A.2.4 Data quality information

A.2.4.1 General

Figure A.4 defines the metadata required to give a general assessment of the quality of a resource. The data dictionary for this diagram is located in B.2.4.

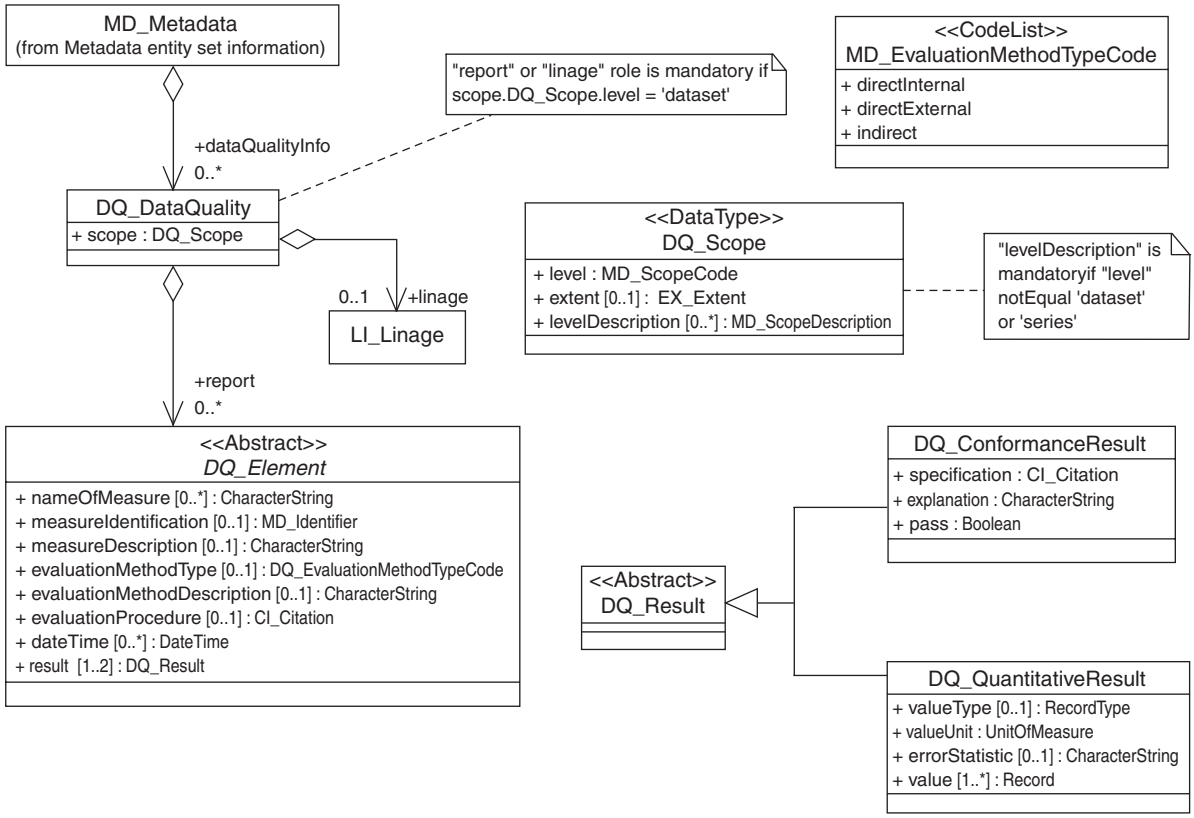

Figure A.4 — Data quality information

A.2.4.2 Lineage information

Figure A.5 defines metadata required to describe the sources and production processes used in producing a dataset. The data dictionary for this diagram is located in B.2.4.2.

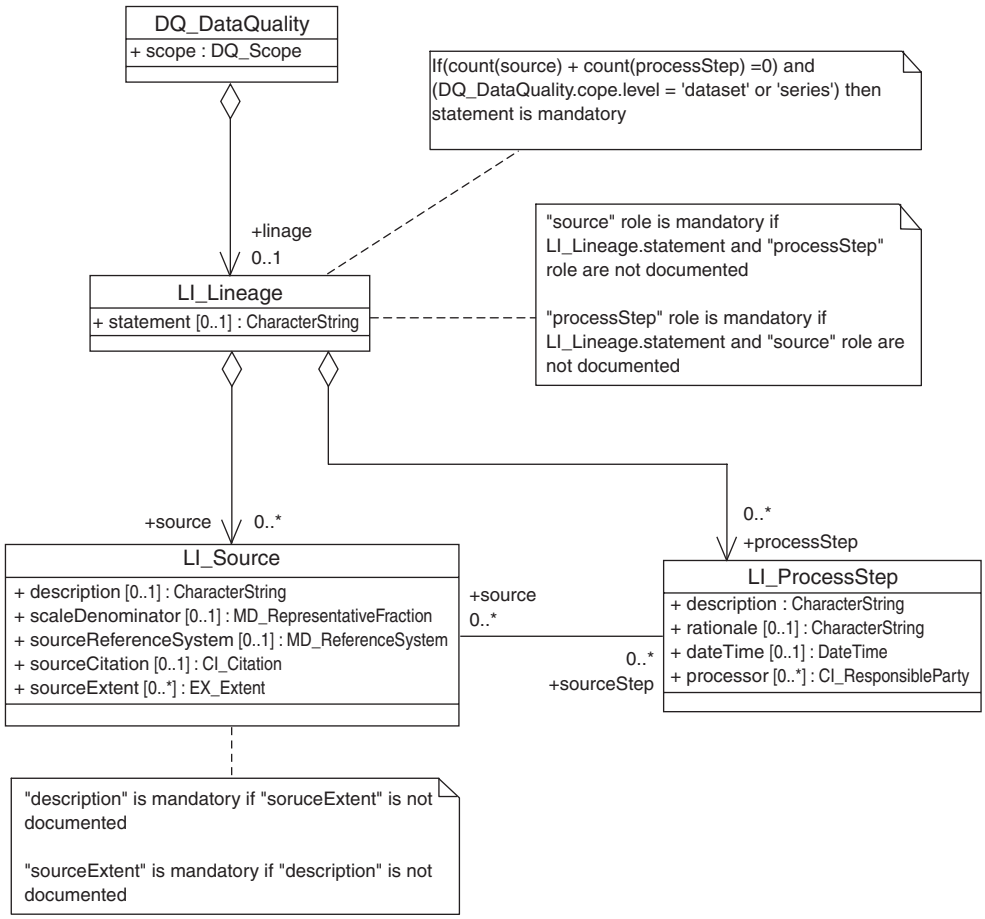

Figure A.5 — Lineage information

A.2.4.3 Data quality classes and subclasses

Figure A.6 defines the classes and subclasses of data quality used in the data quality diagram. The data dictionary for this diagram is located in B.2.4.3.

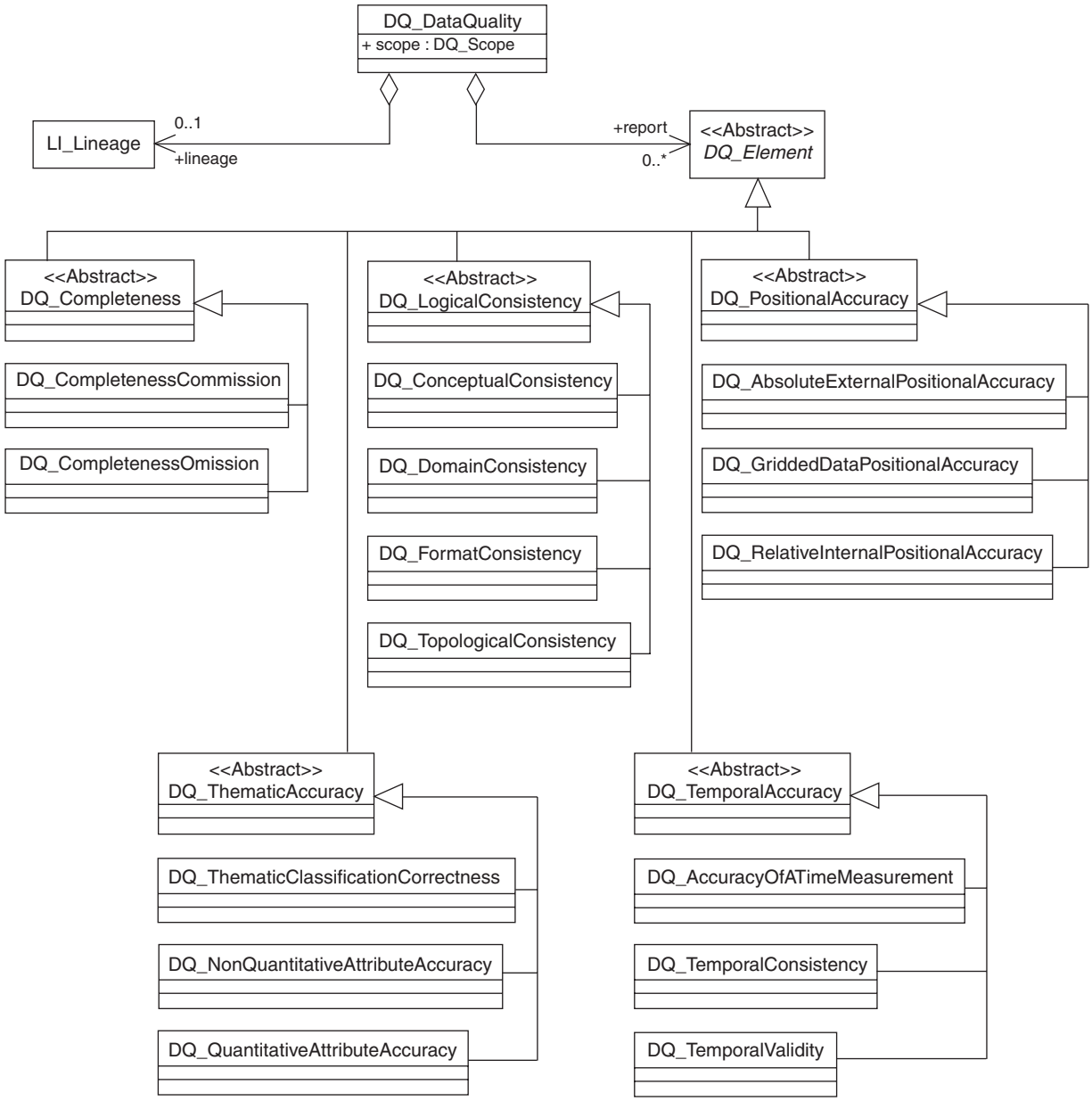

Figure A.6 — Data quality classes and subclasses

Annex B
(normative)

Data dictionary for geographic metadata

B.1 Data dictionary overview

B.1.1 Introduction

This data dictionary describes the characteristics of the metadata defined in Clause 6 and Annex A. The dictionary is specified in a hierarchy to establish relationships and an organization for the information. The dictionary is categorised into sections by UML model package diagram: Metadata Entity Set, Identification, Resource Constraints, Data Quality, Maintenance, Spatial Representation, Reference System, Content, Portrayal Catalogue, Distribution, Metadata Extension, Application Schema, Extent, Citation and Responsible Party and Metadata Application. The clause titles of several of the tables have been expanded to reflect class specification within the respective diagram. Each model diagram from Annex A has a section within the data dictionary. Each UML model class equates to a data dictionary entity. Each UML model class attribute equates to a data dictionary element. The shaded rows define entities. The entities and elements within the data dictionary are defined by seven attributes (those attributes are listed below and are based on those specified in ISO/IEC 11179-3 for the description of data element concepts, i.e. data elements without representation). The term “dataset” when used as part of a definition is synonymous with all types of geographic data resources (aggregations of datasets, individual features and the various classes that compose a feature).

B.1.2 Name/role name

A label assigned to a metadata entity or to a metadata element. Metadata entity names start with an upper case letter. Spaces do not appear in a metadata entity name. Instead, multiple words are concatenated, with each new subword starting with a capital letter (example: XnnnYmmm). Metadata entity names are unique within the entire data dictionary of this International Standard. Metadata element names are unique within a metadata entity, not the entire data dictionary of this International Standard. Metadata element names are made unique, within an application, by the combination of the metadata entity and metadata element names (example: MD_Metadata.characterSet). Role names are used to identify metadata abstract model associations and are preceded by “Role name:” to distinguish them from other metadata elements. Names and role names may be in a language other than that used in this International Standard.

B.1.3 Short name and domain code

Those classes that are not CodeList or Enumeration stereotypes are provided with a Short Name for each element. These short names are unique within this International Standard and may be used with the Extensible MarkUp Language (XML) and ISO 8879 (SGML) or other similar implementation techniques. A naming convention similar to that used to create the longer entity and element names was used to create the short names.

NOTE Implementation using SGML and XML is not mandatory; other implementation methods may be accommodated. For CodeList and Enumeration stereotypes, a code is provided for each possible selection. These domain codes are numerical, unique within the codelist and 3 digits long. Row one of each CodeList and Enumeration contains an alphabetic short name, described above, as row one is the name of the CodeList or Enumeration.

B.1.4 Definition

The metadata entity/element description.

B.1.5 Obligation/Condition

B.1.5.1 General

This is a descriptor indicating whether a metadata entity or metadata element shall always be documented in the metadata or sometimes be documented (i.e. contains value(s)). This descriptor may have the following values: M (mandatory), C (conditional), or O (optional).

B.1.5.2 Mandatory (M):

The metadata entity or metadata element shall be documented.

B.1.5.3 Conditional (C):

Specifies an electronically manageable condition under which at least one metadata entity or a metadata element is mandatory. 'Conditional' is used for one of the three following possibilities:

— Expressing a choice between two or more options. At least one option is mandatory and must be documented.

— Documenting a metadata entity or a metadata element if another element has been documented.

— Documenting a metadata element if a specific value for another metadata element has been documented. To facilitate reading by humans, the specific value is used in plain text (ex. table in Clause B.2, row 3 "C/not defined by encoding?"). However, the code shall be used to verify the condition in an electronical user interface.

If the answer to the condition is positive, then the metadata entity or the metadata element shall be mandatory.

B.1.5.4 Optional (O):

The metadata entity or the metadata element may be documented or may not be documented. Optional metadata entities and optional metadata elements have been defined to provide a guide to those looking to fully document their data. (Use of this common set of defined elements will help promote interoperability among geographic data users and producers world-wide.) If an optional entity is not used, the elements contained within that entity (including mandatory elements) will also not be used. Optional entities may have mandatory elements; those elements only become mandatory if the optional entity is used.

B.1.6 Maximum occurrence

Specifies the maximum number of instances the metadata entity or the metadata element may have. Single occurrences are shown by "1"; repeating occurrences are represented by "N". Fixed number occurrences other than one are allowed, and will be represented by the corresponding number (i.e. "2", "3"…etc).

B.1.7 Data type

Specifies a set of distinct values for representing the metadata elements; for example, integer, real, string, DateTime, and Boolean. The data type attribute is also used to define metadata entities, stereotypes, and metadata associations.

NOTE Data types are defined in ISO/TS 19103, 6.5.2.

B.1.8 Domain

For an entity, the domain indicates the line numbers covered by that entity.

For a metadata element, the domain specifies the values allowed or the use of free text. “Free text” indicates that no restrictions are placed on the content of the field. Integer-based codes shall be used to represent values for domains containing codelists.

B.2.4 Data quality information

B.2.4.1 General

- UML model shown in Figures A.4, A.5 (Lineage) and A.6 (Data quality classes and subclasses)

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
78.	DQ_DataQuality	DataQual	quality information for the data specified by a data quality scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (MD_Metadata)	Lines 79-81
79.	scope	dqScope	the specific data to which the data quality information applies	M	1	Class	DQ_Scope <<DataType>> (B.2.4.5)
80.	*Role name:* report	dqReport	quantitative quality information for the data specified by the scope	C / lineage not provided?	N	Association	DQ_Element <<Abstract>> (B.2.4.3)
81.	*Role name:* lineage	dataLineage	non-quantitative quality information about the lineage of the data specified by the scope	C / report not provided?	1	Association	LI_Lineage (B.2.4.2)

B.2.4.2 Lineage information

B.2.4.2.1 General

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
82.	LI_Lineage	Lineage	information about the events or source data used in constructing the data specified by the scope or lack of knowledge about lineage	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (DQ_DataQuality)	Lines 83-85

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
83.	statement	statement	general explanation of the data producer's knowledge about the lineage of a dataset	C / (DQ_DataQuality.scope.DQ_Scope.level = "dataset" or "series")?	1	CharacterString	Free text
84.	*Role name:* processStep	prcStep	information about events in the life of a dataset specified by the scope	C / mandatory if statement and source not provided?	N	Association	LI_ProcessStep (B.2.4.2.2)
85.	*Role name:* source	dataSource	information about the source data used in creating the data specified by the scope	C / mandatory if statement and processStep not provided?	N	Association	LI_Source (B.2.4.2.3)

B.2.4.2.2 Process step information

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
86.	LI_ProcessStep	PrcessStep	information about an event or transformation in the life of a dataset including the process used to maintain the dataset	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (LI_Lineage and LI_Source)	Lines 87-91
87.	description	stepDesc	description of the event, including related parameters or tolerances	M	1	CharacterString	Free Text
88.	rationale	stepRat	requirement or purpose for the process step	O	1	CharacterString	Free Text
89.	dateTime	stepDateTm	date and time or range of date and time on or over which the process step occurred	O	1	Class	DateTime (B.4.2)
90.	processor	stepProc	identification of, and means of communication with, person(s) and organization(s) associated with the process step	O	N	Class	CI_ResponsibleParty <<DataType>> (B.3.2)

91.	*Role name:* source	stepSrc	information about the source data used in creating the data specified by the scope	O	N	Association	LI_Source (B.2.4.2.3)

B.2.4.2.3 Source information

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
92.	LI_Source	Source	information about the source data used in creating the data specified by the scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (LI_Lineage and LI_ProcessStep)	Lines 93-98
93.	description	srcDesc	detailed description of the level of the source data	C / sourceExtent not provided?	1	CharacterString	Free Text
94.	scaleDenominator	srcScale	denominator of the representative fraction on a source map	O	1	Class	MD_RepresentativeFraction <<DataType>> (B.2.2.4)
95.	sourceReferenceSystem	srcRefSys	spatial reference system used by the source data	O	1	Class	MD_ReferenceSystem (B.2.7)
96.	sourceCitation	srcCitatn	recommended reference to be used for the source data	O	1	Class	CI_Citation <<DataType>> (B.3.2)
97.	sourceExtent	srcExt	information about the spatial, vertical and temporal extent of the source data	C / description not provided?	N	Class	EX_Extent <<DataType>> (B.3.1)
98.	*Role name:* sourceStep	srcStep	information about an event in the creation process for the source data	O	N	Association	LI_ProcessStep (B.2.4.2.2)

B.2.4.3 Data quality element information

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
99.	*DQ_Element*	DQElement	aspect of quantitative quality information	Use obligation from referencing object	Use maximum occurrence from referencing object	Aggregated Class (DQ_DataQuality) <<Abstract>>	Lines 100-107
100.	nameOfMeasure	measName	name of the test applied to the data	O	N	CharacterString	Free text
101.	measureIdentification	measId	code identifying a registered standard procedure	O	1	Class	MD_Identifier <<DataType>> (B.2.7.3)
102.	measureDescription	measDesc	description of the measure	O	1	CharacterString	Free text
103.	evaluationMethodType	evalMethType	type of method used to evaluate quality of the dataset	O	1	Class	DQ_EvaluationMethodType Code <<CodeList>> (B.5.6)
104.	evaluationMethodDescription	evalMethDesc	description of the evaluation method	O	1	CharacterString	Free text
105.	evaluationProcedure	evalProc	reference to the procedure information	O	1	Class	CI_Citation <<DataType>> (B.3.2)
106.	dateTime	measDateTm	date or range of dates on which a data quality measure was applied	O	N	Class	DateTime (B.4.2)
107.	result	measResult	value (or set of values) obtained from applying a data quality measure or the outcome of evaluating the obtained value (or set of values) against a specified acceptable conformance quality level	M	2	Class	DQ_Result <<Abstract>> (B.2.4.4)
108.	DQ_Completeness	DQComplete	presence and absence of features, their attributes and their relationships	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Element) <<Abstract>>	Lines 100-107

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
109.	DQ_Completeness Commission	DQCompComm	excess data present in the dataset, as described by the scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Completeness)	Lines 100-107
110.	DQ_CompletenessOmission	DQCompOm	data absent from the dataset, as described by the scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Completeness)	Lines 100-107
111.	DQ_LogicalConsistency	DQLogConsis	degree of adherence to logical rules of data structure, attribution and relationships (data structure can be conceptual, logical or physical)	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Element) <<Abstract>>	Lines 100-107
112.	DQ_ConceptualConsistency	DQConcConsis	adherence to rules of the conceptual schema	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Logical Consistency)	Lines 100-107
113.	DQ_DomainConsistency	DQDomConsis	adherence of values to the value domains	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Logical Consistency)	Lines 100-107
114.	DQ_FormatConsistency	DQFormConsis	degree to which data is stored in accordance with the physical structure of the dataset, as described by the scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Logical Consistency)	Lines 100-107

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
115.	DQ_TopologicalConsistency	DQTopConsis	correctness of the explicitly encoded topological characteristics of the dataset as described by the scope	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Logical Consistency)	Lines 100-107
116.	DQ_PositionalAccuracy	DQPosAcc	accuracy of the position of features	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Element) <<Abstract>>	Lines 100-107
117.	DQ_AbsoluteExternal PositionalAccuracy	DQAbsExtPosAcc	closeness of reported coordinate values to values accepted as or being true	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Positional Accuracy)	Lines 100-107
118.	DQ_GriddedDataPositional Accuracy	DQGridDataPosAcc	closeness of gridded data position values to values accepted as or being true	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Positional Accuracy)	Lines 100-107
119.	DQ_RelativeInternalPositional Accuracy	DQRelIntPosAcc	closeness of the relative positions of features in the scope to their respective relative positions accepted as or being true	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Positional Accuracy)	Lines 100-107
120.	DQ_TemporalAccuracy	DQTempAcc	accuracy of the temporal attributes and temporal relationships of features	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Element) <<Abstract>>	Lines 100-107

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
121.	DQ_AccuracyOfATime Measurement	DQAccTime Meas	correctness of the temporal references of an item (reporting of error in time measurement)	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Temporal Accuracy)	Lines 100-107
122.	DQ_TemporalConsistency	DQTempConsis	correctness of ordered events or sequences, if reported	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Temporal Accuracy)	Lines 100-107
123.	DQ_TemporalValidity	DQTempValid	validity of data specified by the scope with respect to time	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Temporal Accuracy)	Lines 100-107
124.	DQ_ThematicAccuracy	DQThemAcc	accuracy of quantitative attributes and the correctness of non-quantitative attributes and of the classifications of features and their relationships	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Element) <<Abstract>>	Lines 100-107
125.	DQ_ThematicClassification Correctness	DQThemClass Cor	comparison of the classes assigned to features or their attributes to a universe of discourse	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Thematic Accuracy)	Lines 100-107
126.	DQ_NonQuantitativeAttribute Accuracy	DQNonQuanAtt Acc	accuracy of non-quantitative attributes	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Thematic Accuracy)	Lines 100-107

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
127.	DQ_QuantitativeAttribute Accuracy	DQQuanAttAcc	accuracy of quantitative attributes	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Thematic Accuracy)	Lines 100-107

B.2.4.4 Result information

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
128.	*DQ_Result*	Result	generalization of more specific result classes	Use obligation from referencing object	Use maximum occurrence from referencing object	Class <<Abstract>>	
129.	DQ_ConformanceResult	ConResult	Information about the outcome of evaluating the obtained value (or set of values) against a specified acceptable conformance quality level	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Result)	Lines 130-132
130.	specification	conSpec	citation of product specification or user requirement against which data is being evaluated	M	1	Class	CI_Citation <<DataType>> (B.3.2)
131.	explanation	conExpl	explanation of the meaning of conformance for this result	M	1	CharacterString	Free text
132.	pass	conPass	indication of the conformance result where 0 = fail and 1 = pass	M	1	Boolean	1 = yes 0 = no
133.	DQ_QuantitativeResult	QuanResult	the values or information about the value(s) (or set of values) obtained from applying a data quality measure	Use obligation from referencing object	Use maximum occurrence from referencing object	Specified Class (DQ_Result)	Lines 134-137

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
134.	valueType	quanValType	value type for reporting a data quality result	O	1	Class	RecordType <<Metaclass>> (B.4.3)
135.	valueUnit	quanValUnit	value unit for reporting a data quality result	M	1	Class	UnitOfMeasure (B.4.3)
136.	errorStatistic	errStat	statistical method used to determine the value	O	1	CharacterString	Free text
137.	value	quanVal	quantitative value or values, content determined by the evaluation procedure used	M	N	Class	Record (B.4.3)

B.2.4.5 Scope information

	Name / Role Name	Short Name	Definition	Obligation / Condition	Maximum occurrence	Data type	Domain
138.	DQ_Scope	DQScope	extent of characteristic(s) of the data for which quality information is reported	Use obligation from referencing object	Use maximum occurrence from referencing object	Class <<DataType>>	Lines 139-141
139.	level	scpLvl	hierarchical level of the data specified by the scope	M	1	Class	MD_ScopeCode <<CodeList>> (B.5.25)
140.	extent	scpExt	information about the horizontal, vertical and temporal extent of the data specified by the scope	O	1	Class	EX_Extent <<DataType>> (B.3.1)
141.	levelDescription	scpLvlDesc	detailed description about the level of the data specified by the scope	C / level not equal “dataset” or “series”?	N	Class	MD_ScopeDescription <<Union>> (B.2.5.2)