EPA United States Environmental Protection Agency


# XML Design Rules and Conventions for the Environmental Information Exchange Network

Environmental Information exchange Network

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# Contents

# Introduction and Background

This guide establishes design rules and guidelines for the creation and use of the Extensible Markup Language (XML) for joint use by the U.S. Environmental Protection Agency (EPA) and its state partners. The EPA and the states are working together to establish the nationwide Environmental Information Exchange Network (referred to herein as the Exchange Network or Network) that will use XML as the primary format for data exchange.

## W3C Specifications

The Exchange Network partners have selected the W3C suite of XML technical specifications as the basis for its XML program. All design rules contained in this document are intended to optimize the various facets of these specifications to ensure interoperability among the various components. Although more elegant solutions may exist for certain projects within particular programs, they are not always in the best interests of enterprise-wide solutions.

The guide provides Exchange Network participants with a structure for implementing XML in all of their information resources efforts. This structure is intended to ensure that XML implementation enhances the Exchange Network's information management (IM) interoperability. Because the purpose is to provide concise and consolidated XML design rules, the guide is limited to the XML implementation domain as a subset of the Network's overall IM effort.

As partners continue to modernize their IM systems, consistency in solutions across both partners and program information exchanges becomes increasingly important. Accordingly, it is necessary and critical for all developers to adhere to these standards as written, so as to achieve the agency's stated interoperability goals.

## SCOPE AND AUDIENCE

This guide applies to automated and manual systems developed for programs or administrative purposes. The requirements of this guide apply to existing XML implementations as well as to new XML implementations.

The audience for this guide includes Exchange Network policymakers, schema developers, XML instance authors, and XML application integrators. This guide applies to all Exchange Network organizations and their employees. It also applies to the facilities and personnel of agents (including contractors and grantees) who are involved in XML-related information resource activities.

# AUTHORITIES

Numerous federal laws, regulations, and policies prescribe, recommend, or suggest policies, procedures, and reporting requirements for using information management standards like XML in all federal agencies. This guide refers to specific laws, regulations, and policies where appropriate.

# ROLE OF XML IN ENVIRONMENTAL DATA MANAGEMENT

By its very nature, XML is extensible, because the XML technical specifications provide syntax rules, not precise implementation practices. Making XML extensible was a deliberate decision on the part of the W3C to ensure that users and designers can readily apply the technology in a wide variety of information technology settings, including environmental data management. However, this extensibility is also XML's primary challenge.

The following subsections provide general information about XML technology. They discuss the objectives of the Exchange Network XML program, and relate them to the objectives of the XML design rules. The subsections further identify high-level roles and responsibilities for managing XML within EPA.

## Background of XML Technology

The last 10 years have seen tremendous evolution in technology and its relationship with society and our ways of doing business. The advent of the Internet and the World Wide Web has altered how the nation shares, distributes, and accesses data. It has affected how businesses sell items and how they manage inventory and distribution. The Internet has also yielded a significant number of related technologies, including XML.

XML is a means of exchanging data between application systems across the Internet (or any communications channel). It can also be used with and within databases, web pages, and other applications.

In 1998, the W3C published the *Extensible Markup Language 1.0* technical specification. This specification defined XML as a web-enabled subset of the Standard Generalized Markup Language (SGML).[1] XML separates the data and its presentation requirements, unlike the earlier Hypertext Markup Language (HTML), which combined the two elements. Separating the elements allows XML-formatted data to be used for different purposes and displayed on different devices (web browsers, cellular phones, etc.) with minimal additional processing. XML also allows data transfer between disparate systems.

[1] World Wide Web Consortium, *Extensible Markup Language 1.0*, October 1998. Available at <www.w3.org>.

Over the last 4 years, XML has stirred tremendous excitement and controversy throughout the information technology community, within both business and government. It has been both touted as the solution to all business data requirements and criticized as only another version of electronic data interchange. The main benefit of XML is its ubiquity. XML can be used for end-to-end data definition, presentation, and collection (from the desktop to application to database to server to internal or external recipient) using the same Internet protocols, without the need for expensive middleware at every step.

## Business Standards

Many believe that XML, by virtue of being a W3C recommendation, constitutes a business standard, regardless of the tag set used. This is not the case. The W3C XML specifications describe a metalanguage for defining individual markup languages. Put another way, the W3C XML recommendations provide syntactic rules for XML vocabularies. As such, they are the equivalent of our English grammar—*i* before *e*, noun-verb agreement, and split infinitive prohibitions.

Just as English grammar provides a standard for creating words and sentences without proscribing the content or guaranteeing the semantic understanding of those sentences, so too do the XML specifications provide a standard for creating XML vocabularies and documents. There is nothing in the XML specifications that addresses semantic understanding of the XML metadata or standardization of the data content. It is the responsibility of the individual XML vocabularies to address these issues.

The understanding of, and ability to respond to, a sentence does not come from the syntax rules, but from the semantics defined for both the individual words and the construct. The same is true for XML messages. The syntactic rules published as W3C recommendations provide only a method for developing semantic standards. The business standards are responsible for ensuring semantic meaning.

In the various XML business standards, there is a high risk of redundant vocabulary. It is estimated that more than 1,000 competing XML business standards efforts are underway. Each of these XML business standards describes its own vocabulary and uses its own definitions and unique approaches to cobbling its vocabulary into predefined business messages. In addition, individual organizations outside of these announced initiatives are also developing proprietary standards.

This situation is creating chaos. Not only are these competing efforts layering complexity upon complexity (which forces users to support multiple standards); in many cases they are developing inadequate XML vocabularies. Adopting “quick-hit” vertical industry standards entails significant risk with dubious rewards. It is important that XML design considerations account for the variances in XML business standards. More importantly, partner XML designers must

adhere to the Network's objectives for EPA XML and reuse approved business standards to the maximum extent possible in any XML design effort.

## The Exchange Network's Principles and Guidelines

High-quality and timely information is essential to the work of environmental protection. Yet many of the current systems and approaches to information are ineffective and burdensome to users. In 1998, the states and EPA committed themselves to a partnership to build locally and nationally accessible, cohesive and coherent environmental information systems. This commitment was codified in the state/EPA Information Management Workgroup Vision and Operating Principles. This vision, realized through the Exchange Network, will increase efficiency, improve the quality of environmental data, and provide agencies and the public with access to environmental data and increase their ability to employ this information to protect public health and the environment. The Exchange Network will be standards based, highly interconnected, dynamic, flexible, and secure, operating with broad-based voluntary participation of the individual states and EPA.

When designing the Exchange Network, the workgroup's Technical Resource Group (TRG) employed the following principles:

- The Network design and operation uses an agreed upon set of common data exchange standards and protocols.
- The Network will facilitate the exchange of data between participating partners using the Internet and standardized data exchange formats.
- The Network operations are based upon established best practices and standards for the private sector.

In its deliberations on the design rules, the TRG also considered state and federal policy and guidelines governing implementation of XML, including the following:

- Ensure that Network XML goals, policies, plans, and strategies comply with federal, agency, and state information resource management (IRM) laws and regulations and that they support agency missions
- Provide adequate security for proprietary or privileged information maintained in EPA information systems
- Minimize unnecessary duplication of XML infrastructure in information systems and databases
- Reduce the information collection burden on the public and on state and local governments

- To the maximum extent practicable, base XML implementations on standards developed by voluntary standards bodies, rather than on proprietary agency standards
- Base XML implementations on horizontal business standards instead of vertical business and government standards.

## Roles and Responsibilities

Within the Exchange Network, the TRG and its subordinate committees oversee XML implementation.

Within EPA, the primary responsibility for managing XML is vested in the Office of Environmental Information (OEI). The Assistant Administrator for Environmental Information is the senior official responsible for directing and overseeing the agency's application of XML.

Within OEI, the Offices of Information Collection (OIC) and Information Technology (OIT) play lead roles. Other offices also support the XML program.

# DOCUMENT ORGANIZATION

This guide provides an aggregate of XML guidance. The schema guidance builds upon the general XML design guidance. For this reason, we recommend reading this document in order. This guide is organized as follows:

- Section 1, "XML Design Rules," contains high-level rules that apply to all XML development efforts.
- Section 2, "Schema Design Rules," contains specific design rules for using the W3C Schema specifications for creating agency schemas.[2]

Each of these sections has standalone, sequentially numbered chapters. Several design-related topics are addressed within each chapter. Each topic is further broken down as follows:

- A general discussion, which provides information for Exchange Network policymakers
- A table that lists
  - pros and cons—identifies the advantages and disadvantages of using the schema, design element, or specified facet of the XML technology being addressed;

[2] See <www.w3.org>.

- rules and guidelines—provides Exchange Network specific recommendations (because there are vastly different uses of XML, the rules are categorized as either data-centric or document-centric); and

- justification—provides recommendations that amplify the rules to ensure developers understand the rationale behind each rule and the importance the rule plays in achieving the Exchange Network's interoperability goals.

In addition, this guide contains two appendixes:

- Appendix A, "Summary of XML Rules," summarizes the design rules found in this document. This appendix is intended as a quick reference for developers.

- Appendix B, "Glossary," contains a comprehensive glossary of terms and abbreviations used in this guide.

As other issues are uncovered in the future, particularly those relating to interoperability, they will be investigated in conjunction with the Exchange Network's TRG and added as separate sections as applicable.

# CONVENTIONS

Two types of conventions—key words and rule identifiers—are used throughout this guide.

## Key Words

The key words "W3C XML Schema" and the token "XSD" appear throughout this guide. These terms are synonymous and refer to XML Schemas that are fully conformant with the W3C XML Schema Definition Language (XSD) suite of recommendations—*XML Schema Part 1: Structures*[3] and *XML Schema Part 2: Datatypes*.

The key word "schema" also appears throughout this guide. Wherever schema (with a lowercase "s") appears, it implies either W3C XML Schema or XML document type definitions. Wherever Schema (with an uppercase "S") appears, it explicitly refers to W3C XSD Schema.

[3] See *XML Schema Part 1: Structures* (<http://www.w3.org/TR/smlschema-1/>) and *XML Schema Part 2: Datatypes (*<http://www.w3.org/TR/smlschema-2/>).

The design rules contain certain words that have an explicit meaning. Those words, defined in Request for Comments 2119 issued by the Internet Engineering Task Force, are as follows:[4]

- MUST. This word, or the terms "REQUIRED" or "SHALL," means that the definition is an absolute requirement of the specification.
- MUST NOT. This phrase, or the phrase "SHALL NOT," means that the definition is an absolute prohibition of the specification.
- SHOULD. This word, or the adjective "RECOMMENDED," means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.
- SHOULD NOT. This phrase, or the phrase "NOT RECOMMENDED," means that there may exist valid reasons in particular circumstances when the particular 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.
- MAY. This word, or the adjective "OPTIONAL," means that an item is truly optional. One vendor may choose to include the item because a particular marketplace requires it or because the vendor believes that it enhances the product, while another vendor may omit the same item. An implementation that does not include a particular option MUST be prepared to interoperate with another implementation that does include the option, though perhaps with reduced functionality. In the same vein, an implementation that does include a particular option MUST be prepared to interoperate with another implementation that does not include the option (except, of course, for the feature the option provides).

Note that the force of these words is modified by the requirement level of the document in which they are used.

## Rule Identifiers

All design rules are normative. Design rules are identified through a prefix of [XXc-nn].

- The value "XX" is a prefix to categorize the type of rule, where XX corresponds to a particular section, as follows:

[4] Internet Engineering Task Force, Request for Comments 2119, March 1997. Available at <www.ietf.org/rfc/rfc2119.txt?number=2119>.

- GD for style and general design rules (Section 1)
- SD for schema design rules (Section 2).

- The value “c” indicates the chapter where the rule is located.
- The value “nn” indicates the sequential number of the rule.

For example, the rule identifier [SD6-22] identifies the 22nd rule in Chapter 6 of Section 2.

# Chapter 1
# XML Design Rules Introduction

This section of the guide contains general, high-level XML design rules and guidelines that apply to all XML development efforts, rather than to a specific facet of XML technology described in following sections.

The general rules and guidelines, listed below, provide the common foundation for data and document development within the Environmental Information Exchange Network.

*General XML Design*

| Rules and Guidelines |
|---|
| [GD1-1] All Exchange Network schema must be based on the W3C suite of technical specifications that hold Recommendation status. |
| [GD1-2] Only W3C technical specifications holding Recommendation, Proposed Recommendation, or Candidate Recommendation status shall be used for production activities. |
| [GD1-3] W3C technical specifications holding Draft status may be used for prototyping. Such prototypes will not be put into production until the associated specifications reach a Recommendation, Proposed Recommendation, or Candidate Recommendation status. |
| [GD1-4] All XML parsers, generators, validators, enabled applications, servers, databases, operating systems, and other software acquired or used by partners' activities shall be fully compliant with all W3C XML specifications that hold a Recommendation status. |
| [GD1-5] The normative schema documents that implement the partner document types shall conform to *XML Schema Part 1: Structures* and *XML Schema Part 2: Datatypes*. |
| [GD1-6] Each message must represent a single logical unit of information (such as facility permit compliance data) conveyed in the root element. |
| [GD1-7] The business function of a message set must be unique and must not duplicate the business function of another message. |
| [GD1-8] The name of the message set must be consistent with its definition. |
| [GD1-9] Each message set should correspond to a business process model or models in the ebXML catalog of business processes. |
| [GD1-10] Messages must use the UTF-8/UNICODE character set. |

| | |
|---|---|
| | [GD1-11] XML instance documents conforming to schemas should be readable and understandable, and should enable reasonably intuitive interactions. |
| | [GD1-12] Messages shall be modeled for the abstractions of the user, not the programmer. |
| | [GD1-13] Messages shall use markup to make data substructures explicit (that is, distinguish separate data items as separate elements and attributes). |
| | [GD1-14] Messages shall use well-known data types. |
| | [GD1-15] EPA messages shall reuse registered data types to the maximum extent practicable. |
| | [GD1-16] In a schema, information that expresses associations between data elements in different classification schemes (in other words, “mappings”) may be regarded as metadata. This information should be accessible in the same manner as the rest of the information in the schema. |

The following chapters of this section address

- file naming conventions and
- tag naming conventions.

Because this guide is an ongoing effort, more general design rules and naming conventions may be identified.

# Chapter 2
# XML Schema File Naming Conventions

EPA has developed comprehensive naming conventions for objects that will be stored in a registry.[1] These conventions will ensure that objects will be stored in a manner that will ensure consistency, uniformity, and comprehensiveness, and will be suitable for all aspects of storage and reuse.

The EPA uses a four-tiered hierarchy for naming Schemas. Before developers can apply the hierarchy, they need to determine if the schema is a message-level schema or a shared Exchange Network schema (also referred to as a modular schema):

- *Message-level schemas*. A message-level schema may contain modular references to a number of other, reusable schemas, but is not referenced itself by any other schemas.

- *Shared Exchange Network schemas.* Shared or reusable schemas, which typically will not have one intended root element, will not require the root element in the file name.

In addition, for a shared Exchange Network schema, developers need to determine if it is unique—that is, whether it contains information that is particular to one data flow—or has global applicability—whether it is applicable to two or more data flows. If its use has no meaning outside a particular data flow, then the responsible party should designate that data flow in the file name. However, it is possible for schemas in one data flow to be utilized by other data flows. If a reusable schema is generic and clearly does not belong to any one data flow, then the Exchange Network is the responsible party. The Exchange Network modules are built on the Core Reference Model's 18 major data groups and reference these groups in their file names.

The following sections describe the approach to be used when applying file names to the two message types.

[1] For a detailed discussion and rationale in developing EPA's file naming conventions, see Logistics Management Institute, *XML File Naming Conventions for the Environmental Information Exchange Network,* LMI Report EP211L4, Christopher T. Kupczyk and Jessica L. Glace, June 2003.

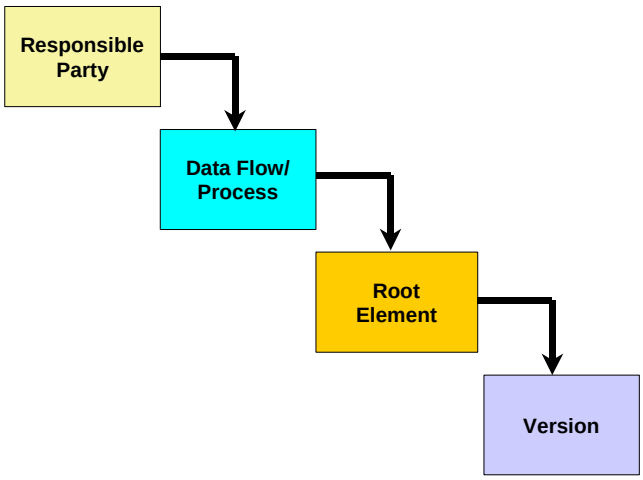
# MESSAGE-LEVEL SCHEMAS

For naming message-level schemas, EPA's four-tiered hierarchy is as follows:

- Responsible party—EPA, Exchange Network, or state postal code
- Data flow/process (e.g., FRS, UCMR, RCRA)
- Root element of the schema
- Version.

Figure 2-1 illustrates the hierarchy.

*Figure 2-1. Four-Tiered Hierarchy for Message-Level Schemas*




The following is an example of a file name for a message-level schema ExchangeNetwork_DWR_e-DWR_v1.xsd. In the example:

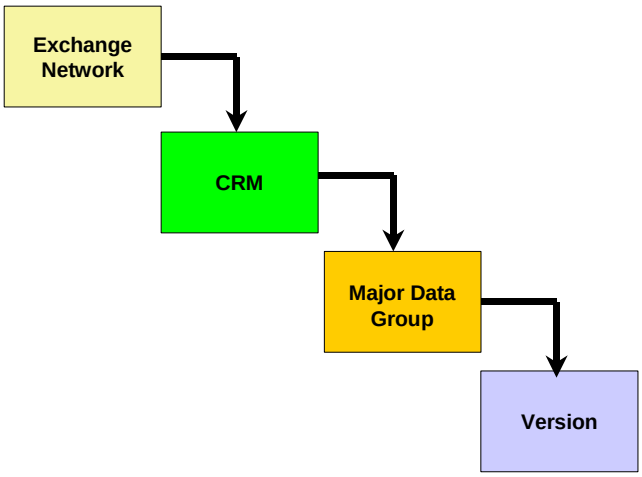
- Exchange Network is the responsible party,
- DWR is the data flow,
- eDWR is the root element, and
- v1 is the version.

# SHARED EXCHANGE NETWORK SCHEMAS

File names for shared Exchange Network schemas that contain generic, reusable blocks of data follow the same general hierarchy as that used for naming message-level schemas. However, as illustrated in Figure 2-2, the responsible party is always the Exchange Network (denoted as "EN" in the file name), the

data flow is the Exchange Network's Core Reference Model (CRM), and the root element corresponds to one of the CRM's major data groups.[2]

*Figure 2-2. Four-Tiered Hierarchy for Shared Exchange Network Schemas*




For example, the file name for a schema defining the CRM's grant module would be EN-CRM-Grant-V1-3.xsd.

# FILE NAMING RULES AND GUIDELINES

*File Naming Convention—Schema*

| Rules and Guidelines |
|---|
| [GD2-1] Schemas and style sheets MUST follow a four part, hierarchical naming convention, based on responsible party, data flow, root, and version (for message-level schemas) or responsible party, data flow or CRM, Major Data Group and version (for shared schemas).<br>[GD2-2] File names MUST NOT use abbreviations unless their meaning is beyond question (EPA, GSA, FBI).<br>[GD2-3] Message-level schemas SHOULD have their versions changed when a referenced external modular schema is updated. |
| **Justification** |
| This approach reflects the likelihood (given the present arrangement of the Exchange Network) that one data flow can have many message-level schemas associated with it. Having the root element as part of the name ensures uniqueness among a data flows multiple files. Additionally, because the Exchange Network has chosen to adopt a rule of using all global elements defining the root in the file name is an extra means of clearly identifying the intended root element of the document. |

[2] EnfoTech, *Core Reference Model for Environmental Information Exchange Network*, March 31, 2003. Available from http://www.exchangenetwork.net/documents/CRM_V1.0_03-31-2003_Release.pdf.

# Chapter 3
# XML Tag Naming Conventions

The Exchange Network will require many XML tags, and it will need them soon. Because the existing commercial dictionaries do not focus on many environmental business processes, the Exchange Network will need to develop its own new dictionaries (in concert with industry and the public). These environmental-specific dictionaries could best be developed if an underlying set of rules could be applied.

The ISO 11179 metadata standard offers a sound basis for these dictionary-development rules. Additional environmental-unique tags are also needed; however, an underlying policy (one that ensures all EPA tags are harmonized with the tags of a federal or other bodies) must be employed to avoid integration difficulties that are attributable to inconsistencies in naming and using XML tags.

The provisions in this document are intended for all new XML implementations. Existing XML implementations may be updated to conform with this document, but are considered acceptable in their existing form if developed before the release of this document. All Exchange Network messages will use markup that conforms to the agency policy in this section, as well as the following guidelines:

- All type, element, and attribute names should use American English. Type, element, and attribute names may use Oxford English. The use of Oxford English is encouraged for any message set that has the potential for international exchange.

- The content (or value) within tags, attributes, and other items may be in any language.

The following sections describe the tag structure (how to write a tag) and offer guidance on creating tag names (what should be included in the tag).

## TAG STRUCTURE

The following defines rules for all *new* development of XML tag names. These rules are the “how” as opposed to the “what” for tag name formation.

| Rules and Guidelines |
|---|
| [GD3-1] Element names MUST be in "Upper Camel Case" (UCC) convention, where UCC style capitalizes the first character of each word and compounds the name.<br>*Example: <UpperCamelCaseElement/>*<br><br>[GD3-2] Schema type names MUST be in UCC convention.<br>*Example: <DataType/>*<br><br>[GD3-3] Attribute names MUST be in "Lower Camel Case" (LCC) convention where LCC style capitalizes the first character of each word *except* the first word. *Example: <UpperCamelCaseElement lowerCamelCaseAttribute="Whatever"/>*<br><br>[GD3-4] Acronyms SHOULD NOT be used, but in cases where they are used,<br>– the capitalization SHALL remain *Example: <XMLSignature/>*, and<br>– the acronym SHOULD be defined in the comments of the DTD or Schema or in a separate document noted in the DTD or Schema as providing a tag dictionary so that the meaning of the acronym is clear.<br><br>[GD3-5] Abbreviations SHOULD NOT be used. In cases where they are used, they MUST be a major part of the federal or data standards vocabulary, and the abbreviation SHOULD be defined within the comments of the DTD or Schema or in a separate document (noted in the DTD or Schema) as providing a tag dictionary so that the meaning of the abbreviation is clear. An exception to this rule is when identifier is used as a representation term, ID SHOULD be used as part of the tag name.<br><br>[GD3-6] Underscores ( _ ), periods (. ) and dashes ( - ) MUST NOT be used.<br><br>[GD3-7] Verbosity in tag length SHOULD be limited to what is required to conform to the Tag Name Content recommendations. When tags will be used in database structures, a limit of 30 characters is recommended. |
| Justification |
| These are standards adopted by most recognized standards organization to include OASIS, UN/CEFACT, and X12.<br><br>These have also been adopted by the<br>• U.S. Federal CIO Council, Architecture and Infrastructure Committee XML Working Group, *Draft Federal XML Developer's Guide,* April 2002, and the<br>• Department of the Navy, DON XML Working Group, *DON XML Developer's Guide, Version 1.1*, 1 May 2002. |

# TAG NAME CONTENT (SEMANTIC GUIDELINES)

The following tag naming conventions should be used in all *new* XML DTD and schema creations.[1] The guidance is the "what" as opposed to the "how" of tag name formation. Table 3-1 contains examples of tag name content.

*Tag Name Content*

| Rules and Guidelines |
|---|
| [GD3-8] Element, attribute, and data type tag names SHOULD be unique.<br><br>[GD3-9] Element tag names MUST be extracted from the Environmental Data Registry (EDR) where possible.<br><br>[GD3-10] High-level parent element tag names SHOULD consist of a meaningful aggregate name followed by the term "Details". The aggregate name may consist of more than one word. E*xample: <SiteFacilityDetails/>*<br><br>[GD3-11] Tag names SHOULD be concise and MUST NOT contain consecutive redundant words.<br><br>[GD3-12] Lowest level (it has no children) element tag name SHOULD consist of the Object Class, the name of a Property Term, and the name of a Representation Term. An Object Class identifies the primary concept of the element. It refers to an activity or object within a business context and may consist of more than one word. *Example: <LocationSupplementalText/>*<br><br>[GD3-13] A Property Term identifies the characteristics of the object class. The name of a Property Term SHALL occur naturally in the tag definition and may consist of more than one word. A name of a Property Term shall be unique within the context of an Object Class but may be reused across different Object Classes. *Example: <LocationZipCode/>* and *<MailingAddressZipCode/>* may both exist.<br><br>[GD3-14] If the name of the Property Term uses the same word as the Representation Term (or an equivalent word), this Property Term SHALL be removed from the tag name. In this case, only the Representation Term word will remain.<br><br>*Examples:* If the Object Class is "*Goods*", the Property Term is "*Delivery Date*", and Representation Term is "*Date*", the tag name is *<GoodsDeliveryDate/>* |

[1] The list of rules is a modified version of the dictionary naming conventions from the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), *Core Components Technical Specification, Part 1 (*Version 2.0.), August 11, 2003. This document was created as follow-on from the ebXML initiative and based on ISO 11179 Part 5, "Naming and Identification Principles for Data Elements."

| | |
|---|---|
| | [GD3-15] A Representation Term categorizes the format of the data element into broad types. A list of UN/CEFACT Representation Terms is included at the end of this list of rules, but the EPA and its partners may need to augment this list to accommodate the specific needs for environmental data. When possible the pre-defined UN/CEFACT list SHOULD be used. Proposed additions should be submitted to the TRG for consideration.<br><br>[GD3-16] The name of the Representation Term MUST NOT be truncated in the tag name.<br><br>[GD3-17] A tag name and all its components MUST be in singular form unless the concept itself is plural.<br>*Example: <Goods/>*<br><br>[GD3-18] Non-letter characters MUST only be used if required by language rules.<br><br>[GD3-19] Tag names MUST only contain verbs, nouns and adjectives (no words like “and”, “of”, “the”). |
| Justification | |
| These rules have been adopted by the main standards development bodies and are quickly becoming universal. With the intent of creating interoperability with the largest audience possible, these are the minimum tag naming rules that should be followed. | |

*Table 3-1. Tag Name Content Examples*

| Dictionary entry name | Source[a] | Parent or basic | Definition | Object class | Property term | Representation term | Tag |
|---|---|---|---|---|---|---|---|
| Country. Details | Other | P | Information about a country | Country | | | CountryDetails |
| Country. Identification.Code | Other | B | A nation with its own government | Country | Identifi-cation | Code | CountryIdentificationCode |
| Country Name | Yes | B | The name that represents a primary geopolitical unit of the world | Country | Name | Name | CountryName |
| Location. Identification.Code | Other | B | The identifier of a location | Location | Identifi-cation | Code | LocationIdentificationCode |
| Facility Registry Identifier | Other | B | The identification number assigned by the EPA Facility Registry System to uniquely identify a facility site | Facility Registry | Identifier | Identifier | FacilityRegistryIdentifier |
| Organization. Details | Other | P | An organized body, such as a business, government body, department, or charity | Organi-zation | | | OrganizationDetails |
| Organization Data Universal Numbering System (DUNS) number | Yes | B | The DUNS number assigned by Dun and Bradstreet to identify unique business establishments | Organi-zation | DUNS | Identifier | OrganizationDUNSIdentifier |
| Organization. Name | Other | B | The text used to identify an organization, the organization's name | Organi-zation | Name | Name | OrganizationName |
| Organization Formal Name | Yes | B | The legal, formal name of an organization that is affiliated with the facility site | Organi-zation | Formal | Name | OrganizationFormalName |

Notes: P = Parent, B = Basic.

[a] EDR or Other.

Table 3-2 defines representation terms.

*Table 3-2. Definition of Representation Terms*

| Term | Definition |
|---|---|
| Amount | A number of monetary units specified in a currency where the unit of currency is explicit or implied. |
| Binary Object | A set of finite-length sequences of binary octets. Secondary *Representation Terms*: Graphic, Picture, Sound, Video. |
| Code | A character string (letters, figures, or symbols) that, for brevity and/or language independence, may be used to represent or replace a definitive value or text of a *Property*. |
| Date Time | A particular point in the progression of time (ISO 8601). Secondary *Representation Terms*: Date, Time. |
| Identifier | A character string used to establish the identify of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme. |
| Indicator | A list of two mutually exclusive Boolean values that express the only possible states of a *Property*. (Values typically indicate a condition such as on/off or true/false.) |
| Measure | A numeric value determined by measuring an object. Measures are specified with a unit of measure. The applicable unit of measure is taken from UN/ECE Rec. 20. |
| Numeric | Numeric information that is assigned or is determined by calculation, counting, or sequencing. It does not require a unit of quantity of a unit of measure. Secondary *Representation Terms*: Value, Rate, Percent. |
| Quantity | A counted number of nonmonetary units. Quantities need to be specified with a unit of quantity. |
| Text | A character string, (i.e., a finite set of characters) generally in the form of words of a language. Secondary *Representation Terms*: Name. |

Source: UN/CEFACT, *Core Components Technical Specification, Part 1* (Version 2.0), August 11, 2003.