Network Working Group
Request for Comments: 5141
Category: Informational

J. Goodwin
H. Apel
ISO

March 2008

A Uniform Resource Name (URN) Namespace for the International Organization for Standardization (ISO)

Status of This Memo

This memo provides information for the Internet community. It does not specify an Internet standard of any kind. Distribution of this memo is unlimited.

Abstract

This document describes a Uniform Resource Name Namespace Identification (URN NID) for the International Organization for Standardization (ISO). This URN NID is intended for use for the identification of persistent resources published by the ISO standards body (including documents, document metadata, extracted resources such as standard schemata and standard value sets, and other resources).

Table of Contents

1. Introduction

The International Organization for Standardization (ISO) was created by international agreement in 1947. ISO is a network of the national standards institutes of many countries, on the basis of one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system. ISO acts as a bridging organization in which a consensus can be reached on solutions that meet both the requirements of business and the broader needs of society, such as the needs of stakeholder groups like consumers and users.

Further information is provided at http://www.iso.org/iso/about.htm.

The core mission of ISO is to develop technical standards constituting technical agreements that provide the framework for compatible technology worldwide. ISO standards contribute to making the development, manufacturing, and supply of products and services more efficient, safer, and cleaner. They make trade between countries easier and fairer.

Every participating ISO member institute (full members) has the right to take part in the development of any standard that it judges to be important to its country's economy. No matter what the size or strength of that economy, each participating member in ISO has one vote. ISO's activities are thus carried out in a democratic framework where each country is on an equal footing to influence the direction of ISO's work at the strategic level, as well as the technical content of its individual standards. Although the ISO standards are voluntary, the fact that they are developed in response to market demand, and are based on consensus among the interested parties, ensures widespread applicability of the standards. Consensus, like technology, evolves and ISO takes account of both evolving technology and evolving interests by requiring a review of its standards at least every five years to decide whether they should be maintained, updated, or withdrawn.

ISO publishes International Standards and other technical specifications that are cited in the definitions of required or expected practices in many industries in many nations. These specifications contain dictionaries of standard terms, catalogues of reference values, definitions of formal languages, formal schemata for information capture and exchange, specifications for standard practices, and other information resources of general use to international trade and industry. ISO wishes to create and manage globally unique, persistent, location-independent identifiers for these resources.

This specification defines the syntax for URNs that identify documents developed by the International Organization for Standardization (ISO) in accordance with the standards development procedures defined in the ISO/IEC Directives, Part 1 [ISODIR-1] and the ISO supplement [ISODIR-S] and processed by the ISO Central Secretariat. The syntax extends to identify document metadata and resources related to these documents or otherwise associated with them. It does not extend to products derived from these documents and published by ISO (e.g., handbooks, compendia) or documents at or below the Technical Committee level. Revisions of this specification may define syntax for URNs in this namespace that identify other ISO objects, when the ISO community defines a requirement for such identifiers.

2. Specification Template

2.1. Namespace ID

"iso"

2.2. Registration Information

Version 2.1
Date: 2007-12-13

2.3. Declared Registrant of the Namespace

J. Goodwin
ISO Central Secretariat
International Organization for Standardization (ISO)
Case Postale 56
CH-1211 Geneva 20
Switzerland

E-mail: goodwin@iso.org

2.4. Declaration of Structure

2.4.1. Definition

The Namespace Specific Strings (NSSs) of all URNs assigned by ISO will conform to the syntax defined in Section 2.2 of [RFC2141].

The NSS has the following ABNF [RFC5234] specification:

```
NSS           = std-nss
```

All URNs conforming to this specification begin the NSS with the prefix "std:" to denote the restriction to documents developed by the ISO standards development procedures as defined in the ISO/IEC Directives, Part 1 [ISODIR-1] and the ISO Supplement [ISODIR-S]. Prefixes that identify ISO objects of other kinds may be defined in future revisions of this specification.

```
std-nss       = "std:" docidentifier *supplement *docelement
                [addition]
```

The prefix "std:" distinguishes an <std-nss>. An <std-nss> identifies the ISO document that is designated by the <docidentifier>, as extended or modified by any identified <supplement>. (An <std-nss> that identifies all parts of a multipart ISO document is a special case as described under the

element <partnumber>.) If the <std-nss> contains an <addition> element, the NSS identifies a resource extracted from the ISO document or otherwise associated with it (see below).

```
docidentifier = originator [":" type] ":" docnumber [":" partnumber]
                [[":" status] ":" edition]
                [":" docversion] [":" language]
```

<docidentifier> provides the complete identification of an ISO document. Each of its component elements is described below.

```
originator    = "iso" / "iso-iec" / "iso-cie" / "iso-astm" /
                "iso-ieee" / "iec"
```

<originator> is the organization (usually an international body) from which a document emanates.

Current values:

iso = International Organization for Standardization

iec = International Electrotechnical Commission (IEC), or Commission Electrotechnique Internationale

iso-iec = jointly developed by ISO and IEC

iso-cie = jointly developed by ISO and the Commission Internationale d'Eclairage (CIE)

iso-astm = jointly developed by ISO and the American Society for Testing and Materials (ASTM) International

iso-ieee = jointly developed by ISO and the Institute for Electrical and Electronics Engineers (IEEE)

Revisions of this specification may define additional values.

```
type          = "data" / "guide" / "isp" / "iwa" /
                "pas" / "r" / "tr" / "ts" / "tta"
```

<type> designates the ISO deliverable type. If the <type> element is not present, the classification is "international standard". Other current values:

data = Data (document type no longer published)

guide = Guide

isp = International Standardized Profile

iwa = International Workshop Agreement

pas = Publicly Available Specification

r = Recommendation (document type no longer published)

tr = Technical Report

ts = Technical Specification

tta = Technology Trends Assessment

docnumber = DIGITS

<docnumber> is the reference number assigned to the document by ISO and/or IEC. An ISO document may comprise a single document, or two or more separate parts each of which is identified by <partnumber>.

partnumber = "-" 1*(DIGIT / ALPHA / "-")

<partnumber> is the reference number that identifies a part of a multipart standard.

Where it is required to refer to a multipart ISO document in its entirety, this can be designated by omitting the <partnumber> element. However, this precludes the possibility of using any further elements except <addition>.

NOTE: The option to refer to a multipart ISO document by omitting the <partnumber> element has been included to align with the provision in the ISO/IEC Directives, Part 2, 2004 [ISODIR-2] subclause 6.2.2 of making an undated reference to all parts of an ISO document. It is only permissible to use this option where the URN is referring to a multipart ISO document in its entirety. Since the use of this option precludes the designation of the elements <status> and <edition>, it is implicit that the URN needs to remain valid irrespective of any future changes to the multipart document (see the rules for undated references given in the ISO/IEC Directives, Part 2, 2004 [ISODIR-2] subclause 6.6.7.5.2). This shall be taken into consideration in the use (and maintenance) of any URN specification employing this option.

NOTE: In the case where the multipart document comprises different types of ISO deliverable, the <type> of the core part (usually part 1) applies. See the example "Reference to a resource related to all parts of a multipart document".

Except for the case where it is required to refer to a multipart document in its entirety, the element <partnumber> is required if the identified resource is a part of an ISO document. Otherwise, this element is not used.

status = ("draft" / "cancelled") / stage

<status> indicates the publication status of the document. When the <status> element is not present, the NSS refers to a published document. Other values:

draft = document that has not yet been accepted for publication by international ballot

cancelled = document that has been deleted or withdrawn

stage = "stage-" stagecode ["." iteration]

<stage> indicates the stage code and iteration of the document.

stagecode = DIGIT DIGIT "." DIGIT DIGIT

<stagecode> is the harmonized stage code in accordance with ISO Guide 69:1999, "Harmonized Stage Code system (Edition 2) -- Principles and guidelines for use" [ISOGUIDE69].

iteration = "v" DIGITS

<iteration> is a sequential number that refers to a specific iteration of the project’s lifecycle through the designated stage.

If no <iteration> is specified, the reference is to the highest iteration available for the specified stagecode.

NOTE: In the ISO Central Secretariat project management database, the <iteration> is referred to as the "project version".

edition = "ed-" DIGITS

<edition> designates a specific edition of the document. (DIGITS is the (sequential) edition number.) If no <edition> is specified, the NSS refers to the latest edition.

```
docversion    = "v" (simpleversion / isoversion)

simpleversion = DIGITS
```

<docversion> designates the version number of a document's <edition>. It is altered by correction (corrected version; Technical Corrigendum) or amendment (Amendment; Addendum) and is distinct from a revision, which changes the edition number.

In the <simpleversion>, the first version published is 1, and each subsequent correction or amendment increases the version number by 1.

If no <docversion> is specified, the reference is to the highest version number available for the denoted <edition>.

Current values of <simpleversion>:

1 - first version published

2 - corrected version published

```
isoversion    = baseversion *includedsuppl

baseversion   = DIGITS

includedsuppl = "-" suppltype supplnumber [ "." supplversion ]
```

An <isoversion> can be linked to a simpleversion by defining an existing simpleversion as baseversion and listing all the <supplement> elements (corrections and amendments) incorporated into that version.

Examples for the <isoversion> (internal ISO version) scheme:

1 = first version of standard

1-amd1.v1 = first version of standard incorporating first version of Amendment 1

1-amd1.v1-amd2.v1 = first version of standard incorporating first version of Amendment 1 and first version of Amendment 2

1-amd1.v2-amd2.v1-amd3 = first version of standard incorporating corrected version of Amendment 1, first version of Amendment 2, and highest version of Amendment 3

1-cor3 = first version of standard incorporating highest version of Technical Corrigendum 3

1-amd1-cor3 = first version of standard incorporating highest version of Amendment 1 and highest version of Technical Corrigendum 3

```
language      = monolingual / bilingual / trilingual

monolingual   = "en" / "fr" / "ru" / "es" / "ar"

bilingual     = "en,fr" / "en,ru" / "fr,ru"

trilingual    = "en,fr,ru"
```

<language> designates the official ISO language(s), or the language of an official translation, in which the document (object) is processed and published by ISO (excluding languages that constitute only specific elements of the content). The value is one or more alpha-2 codes, each of which designates a language, as specified in ISO 639-1 [ISO639-1]. If no language element is specified, <en> is assumed.

NOTE: Although [ISO639-1] recommends that language codes be written in lowercase, this ABNF definition allows the use of uppercase language codes because in ABNF [RFC5234], terminal symbols defined as literal strings are explicitly case-insensitive. This case distinction does not carry any meaning (see Section 2.9) and it is recommended to use language codes in lowercase. For additional information about the usage of language tags in information objects, see [RFC4646].

```
supplement    = ":" suppltype ":" supplnumber
                [":" supplversion ] [":" language ]

suppltype     = "amd" / "cor" / "add"

supplnumber   = DIGITS

supplversion  = "v" DIGITS
```

<supplement> designates a technical alteration of or addition to an ISO standard that does not result in a new <edition> or <version>. Each <supplement> may be one of the three types, designated by <suppltype>:

amd = Amendment -- a document that alters and/or adds to previously agreed upon technical provisions in an existing ISO document; an amendment is subject to acceptance by ballot in accordance with the ISO/IEC Directives, Part 1, 2004 [ISODIR-1] subclause 2.10.3

cor = Technical Corrigendum -- a document that corrects a technical error or ambiguity, or updates the ISO document in such a way that the modification has no effect on the technical normative elements; a Technical Corrigendum is not balloted -- see the ISO/IEC Directives, Part 1, 2004 [ISODIR-1] subclause 2.10.2

add = Addendum -- (document type no longer published) Addenda were documents that changed (by correction, addition, or deletion) the technical requirements of an ISO document; an addendum was subject to acceptance by ballot in accordance with the ISO/IEC Directives, Part 1. (Addenda are included in this RFC because some of them are still valid.)

Supplements are numbered consecutively per ISO document, and within each supplement type.

<supplnumber> identifies the number of the supplement.

<supplversion> designates the version of a published supplement. At present, only two versions are used in practice: when a supplement is published, it is version 1. If that supplement is subsequently corrected by issuing a corrected version, as designated by the term "Corrected" on the cover page together with a date, the corrected version is version 2.

The language of a supplement can be different from that of the document. For example, a supplement may apply to only one of the languages of a bilingual document. For such cases, the language of a supplement can be identified using the <language> element defined above. The interpretation is the same, except that it applies only to the supplement.

```
docelement    = ":" ( "clause" / "figure" / "table" / "term" ) ":"
                elementnumber / elementrange
                *( "," elementnumber / elementrange )

elementnumber = ( ALPHA / DIGITS ) *( "."  DIGITS )

elementrange  = elementnumber "-" elementnumber
```

<docelement> identifies one or more numbered subdivisions of a document. Types of numbered subdivision are specified in the ISO/IEC Directives, Part 2 [ISODIR-2]. This RFC currently specifies forms for reference to clauses, figures, tables, and terms only. It does not provide for reference to subfigures. Revisions of this specification may define additional values.

<clause> represents the selection of one or more clauses or subclauses of the document. <figure> represents the selection of one or more figures of the document. <table> represents the selection of one or more tables of the document. <term> represents the selection of one or more terms of the document.

<elementnumber> designates a numbered subdivision in a document, where the type of subdivision is identified by the literal "clause", "figure", "table", or "term". When the first character of <elementnumber> is a digit, the reference is to the subdivision designated by that digit string and by any additional digit strings separated by periods. When the first character of <elementnumber> is alphabetical, the reference is to the corresponding Annex, and to the subdivisions designated by additional digit strings.

The form <elementnumber> HYPHEN <elementnumber> designates a range of subdivisions, and the form <elementnumber> COMMA <elementnumber> designates a list. A list can contain ranges.

```
addition      = techdefined / isodefined

techdefined   = ":tech" *techelement

techelement   = <unspecified>

isodefined    = <unspecified>
```

<addition> is an additional element of the NSS intended to identify a representation of an ISO document, an extract from an ISO document, or some related information set, as a resource in its own right.

<techdefined> represents an associated or embedded resource defined by the committee that develops or maintains the identified document. All such <addition> elements begin with the prefix ":tech".

<isodefined> represents associated or embedded resources defined by the ISO Central Secretariat. The definition of an <addition> element beginning with any symbol other than <tech> is reserved to the ISO Central Secretariat.

The syntax of the <addition> element is not specified in this RFC. Specific syntax for this element will be specified as needed by the ISO Central Secretariat, or by the individual committee that has the responsibility for developing or maintaining the identified document. It is necessary that these definitions comply with the rules for lexical equivalence specified in Section 2.9 and take into account the process for identifier resolution as discussed in Section 2.8.

```
DIGITS        = DIGIT *DIGIT

DIGIT         = %x30-39 ; 0-9

ALPHA         = %x41-5A / %x61-7A ; A-Z / a-z
```

Basics of the ABNF notation used :

" " literals (terminal character strings); terms not in quotes are non-terminals

/ alternatives

[] indicates an optional rule

() indicates a sequence group, used as a single alternative or as a single repeating group

<a>*<b> indicates that the following term or group can repeat at least <a> and at most <b> times; default values are 0 and infinity, respectively

; comment

2.4.2. Examples

- Language handling:

  urn:iso:std:iso:9999:-1:ed-1:en
  refers to the 1st edition of ISO 9999-1, in English

  urn:iso:std:iso:9999:-1:ed-1:en,fr
  refers to the 1st edition of ISO 9999-1, in English/French (bilingual document)

- Originators/document type:

  urn:iso:std:iso-iec:tr:9999:-1:ed-1:en
  refers to the 1st edition of ISO/IEC TR 9999-1, in English

- Status:

  urn:iso:std:iso-iec:9075:-3:cancelled:ed-2:en
  urn:iso:std:iso-iec:9075:-3:stage-95.99:ed-2:en
  both refer to the cancelled 2nd edition of ISO/IEC 9075-3, in English

  urn:iso:std:iso-iec:9075:-3:draft:ed-4:en
  urn:iso:std:iso-iec:9075:-3:stage-30.60:ed-4:en
  both refer to the draft 4th edition of ISO/IEC 9075-3, in English

  urn:iso:std:iso:128:-20:en
  urn:iso:std:iso:128:-20:stage-90.20:ed-1:en
  both refer to the published (90.20 = under 2nd periodic review) 1st edition of ISO 128-20, in English

  urn:iso:std:iso:128:-71:cancelled:ed-1:en
  urn:iso:std:iso:128:-71:stage-30.98.v2:ed-1:en
  both refer to the cancelled (30.98 = project deleted) 1st edition of ISO 128-71, in English; the second example refers specifically to the 2nd iteration (projectversion) at stage 30

- Non-numeric part number:

  urn:iso:std:iso:9999:-A02:ed-1:en
  refers to the 1st edition of ISO 9999-A02, in English

- Reference to a resource related to all parts of a multipart document:

  urn:iso:std:iso:20022:tech:xsd:camt.001.001.01
  refers to a "techdefined" resource (i.e., a resource defined by the committee that develops or maintains the identified document) associated with ISO 20022 in its entirety; in this example, the techdefined part comprises ":xsd:camt.001.001.01"

  NOTE: At the time of drafting of this schema, ISO 20022 comprises 5 parts: parts 1 and 2 are International Standards; parts 3 to 5 are Technical Specifications. Therefore, the <doctype> "international standard" is used in the URN.

- Docversion handling:

  urn:iso:std:iso:9999:-1:ed-1:v2:en
  refers to the corrected English version of the 1st edition of ISO 9999-1

  urn:iso:std:iso:9999:-1:ed-1:v1-amd1:en
  refers to the version comprising the 1st edition of ISO 9999-1, incorporating the latest version of Amendment 1, in English

  urn:iso:std:iso:9999:-1:ed-1:v1:en,fr:amd:1:v2:en
  refers to the 2nd version of Amendment 1, in English, which amends the 1st version of edition 1 of ISO 9999-1, in English/French (bilingual document)

  urn:iso:std:iso:9999:-1:ed-1:v1-amd1.v1:en,fr:amd:2:v2:en
  (isoversion scheme)
  refers to the corrected version of Amendment 2, in English, which amends the document comprising the 1st version of edition 1 of ISO 9999-1 incorporating the 1st version of Amendment 1, in English/ French (bilingual document)

  urn:iso:std:iso:5817:ed-2:v2:en:cor:1:en
  refers to the 1st version of Technical Corrigendum 1, in English, which amends the corrected version of edition 2 of ISO 5817, in English

- Supplement handling:

  urn:iso:std:iso:9999:-1:ed-2:en:amd:1
  refers to Amendment 1 to the 2nd edition of ISO 9999-1, in English

  urn:iso:std:iso:9999:-1:ed-2:en:amd:1:v2
  refers to the corrected version of Amendment 1 to the 2nd edition of ISO 9999-1, in English

  urn:iso:std:iso:9999:1:ed-2:en,fr:amd:2:en
  refers to Amendment 2 in English to the 2nd edition of ISO 9999-1, in English/French (bilingual document)

  urn:iso:std:iso:9999:-1:ed-2:en:amd:1:cor:1
  refers to Corrigendum 1 to Amendment 1 to the 2nd edition of ISO 9999-1, in English

- o Docelement handling:

  urn:iso:std:iso:105:-c12:ed-1:en:clause:a.1,a.2
  urn:iso:std:iso:105:-c12:ed-1:en:clause:a.1-a.2
  both refer to clauses A.1 and A.2 in the 1st edition of ISO 105-C12, in English

  urn:iso:std:iso:9999:-1:ed-1:v1-amd1.v1:en,fr:amd:2:v2:en:clause:3.1,a.2-b.9 (isoversion scheme) refers to (sub)clauses 3.1 and A.2 to B.9 in the corrected version of Amendment 2, in English, which amends the document comprising the 1st version of edition 1 of ISO 9999-1 incorporating the 1st version of Amendment 1, in English/French (bilingual document)

  urn:iso:std:iso:9999:-1:ed-2:en:amd:1:term:3.2,3.3,3.4.1-3.4.4,3.12
  refers to the terms 3.2, 3.3, 3.4.1 to 3.4.4, and 3.12 in Amendment 1 to the 2nd edition of ISO 9999-1, in English

2.5. Relevant Ancillary Documentation

ISO/IEC Directives, Part 1 [ISODIR-1] and Part 2 [ISODIR-2], and ISO supplement [ISODIR-S].

2.6. Identifier Uniqueness Considerations

Assignment of URNs for documents in the requested namespace will be managed by the ISO Central Secretariat, which will ensure that the assigned URNs are consistent with the ISO Directives for unique identification of ISO documents.

Assignment of URNs for Technical Committee resources related to ISO documents will be managed by the Technical Committees developing or maintaining those documents. As indicated above, each such URN will extend the URN for the containing document via the element <addition>. The responsibility of the Technical Committee will therefore be to ensure the uniqueness of the techdefined <addition> element that constitutes the identifier for the resource within the document namespace, and thus the uniqueness of the overall resource identifier within the requested namespace.

2.7. Identifier Persistence Considerations

Assigned URNs will not be reused and will remain valid beyond the lifecycle of the referenced resources. However, it should be noted that although the URNs remain valid, the status of the referenced resource may change.

2.8. Process for Identifier Resolution

Resolving document identifiers:

This schema has been developed with the intent that a URN identifying an ISO document can be transformed to a valid http URI by replacing the requested URN namespace prefix ("iso") and the "std:" prefix with the domain name "standards.iso.org", replacing all occurrences of ":" within the identifier with "/", and converting characters to lowercase. (ISO is planning to develop a website implementation to support these URIs.)

Examples:

urn:iso:std:iso:9999:-1:ed-1:en: corresponds to
http://standards.iso.org/iso/9999/-1/ed-1/en/

urn:iso:std:iso-iec:tr:9999:-1:ed-1:en: corresponds to
http://standards.iso.org/iso-iec/tr/9999/-1/ed-1/en/

urn:iso:std:iso:9999:-1:ed-2:en,fr:amd:2: corresponds to
http://standards.iso.org/iso/9999/-1/ed-2/en,fr/amd/2/

Resolving identifiers for <addition> resources:

For URNs in the requested namespace that refer to additional resources related to ISO documents, the ISO Central Secretariat will specify the resolution procedure at the time it defines the syntax for the corresponding <addition> to the <std-nss>. In most cases, those resources will be maintained on an ISO website, as extensions to the http URIs described above.

2.9. Rules for Lexical Equivalence

URNs are lexically equivalent if they are octet-by-octet equal after the following preprocessing:

1. normalize the case of the leading "urn:" token

2. normalize the case of the NID

3. normalize the case of any %-escaping

4. normalize the case of all elements

Further information is specified in [RFC2141], Section 5.

2.10. Conformance with URN Syntax

No special considerations.

2.11. Validation Mechanism

None specified.

2.12. Scope

Global.

3. Namespace Considerations

The ISO-specific requirements are as follows:

- globally unique, persistent identifiers
- location-independent identifiers
- human-interpretable identifiers
- a scheme applicable to paper documents as well as machine-readable documents
- a scheme applicable to conceptual documents and explicit forms of documents
- a scheme applicable to resources extracted from documents
- a scheme applicable to "metadata" associated with documents
- a scheme in which the identifier assignment is managed by the ISO Central Secretariat

Location-independence: Because the publication of ISO standards is a complex arrangement involving multiple development organizations and national standards institutes, a given ISO document may be available in a number of forms from a number of sources. This makes it important to have a document identifier that is global in scope, widely and uniformly used, and independent of the text source used by any given reference.

Human-interpretable: Many, perhaps most, references to documents appear in text generated by human authors. It is important that an author familiar with the scheme be able to generate a correct URN for a document for which the author has the ISO reference (or document identifier). Conversely, it is important that a reader unfamiliar

with the scheme be able to identify the URN as a reference to an ISO document, particularly an ISO standard, and also to recognize identifiers for forms, languages, or metadata sets.

Paper documents: Older ISO standards that are commonly used as industrial references exist only in paper form or in earlier machine-readable forms that are not commonly used on the Internet. It is important to have a document identifier scheme that extends to these resources as well. (In fact, many of these have been converted to Internet forms, and others are being converted, but it is important that the identifier be independent of the form in which the document can be obtained at any given time.)

Conceptual documents vs. representation forms: Because ISO documents are regularly maintained and re-published in multiple forms, it is important to have document identifiers that denote the conceptual document, without regard to publication form. At the same time, it is necessary for certain types of use to be able to refer to specific editions, or specific publication forms (for example, editions in different languages, or to PDF or HTML versions). This URN specification allows for the identification of these different types of use in the <isodefined> part of the <addition> element.

Document extracts: ISO standards may contain formal specifications in machine-processable languages, or formal specifications that also have representations in machine-processable languages. It is useful to be able to extract these specifications in machine-processable form as separate resources, and therefore it is necessary to give these "extracted resources" global identifiers derived from the document identifier using a consistent identification scheme.

Document metadata: Certain uses of documents and document text, primarily bibliographic, also extract information from the documents, and that information, commonly called "metadata", is organized in machine-readable forms conforming to other standards. These metadata sets then become resources in their own right. It is important to give them URN identifiers consistent with the document identification scheme.

4. Community Considerations

The ISO community is broad in two dimensions. In one dimension, its documents are developed and used in a large variety of industries and professions: natural sciences, manufacturing, construction, transportation, information technology, social sciences, etc. In the other dimension, it is a community of expert developers, standards

managers, publishers, professional users, and consumers. And Internet information technologies are a part of common professional practice in all of these areas in both dimensions.

ISO standards are cited in business agreements, in professional publications, in product descriptions, and in standards development and publication activities. When these citations appear in electronic form, the references must be unambiguous.

The information technology community is itself very active in the development and use of standards, and many ISO publications are developed by and for that community. When an Internet information exchange uses a form specified in an ISO document, or a terminology defined in an ISO document, it is often necessary to identify that ISO specification in the envelope surrounding the exchange. That identification should use a formal, unambiguous identifier in a form readily recognized by the receiving software, and possibly by the ultimate human recipient of the information.

In order to facilitate the use of existing and emerging Internet technologies for all of these purposes, URNs conforming to [RFC2141] represent the most useful form of formal, globally unambiguous identifiers. The use of a managed namespace for such identifiers, following a consistent scheme for identifying ISO documents and their derivatives, would be of significant benefit to the entire ISO community.

- It would give professional users in many industries a standard form for electronic reference to ISO standards in HTML, XML, PDF, etc., documents.

- It would give software developers a standard form for reference to ISO standard protocols, schemata, languages, data sets, etc.

- It would give standards developers a standard form for reference to other ISO publications in various stages of development. And it would give them a standard form for creating identifiers for machine-readable information sets contained in, or derived from, the specifications.

- It would give standards managers and publishers a formal uniform scheme for reference to specific publications, editions, and versions of ISO documents.

While the assignment of identifiers under this scheme is managed by the ISO Central Secretariat, the processes by which the identified objects arise and acquire such identifiers are the result of agreements made by the member bodies. Every such project is

initiated by one member body and reviewed and voted on by the others. Every accepted project is open to participation by any member body, and in fact, participation by a certain minimum number (usually 5) of member bodies is required for acceptance of most projects. In general, the member bodies are open professional and industrial organizations reflecting broad expertise and national interest.

It should be noted that ISO documents in draft state are not usually made available outside the ISO standards development community. Making them available to professionals outside of the process might well mislead the recipients into premature adoption of practices that are not yet completely specified or have not yet achieved consensus, and therefore may well change.

It should also be noted that ISO documents are not, in general, freely available over the Internet. Rather, there are complex agreements between ISO and its member institutes as to the rights to the publications and the corresponding fees that may be charged for paper or electronic copies of various editions. Some ISO documents are freely available, and some are freely available in certain forms. In general, derivatives of ISO documents (schemata, metadata sets, etc.) are freely available over the Internet in the appropriate machine-readable forms. A URL associated with a URN in the requested namespace may therefore lead directly to a machine-readable copy of the text of the document or derivative, or it may lead to a site that can provide that text for a fee, or it may lead to a site that can only sell a paper copy of the document. Bearing in mind that ISO is a network of otherwise independent institutes, this behavior is simply a property of the ISO community.

Finally, it should be noted that, for many purposes, reference to the ISO standard is what is required, and only the product engineer or software tool builder actually needs access to the text. This request is based on the need to standardize the form of reference, not the means of access.

5. IANA Considerations

IANA has assigned "iso" (29) as a formal NID.

The ISO Central Secretariat will maintain a registry of the permissible values for the elements comprising the NSS. Information may be obtained from the following address: urn@iso.org.

6. Security Considerations

The ISO URN Namespace ID shares the security considerations outlined in [RFC3406], but has no other known security considerations.

7. References

7.1. Normative References

[ISODIR-1] International Organization for Standardization, "Procedures for the technical work", ISO/IEC Directives Part 1, Edition 5, 2004.

[ISODIR-2] International Organization for Standardization, "Rules for the structure and drafting of International Standards", ISO/IEC Directives Part 2, Edition 5, 2004.

[ISODIR-S] International Organization for Standardization, "Procedures specific to ISO", ISO/IEC Directives Supplement.

[ISOGUIDE69] International Organization for Standardization, "Harmonized Stage Code system (Edition 2) - Principles and guidelines for use", ISO Guide 69:1999.

[ISO639-1] International Organization for Standardization, "Codes for the representation of names of languages - Part 1: Alpha-2 code", ISO 639-1:2002.

[RFC2141] Moats, R., "URN Syntax", RFC 2141, May 1997.

[RFC3406] Daigle, L., van Gulik, D., Iannella, R., and P. Faltstrom, "Uniform Resource Names (URN) Namespace Definition Mechanisms", BCP 66, RFC 3406, October 2002.

[RFC5234] Crocker, D., Ed., and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", STD 68, RFC 5234, January 2008.

7.2. Informative References

[ISO8879:1986] International Organization for Standardization, "Information processing -- Text and office systems -- Standard Generalized Markup Language (SGML)", ISO 8879:1986.

[ISO/IEC9070:1991] International Organization for Standardization, "Information technology -- SGML support facilities -- Registration procedures for public text owner identifiers", ISO/IEC 9070:1991.

[ISO/IEC8824-1:2002]
International Organization for Standardization, "Information technology -- Abstract Syntax Notation One (ASN.1): Specification of basic notation -- Part 1", ISO/IEC 8824-1:2002.

[ISO/IEC8825:1987]
International Organization for Standardization, "Information processing systems -- Open Systems Interconnection -- Specification of Basic Encoding Rules for Abstract Syntax Notation ONE (ASN.1)", ISO/IEC 8825:1987.

[CCITT] "Specification of Basic Encoding Rules for Abstract Syntax Notation One (ASN.1)", CCITT Recommendation X.209, January 1988.

[RFC3061] Mealling, M., "A URN Namespace of Object Identifiers", RFC 3061, February 2001.

[RFC3151] Walsh, N., Cowan, J., and P. Grosso, "A URN Namespace for Public Identifiers", RFC 3151, August 2001.

[RFC4646] Phillips, A. and M. Davis, "Tags for Identifying Languages", BCP 47, RFC 4646, September 2006.

Appendix A. Alternative Naming Schemes

Before initiating this request, ISO attempted to find an existing or currently proposed URN NID scheme that might be used instead of a dedicated scheme. Two existing schemes were carefully considered because they clearly meet part of the requirements:

- The OID scheme, documented in [RFC3061]
- The PublicId scheme, documented in [RFC3151]

The OID scheme is derived from the joint ISO/ITU-T ASN.1 object-identifier scheme specified in [ISO/IEC8824-1:2002] (original edition 1984; [RFC3061] cites the 1988 [CCITT] edition of the encoding rules in [ISO/IEC8825:1987]. This standard assigned the registry authority for all identifiers in the { iso(1) } namespace to ISO, and therefore, ISO controls the registry of all identifiers beginning "oid:1:". And in fact, ISO has developed, and is using, an identification scheme under ASN.1 that meets most of the above requirements. ISO could clearly define a use of the OID scheme that would be adequate to meet all of its technical objectives, although it would further complicate the current ASN.1 scheme.

The original intent of ISO 8824 was to permit both a human-readable form for the identifier, to maximize intuitive recognition, and an encoding that minimized the number of bits needed to communicate an OID value over a network. Regrettably, the encoding chosen in RFC 3061 is much closer to the minimal bits encoding than to the human-readable one. The NSS for the OID scheme consists entirely of digits and punctuation. For example, the ASN.1 identifier { iso(1) standard(0) 7852 part(2) edition(3) } becomes: urn:oid:1:0:7852:2:3.

This is difficult for a human reader or author to interpret. It is also easy to mistype, and the scheme contains no "check-digits", which makes it difficult to validate, leading to the propagation of URNS that are invalid or valid but erroneous. Finally, the all-numeric form conveys no hint of the name of the responsible organization, and therefore no hint of any URL that might aid a human reader in interpreting the reference. The OID scheme makes all of the required identifiers technically possible and technically useable by software, but for all practical purposes, the OID URNs are useful only to software.

The PublicId scheme is derived from Standard Generalized Markup Language (SGML) [ISO8879:1986] and [ISO/IEC9070:1991] bibliographic catalogue forms. Narrowed to ISO publications, it is adequate for the unique global persistent identification of published documents, in both paper and machine-processable form.

Importantly, the PublicId scheme does not have a "conceptual document" notion -- it identifies specific publications and editions. "Weak identification" could be used to implement the conceptual document concept, but the PublicId scheme does not document that interpretation. In any case, the PublicId scheme does not extend to draft documents, which are often referenced in pilot implementations, to separate forms of a document, or to resources extracted from documents. It supports only those metadata elements that are defined in SGML. The scheme could be extended to do most of these, but the ISO-specific extensions would not in general extend to the much broader base of documents identified by PublicIds. (Version and edition management practices vary significantly across publishers, depending on their milieu.) Further, the ISO Central Secretariat could not and should not control the registry of such URNs.

ISO therefore concluded that the alternative schemes are not adequate to meet the requirements of the ISO community.

Whilst requesting a new namespace for ISO documents and their derivatives, ISO does not wish to discourage the use of these other identifiers for ISO publications. The PublicId form, in particular, is useful for referring to ISO publications in a larger bibliographic information space.

Appendix B. ABNF Definition of Namespace ID = "iso" (Informative)

```
NSS           = std-nss

std-nss       = "std:" docidentifier *supplement *docelement
                [addition]

docidentifier = originator [":" type] ":" docnumber [":" partnumber]
                [[":" status] ":" edition]
                [":" docversion] [":" language]

originator    = "iso" / "iso-iec" / "iso-cie" / "iso-astm" /
                "iso-ieee" / "iec"

                ; iso      = International Organization for
                ;            Standardization

                ; iec      = International Electrotechnical
                ;            Commission (IEC), or Commission
                ;            Electrotechnique Internationale

                ; iso-iec  = jointly developed by ISO and IEC
```

```
                    ; iso-cie  = jointly developed by ISO and the
                    ;            Commission Internationale d'Eclairage
                    ;            (CIE)

                    ; iso-astm = jointly developed by ISO and the
                    ;            American Society for Testing and
                    ;            Materials (ASTM) International

                    ; iso-ieee = jointly developed by ISO and the
                    ;            Institute for Electrical and
                    ;            Electronics Engineers (IEEE)

   type           = "data" / "guide" / "isp" / "iwa" /
                    "pas" / "r" / "tr" / "ts" / "tta"

                    ; data  = Data (document type no longer published)

                    ; guide = Guide

                    ; isp   = International Standardized Profile

                    ; iwa   = International Workshop Agreement

                    ; pas   = Publicly Available Specification

                    ; r     = Recommendation (document type no longer
                    ;         published)

                    ; tr    = Technical Report

                    ; ts    = Technical Specification

                    ; tta   = Technology Trends Assessment

   docnumber      = DIGITS

   partnumber     = "-" 1*( DIGIT / ALPHA / "-" )

   status         = ( "draft" / "cancelled" ) / stage

                    ; draft     =  document that has not yet been
                    ;              accepted for publication by
                    ;              international ballot

                    ; cancelled =  document that has been deleted or
                    ;              withdrawn

   stage          = "stage-" stagecode ["." iteration]
```

```
   stagecode     = DIGIT DIGIT "."  DIGIT DIGIT

   iteration     = "v" DIGITS

   edition       = "ed-" DIGITS

   docversion    = "v" (simpleversion / isoversion)

   simpleversion = DIGITS

                   ; 1 = first version published

                   ; 2 = corrected version published

   isoversion    = baseversion *includedsuppl

   baseversion   = DIGITS

   includedsuppl = "-" suppltype supplnumber [ "." supplversion ]

   language      = monolingual / bilingual / trilingual

   monolingual   = "en" / "fr" / "ru" / "es" / "ar"

   bilingual     = "en,fr" / "en,ru" / "fr,ru"

   trilingual    = "en,fr,ru"

   supplement    = ":" suppltype ":" supplnumber
                   [":" supplversion ] [":" language ]

   suppltype     = "amd" / "cor" / "add"

                   ; amd = Amendment

                   ; cor = Technical Corrigendum

                   ; add = Addendum

   supplnumber   = DIGITS

   supplversion  = "v" DIGITS

   docelement    = ":" ( "clause" / "figure" / "table" / "term" ) ":"
                   elementnumber / elementrange
                   *( "," elementnumber / elementrange )

   elementnumber = ( ALPHA / DIGITS ) *( "."  DIGITS )
```

```
   elementrange  = elementnumber "-" elementnumber

   addition      = techdefined / isodefined

   techdefined   = ":tech" *techelement

   techelement   = <unspecified>

   isodefined    = <unspecified>

   DIGITS        = DIGIT *DIGIT

   DIGIT         = %x30-39 ; 0-9

   ALPHA         = %x41-5A / %x61-7A ; A-Z / a-z
```

Authors' Addresses

Joanna Goodwin
International Organization for Standardization
Case Postal 56
Geneva 20 1211
Switzerland

EMail: goodwin@iso.org
URI: http://www.iso.org

Holger Apel
International Organization for Standardization
Case Postal 56
Geneva 20 1211
Switzerland

EMail: apel@iso.org
URI: http://www.iso.org

Full Copyright Statement

Intellectual Property