 SIS Batch Notification Messages

A logical service implementing the mutable SIS *shall* support the exchange of SISBatchNotification and SISBatchNotificationAcknowledgement type messages with Consumers.

C.5.5.1 SISBatchNotification Message

The SISBatchNotification message is used by the information service to report the batch execution status for a batch created by the Consumer and executed in asynchronous mode. The SIS *shall* include mut:UpdateError elements in the notification message if any error occurred during the batch execution.

The SISBatchNotification message is also used by the information service to report the cancellation of a batch in case the SIS decides to cancel it before receiving the execution request from the Consumer. The SIS *may* cancel a batch at any time and for any reason provided that it informs the Consumer using the BatchNotification message. The SIS notifies the Consumer that a batch is cancelled by setting the value of the @class attribute of the core:StatusCode element to “6”.

The XML schema definition for this message is illustrated in Figure 34.

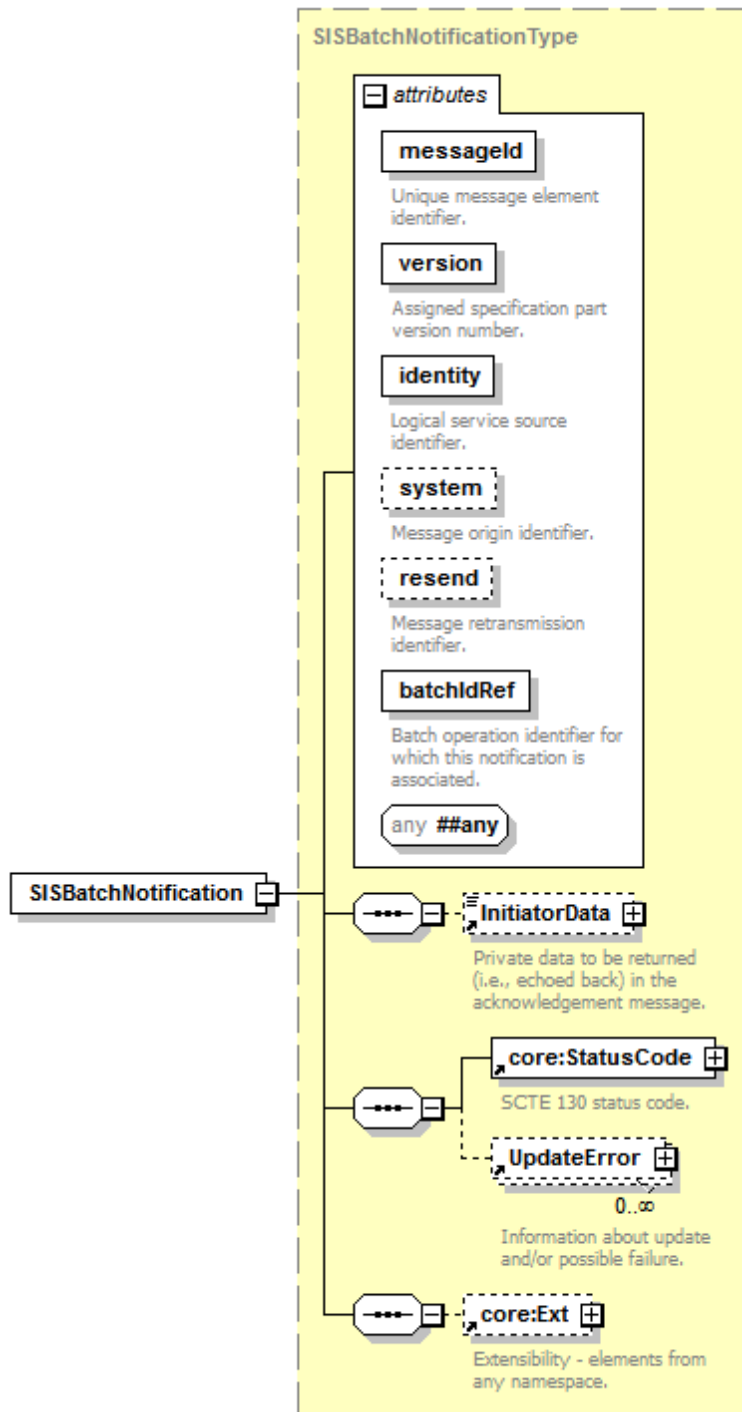


Figure 34. SISBatchNotification Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.5.2 SISBatchNotificationAcknowledgement Message

Upon the receipt of an SISBatchNotification message type, an SIS Consumer *shall* respond with a SISBatchNotificationAcknowledgement message type.

The XML schema definition for this message is illustrated in Figure 35.

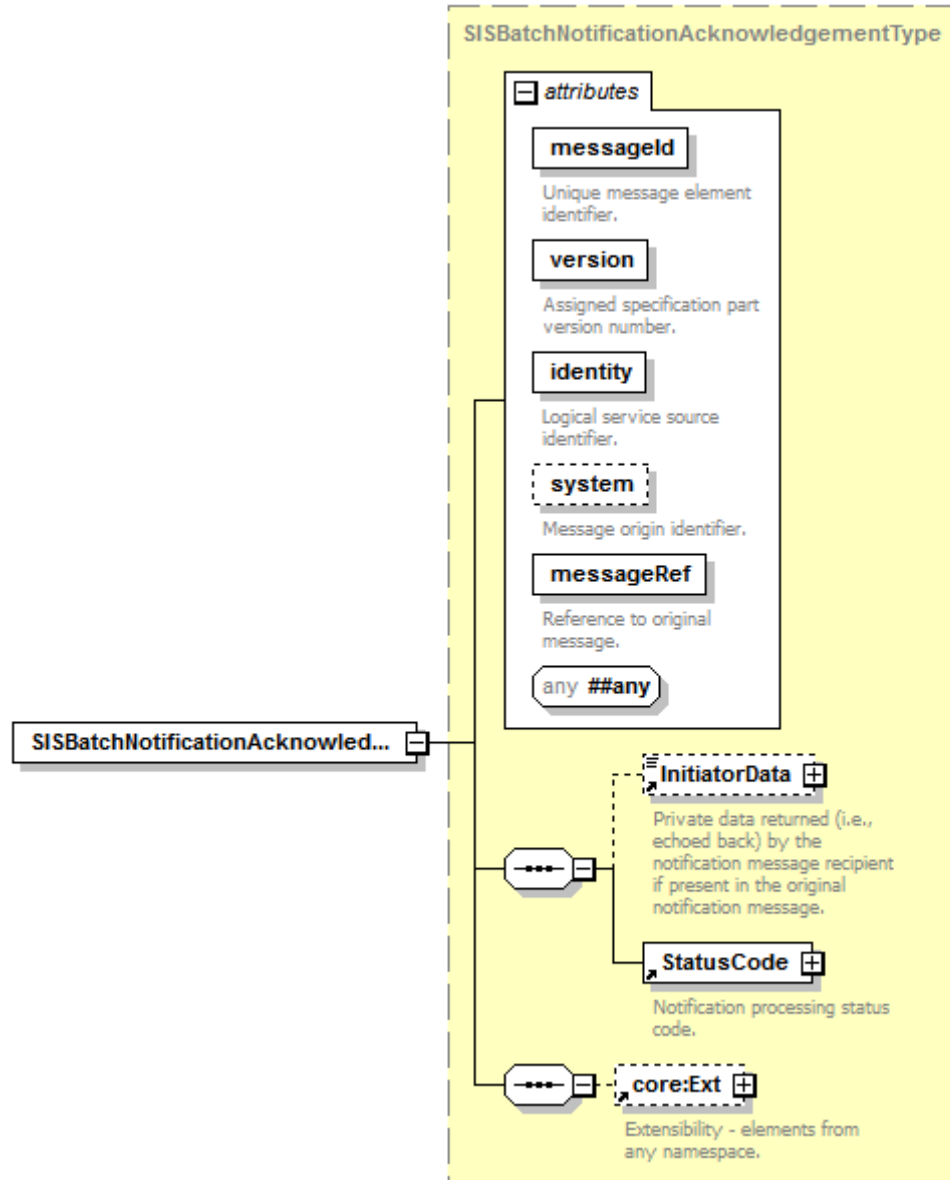


Figure 35. SISBatchNotificationAcknowledgement Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.6 SIS Mutable Operation Notification Messages

A logical service implementing the mutable SIS *shall* support the mutable operation notification message exchange.

C.5.6.1 SISMutableOperationNotification Message

When a single mutable operation is requested to be executed in asynchronous mode, the information service *shall* return the response to the Consumer immediately and send a notification using the SISMutableOperationNotification message upon operation completion.

The XML schema definition for this message is illustrated in Figure 36.

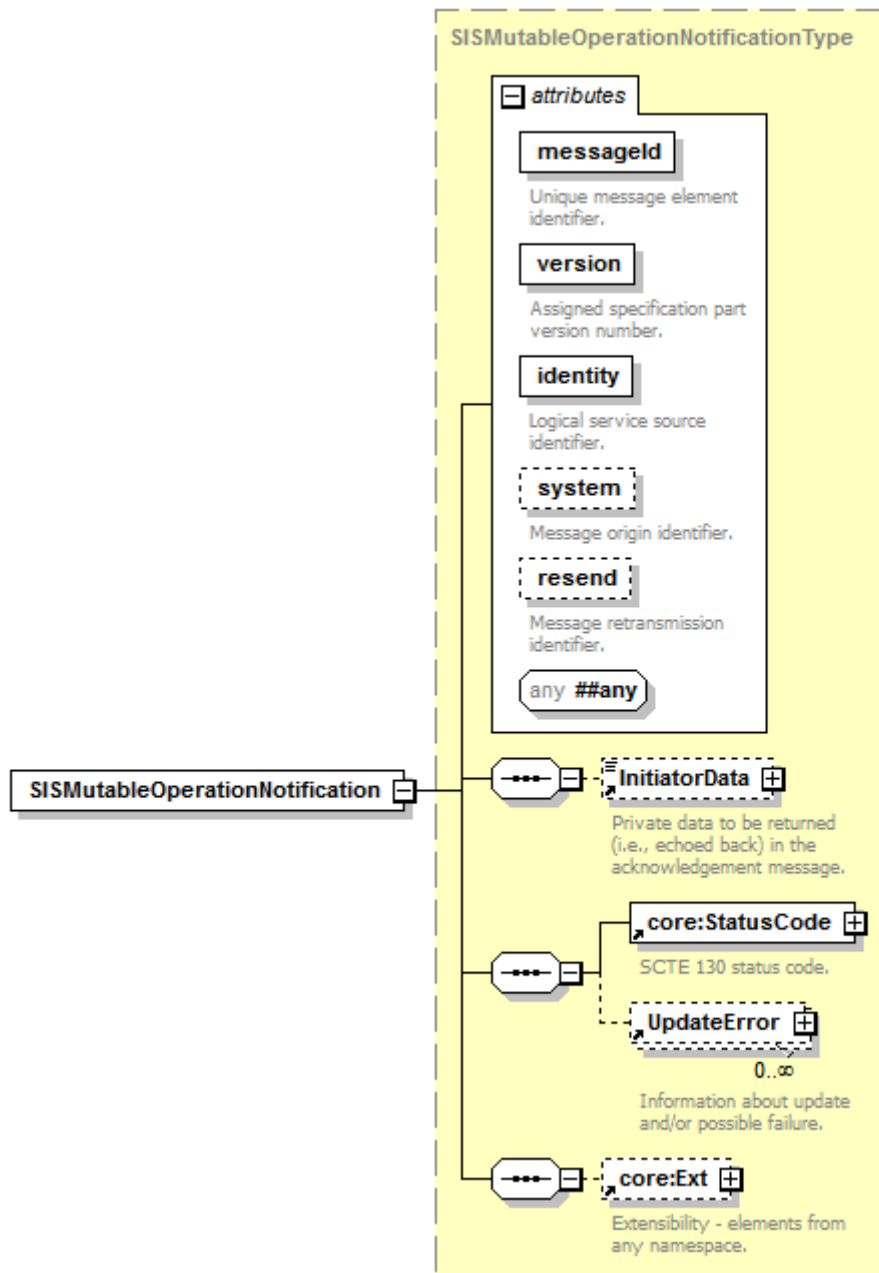


Figure 36. SISMutableOperationNotification Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.6.2 SISMutableOperationAcknowledgement Message

Upon receipt of a SISMutableOperationNotification message, a Consumer *shall* respond with a SISMutableOperationAcknowledgement message.

The XML schema definition for this message is illustrated in Figure 37.

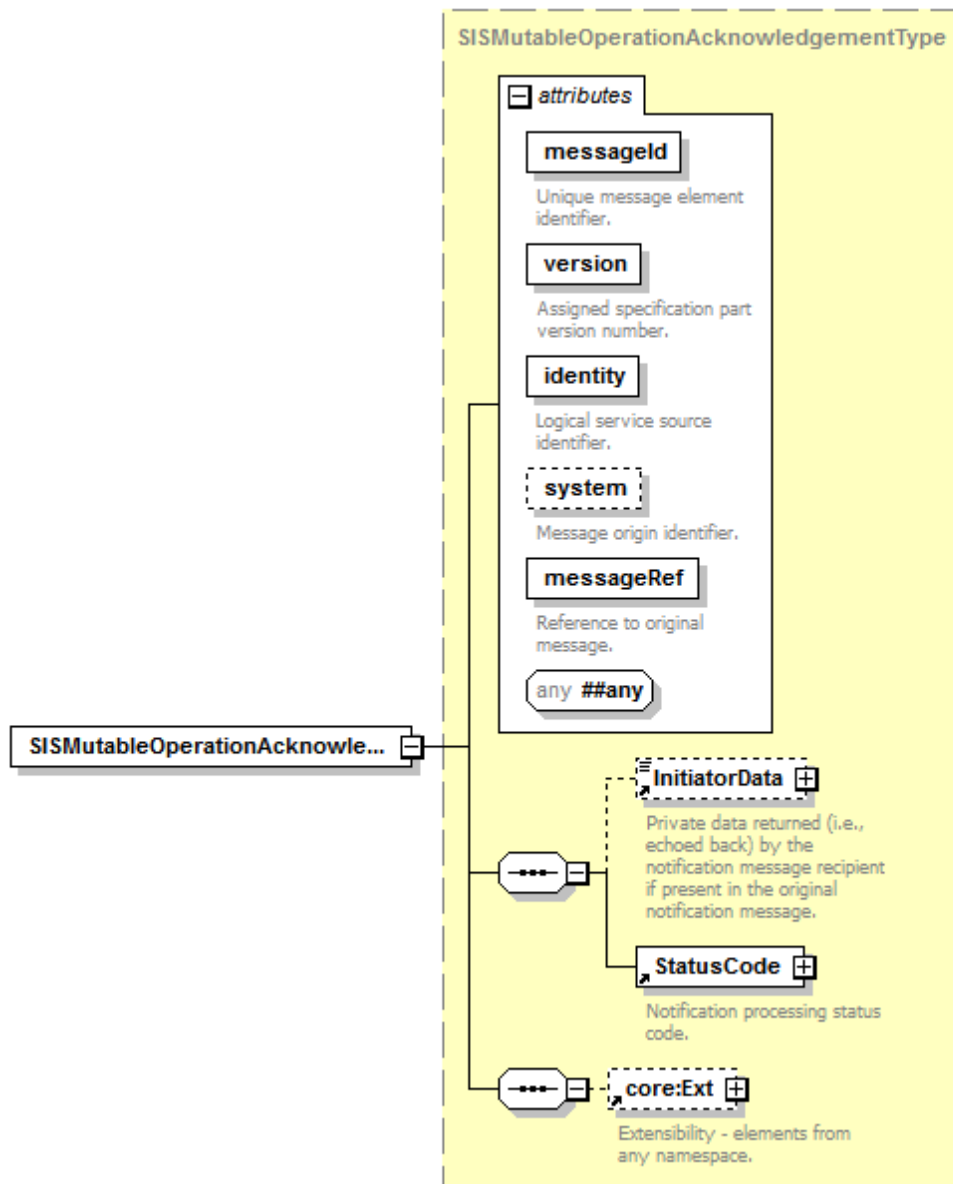


Figure 37. SISMutableOperationAcknowledgement Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.7 SIS List Batch Messages

A logical service implementing the mutable SIS *shall* support the list batch message exchange

C.5.7.1 SISListBatchRequest Message

An SIS Consumer can use the SISListBatchRequest message to get status information about one or more mutable operation batches created or in progress. Completed batches, whether successful or not *shall not* appear in the list.

The XML schema definition for this message is illustrated in Figure 38.

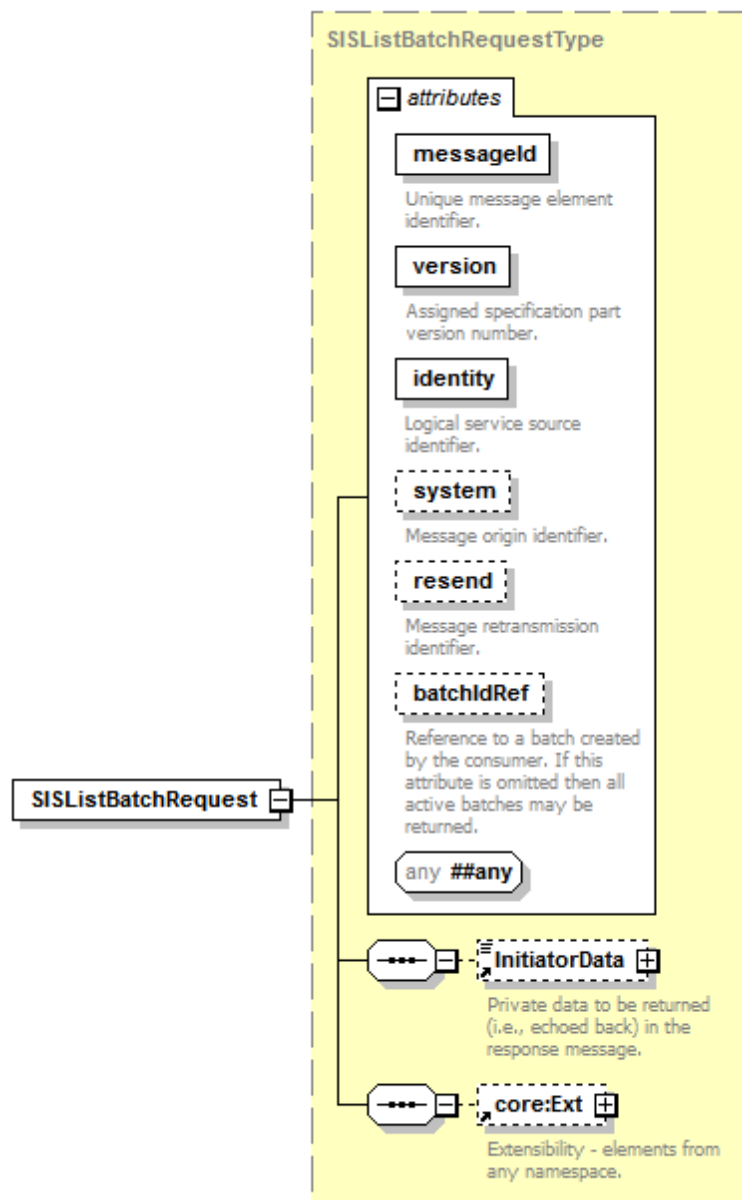


Figure 38. SISListBatchRequest Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

C.5.7.2 SISListBatchResponse Message

Upon receipt of a SISListBatchRequest message the SIS *shall* respond with a SISListBatchResponse message. The response contains information about one or more mutable operation batches according to the request.

The SIS *shall* include in the list only batches that are active. An active batch is created but not started, or in progress (started). Cancelled or completed batches *shall not* be included in the list.

The XML schema definition for this message is illustrated in Figure 39.

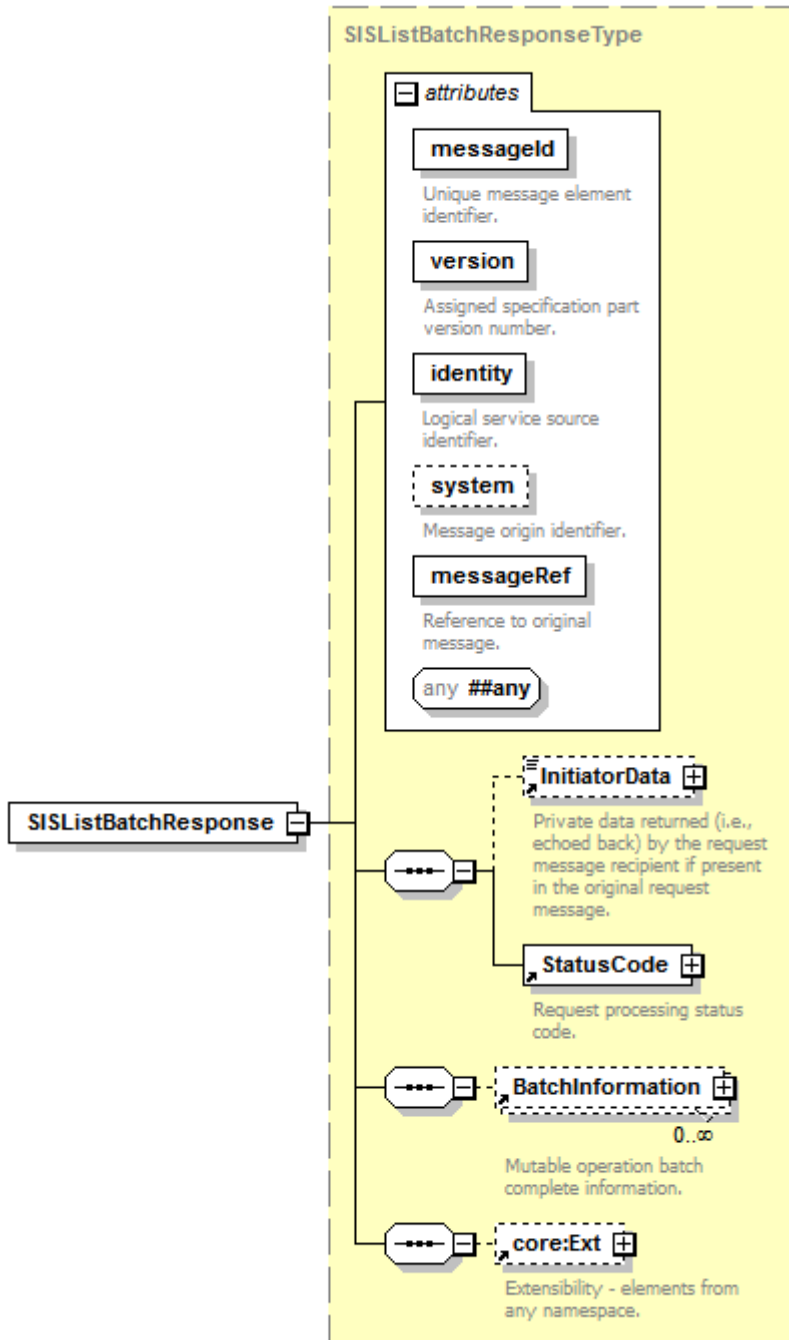


Figure 39. SISListBatchResponse Message XML Schema

The SIS interface defines no new message attributes for this message in addition to those already defined by [SCTE 130-8].

core:Ext [Optional] — Any additional elements from any namespace. For additional information on the core:Ext element see [SCTE130-2].

APPENDIX D. MUTABLE SIS EXAMPLES (INFORMATIVE)

The following sections contain a selection of Mutable SIS top level example messages. The section assumes the following namespace declarations, which are omitted from the examples.

- xmlns="http://www.scte.org/schemas/130-6/2011/sis/mutable"
- xmlns:core="http://www.scte.org/schemas/130-2/2008a/core"
- xmlns:sis="http://www.scte.org/schemas/130-6/2011/sis"
- xmlns:gis="http://www.scte.org/schemas/130-8/2011/gis"
- xmlns:mut="http://www.scte.org/schemas/130-8/2011/gis/mutable"

D.1 Listing Supported Features

Example 17 contains an example of SISListSupportedFeatureRequest message.

```
<sis:SISListSupportedFeaturesRequest messageId="acs-342" system="SISClient"
    version="1.0"
    identity="40DA910E-01AF-5050-C7EA-5D7B4A475311"
/>
```

Example 17. SISListSupportedFeaturesRequest Message

Example 18 contains a SISListSupportedFeatureResponse message example containing a mutable service data model description.

```
<sis:SISListSupportedFeaturesResponse messageId="sca-343"
    system="SISServer" version="1.0"
    identity="40DA910E-01AF-5050-C7EA-5D7B4A475312"
    messageRef="acs-342">
  <core:StatusCode class="0"/>
  <core:Callout>
    <core:Address type="SOAP 1.1">http://10.250.30.22/GISServer</core:Address>
  </core:Callout>
  <mut:MutableServiceDataModelProfile>
    <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>
    <gis:AdvancedQueryLanguage>XPath</gis:AdvancedQueryLanguage>
    <gis:AdvancedQueryLanguage>XQuery</gis:AdvancedQueryLanguage>
    <mut:UpdateExpressionLanguage version="1.7">JavaScript</mut:UpdateExpressionLanguage>
  </mut:MutableServiceDataModelProfile>
</sis:SISListSupportedFeaturesResponse>
```

Example 18. SISListSupportedFeaturesResponse Message

D.2 Listing Qualifiers

Example 19 contains an example of SISListQualifiersRequest message.

```
<sis:SISListQualifiersRequest messageId="acs-344"  
  system="SISClient" version="1.0"  
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">  
  <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>  
</sis:SISListQualifiersRequest>
```

Example 19. SISListQualifiersRequest Message

Example 20 contains an example of SISListQualifiersResponse message for a mutable service data model.

```

<sis:SISListQualifiersResponse messageId="sca-345"
      system="SISServer" version="1.0"
      identity="40DA910E-01AF-5050-C7EA-5D7B4A475312"
      messageRef="acs-344">
  <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>
    <mut:MutableQualifierDescription name="mutable1"
      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>
    </mut:MutableQualifierDescription>
    <mut:MutableQualifierDescription name="mutable2" valueType="integer">
      <gis:MinInteger>0</gis:MinInteger>
    </mut:MutableQualifierDescription>
  </gis:BasicQueryDataModelDescription>
</sis:SISListQualifiersResponse>

```

Example 20. SISListQualifiersRequest Message

D.3 Mutable Operation

Example 21 contains an example of SISMutableOperationRequest message. The operation in this example is executed synchronously.


```

<SISMutableOperationRequest messageId="acs-350"
  system="SISClient" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>
  <mut:PutDataModelQualifier>
    <mut:MutableQualifierDescription name="aqName1" valueType="string"/>
    <mut:MutableQualifierDescription name="aqName2" valueType="string"/>
  </mut:PutDataModelQualifier>
  <mut:PutDataModelQualifier>
    <mut:MutableQualifierDescription name="aqName3" valueType="string"/>
  </mut:PutDataModelQualifier>
  <mut:RemoveDataModelQualifier>
    <gis:QualifierDeclaration name="aqName0"/>
    <gis:QualifierDeclaration name="aqName01"/>
  </mut:RemoveDataModelQualifier>
  <mut:RemoveDataModelQualifier>
    <gis:QualifierDeclaration name="aqName02"/>
  </mut:RemoveDataModelQualifier>
  <mut:PutQualifier updateId="1">
    <gis:UniqueQualifier>
      <gis:Qualifier name="stbId"
        value="111111111111113"></gis:Qualifier>
    </gis:UniqueQualifier>
    <mut:QualifierValueIncrement name="aqName03" value="1"/>
    <mut:QualifierValueDecrement name="aqName05" value="2"/>
    <mut:QualifierValueExpression name="aqName06">
      <mut:Expression language="JavaScript" version="1.5">a*value</mut:Expression>
      <!-- 'value' refers to the current value of the qualifier -->
      <mut:EvaluationArgument name="a" value="5"/>
    </mut:QualifierValueExpression>
  </mut:PutQualifier>
  <mut:PutQualifier updateId="2">
    <gis:UniqueQualifier>
      <gis:Qualifier name="stbId"
        value="111111111111111"></gis:Qualifier>
    </gis:UniqueQualifier>
    <mut:QualifierValue name="aqName03" value="123"/>
    <mut:QualifierValue name="aqName04" value="aqValue234"/>
  </mut:PutQualifier>
  <mut:PutQualifier updateId="3">
    <gis:UniqueQualifier>
      <gis:Qualifier name="stbId"
        value="111111111111112"></gis:Qualifier>
    </gis:UniqueQualifier>
    <mut:QualifierValue name="aqName03" value="456"/>
  </mut:PutQualifier>
</SISMutableOperationRequest>

```

Example 21. SISMutableOperationRequest Message (synchronous)

Example 22 contains an example of SISMutableOperationResponse message. The response in this example is for a successful operation.

```
<SISMutableOperationResponse messageId="sca-345"
  system="SISServer" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311"
  messageRef="acs-350">
  <core:StatusCode class="0"/>
</SISMutableOperationResponse>
```

Example 22. SISMutableOperationResponse Message

Example 23 contains an example of SISMutableOperationRequest message. The operation in this example is executed asynchronously.

```
<SISMutableOperationRequest messageId="acs-351"
  system="SISClient" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>
  <core:Callout>
    <core:Address type="SOAP 1.1">http://10.250.30.21/SISClient</core:Address>
  </core:Callout>
  <mut:PutQualifier updateId="1">
    <gis:UniqueQualifier>
      <gis:Qualifier name="stbId" value="1111111111111111"/>
    </gis:UniqueQualifier>
    <mut:QualifierValueIncrement name="aqName03" value="1"/>
    <mut:QualifierValueDecrement name="aqName05" value="2"/>
  </mut:PutQualifier>
  <mut:PutQualifier updateId="2">
    <gis:UniqueQualifier>
      <gis:Qualifier name="stbId" value="1111111111111111"/>
    </gis:UniqueQualifier>
    <mut:QualifierValue name="aqName03" value="100"/>
    <mut:QualifierValue name="aqName04" value="aqValue234"/>
  </mut:PutQualifier>
</SISMutableOperationRequest>
```

Example 23. SISMutableOperationRequest Message (asynchronous)

Upon receipt of an asynchronous request a logical service replies with a response that in most cases will be a successful response and will look like Example 22. After the operation completes, the logical service will send a mutable operation notification message. Example 24 contains an example of SISMutableOperationNotification message:

```

<SISMutableOperationNotification messageId="sca-346"
  system="SISServer" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311"
  messageRef="acs-351">
  <core:StatusCode class="1"/>
  <mut:UpdateError updateIdRef="2">
    <core:StatusCode class="1">
      <core:Note>This update failed.</core:Note>
    </core:StatusCode>
  </mut:UpdateError>
</SISMutableOperationNotification>

```

Example 24. SISMutableOperationNotification Message

Upon receipt of the SISMutableOperationNotification message the Consumer will respond with a SISMutableOperationAcknowledgement message.

Example 25 contains an example of SISMutableOperationAcknowledgement message.

```

<SISMutableOperationAcknowledgement messageId="acs-352"
  system="SISClient" messageRef="sca-346"
  version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <core:StatusCode class="0"/>
</SISMutableOperationAcknowledgement>

```

Example 25. SISMutableOperationAcknowledgement Message

D.4 Batch Mutable Operation

Example 26 contains an example of SISBatchCreateRequest message.

```

<SISBatchCreateRequest messageId="acs-360"
  system="SISClient" version="1.0"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>
  <core:Callout>
    <core:Address type="SOAP 1.1">http://10.250.30.21/SISClient</core:Address>
  </core:Callout>
</SISBatchCreateRequest>

```

Example 26. SISBatchCreateRequest Message

Example 27 contains an example of BatchCreateResponse message.

```
<SISBatchCreateResponse messageId="sac-348"
  system="SISServer" version="1.0" messageRef="acs-360"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <core:StatusCode class="0"/>
  <mut:Batch batchId="1234"/>
</SISBatchCreateResponse>
```

Example 27. SISBatchCreateResponse Message

Example 28 contains an example of SISBatchItemRequest message.

```
<SISBatchItemRequest messageId="acs-361" system="SISClient" version="1.0"
  batchIdRef="1234"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <mut:PutQualifier updateId="1">
    <gis:UniqueQualifier>
      <gis:Qualifier name="stbId" value="1111111111111111"/>
    </gis:UniqueQualifier>
    <mut:QualifierValueIncrement name="aqName03" value="1"/>
    <mut:QualifierValueDecrement name="aqName05" value="2"/>
  </mut:PutQualifier>
  <mut:PutQualifier updateId="2">
    <gis:UniqueQualifier>
      <gis:Qualifier name="stbId" value="1111111111111111"/>
    </gis:UniqueQualifier>
    <mut:QualifierValue name="aqName03" value="100"/>
    <mut:QualifierValue name="aqName04" value="aqValue234"/>
  </mut:PutQualifier>
</SISBatchItemRequest>
```

Example 28. SISBatchItemRequest Message

Example 29 contains an example of SISBatchItemResponse message.

```
<SISBatchItemResponse messageId="sac-350" system="SISServer" version="1.0"
  messageRef="acs-361"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <core:StatusCode class="0"/>
</SISBatchItemResponse>
```

Example 29. SISBatchItemResponse Message

Example 30 contains an example of SISBatchOperationRequest message.

```
<SISBatchOperationRequest messageId="acs-362" system="SISClient" version="1.0"
  batchIdRef="1234"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <mut:ExecuteBatch transactionLevel="message"/>
</SISBatchOperationRequest>
```

Example 30. SISBatchOperationRequest Message

Example 31 contains an example of SISBatchOperationResponse message.

```
<SISBatchOperationResponse messageId="sac-365" system="SISServer" version="1.0"
  messageRef="acs-362"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311"
  batchIdRef="1234">
  <core:StatusCode class="5"/>
  <mut:UpdateError updateIdRef="1">
    <core:StatusCode class="1"></core:StatusCode>
  </mut:UpdateError>
</SISBatchOperationResponse>
```

Example 31. SISBatchOperationResponse Message

Example 32 contains an example of SISBatchNotification message.

```
<SISBatchNotification messageId="sac-360" system="SISServer" version="1.0"
  batchIdRef="1234"
  identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <core:StatusCode class="5">
    <core:Note>Batch was cancelled</core:Note>
  </core:StatusCode>
</SISBatchNotification>
```

Example 32. SISBatchNotification Message

Example 33 contains an example of SISBatchNotificationAcknowledgement message.

```

<SISBatchNotificationAcknowledgement messageId="acs-370" system="SISClient"
    messageRef="sac-360" version="1.0"
    identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <core:StatusCode class="0"/>
</SISBatchNotificationAcknowledgement>

```

Example 33. SISBatchNotificationAcknowledgement Message

D.5 Data Model Description Notification

In order to receive notifications on data model description changes, a Consumer needs to register a notification containing the DataModelDescriptionQuery element. The following is an example of such a notification registration.

```

<sis:SISNotificationRegistrationRequest messageId="acs-380" system="SISClient"
    version="1.0"
    identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <core:Callout>
    <core:Address type="SOAP 1.1">http://10.250.30.21/SISClient</core:Address>
  </core:Callout>
  <mut:DataModelDescriptionQuery queryId="123">
    <gis:ServiceDataModel>http://SuperDemographics.com</gis:ServiceDataModel>
  </mut:DataModelDescriptionQuery>
</sis:SISNotificationRegistrationRequest>

```

Example 34. SISNotificationRegistrationRequest Message

The following is an example of SISNotification message.

```

<sis:SISNotification messageId="sac-365" system="SISServer" version="1.0"
    noticeType="update"
    identity="40DA910E-01AF-5050-C7EA-5D7B4A475311">
  <gis:QueryResult resultSetSize="1" queryRef="123">
    <mut:DataModelDescriptionQueryResult isChanged="true"/>
  </gis:QueryResult>
</sis:SISNotification>

```

Example 35. SISNotification Message

13.0 SCHEMA CHANGES

The Mutable SIS introduces a new schema with new elements and types. A logical service implementing the Mutable SIS *shall* include the new Mutable SIS schema along with the SIS schema.

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