A URN Namespace for Public Identifiers

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Abstract

This document describes a URN (Uniform Resource Name) namespace that
is designed to allow Public Identifiers to be expressed in URI
(Uniform Resource Identifiers) syntax.

1. Introduction

XML [1] external entities have two identifiers: a system identifier
and a public identifier. The system identifier is a URI, by
definition, but the public identifier is simply a string.

Historically, the system identifier of an external entity has been a
local, or system-specific identifier while the public identifier has
been a more global, persistent name.

Unfortunately, public identifiers do not fit neatly into the existing
web architecture because they are not legal URIs. Many new
specifications (XSLT, XML Schema, etc.) have the implicit or explicit
requirement that all external identifiers be URIs.

The purpose of this namespace is to allow public identifiers to be
encoded in URNs in a reliable, comparable way.

This document describes a scheme for representing public identifiers as URNs by introducing a public identifier namespace, "publicid".

This namespace specification is for a formal namespace.

1.1 Public Identifiers

Any string which consists only of the public identifier characters (defined by Production 13 of Extensible Markup Language (XML) 1.0 Second Edition [1]) is a legal public identifier.

In addition to the character set restriction, public identifiers must be normalized by changing all strings of whitespace (the characters #x20, #x9, #xD, and #xA) to single space characters (#x20), and removing all leading and trailing whitespace.

In keeping with this specification's goal of allowing public identifiers to be encoded in a reliable, comparable way, this specification mandates that public identifiers be normalized before encoding them into URNs. Throughout this specification, we assume that normalization has already been performed.

1.2 Formal Public Identifiers

SGML [2] defines a restricted subset of public identifier called a "Formal Public Identifier" (FPI).

FPIs are strings composed from the same range of characters as public identifiers, but with an explicit internal structure. The structure of Formal Public Identifiers is normatively described in SGML [2]; we review it here for convenience.

Most Formal Public Identifiers consist of the following fields, in this order: an owner identifier, a public text class, a public text description, a public text language or public text designating sequence, and an optional public text display version.

Owner identifiers may begin with "-//" or "+//"; otherwise "//" is used to delimit fields in the FPI (with the exception of the public text class which is delimited from the public text description by a space).

In other words, most FPIs look like this:

    owner//class description//language//version

and most owners begin with "+//" or "-//", although they are not required to. Here are some example FPIs:

```
+//IDN python.org//DTD XML Bookmark Exchange Language 1.0//EN//XML
-//OASIS//DTD DocBook XML V4.1.2//EN
-//ArborText::prod//DTD Help Navigation Document::19970708//EN
ISO/IEC 10179:1996//DTD DSSSL Architecture//EN
ISO 8879:1986//ENTITIES Added Latin 1//EN
```

This document describes an algorithm for encoding public identifiers into URNs that explicitly allows the structured nature of formal public identifiers to be preserved. However, an algorithm for correctly identifying a Formal Public Identifier and determining the various fields within it is out of scope for this document and not necessary for the implementation of this URN namespace.

2. Specification Template

Namespace ID:

   "publicid" requested.

Registration Information:

   Registration Version Number: 1
   Registration Date: 2001-05-08

Declared registrant of the namespace:

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Declaration of structure:

   The Namespace Specific String (NSS) for URNs in the "publicid" namespace has the following structure:

      urn:publicid:{transcribed-public-identifier}

   Where:

         {transcribed-public-identifier} is the text of the public identifier transcribed according to the following rules:

- A space in the public identifier is transcribed as
  "+". Whitespace normalization must be performed
  before constructing a URN in the "publicid" namespace,
  therefore adjacent "+" characters never occur in URNs
  in this namespace.
- The sequence of characters "//" is transcribed as ":".
- The sequence of characters "::" is transcribed as ";".
- A literal "+" character is transcribed as "%2B".
- A literal ":" character (except in "::") is
  transcribed as "%3A".
- A literal "/" character (except in "//") is
  transcribed as "%2F".
- A literal ";" character is transcribed as "%3B".
- A literal "'" character is transcribed as "%27".
- A literal "?" character is transcribed as "%3F".
- A literal "#" character is transcribed as "%23".
- A literal "%" character is transcribed as "%25".

The special rules for "//" and "::" are designed to preserve the
structured nature of formal public identifiers without requiring the
translator to have special knowledge of FPI syntax.

The rules for "+", ":", "/", and ";" are required to preserve literal
occurrences of these characters in the 'publicid' URN namespace.

The remaining characters, " " (space), "'", "?", "#", and "%", are
the only other legal characters in public identifiers that cannot be
literally transcribed into a URN by the rules of RFC 2141 [4] and RFC
2396 [5].

Relevant ancillary documentation:

    Extensible Markup Language (XML) Version 1.0 Second Edition [1]
    Standard Generalized Markup Language (SGML) [2]
    Registration procedures for public text owner identifiers [3]

Identifier uniqueness considerations:

    The identifier uniqueness considerations for URNs in the
    "publicid" namespace are the same as the identifier uniqueness
    considerations for public identifiers. Formal Public Identifiers
    with registered owner identifiers are required to be unique. For
    unregistered owner identifiers and informal public identifiers,
    they may or may not be unique. No enforcement policy can be
    asserted.

Identifier persistence considerations:

   The persistence of URNs in the "publicid" namespace is the same as
   the persistence of the corresponding public identifier.

   The "publicid" namespace is available for a wide range of uses; it
   cannot be subjected to a uniform persistence policy. As a general
   rule, formal public identifiers with registered owner identifiers
   are more likely to be persistent than informal public identifiers
   or formal public identifiers with unregistered owner identifiers.

   One exception to this rule is the "IDN" scheme for producing a
   registered owner identifier from a domain name. That scheme
   contains at least all the weaknesses associated with the
   persistence of domain names.

   It is important to note that a properly registered owner
   identifier can apply any policy desired to the portion of the
   "publicid" URN namespace identified by that owner identifier.

Process of identifier assignment:

   Identifiers in the "publicid" namespace are assigned by applying
   the conversions described above to a public identifier. In order
   to provide a URN in this namespace for a resource that does not
   have a public identifier, one must be created (according to the
   rules for creating public identifiers).

   There is no requirement that a resource have only one public
   identifier.

Process of identifier resolution:

   Identifiers in the "publicid" namespace may be resolved by the
   same policies and procedures as public identifiers. Public
   identifiers can be resolved in many different ways. Many existing
   systems provide facilities for resolving them by way of OASIS
   TR9401 [6] Catalog files. Other systems resolve them by mapping
   each component to a local pathname component. And some systems
   simply "know about" a fixed set of public identifiers. In
   addition, URNs in the 'publicid' namespace may be resolvable by
   other mechanisms unique to URIs (such as caches).

Rules for Lexical Equivalence:

   Whitespace normalization is performed before constructing a URN in
   the "publicid" namespace, so URNs are lexically equivalent if and
   only if they are lexically identical.

Conformance with URN Syntax:

> No special considerations. URNs in this namespace conform to both
> RFC 2141 and RFC 2396.

Validation mechanism:

> None specified.

Scope:

> Global

3. Examples

The following examples are not guaranteed to be real. They are
listed for pedagogical reasons only.

> "ISO/IEC 10179:1996//DTD DSSSL Architecture//EN" becomes
> "urn:publicid:ISO%2FIEC+10179%3A1996:DTD+DSSSL+Architecture:EN"
>
> "ISO 8879:1986//ENTITIES Added Latin 1//EN" becomes
> "urn:publicid:ISO+8879%3A1986:ENTITIES+Added+Latin+1:EN"
>
> "-//OASIS//DTD DocBook XML V4.1.2//EN" becomes
> "urn:publicid:-:OASIS:DTD+DocBook+XML+V4.1.2:EN"
>
> "+//IDN example.org//DTD XML Bookmarks 1.0//EN//XML" becomes
> "urn:publicid:%2B:IDN+example.org:DTD+XML+Bookmarks+1.0:EN:XML"
>
> "-//ArborText::prod//DTD Help Document::19970708//EN" becomes
> "urn:publicid:-:ArborText;prod:DTD+Help+Document;19970708:EN"
>
> "foo" becomes
> "urn:publicid:foo"
>
> "3+3=6" becomes
> "urn:publicid:3%2B3=6"
>
> "-//Acme, Inc.//DTD Book Version 1.0" becomes
> "urn:publicid:-:Acme,+Inc.:DTD+Book+Version+1.0"

4. Security Considerations

> There are no additional security considerations other than those
> normally associated with the use and resolution of URNs in
> general.

References

   [1]   W3C, XML WG, "Extensible Markup Language (XML) 1.0 Second
          Edition", February 1998, <http://www.w3.org/TR/REC-xml>.

   [2]   JTC 1, SC 34, "ISO 8879:1986 Information processing -- Text and
          office systems -- Standard Generalized Markup Language (SGML)",
          1986.

   [3]   JTC 1, SC 34, "ISO/IEC 9070:1991 Information technology -- SGML
          support facilities -- Registration procedures for public text
          owner identifiers", 1991.

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

   [5]   Berners-Lee, T., Fielding, R. and L. Masinter, "Uniform
          Resource Identifiers (URI): Generic Syntax", RFC 2396, August
          1998.

   [6]   Grosso, P., "Entity Management: OASIS Technical Resolution
          9401:1997 (Amendment 2 to TR 9401)", Sep 1997,
          <http://www.oasis-open.org/html/tr9401.html>.

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