

## Annex B (normative)

### Contents of the ITS/TICS Data Registry and ITS/TICS Data Dictionaries: Meta attribute definitions

#### B.1 Introduction

The definitions for the meta attributes of the ITS/TICS Data Registry and ITS/TICS Data Dictionaries are given in this annex. Meta attributes in the identification category shall serve to identify data concepts from a number of perspectives, e.g., a unique data concept identifier, a unique ASN.1 name, a unique descriptive name, a URL. Meta attributes in the definitional category shall provide definitional information about a data concept. Relational meta attributes shall define relationships among data concepts. Representational meta attributes shall document the representation aspects of data concepts. Administrative meta attributes shall be used to present administrative information relating to data concepts.

See Annex C (Contents of the ITS/TICS Data Registry and ITS/TICS Data Dictionaries: Meta attribute requirements for data concepts) for requirements relating meta attributes to data concepts.

The names for the meta attributes defined in this annex are specific to the meta attribute definitions defined herein and are to be so defined solely within the context of Annex B and the related Annex C. The general use of such terms (e.g. Remarks) throughout the rest of the Standard is the common, less specific usage of the word.

The proposal and adoption of meta attribute definitions shall be a managed process. The Stewards and Data Registry Registrar shall bring to the attention of the ITS/TICS CCC instances where it appears that duplications of data concepts have been proposed.

**NOTE** These basic meta attributes may be represented in one or more (meta) data models to reflect more completely the relationships among the data. While selected meta attributes are based upon ASN.1 syntax for data representation, alternative (meta) data models may result in alternative syntax. Consequently, additional meta attributes to support other syntaxes (e.g. CORBA IDL, EDIFACT, XML Schema) may be added in future revisions and some existing mandatory attributes may become optional.

#### B.2 Identification meta attributes

##### B.2.1 Data concept identifier

**Definition:** An unambiguous unique identifier allocated, by the Registrar, to every data concept. For the ITS/TICS Data Registry, the Data Concept Identifier (DCI) shall be a INTEGER UNIQUE in accordance with ASN.1 specification depending on the Registrar. Alpha/alphanumeric/ASCII character strings shall not be acceptable.

**Description:** The value of this meta-attribute is automatically assigned for data concepts entered into the ITS/TICS Data Registry.

##### B.2.2 Data concept version

**Definition:** An integer reference to a revision or refinement of a data concept that does not change its semantic content, or, if appropriate, its representational form.

**Description:** Versions are established to record minor, non-semantic/representational changes to a data concept. Changes in the administrative meta attributes do not result in a version change. The value of this meta-attribute is automatically assigned for data concepts entered into the ITS/TICS Data Registry.

### B.2.3 Descriptive name

Definition: A descriptive word or group of words that labels a data concept. Descriptive names shall be constructed in accordance with requirements of Clause 9.

Description: Descriptive names represent the meaning of the data concept and facilitate semantic understanding.

### B.2.4 Synonymous descriptive names

Definition: Names assigned to a data concept that differ from its descriptive name, but represents the same data concept.

Description: The type of data concept specifies what “same” means. At a minimum, the data concepts must be semantically equivalent. For instance, two data element concepts may have differently worded definitions; but, if they are equivalent semantically, their names are synonymous. Data elements, on the other hand, must not only be semantically equivalent but they also must have identical value domains. For instance, two data elements representing a date as “Gregorian date” and “Julian date” are two different, but related, data elements. Synonymous descriptive names do not need to conform to the naming conventions in Clause 9.

NOTE Synonymous descriptive names should be introduced only where necessary. They may be of use, for instance, when the contents of several functional-area Data Dictionaries are synthesized into the ITS/TICS Data Registry, and the same data element (from the perspective of its semantics and value domains) occurs in more than one functional-area Data Dictionary, but with different descriptive names. It may be useful to choose one of these names (or a “neutral” name) as the primary descriptive name, and to show one or more of the other names as synonymous descriptive name(s).

### B.2.5 Symbolic names

Definition: The names for a data concept as used in application programs.

### B.2.6 ASN.1 name

Definition: The ASN.1 Name shall be the name of a data concept expressed as a valid “typereference” as defined in 11.2 of ISO/IEC 8824-1:1999. The ASN.1 name should be unique within the ITS/TICS community.

Description: The name of a data concept expressed in ASN.1 syntax.

NOTE Information on ASN.1 naming conventions and conversion from ITS/TICS Data Dictionary data element names to ASN.1 names can be found in Annex D.

### B.2.7 ASN.1 object identifier

Definition: A unique ASN.1 object identifier in accordance with ISO/IEC 8824-1.

Description: An OID that shall be assigned once to each specified data concept.

### B.2.8 Uniform resource locator

Definition: A Uniform Resource Locator (URL) is a representation of the location and access method for a resource available via the Internet.

Description: If data concept, which is subjected by URL, is not included in ITS/TICS Data Registry and/or Data Dictionary, the URL indicates location and access method of the data concept.

## B.3 Definitional meta attributes

### B.3.1 Definition

Definition: A statement in natural-language text that expresses the essential meaning of a data concept and assists humans in differentiating the data concept from all other data concepts.

### B.3.2 Descriptive name context

Definition: A designation of the ITS/TICS functional area within which the descriptive name is relevant.

Description: Legal values for this meta attribute are the names of the functional areas (subsystems) for the ITS/TICS architecture. Multiple descriptive name contexts are allowed.

### B.3.3 Symbolic name usage

Definition: The name(s) of the application(s) within which the data element symbolic name is used.

### B.3.4 Source

Definition: The source document or other reference that was used to develop the pertinent data concept.

Description: The source is a reference to the original document (e.g., white paper, architecture or standard) that defines the requirement for the data concept. For value domains the source shall be the standard that describes the concept (e.g. for most measurements the source is ISO 1000).

### B.3.5 Architecture reference

Definition: The name of one or more ITS/TICS Architecture “architecture flow”(s) with corresponding architecture source (subsystem or terminator) and architecture destination (subsystem or terminator) into which this data concept can be meaningfully categorized wholly or in part.

Description: For classification of data concepts, the legal values for Architecture Reference shall be the architecture flow names with corresponding source and destination given in a framework ITS/TICS Architecture, for example a published version of the *ITS/TICS Reference Architecture*.

In use for example, in a Data Registry data concept entry screen, the triple of architecture flow name, source name and destination name should be selected from a valid value list derived from the specified version of the framework ITS architecture. The list should be optionally sorted (as selected by the Data Steward or Submitter): source, destination, architecture flow name; or destination, source, architecture flow name; or architecture flow name, source, destination; or architecture flow name, destination, source.

Other schemes may be used in addition to this classification scheme (for instance, there might be another classification scheme based on treating the data concepts as objects in a communications context). For each Architecture Reference there shall be an Architecture Name and an Architecture Version for classification of the data concept to be complete.

### B.3.6 Architecture name

Definition: The designator (e.g., the title or number) of an ITS/TICS or other Architecture that contains the Architecture reference(s).

### B.3.7 Architecture version

Definition: The version number of an ITS/TICS or other Architecture that contains the Architecture reference(s).

### **B.3.8 Data concept type**

Definition: A categorization of the kind of data concept.

Description: Legal values for data concept type are:

- a) Object class
- b) Property
- c) Value domain
- d) Data element concept
- e) Data element
- f) Data frame
- g) Message
- h) Interface dialogue
- i) Association

### **B.3.9 Remarks**

Definition: Comments or other information pertinent to the data concept.

Description: This meta attribute is unconstrained as to its textual content.

### **B.3.10 Context**

Definition: Particular circumstances surrounding the data concept.

### **B.3.11 Standard**

Definition: The alphanumeric designation of the standard, or other reference, that defines and describes the data concept. Acronyms or identifiers may be used.

Description: The standard will nominally be the functional Data Dictionary standard that defines the data concept

### **B.3.12 Metadata source**

Definition: Indicates where the metadata resides that is used to describe and interpret the data concepts, the values of which comprise the Data Concept Instance data in the message.

The default source shall be "direct," which assumes the receiving system knows what all the data being sent means, based on the data elements all being specified in an ITS/TICS Data Dictionary and/or the ITS/TICS Data Registry.

"Indirect" means instances of the message contain data corresponding to at least some data elements not "directly" known to the receiving system, but which are specified in other (external to ISO/TC 204) systems in an compatible format. In this case, in the message specification the source of the metadata shall be specified for any data element not found in the ITS/TICS Data Dictionary and/or the ITS/TICS Data Registry. This shall be specified as a reference to some foreign source (for example, a Data Dictionary or registry that is not within the ITS/TICS community).

“Embedded” means that the message instances include, as part of their message, the metadata for any data elements which are not found in an ITS/TICS functional-area Data Dictionary and/or the ITS/TICS Data Registry, or which are not indirectly referenced in some foreign source. In this case, the metadata shall be specified in the message specification, if known at the time the specification is produced. In cases where the metadata is not known in advance (i.e., ad hoc messages, where the data and its metadata cannot be determined until the message instance is created), a placeholder (“embedded”) shall be specified for such data. The message instance must then contain an embedded specification of its data elements. How this is accomplished varies by message implementation environment, for example, a self-describing data system.

Description: The value of this meta attribute shall be specified as “direct/indirect/embedded,” with reference data or embedded metadata being specified, as appropriate.

EXAMPLE      Direct

### B.3.13 Priority

Definition: Indicates whether or not a message should receive priority treatment. If applicable, the priority scheme and/or the priority of the message may be specified.

NOTE 1      There may be one global ITS/TICS priority scheme applicable to all ITS/TICS “broadcast” messages. There may be others specific to particular messages or message groups. Knowledge of such schemes should be taken into account during message specification.

NOTE 2      Wireless messages might be good candidates for a “round robin” priority scheme whereby important messages are transmitted every time, and less important messages as time permits. The priority scheme in this case would be two-valued: urgent versus as time permits.

Description: Specify priority/no priority. If “priority,” this meta attribute may also be used to specify the priority scheme and/or the priority of the message. Default is no priority.

EXAMPLE

- Priority, urgent versus as time permits
- Priority, urgent/normal/low
- Priority, 1-10 (10 highest priority)
- No priority

### B.3.14 Frequency/message mode

Definition: Indicates the expected timing or rate of occurrence of an instance of this message. Additionally, indicates the message mode for periodic messages.

Description: Indicates whether a message instance is “periodic/event driven/user driven.” If periodic guidance may be provided by the message developers as to the frequency or range of frequencies. Multiple selections is allowed, for example “periodic and event driven.”

EXAMPLE

- Periodic, 20 seconds
- Event driven
- User driven

### B.3.15 Delivery verification

Definition: Indicates whether instances of this message shall/may require that delivery to the intended recipient be confirmed. May include retry criteria.

Description: If used, specify, “shall” or “may.” The message developers should provide guidance to the implementer as to how this meta attribute is to be used.

EXAMPLE

- Shall, critical for financial transactions, retry for four hours.
- Shall, attempt delivery while “Traffic\_incident” is true.

### B.3.16 Data quality

Definition: Indicates that data should have a data quality description.

Description: This meta attribute shall be used to specify the details of data quality for a data element. Multiple items may be required to describe data quality, with some items being qualitative (e.g., free text) and others quantitative. These items should be clearly defined so that data users can determine whether the data in question are of the required quality for the intended purpose.

EXAMPLE (for measured data such as sensor outputs)

- Performance in the time domain: measurement timing or cycle.
- Accuracy: number of significant digits, rate of error, or range of measurement.
- Data generation method: method of measurement, including instrument name.
- Reliability: Levels 1/2/3, where Level 1 indicates that data loss is not allowed at all, and that the data are used by services that have a heavy responsibility such as lifesaving; Level 2 indicates that lost data should be compensated appropriately, although some data loss is allowed; Level 3 indicates that some data loss is allowed.

## B.4 Relational meta attributes

### B.4.1 Modeling-related meta attributes

The first three relational meta attributes (Precursor, Successor, Synonym) are introduced to identify certain stereotype association relationships (extensions in the vocabulary of the UML) that operate at the meta level, i.e. they are used to define associations between data concepts, not between their instantiations. Any relationship may be described by the other meta attributes defined here. Refer to Figure B.1 for UML representation of among selected data concepts.

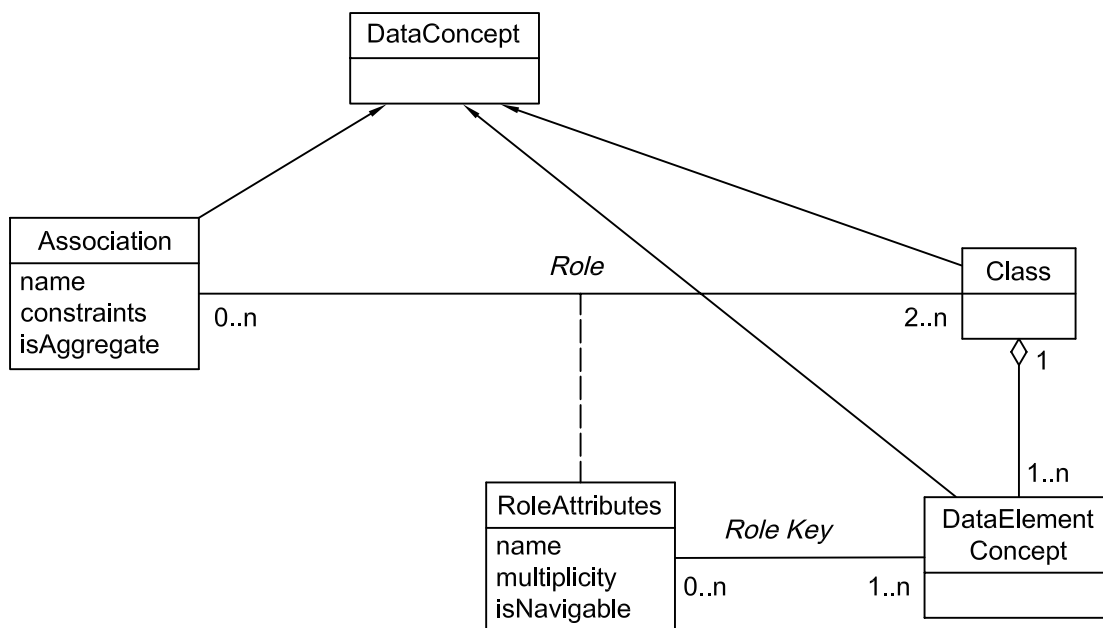


Figure B.1 — Meta attribute relationships

#### B.4.2 Precursor

Definition: A historical, semantically similar data concept, which this data concept has replaced or is replacing.

Description: Multiples allowed. Applies to all data concepts. This shall be the Descriptive Name of the data concept that has been replaced.

#### B.4.3 Successor

Definition: A newer, semantically similar data concept, which has replaced or is replacing this data concept.

Description: Multiples allowed. Applies to all data concepts. This shall be the Descriptive Name of the data concept that has replaced the data concept to which this meta-attribute applies.

#### B.4.4 Synonym

Definition: A semantically similar data concept

Description: Multiples Allowed. Applies to all data concepts. This shall be the Descriptive Name of the synonymous data concept.

#### B.4.5 Abstract

Definition: An indication (true or false) of whether the object class has member objects. Abstract object classes cannot be instantiated, but they may have non-abstract specializations.

Description. This meta attribute only applies to object classes. Must be defined once for each object class.

#### B.4.6 Roles

Definition: Identifies the object classes in an association and the “face name” that each object class presents to the other object class(es) involved in the association.

Description: “<object class[1] name>”, “<role[1] name>”, “<object class[2] name>”, “<role[2] name>”, ....

In the case of a generalization relationship, <role[1] name> = parent, <role[2] name> = child.

Applies only to the association data concept.

#### B.4.7 Multiplicity

Definition: The number of instances of the subject data concept that are associated with a given data concept

Description: A specification of the range of all allowable cardinalities a data concept may assume. Applies to object class and association.

#### B.4.8 Association Constraints

Definition: The constraints meta attribute identifies any special constraints placed on an association. These constraints include the following terms as defined in UML, and may consist of other terms deemed appropriate.

implicit - relationship is only conceptual

ordered - set of objects at one end of association are in an explicit order

changeable - links may be added, removed, and changed

addOnly - new links may be added from an object on the opposite end of the association

frozen - link may not be modified or deleted

xor - exactly one set for each associated object class

Description: Applies only to the association data concept.

#### B.4.9 Aggregate

Definition: Indicates whether the object class designates a “whole” in a “whole-part” association. If the value is false, the association is not a whole-part.

Description: A simple true or false. Applies only to the association data concept

NOTE Aggregation is a special kind of association in which one object class represents a larger thing (the “whole”) which consists of smaller things (the “parts”).

#### B.4.10 Role Key

Definition: The mechanism by which the role player object class in an association is identified as a specific instance of the subject object class.

Description: Shall be specified if the role is navigable. An ordered list of data elements defined the object class of the association. Applies only to the association data concept.

NOTE A role is the face that an object class presents to an object class at the other end of an association.

### **B.4.11 Referenced messages**

Definition: A set of messages which are employed in an interface dialogue.

Description: The messages shall be identified by using the ASN.1 object ID meta attribute for the related messages. Applies only to the interface dialogue data concept. Multiples allowed.

NOTE When ASN.1 encoding rules are applied, there is a guarantee that values of a message will be unambiguously transferred. When an interface dialogue needs to use a set of messages, unambiguity can be preserved by defining a single message which is a "CHOICE" of the messages in the set.

### **B.4.12 Referenced data frames**

Definition: A set of data frames which are involved in elaborating other data concepts such as information dialogue and messages. Multiples allowed.

Description: The data frames shall be identified by using their ASN.1 object ID meta attribute.

### **B.4.13 Referenced data elements**

Definition: A set of data elements which are involved in elaborating other data concepts such as data frame or message.

Description: The data elements shall be identified by using their ASN.1 object ID meta attribute. Multiples allowed.

### **B.4.14 Referenced object classes**

Definition: A set of object classes which are involved in elaborating other data concepts such as associations.

Description: The object classes shall be identified by using the ASN.1 object ID meta attribute. Multiples allowed.

### **B.4.15 Referenced associations**

Definition: A set of associations which are involved in elaborating an interface dialogue.

Description: The associations shall be identified by using their ASN.1 object ID meta attributes. Multiples allowed.

## **B.5 Representational meta attributes**

### **B.5.1 Data type**

Definition: The logical representation of the data concept as expressed as a valid data concept instance of an ASN.1 data type.

Description: The form of this meta attribute for messages, data frames, data elements and value domains is specified in the following sub-clauses.

#### **B.5.1.1 Description for messages**

The text of this meta-attribute shall consist of a complete and syntactically correct ASN.1 module definition. The module identifier for this module is provided by the definer of the module, and is not the same as the ASN.1 Object Identifier meta-attribute that identifies the registration entry. The module definition may contain IMPORT statements, but these shall reference only modules defined in the Data Registry as either data

elements or as data frames. It may contain multiple ASN.1 type definitions. The first type definition defines the message and shall be exported. Any other type definitions shall not be exported, and shall be referenced (directly or indirectly) by that first type definition. Within each type definition, only imported type references and the ASN.1 constructors “SEQUENCE”, “SEQUENCE OF” and “CHOICE” shall be used.

The contents of a message shall be specified by elaborating which data elements (including data frames composed of groups of data elements, and in some cases, other data concept types) are grouped or packaged into which messages, under what conditions and, where applicable, in what order. The instantiation of these data elements shall comprise the actual message for a message instance. The specifications shall be expressed in ASN.1 syntax as per ISO/IEC 8824-1 and ISO/IEC 8824-2. The specifications shall use only the data elements, data frames composed of data elements and in specifically predetermined cases other data concept types, specified in ITS/TICS Data Dictionaries. Exceptions are made for data elements found in external Data Dictionaries (handled indirectly, by reference), as well as those cases where metadata is embedded in the instance of the message (handled by noting that there will be embedded metadata).

Message specifications should use only data elements (which are low-level data concepts considered atomic in some context for some purpose) and data frames. However, more complex data structures can be specified in a message by building up groups of data elements using ASN.1 constructors. Commonly occurring sequences or other groupings of data elements may be handled through the use of the “data frame” data concept.

The packaging or grouping of data concepts (data elements, data frames, and/or other data concept types) into messages may involve specifying any or all of the following:

- The data concepts comprising the message, including their ordering or sequence, where applicable
- Repeatability of data concepts within a sequence, or of segments of sequences, comprising the message
- Optionally, default values and conditionality (i.e. dependency) among data concepts comprising the message.

Repeating sequences of data concepts are allowed as part of a message specification.

#### **B.5.1.2 Description for data frames**

The text of this meta-attribute shall consist of a complete and syntactically correct ASN.1 module definition. The module identifier for this module is provided by the definer of the module, and is not the same as the ASN.1 Object Identifier meta-attribute that identifies the registration entry. The module definition may contain IMPORT statements, but these shall reference only modules defined in the Data Registry as either data elements or as data frames. It shall contain a single ASN.1 type definition. This type definition defines the data frame and shall be exported. Within that type definition, only imported type references and the ASN.1 constructors “SEQUENCE”, “SEQUENCE OF” and “CHOICE” shall be used.

#### **B.5.1.3 Description for data elements**

The text of this meta-attribute shall consist of a complete and syntactically correct ASN.1 module definition. The module identifier for this module is provided by the definer of the module, and is not the same as the ASN.1 Object Identifier meta-attribute that identifies the registration entry. The module definition may contain IMPORT statements, but these shall reference only modules defined in the Data Registry as value domains. The module shall contain a single ASN.1 type definition. This type definition defines the data element and shall be exported. Within that type definition, only the ASN.1 constructors “SEQUENCE”, “SEQUENCE OF” and “CHOICE” shall be used, together with the “base ASN.1 types” defined below, possibly with a constraint applied to them or to uses of the “SEQUENCE OF” construction.

Within this context, the term “base ASN.1 type” shall mean one of the following data types, which are a subset of the ASN.1 types specified in ISO/IEC 8824-1. The data types are listed here with the formal definitions given in ISO/IEC 8824-1.

NOTE The following notation conforms to the rules as specified in ISO/IEC 8824-1:1998, Clause 5.

```

ITS-DD-Type ::=
ITS-DD-BuiltinType |
ITS-DD-ReferencedType |
ITS-DD-ConstrainedType

ITS-DD-BuiltinType ::=
BooleanType | -- see ISO/IEC 8824-1, Clause 17
IntegerType | -- see ISO/IEC 8824-1, Clause 18
EnumeratedType | -- see ISO/IEC 8824-1, Clause 19
RealType | -- see ISO/IEC 8824-1, Clause 20
BitStringType | -- see ISO/IEC 8824-1, Clause 21
OctetStringType | -- see ISO/IEC 8824-1, Clause 22
NullType | -- see ISO/IEC 8824-1, Clause 23
TaggedType | -- see ISO/IEC 8824-1, Clause 30
ObjectIdentifierType | -- see ISO/IEC 8824-1, Clause 31
BMPString | -- see ISO/IEC 8824-1, Clause 36
IA5String | -- see ISO/IEC 8824-1, Clause 36
NumericString | -- see ISO/IEC 8824-1, Clause 36
UTF8String | -- see ISO/IEC 8824-1, Clause 36

ITS-DD-ReferencedType ::=
typereference | -- see ISO/IEC 8824-1, Clause 11.2
Externaltypereference | -- see ISO/IEC 8824-1, Clause 13.4
GeneralizedTime | -- see ISO/IEC 8824-1, Clause 41
ObjectDescriptor | -- see ISO/IEC 8824-1, Clause 43

ITS-DD-ConstrainedType ::=
ITS-DD-Type Constraint | -- see ISO/IEC 8824-1, Clause 44.5
| -- for definition of constraint

```

If the Type is a “typereference” or “Externaltypereference,” the typereference shall be the ASN.1 Name of a defined Reference value domain.

Fixed point decimal may be represented by an integer type if the definition meta attribute indicates the offset of the decimal.

Floating point decimal may be derived from real type.

UTF8String shall be used for the character string type in the case of international information exchange. BMPString and IA5String may be used in regional/country Data Registry/Data Dictionary.

BMPString type and IA5String type are subsets of UTF8String type. Use of constraints to restrict the alphabets of BMPString (for Unicode) and IA5String (for ASCII) may result in more efficient encoding than use of UTF8String, while if no constraint is present UTF8String may result in more efficient encoding than BMPString.

Permissible ranges of values, lists of values for enumerated types, or rules for determining valid values for the value domains of data elements shall be specified for the data elements as part of the metadata about them in an ITS/TICS functional-area Data Dictionary and/or the ITS/TICS Data Registry as well as being present in the ASN.1 module definition.

Data types and size-related constraints shall be specified for the data elements as part of the metadata about them in an ITS/TICS functional-area Data Dictionary and/or the ITS/TICS Data Registry. Placing limits on the size of integers, the length of strings, and the number of iterations in a SEQUENCE OF, typically with an extension marker to allow for expansion in a later version, are likely to result in more efficient bits-on-the-line.

Any metadata related to data elements in a message specification that is in addition to the information in an ITS/TICS functional-area Data Dictionary and/or the ITS/TICS Data Registry should be maintained in coordination with the Data Dictionary and/or registry to ensure consistency.

NOTE Submitters of version 1 ASN.1 definitions are strongly encouraged to provide extension markers where appropriate. For example, in an element “vehicle-type ENUMERATED {unknown, car, heavy-goods-vehicle, public-service-vehicle, ...} the ellipsis should certainly be included to indicate possible additions in version 2.

#### **B.5.1.4 Description for value domains**

The text of this meta-attribute shall consist of a complete and syntactically correct ASN.1 module definition. The module identifier for this module is provided by the definer of the module, and is not the same as the ASN.1 Module Identifier meta-attribute that identifies the registration entry. The module definition shall not contain an IMPORT statement. The module shall contain a single ASN.1 type definition. This type definition defines the value domain and shall be exported. Within that type definition, only the ASN.1 constructors "SEQUENCE", "SEQUENCE OF" and "CHOICE" shall be used, together with the "base ASN.1 types" defined in B.5.1.3, possibly with a constraint applied to them or to uses of the "SEQUENCE OF" construction.

The definition of a value domain differs from the definition of a data element only in that the semantics associated with the different values may be absent, and provided when the value domain is used in the definition of a data element.

#### **B.5.2 Format**

Definition: A natural language description of the logical layout of the data concept in relation to interchange of data. The format meta attribute shall not be interpreted to override the restrictions in either the data type or valid value rule meta attribute.

Description: The specific layout depends upon the data type of the value domain.

#### **B.5.3 Unit of measure**

Definition: Units shall be defined in accordance with ISO 1000. For units of enumeration, such as equipment or units of issue the standard measure shall be defined using this meta attribute.

Description: Indicates the appropriate measurement framework (i.e., approved names for standard measures of extent, quantity, amount, distance, dimensions, capacity, etc.) for the measurement numbers associated with a data concept.

#### **B.5.4 Valid value rule**

Definition: A natural language text definition of the rule(s) by which permissible legal instances of a data element or a value domain are identified. In no case shall the valid Value Rule allow values that are not in accordance with the Data Type meta attribute.

Description: While the precise abstract data exchange format is defined by the Data Type meta attribute, a valid value rule may be used to further constrain valid values (e.g., due to relationships to other data concepts) or to provide a natural language text definition of the data format.

### **B.6 Administrative meta attributes**

#### **B.6.1 Registration status**

Definition: An administrative or qualitative level assigned to a data concept according to its status in a qualitative hierarchy (or interim administrative status in between qualitative levels).

Description: Legal values for the qualitative registration status levels are Card, Draft, Recorded, Qualified, and Preferred.. Legal values for the administrative registration status levels are Provisionally Qualified, Provisionally Preferred and Retired.

#### **B.6.2 Date registered**

Definition: The date that a data concept is initially entered into the ITS/TICS Data Registry, regardless of its registration status at the time it was entered.

Description: The value of this meta attribute is assigned automatically by the ITS/TICS Data Registry.

### **B.6.3 Last change date**

Definition: The date that the last version of the data concept was recorded in the ITS/TICS Data Registry.

Description: The value of this meta attribute is assigned automatically by the ITS/TICS Data Registry.

### **B.6.4 Last change user**

Definition: The access name of the person who made the last change to the data concept.

Description: The value of this meta attribute is assigned automatically by the ITS/TICS Data Registry.

### **B.6.5 Registrar organization name**

Definition: The reference to the authority under which the data concept was registered.

Description: When a functional-area Data Dictionary reuses a data concept from a foreign Data Dictionary, the source authority for the external data concept is recorded in this meta attribute, otherwise the ITS/TICS registration authority is recorded.

### **B.6.6 Registrar phone number**

Definition: The telephone number [country code, city code, area code, exchange number, telephone number, extension number] of the authorized registrar.

Description: When a functional-area Data Dictionary reuses a data concept from a foreign Data Dictionary, the source authority for the foreign data concept is recorded in this meta attribute, otherwise the ITS/TICS registration authority is recorded.

### **B.6.7 Steward organization name**

Definition: A reference to the authority having responsibility for a data concept.

Description: This is the organization assigned responsibility for managing data concepts within a defined data subject area.

### **B.6.8 Steward phone number**

Definition: The telephone number [country code, city code, area code, exchange number, telephone number, extension number] of the authorized data steward.

### **B.6.9 Submitter organization name**

Definition: A reference to the authority having responsibility for submitting a data concept proposal for registration.

Description: This is the organization assigned responsibility for identifying, documenting, and proposing data concepts for registration.

### **B.6.10 Submitter phone number**

Definition: The telephone number [country code, city code, area code, exchange number, telephone number, extension number] of the responsible submitter organization.

### **B.6.11 User**

Definition: An access name of a person who is authorized read-only access to the Data Dictionary or Data Registry.

Description: The values of this meta attribute are maintained via a controlled word list of authorized users.

### **B.6.12 View**

Definition: A logical grouping of the Data Dictionary or Data Registry contents by data subject area, functional area, standard, application, application, or other demarcation.

### **B.6.13 Related groups**

Definition: A designation of the ITS/TICS data stewards that may be impacted by changes to a given data concept.

### **B.6.14 Security class**

Definition: A level of degree of protection of information against unauthorized access, associated with a data concept.

Description: Such protection relates to the degree of access permissible for a data concept.

NOTE Most security issues are envisioned as being specific to the use of a data element within an application context, but if there are general security criteria pertinent to a data element or other data concept, such as read/write/update rights..

EXAMPLE Personal privacy issues, proprietary data, financial data, etc.