              A Uniform Resource Name (URN) Namespace
                     for Sources of Law (LEX)
                    draft-spinosa-urn-lex-15.txt

Abstract

   This document describes a Uniform Resource Name (URN) Namespace
   Identification (NID) convention for identifying, naming, assigning,
   and managing persistent resources in the legal domain. This
   specification is published to allow adoption of a common convention
   by multiple jurisdictions to facilitate ease of reference and access
   to resources in the legal domain.

Status of this Memo

   This Internet-Draft is submitted to IETF in full conformance with the
   provisions of BCP 78 and BCP 79.

   Internet-Drafts are working documents of the Internet Engineering
   Task Force (IETF), its areas, and its working groups. Note that
   other groups may also distribute working documents as
   Internet-Drafts.

   Internet-Drafts are draft documents valid for a maximum of six months
   and may be updated, replaced, or obsoleted by other documents at any
   time. It is inappropriate to use Internet-Drafts as reference
   material or to cite them other than as "work in progress."

   The list of current Internet-Drafts can be accessed at
   http://www.ietf.org/1id-abstracts.html

   The list of Internet-Draft Shadow Directories can be accessed at
   http://www.ietf.org/shadow.html

   This Internet-Draft will expire on September 18, 2022.

Copyright Notice

Table of Contents

1 Introduction

1.1 The Purpose of Namespace "lex"

The purpose of the "lex" namespace is to assign an unequivocal
identifier, in well-defined format, to documents that are sources of
law. To the extent of this namespace, "sources of law" include any
legal document within the domain of legislation, case law and
administrative acts or regulations; moreover potential "sources of
law" (acts under the process of law formation, as bills) are included
as well. Therefore "legal doctrine" is explicitly not covered.

The identifier is conceived so that its designed construction depends
only on the characteristics (details) of the document itself and is,
therefore, independent from the document's on-line availability, its
physical location, and access mode. The identifier itself is assigned
by the jurisdiction that owns the identified document. Even a
document that is not available online at all may still have a LEX URN
that identifies it.

This identifier can be used as a way to represent the references (and
more generally, any type of relation) among the various sources of
law. In an on-line environment with resources distributed among
different Web publishers, uniform resource names allow simplified
global interconnection of legal documents by means of automated
hypertext linking. LEX URNs are therefore particularly useful when
they can be mapped into or associated with locators such as HTTP
URLs.

1.2 Entities Supporting this Specification

The following entities support the publication of this proposal:

- CNR (National Research Council of Italy) - Italy;
- Agency for Digital Italy (AgID) - Presidency of the Council of
  Ministers - Italy;
- PRODASEN - IT Department of the Federal Senate - Brazil;
- LII (Legal Information Institute), Cornell Law School - USA.

1.3 The Context

This specification of an unequivocal identifier for legal documents
follows a number of initiatives in the field of legal document
management. These specifications for an an unequivocal identifier of
legal documents follows a number of initiatives in the field of legal
document management.

Since 2001 the Italian Government, through the National Center for

Information Technology in the Public Administration, the Ministry of Justice and CNR (the National Research Council of Italy) promoted the NormeInRete project. It was aimed at introducing standards for sources of law description and identification using XML and URN techniques.

Other national initiatives in Europe introduced standards for the description of legal sources [FRAN]. Such initiatives, based in synergies between government, national research institutes, and universities, have defined national XML standards for legal document management, as well as schemes for legal document identification. Outside Europe, similar initiatives have addressed similar problems [FRAN]. Several of these identifiers are based on a URN schema.

In today's information society the processes of political, social and economic integration of European Union member states as well as the increasing integration of the world-wide legal and economic processes are causing a growing interest in exchanging legal information knowledge at national and trans-national levels.
The growing desire for improved quality and accessibility of legal information amplifies the need for interoperability among legal information systems across national boundaries. A common well-defined schema used to identify sources of law at international level is an essential prerequisite for interoperability.

Interest groups within several countries have already expressed their intention to adopt a shared solution based on a URN technique.
The need for an unequivocal identifier of sources of law in different EU Member States, based on open standards and able to provide advanced modalities of document hyper-linking, has been expressed in several conferences (as [LVI]) by representatives of the Publications Office of the European Union (OP), with the aim of promoting interoperability among national and European institution information systems. Similar concerns have been raised by international groups concerned with free access to legal information, and the Permanent Bureau of the Hague Conference on Private International Law [HCPIL] that encourage State Parties to "adopt neutral methods of citation of their legal materials, including methods that are medium-neutral, provider-neutral and internationally consistent.". In a similar direction the CEN Metalex initiative is moving, at European level, towards the definition of a standard interchange format for sources of law, including recommendations for defining naming conventions to them.

The need of unequivocal identifiers for sources of law is of particular interest also in the domain of case law. Such need is extremely felt within both common law systems, where cases are the main law sources, and civil law systems, for the importance of

providing an integrated access to cases and legislation, as well as to track the relationships between them. This domain is characterized by a high degree of fragmentation in case law information systems, which usually lack interoperability.
In the European Union, the community institutions have stressed the need for citizens, businesses, lawyers, prosecutors and judges to become more aware not only of (directly applicable) EU law, but also of the various national legal systems. The growing importance of national judiciaries for the application of Community law was stressed in the resolution of the European Parliament of 9 July 2008 on the role of the national judge in the European judicial system. Similarly the the Council of the European Union has underlined the importance of cross-border access to national case law, as well as the need for its standardisation, in view of an integrated access in a decentralized architecture. In this view the Working Party on Legal Data Processing (e-Law) of the Council of the European Union formed a task group to study the possibilities for improving cross-border access to national case law. Taking notice of the report of the Working Party's task group the Council of the EU decided in 2009 to elaborate on a uniform, European system for the identification of case law (ECLI: European Case-Law Identifier) and uniform Dublin Core-based set of metadata.
The Council of the European Union invited the Member States to introduce in the legal information systems the European Legislation Identifier (ELI), an http-based Semantic Web oriented identification system for European Union and Member States legislation.

The LEX identifier (also referred in this text as "LEX name") is conceived to be general enough so as to provide guidance at the core of the standard and sufficient flexibility to cover a wide variety of needs for identifying all the legal documents of different nature, namely legislative, case-law and administrative acts. Moreover, it can be effectively used within a federative environment where different publishers (public and private) can provide their own items of a legal document (that is there is more than one manifestation of the same legal document).
However specifications and syntax rules of LEX identifier can be used also for http-based naming convention (Appendix D) to cope with different requirements in legal information management, for example the need of having an identifier compliant with the Linked Open Data principles.

This document supplements the required name syntax with a naming convention that interprets all these recommendations into an original solution for sources of law identification.

1.4 General Characteristics of the System

The specification contained in this document promote interoperability
among legal information systems by the definition of a namespace
convention and structure that will create and manage identifiers for
legal documents. The identifiers will be:
- globally unique
- transparent
- reversible
- persistent
- location-independent, and
- language-neutral.
These qualities will facilitate legal document management as well as
providing a mechanism of stable cross-collections and cross-country
references.

Transparency means that given an act and its relevant metadata
(issuing authority, type of measure, etc.) it is possible to create
the related urn identifier. Moreover this identifier is able to
unequivocally identify the related act. These two properties make the
identification system reversible (from an act to its URN and from a
URN to the related act).

Language-neutrality is an especially important feature that will
promote adoption of the standard by organizations that must adhere to
official-language requirements. This specification provides useful
guidance to both public and private groups that create, promulgate,
and publish legal documents. Registrants wish to minimize the
potential for creating conflicting proprietary schemes, while
preserving sufficient flexibility to allow for diverse document types
and to respect the need for local control of collections by an
equally diverse assortment of administrative entities.

As usual, the problem is to provide the right amount guidance at the
core of the specification while providing sufficient flexibility to
cover a wide variety of needs. This LEX specification does this by
splitting the identifier into parts. The first part uses a pre-
existing standard specification ("country/jurisdiction name
standard") to indicate the country (or more generally the
jurisdiction) of origin for the legal document being identified; the
remainder ("local name") is intended for local use in identifying
documents issued in that country or jurisdiction. This second part
depends only on the system of sources of law identification operating
in that nation and it is mainly composed by formalized information
related to the enacting authority, the type of measure, the details
and possibly the annex.

The identification system based on uniform names includes:
- a schema for assigning names capable of representing unambiguously
  any addressed source of law (namely legislation, case law and

administrative acts), issued by any authority (intergovernmental,
supranational, national, regional and local) at any time (past,
present and future);
- a resolution mechanism - in a distributed environment - that ties a
  uniform name to the on-line location of the corresponding
  resource(s).
This document considers the first of these requirements. It also
contains a few references to the architecture of the resolution
service and to the corresponding software.

1.5 Linking a LEX Name to a Document

The LEX name is linked to the document through meta-information which
may be specified:
- internally to the document itself through a specific element within
  an XML schema or by an [HTML] META tag;
- externally by means of a Resource Description Framework [RDF]
  triple, a specific attribute in a database, etc.
At least one of these modalities is necessary for enabling automated
construction and updating of catalogues (distributed and centralized)
and the implementation of resolvers that associate the uniform name
of a document with its physical location(s). LEX assumes no
particular relationship between the originator of the document, its
publisher, and the implementer of catalogues or resolution services.
They may be the same entity, or not.

1.6 Use of LEX Names in References

LEX names can be used in references as a HREF attribute value of the
hypertext link to the referred document.
This link can be created in two ways:
- by manually inserting, in the referring document, the link with the
  uniform name: this is a burdensome procedure especially for
  documents that are already on-line;
- by automatically constructing (either permanently or temporarily)
  the link with the uniform name, through reference parsers of a
  text: this is a more time-saving procedure even if subject to a
  certain percentage of errors, since references are not always
  accurate or complete. This solution could nevertheless be
  acceptable for already published documents.
In any case, whatever the method adopted is, new documents produced
in XML format (compliant with the DTD/XMLSchema defined in the
related country) should express references through the uniform name
of the document referred to.

1.7 Definitions

According to this document, the following terms are used in the

following meaning:
- Source of Law:
  is a general concept, and is used to refer to legislation, case
  law, regulations and administrative acts. In its broadest sense,
  the source of law is anything that can be conceived of as the
  originator of 'erga omnes' legal rules. In this document "source of
  law" refers also to acts during their formation cycle as bills that
  might or might not become sources of law;
- Jurisdictional Registrar:
  is an organization which shares and defines in any country or
  jurisdiction the assignment of the main components of the resource
  identifier through which the identifier uniqueness is guaranteed.
  This task includes the definition of allowed jurisdiction names and
  units, as well as the primary elements (issuing authorities and
  type of legal measures) of LEX URNs according to the
  characteristics of the jurisdiction or institutions organization.

1.8 Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
"SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and
"OPTIONAL" in this document are to be interpreted as described in BCP
14 [RFC2119] [RFC8174] when, and only when, they appear in all
capitals, as shown here.

1.9 Syntax Used in this Document

This document uses the syntax common to many Internet RFCs, which is
based on the ABNF (Augmented Backus-Naur Form) [RFC5234] meta-
language.

2 Registration Template

This section provides the details of the URN registration using the
template and guidance found in [RFC8141].

   Namespace Identifier:

      "lex" requested according to [RFC8141].

   Version:

      1.0

   Date:

      2021-04-26

   Registrant:

National Research Council of Italy (CNR)
Via de' Barucci, 20
50127 Florence
Italy
e-mail: lex@ittig.cnr.it
phone: +39 055 43995

contact: Enrico Francesconi
e-mail: enrico.francesconi@cnr.it

Purpose:

The purpose of the "lex" namespace is to assign an unequivocal
identifier, in well-defined format, to documents that are
sources of law.

This specification of an unequivocal identifier for legal
documents follows a number of initiatives in the field of legal
document management. Those initiatives were aimed at
introducing standards for sources of law identification and
mark-up using URI and XML techniques, respectively (for more
details see Section 1.3). The LEX identifier is conceived to
be general enough, so as to provide guidance at the core of the
specification and sufficient flexibility to cover a wide
variety of needs for identifying all the legal documents of
different nature, namely legislative, case-law and
administrative acts. Moreover, it can be effectively used
within a federative environment where different publishers
(public and private) can provide their own items of an act
(that is there is more than one manifestation of the same act).

The LEX identifier is conceived to be: globally unique,
transparent, reversible, persistent, location-independent, and
language-neutral. It is organized into parts. The first part
uses a predetermined standard to specify the country (or more
generally the jurisdiction) of origin for the legal document
being identified; the remainder is intended for local use in
identifying documents issued in that country or jurisdiction.
This second part depends only on the system of sources of law
identification operating in that nation and it is mainly
composed by formalized information related to the enacting
authority, the type of measure, the details and possibly the
annex. For more details on the nature of the LEX
characteristics and the general internal organization, see
Section 1.4.

The LEX name is linked to the document through specific meta-
information, internally (with a tag) or externally (with a

attribute) (for details on this see Section 1.5)

LEX names can be used in references either in (X)HTML document
or, more generally, in XML documents format (compliant with the
DTD/XMLSchema defined in the related country) (see Section 1.6
for more information).

Syntax:

The identifier has a hierarchical structure as follows:

"urn:lex:" NSS

where <NSS> is the Namespace Specific String composed as
follows:

NSS = jurisdiction ":" local-name

where:

<jurisdiction> is the part providing the identification of the
jurisdiction, identifying the scope (state, regional,
municipal, supranational or of an organization) where a set of
sources of law have validity. It is also possible to represent
international organizations (either states or public
administrations or private entities);

<local-name> is the uniform name of the source of law in the
country or jurisdiction where it is issued; its internal
structure is common to the already adopted schemas. It is able
to represent all the aspects of an intellectual production, as
it is a legal document, from its initial idea, through its
evolution during the time, to its realisation by different
means (paper, digital, etc.).

LEX specifications give information on the internal structure
of both <jurisdiction> and <local-name>, including
specifications about case sensitivity, the use of national
characters and diacritics, as well as spaces, connectives,
punctuation marks, abbreviations, acronyms, date formats and
ordinal numbers. For more details on the internal structure and
syntax of the LEX identifier, see Section 3, 4 and 5.

The use of r- and q- components, introduced by [RFC8141], with
LEX URNs is not defined in this document. However a LEX URNs
resolution system can be developed to deal with such components
according to the semantics specified in [RFC8141].

Assignment:

> The Jurisdictional Registrar (or those it delegates) of each
> adhering country or organization is responsible for the
> definition or acceptance of the uniform name's primary elements
> (issuing authority and type of legal measure).
>
> Any country or jurisdiction, aiming to adopt this schema,
> identifies a Jurisdictional Registrar, an organization which
> shares and defines the structure of the optional part of the
> name, according to the organization of the state or
> institution. The process of assigning the <local-name> will be
> managed by each specific country or jurisdiction under the
> related <jurisdiction> element (details on this can be found in
> Section 7.2).
>
> Identifiers in the "lex" namespace are defined through a
> <jurisdiction> field assigned to the sources of law of a
> specific country or organization, and a <local-name> assigned
> by the issuing authority. The goal of the LEX schema is to
> maintain uniqueness and persistence of all resources identified
> by the assigned URNs. The values of the elements for the LEX
> identifier within a jurisdiction are defined by the
> Jurisdictional Registrar. This ensures that the constructed
> URNs are unique (see Section 7.3 for details on uniqueness).
>
> The persistence of identifiers depends on the durability of the
> institutions that assign and administer them (see Section 7.3
> for details on persistence).

Security and Privacy:

> This document introduces no additional security considerations
> beyond those associated with the use and resolution of URNs in
> general.

Interoperability:

> As an openly specified naming convention to identify sources of
> law at international level, LEX is meant to guarantee
> interoperability among legal information systems across
> national boundaries.
>
> The characteristics of the LEX naming convention facilitate
> legal document management as well as providing a mechanism of
> stable cross-collections and cross-country references, thus
> allowing the distribution of the legal information towards a
> federated architecture.

Resolution:

    The resolution service associates a LEX identifier with a
specific document address on the internet. The architecture of
the resolution service will be organized in two fundamental
components: a chain of information in DNS (Domain Name System)
and a series of resolution services from URNs to URLs, each
competent within a specific domain of the namespace (see
Section 8.1 for more details).

    To cope with possible incomplete or inaccurate uniform names,
the implementation of a catalogue, based on a relational-
database, able to associate a URN to related URLs, is
suggested, as it will lead to a higher flexibility in the
resolution process. A resolver can provide names normalization,
completion of inaccurate or incomplete names, and finally their
resolution in network locations (see Section 8.2 and 8.3 for
characteristics and behaviour of a catalogue for resolution).

Documentation:

    The syntax, semantics and usage details of LEX URNs are given
in [this RFC].

Additional Information:

    See [FRAN] and [SPIN].

Revision Information:

    None

3 Specifications of Registration

3.1 Identifier Structure

The <jurisdiction> element is composed of two specific fields:

    jurisdiction = jurisdiction-code *(";" jurisdiction-unit)

where:

<jurisdiction-code> is usually the identification code of the country
where the source of law is issued.

To facilitate the transparency of the name, the <jurisdiction-code>
follows usually the rules of identification of other Internet
applications, based on Domain Name (for details or special cases see

Section 11.2).
Where applicable, the ccTLD, or the TLD, or the Domain Name of the
country or multinational or international organisation is used. If
such information is not available for a particular institution, a
specific code will be defined (see Section 11.2).
Examples reported in this document are hypothetical and assumed that
the corresponding Domain Name is used for the <jurisdiction-code>.

However, a special register for the <jurisdiction-code> is required,
the rules of which are defined in section 11.2.

<jurisdiction-unit> are the possible administrative hierarchical sub-
structures defined by each country or organisation within their
specific legal system. This additional information can be used in
case two or more levels of legislative or judicial production exist
(e.g., federal, state and municipality level) and the same bodies may
be present in each jurisdiction. Therefore acts of the same type
issued by similar authorities in different areas differ for the
jurisdiction-unit specification. An example can be the following:
"br:governo:decreto" (decree of federal government),
"br;sao.paulo:governo:decreto" (decree of SU+00E3o Paulo state) and
"br;sao.paulo;campinas:governo:decreto" (decree of Campinas
municipality).

Examples (hypothetical) of sources of law identifiers are:

urn:lex:it:stato:legge:2003-09-21;456 (Italian act)
urn:lex:fr:etat:loi:2004-12-06;321 (French act)
urn:lex:es:estado:ley:2002-07-12;123 (Spanish act)
urn:lex:ch;glarus:regiere:erlass:2007-10-15;963 (Glarus Swiss Canton
decree)
urn:lex:eu:commission:directive:2010-03-09;2010-19-EU (EU Commission
Directive)
urn:lex:us:supreme.court:decision:1963-03-18;372.us.335 (US SC
decision)
urn:lex:be:conseil.etat:decision:2008-07-09;185.273 (Decision of the
Belgian Council of State)

3.2 Conformance with URN Syntax

The "lex" NID syntax conforms to [RFC8141]. However, a series of
characters are reserved to identify elements or sub-elements, or for
future extensions of the LEX naming convention (see Section 4.2).

3.3 Validation Mechanism

The Jurisdictional Registrar (or those it delegates) of each adhering
country or organization is responsible for the definition or

acceptance of the uniform name's primary elements (issuing authority
and type of legal measure).

3.4 Scope

Global interest. In fact each body that enacts sources of law can
identify them by this scheme. Furthermore, other bodies (even not
enacting sources of law, such as newspaper or magazine publishers,
etc.) aiming to refer legal documents, can unequivocally identify
them by this scheme.

4 General Syntax and Features of the LEX Identifier

This section lists the general features applicable to all
jurisdictions.

4.1 Allowed and Not Allowed Characters

These characters are defined in accordance with the [RFC8141]
"Uniform Resource Names (URNs)". For various reasons, later
explained, in the "lex" <NSS> only a sub-set of characters is
allowed. All other characters are either eliminated or converted.

For the full syntax of the uniform names in the "lex" space, please
see Attachment A.

4.2 Reserved Characters

These characters MUST always and uniquely be used for the purpose
assigned below.
The first category includes those characters bearing a specific
meaning in the general creation of the URI (Uniform Resource
Identifier)(see Section 2 of [RFC3986]) such as "%", "?", "#" , etc.

The following characters instead are reserved in the specific "lex"
namespace: However, the following reserved characters are given
special meaning in the specific "lex" namespace:

- "@" separator of the expression, that contains information on
  version and language;
- "$" separator of the manifestation, that contains information on
  format, editor, etc.;
- ":" separator of the main elements of the name at any entity;
- ";" separator of level. It identifies the introduction of an
  element at a hierarchically lower level, or the introduction of a
  specification;
- "+" separator of the repetitions of an entire main element (e.g.,
  multiple authorities);

   - "," separator of the repetitions of individual components in the
     main elements, each bearing the same level of specificity (e.g.,
     multiple numbers);
   - "~" separator of the partition identifier in references (e.g.,
     paragraph of an article);
   - "*" and "!" are reserved for future expansions.

   To keep backward compatibility with existing applications in some
   jurisdictions, the "lex" NID syntax does not include the use of the
   character "/" in this version. This character will be converted into
   "-" (see Sections 6.7 and B3.4) or into "." (see Section B4.2).

4.3 Case Sensitivity

   Names belonging to the "lex" namespace are case-insensitive. It is
   RECOMMENDED that they be created in lower case, but names that differ
   only in case MUST be considered to be equivalent.
   (e.g., "Ministry" will be recorded as "ministry").

4.4 National Characters and Diacritic Signs

   In order to exploit DNS as a routing tool towards the proper
   resolution system, to keep editing and communication more simple and
   to avoid character percent-encoding, it is strongly RECOMMENDED that
   national characters and diacritic signs are turned into base ASCII
   characters (e.g., the Italian term "sanitU+00E0" converted into
   "sanita", the French term "ministU+00E8re" converted into
   "ministere"), in case by transliteration (e.g. "MU+00FCnchen"
   converted into "muenchen").
   This conversion consists of:
   - transcription from non-Latin alphabets;
   - transliteration of some signs (diaeresis, eszett, ...);
   - preservation of the only basic characters, eliminating the signs
     placed above (accents, tilde, ...), below (cedilla, little tail,
     ...) or on (oblique cut, ...).

   If this conversion is not acceptable by a specific jurisdiction or is
   not available in a given language, UTF-8 %-encoding [STD63] MUST be
   used. In this case it should be noted that the generated URN (as some
   of its parts) can not be used directly for routing through DNS, and
   therefore the jurisdiction must adopt one of the following
   strategies:
   - to convert non-ASCII characters within the DNS into the IDN
     encoding, using the [RFC5894] punycode translation (ex:
     mU+00FCnchen in xn--mnchen-3ya), and to develop an interface
     software that converts the URN before the navigation in DNS, or
   - to create a routing service relying to a software, out of DNS,
     addressing a proper resolution service.

Summarizing, the preference order is the following:
- Conversion into base ASCII (RECOMMENDED solution);
- Conversion to punycode only for navigation in DNS, via software
  interface;
- Creation of a routing service relying on a software, out of DNS,
  addressing a proper resolution service.
The first solution allows native DNS routing, while the other two
require a software development for the interface or the routing.
However it is up to the specific jurisdiction to choose the preferred
solution.

Two examples (Latin and Cyrillic alphabet) relating to the different
solutions adopted are here reported:

a. a circular adopted by the Municipality of Munich (Rundschreiben
   der Stadt MU+00FCnchen):
   - ascii = urn:lex:de:stadt.munchen:rundschreiben:...
   - utf-8 = urn:lex:de:stadt.mU+00FCnchen:rundschreiben:...
   - punycode = urn:lex:de:stadt.xn--mnchen-3ya:rundschreiben:...

b. a state law of the Russian Federation (latin: gosudarstvo zakon;
   cyrillic: U+0441U+043EU+0441U+0442U+043EU+044FU+043DU+0438U+0435
   U+0437U+0430U+043AU+043EU+043D):
   - ascii = urn:lex:ru:gosudarstvo:zakon:...
   - utf-8 = urn:lex:ru:U+0441U+043EU+0441U+0442U+043EU+044FU+043D
     U+0438U+0435:U+0437U+0430U+043AU+043EU+043D:...
   - punycode = urn:lex:ru:xn--80aebe3cdmfdkg:xn--80ankme:...

   assuming that the Russia jurisdiction-code is expressed in ASCII
   ("ru"), while the Cyrillic version ("U+0440U+0444") has the puny-
   code "xn--p1ai".

4.5 Abbreviations

Abbreviations are often used in law for indicating institutions (e.g.
Min.), structures (e.g. Dept.), or legal measures (e.g. Reg.) but not
in a uniform way, therefore their expansion is highly RECOMMENDED.
(e.g., "Min." is reported as "ministry")

4.6 Date Format

Dates are expressed by numbers in the [ISO8601] format:

                              yyyy-mm-dd

(e.g., "September 2, 99" will be written as "1999-09-02")

5 Specific Syntax and Features of the LEX Identifier

In this section there are other features related to specific
jurisdictions and the implementation of which is RECOMMENDED.

5.1 Spaces, Connectives and Punctuation Marks

All the language connectives (e.g., articles, prepositions, etc.),
the punctuation marks and all the special characters (as apostrophes,
dashes, etc.), when explicitly present, are eliminated (no
transformation occurs in cases of languages with declensions or
agglutinating languages). The words left are connected to each other
by a dot (".") which substitutes the "space".
(e.g., "Ministry of Finances, Budget and of Economic Planning"
becomes "ministry.finances.budget.economic.planning";
"Ministerstvo Finansov" becomes "ministerstvo.finansov")

5.2 Acronyms

The use of acronyms might be confusing and encourage ambiguity in
uniform names (the same acronym may indicate two different
institutions or structures), therefore their expansion is highly
RECOMMENDED.
(e.g., "FAO" is expanded as "food.agriculture.organization")

5.3 Ordinal Numbers

To even the representation, it is highly RECOMMENDED that any ordinal
number included in a component of a document name (e.g., in the
description of an institution body) is indicated in Western Arabic
numerals, regardless to the original expression: whether in Roman
numerals, or with an adjective, or in Arabic numeral with apex, etc.
(IV, third, 1U+00B0, 2^, etc.).
(e.g., "Department IV" becomes "department.4")

6 Creation of the Source of Law LEX Identifier - Baseline structure

6.1 Basic Principles

The uniform name must identify one and only one document (more
precisely a "bibliographic resource" [ISBD], see also Section 6.2)
and is created in such a way that it is:
- self-explanatory ;
- identifiable through simple and clear rules;
- compatible with the practice commonly used for references;
- able to be created from references in the text, automatically (by
  parser) or manually;
- representative of both the formal and the substantive aspects of
  the document.

6.2 Model of Sources of Law Representation

According to [FRBR] (Functional Requirements for Bibliographic
Records) model developed by IFLA (International Federation of Library
Associations and Institutions), in a source of law, as in any
intellectual production, 4 fundamental entities (or aspects) can be
specified.

The first 2 entities reflect its contents:
- work: identifies a distinct intellectual creation; in our case, it
  identifies a source of law both in its being (as it has been issued
  or proposed) and in its becoming (as it is modified over time);
- expression: identifies a specific intellectual realisation of a
  work; in our case it identifies every different (original or up-to-
  date) version of the source of law over time and/or language in
  which the text is expressed;
while the other 2 entities relate to its form:
- manifestation: identifies a concrete realisation of an expression;
  in our case it identifies realizations in different media
  (printing, digital, etc.), encoding formats (XML, PDF, etc.), or
  other publishing characteristics;
- item: identifies a specific copy of a manifestation; in our case it
  identifies individual physical copies as they are found in
  particular physical locations.

In this document the [FRBR] model has been interpreted for the
specific characteristics of the legal domain. In particular, apart
from the language which does produce a specific expression, the
discriminative criterion between expression and manifestation is
based on the difference of the juridical effects that a variation can
provide with respect to the involved actors (citizens, parties,
institutions). In this scenario the main characteristic of the
expression of an act is represented by its validity over the time,
during which it provides the same juridical effects. These effects
change for amendments or annulments of other legislative or
jurisprudential acts. Therefore notes, summarizations, comments,
anonymizations and other editorial activities over the same text do
not produce different expressions, but different manifestations.

6.3 The Structure of the Local Name

The <local-name> within the "lex" namespace MUST contain all the
necessary pieces of information enabling the unequivocal
identification of a legal document. If the <local-name> violates
this requirement, the related URN is not a valid one within the "lex"
namespace.
In the legal domain, at the "work" level, three components are always
present: the enacting authority, the type of provision and the

details. A fourth component, the annex, can be added if any.
It is often necessary to differentiate various expressions, that is:
- the original version and all the amended versions of the same
  document;
- the versions of the text expressed in the different official
  languages of the state or organization.
Finally the uniform name allows a distinction among diverse
manifestations, which may be produced by multiple publishers using
different means and formats.
In every case, the basic identifier of the source of law (work)
remains the same, but information is added regarding the specific
version under consideration (expression); similarly a suffix is added
to the expression for representing the characteristics of the
publication (manifestation).
Information which forms a source of law uniform name at each level
(work, expression, manifestation) is expressed in the official
language of the related jurisdiction; in case of multiple official
languages (as in Switzerland) or more involved jurisdictions (as in
international treaties), more language-dependent names (aliases) are
created.

Therefore, the more general structure of the local name appears as
follows:

        local-name = work ["@" expression] ["$" manifestation]

However, consistent with legislative practice, the uniform name of
the main original provision (work) becomes the identifier of an
entire class of documents which includes: the original main document,
the annexes, and all their versions, languages and formats
subsequently generated.

6.4 Structure of the Document Identifier at Work Level

The structure of the document identifier is made of the four
fundamental elements mentioned above, clearly distinguished one from
the other in accordance with an order identifying increasingly narrow
domains and competences:

         work = authority ":" measure ":" details *(":" annex)

where:

<authority> is the issuing or proposing authority of the measure
(e.g., State, Ministry, Municipality, Court, etc.);

<measure> is the type of the measure, both public nature (e.g.,
constitution, act, treaty, regulation, decree, decision, etc.) as

well as private one (e.g., license, agreement, etc);

<details> are the terms associated to the measure, typically the date (usually the signature date) and the number included in the heading of the act;

<annex> is the identifier of the annex, if any (e.g., Annex 1).

In case of annexes, both the main document and its annexes have their own uniform name so that they can individually be referenced; the identifier of the annex adds a suffix to that of the main document. In similar way the identifier of an annex of an annex adds an ending to that of the annex which it is attached to.

The main elements of the work name are generally divided into several elementary components, and, for each, specific rules of representation are established (criteria, modalities, syntax and order).
For the details regarding each element, please see the Attachment B.

Examples (hypothetical) of <work> identifiers are:

```
urn:lex:it:stato:legge:2006-05-14;22
urn:lex:uk:ministry.justice:decree:1999-10-07;45
urn:lex:ch;glarus:regiere:erlass:2007-10-15;963
urn:lex:es:tribunal.supremo:decision:2001-09-28;68
urn:lex:fr:assemblee.nationale:proposition.loi:13.legislature;1762
urn:lex:br:estado:constituicao:1988-10-05;lex-1
urn:lex:un.org:united.nations;general.assembly:resolution:
    1961-11-28;a-res-1661
urn:lex:nl:hoge.raad:besluit:2008-04-01;bc8581
```

It is worth to note that the type of measure is important to identify case law, as well as legislation, especially within the legal systems where cases, by tradition, are identified only through the year of release and a number. Since the aim of the "urn:lex" schema is to identify specific materials, the type of measure or the full date are able to provide discrimination between materials belonging to a specific case.

Here below is an example where the type of measure or the full date are essential for identify specific materials of a case:
- 4/59 Judgement of the EEC Court of Justice 04/04/1960, Mannesmann
  AG and others / ECSC High Authority
  urn:lex:eec.lex.arpa:court.justice:judgement:1960-04-04;4-59
- 4/59 Order of the EEC Court of Justice 18/05/1960, Mannesmann AG
  and others / ECSC High Authority
  urn:lex:eec.lex.arpa:court.justice:order:1960-05-18;4-59

6.5 **Aliases**

   International treaties involve more jurisdictions (the signing ones)
   so they are represented through more identifiers, each of them
   related to an involved jurisdiction. For example, a bilateral France
   and Germany treaty is identified through two URNs (aliases) belonging
   to either "fr" or "de" jurisdiction
   (e.g., "urn:lex:fr:etat:traite:..." and
   "urn:lex:de:staat:vertrag:...")
   since it pertains to both the French and the German jurisdiction.

   In the states or organisations that have more than one official
   language, a document has more identifiers, each of them expressed in
   a different official language, basically a set of equivalent aliases.
   This system permits manual or automated construction of the uniform
   name of the referred source of law in the same language used in the
   document itself.
   (e.g., "urn:lex:eu:council:directive:2004-12-07;31",
   "urn:lex:eu:consiglio:direttiva:2004-12-07;31", etc.)

   Moreover, a document can be assigned more than one uniform name in
   order to facilitate its linking from other documents. This option can
   be used for documents that, although unique, are commonly referenced
   from different perspectives. For example, the form of a document's
   promulgation and its specific content (e.g., a Regulation promulgated
   through a Decree of the President of the Republic).

6.6 **Structure of the Document Identifier at Expression Level**

   There may be several expressions of a legal text, connected to
   specific versions or languages.
   Each version is characterized by the period of time during which that
   text is to be considered as the valid text (in force or effective).
   The lifetime of a version ends with the issuing of the subsequent
   version.
   New versions of a text may be brought into existence by:
   - changes in the text (amendments) due to the issuing of other legal
     acts and to the subsequent production of updated or consolidated
     texts;
   - correction of publication errors (rectification or errata corrige);
   - entry into or departure from a particular time span, depending on
     the specific date in which different partitions of a text come into
     force.
   Each of such versions may be expressed in more than one language,
   with each language-version having its own specific identifier.
   The identifier of a source of law expression adds such information to
   the work identifier, using the following main structure:

                    expression = version [":" language]

   where:

   <version> is the identifier of the version of the (original or
   amended) source of law. In general it is expressed by the
   promulgation date of the amending act; anyway other specific
   information can be used for particular documents. If necessary, the
   original version is specified by the string "original", expressed in
   the language of the act or version (for the details regarding this
   element, please see the Attachment C);

   <language> is the identification code of the language in which the
   document is expressed, according to [BCP47] (it=Italian, fr=French,
   de=German, etc.). The granularity level of the language (for example
   the specification of the German language as used in Switzerland
   rather than the standard German) is left to each specific
   jurisdiction. The information is not necessary when the text is
   expressed in the unique official language of the country or
   jurisdiction.

   Examples (hypothetical) of document identifiers for expressions are:

   urn:lex:ch:etat:loi:2006-05-14;22@originel:fr
        (original version in French)
   urn:lex:ch:staat:gesetz:2006-05-14;22@original:de
        (original version in German)
   urn:lex:ch:etat:loi:2006-05-14;22@2008-03-12:fr
        (amended version in French)
   urn:lex:ch:staat:gesetz:2006-05-14;22@2008-03-12:de
        (amended version in German)
   urn:lex:be:conseil.etat:decision:2008-07-09;185.273@originel:fr
        (original version in French of a Belgian decision)

6.7 Structure of the Document Identifier at Manifestation Level

   To identify a specific manifestation, the uniform name of the
   expression is followed by a suitable suffix containing the following
   main elements:
   - <format>: the digital format (e.g., XML, HTML, PDF, etc.) expressed
     according to the MIME Content-Type standard [RFC2045], where the
     "/" character is to be substituted by the "-" sign;
   - <editor>: editorial staff who produced it, expressed according to
     its Internet domain name. Since publishers' domain names may vary
     over time, manifestations already assigned by a publisher remain
     unchanged even if the identified object is no longer accessible. In
     this case, in order to make its materials accessible, the publisher
     will have to create for each of them a new manifestation with the

   new domain name;
- <component>: possible components of the expressions contained in
  the manifestation. Such components are expressed by language-
  dependent labels representing the whole document (in English "all")
  or the main part of the document (in English "body") or the caption
  label of the component itself (e.g. Table 1, Figure 2, etc.);
- <feature>: other features of the document (e.g., anonymized
  decision text).

The <manifestation> suffix will thus read:

        manifestation = editor ":" format
                        [":" component [":" feature]]

To indicate possible features or peculiarities, each main element of
the manifestation MAY be followed by further specifications
(separated by ";"), for example as regards <editor> the archive name
and the electronic publisher, for <format> the version, etc.
Therefore the main elements of the manifestation will assume the
forms:

        editor = publisher *(";" specification)
        format = mime *(";" specification)
        component = part *(";" specification)
        feature = attribute *(";" specification)

The syntax details of the <manifestation> element is shown in
attachment A, in the related section.

(examples (hypothetical):
the original version the Italian act 3 April 2000, n. 56 might have
the following manifestations with their relative uniform names:
- PDF format (vers. 1.7) of the whole act edited by the Italian
  Parliament:
  "urn:lex:it:stato:legge:2000-04-03;56$application-
  pdf;1.7:parlamento.it"
- XML format (version 2.2 DTD NIR) of the text of the act and PDF
  format (version 1.7) of the "Figura 1" (figure 1) contained in the
  body, edited by the Italian Senate:
  "urn:lex:it:stato:legge:2000-04-03;56$text-xml;dtd-
  nir-2.2:senato.it:testo"
  "urn:lex:it:stato:legge:2000-04-03;56$application-
  pdf;1.7:senato.it:figura.1"

the Spanish URN of the html format of the whole Judgement of the
European Court of Justice n. 33/08 of 11/06/2009, in Spanish version,
published in the Jurifast data base in anonymized form:
"urn:lex:eu:tribunal.justicia:sentencia:2009-06-11;33-

08@original:es$text-html:juradmin.eu;jurifast:todo:anonimo")

Furthermore, it is useful to be able to assign a uniform name to a
manifestation (or to a part of it) in case non-textual objects are
involved. These may be multimedia objects that are non-textual in
their own right (e.g. geographic maps, photographs, etc.), or texts
recorded in non-textual formats, such as image scans of documents.

In these ways, a LEX name permits:
- exploitation of all the advantages of an unequivocal identifier
  that is independent of physical location;
- a means to provide choice among different existing manifestations
  (e.g. XML or PDF formats, resolution degree of an image etc.) of
  the same expression.

6.8 Sources of Law References

References to sources of law often refer to specific partitions of
the act (article, paragraph, etc.) and not to the entire document.

From a legal point of view, a partition is always a text block, that
represents a logical subdivision of an act.
As regards the digital representation, in a structured format (as
XML) perfectly fitting the document logical structure, a partition is
represented by an element (a block of text) with its own ID; this ID
aims to identify the related element and to locate it. In this case,
therefore, it is possible either to extract or to point to a
partition.
In a mark-up not fitting the logical structure of the text (as HTML),
generally only the starting point of the partition, rather than the
whole block of text or element, is identified through a label (a <a
id=partitionID> tag in Html Markup Language [HTML]). In this case
therefore it is not possible to extract a partition but only to point
to it.
In both cases, having a partition identifier is useful; therefore,
for allowing browsers to point to a specific partition, it is
necessary that such partition is endowed with an unequivocal label or
ID within the including document and its value is the same
independently from the document format.

For enabling the construction of the partition identifier between
different collections of documents, specific construction rules for
IDs or labels will be defined and shared, within each country or
jurisdiction, for any document type (e.g., for legislation, the
paragraph 2 of the article 3 might have as label or ID the value
"art3;par2", similarly for case-law, paragraph 22 of the judgement in
Case 46/76 Bauhuis v Netherlands, might have as label or ID the value
"par22").

Furthermore, it is useful to foresee the compatibility with applications able to manage this information (e.g., returning the proper element); these procedures are particularly useful in the case of rather long acts, such as codes, constitutions, regulations, etc. For this purpose it is necessary that the partition identifier is transmitted to the servers (resolution and application) and therefore it cannot be separated by the typical "#" character of URI fragment, which is not transmitted to the server.

According to these requirements, the syntax of a reference is:

        URN-reference = URN-document ["~" partition-id]

(e.g., to refer to the paragraph 3 of the article 15 of the French Act of 15 may 2004, n. 106, the reference can be "urn:lex:fr:etat:loi:2004-05-15;106~art15;par3").

Using a different separator ("~") from the document name, the partition ID is not withheld by the browser but it is transmitted to the resolution process. This enables the resolver to retrieve (for example, out of a database) only the referred partition, if the partition syntax is compatible with the media type used, otherwise to return the whole act.
Anyway, to make it effective in a browser pointing to the indicated partition, the resolver SHOULD transform the partition ID of each returned URL in a URI fragment. If this operation cannot be accomplished, the browser is positioned at the beginning of the document. The transformation in URI fragment is obtained appending to the URL the "#" character followed by the partition ID (in the example above, the returned URL will be <URL-document>#art15;par3). Doing this, knowing the granularity of the act markup, the resolver could exploit the hierarchical structure of the ID, eliminating sub-partitions not addressed. If only the article was identified in the act, in the previous example it could return <URL-document>#art15 only.

Anyway it is possible to use the general syntax (with "#"); in this case only the URN document component of the reference is transmitted to the resolver, therefore the whole document will be always retrieved.

7 The Procedure of Uniform Names Assignment

7.1 Specifying the <jurisdiction> Element of the LEX Identifier

Under the "lex" namespace, each country or international organization is assigned with a jurisdiction code, which characterizes the URNs of the source of law of that country or jurisdiction. This code is

assigned according to ccTLD (as well as TLDN (Top Level Domain Name)
or DN (Domain Name) for the organizations) representation and it is
the value of the <jurisdiction-code> element, which preserves cross-
country uniqueness of the identifiers.

7.2 Jurisdictional Registrar for Names Assignment

Any country or jurisdiction, who intends to adopt this schema, MUST
identify a Jurisdictional Registrar, an organization which shares and
defines the structure of the optional part (<jurisdiction-unit>) of
the name, according to the organization of the state or institution
(for details see Section 11.2). It must appoint a Jurisdictional
Registrar and inform the Designed Experts, together with the
registration of a jurisdiction code. For example, in a federal state
a <jurisdiction-unit> corresponding to the name of each member state
(e.g. "br;sao.paolo", "br;minas.gerais", etc.) may be defined.

The process of assigning the <local-name> will be managed by each
specific country or jurisdiction under the related <jurisdiction>
element.
In any country the Jurisdictional Registrar shares and defines the
assignment of the primary elements (issuing authority and type of
legal measure) of the local names considering the characteristics of
its own state or institution organization.
Such a Registrar MUST establish, according to the guidelines
indicated in the current document, a uniform procedure within the
country or organization to define <local-name> elements, to take
decisions upon normalizations and finally to solve and avoid possible
name collisions as well as to maintain authoritative registries of
various kinds (e.g., for authorities, types of measures, etc.). In
particular, accurate point-in-time representations of the structure
and naming of government entities are important to semantically-aware
applications in this domain.
Moreover, the Registrar shares and defines the rules to construct
partition IDs for each document type.
Finally, the Registrar will develop and publish the rules and the
guidelines for the <local-name> construction as well as the
predefined values and codes. The Registrar should also promote the
urn:lex identifier for the sources of law of its jurisdiction.

Such a set of rules will have to be followed by all institutional
bodies adopting the URN LEX identification system in a country or
jurisdiction, as well as by private publishers, and each of them will
be responsible for assigning names to their domains.

7.3 Identifier Uniqueness

Identifiers in the "lex" namespace are defined through a

<jurisdiction> element assigned to the sources of law of a specific
country or organization, and a <local-name> assigned by the issuing
authority, in conformance with the syntax defined in [Section 6](). The
main elements (authority and type of measure) of the <local-name> are
defined by the Jurisdictional Registrar, so that it is ensured that
the constructed URNs are unique. The Jurisdictional Registrar MUST
provide clear documentation of rules by which names are to be
constructed, and MUST update and make accessible its registries.

Any issuing authority is responsible to define formal parameters to
guarantee local name uniqueness by attributing, if necessary, a
conventional internal number, which, combined with the other <local-
name> components (authority, measure and date), builds an unequivocal
identifier. Uniqueness is achieved by checking against the catalogue
of previously assigned names.

7.4 Identifier Persistence Considerations

The persistence of identifiers depends on the durability of the
institutions that assign and administer them. The goal of the LEX
schema is to maintain uniqueness and persistence of all resources
identified by the assigned URNs.

In particular, the CNR, as proposer, is responsible of maintaining
the uniqueness of the <jurisdiction> element; given that the
<jurisdiction> is assigned on the basis of the long-held ccTLD
representation of the country (or the TLDN or DN of the organization)
and that the country or organization associated code is expected to
continue indefinitely, the URN also persists indefinitely.

The rules for the construction of the name are conceived to delegate
the responsibility of their uniqueness to a set of authorities which
is identified within each country or organization.

Therefore, each authority is responsible for assigning URNs which
have a very long life expectancy and can be expected to remain unique
for the foreseeable future. Practical and political considerations,
as well as diverse local forms of government organization, will
result in different methods of assigning responsibility for different
levels of the name.
Where this cannot be accomplished by the implementation of an
authoritative hierarchy, it is highly desirable that it be done by
creating consensus around a series of published rules for the
creation and administration of names by institutions and bodies that
operate by means of collaboration rather than compulsion.

Issuing authorities that operate in more localized scopes, ranging
from the national down to the very local, MUST equally take

responsibility for the persistence of identifiers within their scope.

8 Recommendations for the Resolution Process

8.1   The General Architecture of the System

The task of the resolution service is that of associating a LEX
identifier with a specific document address on the network. By
contrast with systems that can be constructed around rigorous and
enforceable engineering premises, such as DNS, the "lex" namespace
resolver will be expected to cope with a wide variety of "dirty"
inputs, particularly those created by the automated extraction of
references from incomplete or inaccurate texts. In this document,
the result is a particular emphasis on a flexible and robust resolver
design.

The system has a distributed architecture based on two fundamental
components: a chain of information in DNS (Domain Name System) and a
series of resolution services from URNs to URLs, each competent
within a specific domain of the namespace.
The client retrieves the document associated with this URN using the
procedure described in [RFC3404], which starts with a DNS NAPTR
query.

A resolution service can delegate the resolution and management of
hierarchically-dependent portions of the name.
Delegation of this responsibility will not be unreasonably withheld
provided that the processes for their resolution and management are
robust and are followed.

For the "lex" namespace, CNR will maintain in the <lex-nameserver>
(see Section 11.1) the root zone of the chain resolution (equivalent
to "lex.urn.arpa" (see [RFC3405]) and, in correspondence with the
adhesion (see Section 11.2) of a new country (e.g., "br") or
organization, will update the DNS information with a new record to
delegate the relative resolution. This may be obtained by a regular
expression that matches the initial part of the URN (e.g.,
"urn:lex:br") and redirects towards the proper zone (e.g.,
"lex.senado.gov.br").

Likewise the institution responsible for the jurisdiction uniform
names (e.g., "urn:lex:br") has the task of managing the relative root
in the DNS system (e.g., "lex.senado.gov.br" zone) and routing the
resolution towards its resolvers on the basis of parts of the uniform
names. In similar way it can delegate the resolution of
country/organization sub-levels (e.g., "urn:lex:br;sao.paolo")
towards the relative zone (e.g., "lex.sao-paolo.gov.br").

Such DNS routing chain does not work for all the URN components
containing %-encoded characters. Therefore, when converting a lex:URN
in UTF-8 code to a DNS query, clients MUST perform punycode
conversion [RFC5891] before sending the query.

The resolution service is made up of two elements: a knowledge base
(consisting in a catalogue or a set of transformation rules) and a
software to query the knowledge base itself.

8.2 Catalogues for Resolution

Incompleteness and inaccuracy are rather frequent in legal citations,
and incomplete or inaccurate uniform names of the referred document
are thus likely to be built from textual references (this is even
more frequent if they are created automatically through a specific
parser). For this reason, the implementation of a catalogue, based on
a relational-database, is suggested, as it will lead to a higher
flexibility in the resolution process.
In addition the catalogue must manage the aliases, the various
versions and languages of the same source of law as well as the
related manifestations.

It is suggested that each enacting authority implements its own
catalogue, assigning a corresponding unambiguous uniform name to each
resource.

8.3 Suggested Resolver Behaviour

First of all the resolver should separate the part corresponding to
the partition ID, through the "~" separator, from the document name.

So, the resolution process SHOULD implement a normalization of the
uniform name to be resolved. This may involve transforming some
components to the canonical form (e.g., filling out the acronyms,
expanding the abbreviations, unifying the institution names,
standardizing the type of measures, etc.). For this function
authorities and types of measure registers are useful.

The resolver SHOULD then query the catalogue searching for the URN
which corresponds exactly to the given one (normalized if necessary).
Since the names coming from the references may be inaccurate or
incomplete, an iterative, heuristic approach (based on partial
matches) is indicated. It is worth remarking that incomplete
references (not including all the elements to create the canonical
uniform name) are normal and natural; for a human reader, the
reference would be "completed" by contextual understanding of the
reference in the document in which it occurs.

In this phase, the resolver should use the partition ID information
to retrieve, if it is possible, only the referred partition,
otherwise to return of the entire document.

Lacking more specific indications, the resolver SHOULD select the
best (most recent) version of the requested source of law, and
provide all the manifestations with their related items.
A more specific indication in the uniform name to be resolved will,
of course, result in a more selective retrieval, based on any
suggested expression and/or manifestations components (e.g. date,
language, format, etc.).

Finally, the resolver SHOULD append to URLs the "#" character
followed by partition ID, transforming it in a URI fragment for
browser pointing.

9 Namespace Considerations

In collaboration with the legislative XML community, registrants
carried out a preliminary study [SART] of the URI alternatives to
satisfy the key requirements.
The options analysed were: a private URI scheme, URL, PURL and URN.
URN was considered the most appropriate URI given the requirements
analysis.
Advantages we would emphasize are:
- greater flexibility in building the identifier;
- the capacity to represent name components that are not strictly
  hierarchical;
- the potential for clear division of the identifier into macro
  parts, main elements and components, using different separators;
- ease of managing optional parts of a name.

10 Community Considerations

The use of the "lex" namespace facilitates the interoperability of
information systems used in the Public Administration at the national
and international level. Moreover it allows the distribution of the
legal information towards a federated architecture. In such an
architecture, documents are directly managed by the issuing
authorities, with resulting benefits in information authenticity,
quality and currency. A shared identification mechanism of resources
guarantees that a distributed system will be as efficient and
effective as a comparable centralized system.

Creators of Internet content that references legal materials -
including publishers operating well outside the traditional arenas of
legal publishing - benefit by the registration of the namespace
because it facilitates the linking of legal documents, whether by

manual or automated means, and reduces the cost of maintaining
documents that contain such references.

Any citizen or organisation with Internet web browser capability will
have the possibility to use the namespace and its associated
application, registers, and resolution services, to facilitate
document access (if available).

11 IANA Considerations

11.1 NID Registration

IANA is requested to make an assignment from the "Uniform Resource
Names (URN)" registry described by [RFC8141] to register "lex"
according to the registration request set out in Section 2. The
assignment should be made from the "Formal URN Namespaces" registry.

In addition, to activate a distributed resolution system, the one-off
registration of the following NAPTR records is required:

```
in the URN.ARPA domain:
     IN NAPTR  1    0  ""  ""  "!^urn:lex:!_lex!i"  .
_lex IN NAPTR  10  10  ""  ""  ""  <lex-nameserver>.

in the URN.URI.ARPA domain:
     IN NAPTR  1    0  ""  ""  "!^urn:lex:!_lex!i"  .
_lex IN NAPTR  10  10  ""  ""  ""  <lex-nameserver>.
```

where <lex-nameserver> indicates the server of the organization that
is responsible for the resolution of the "lex" namespace and will be
communicated by the applicant when the application is approved.

11.2 Jurisdiction-code Registration

It is requested to create a new registry for <jurisdiction-code>,
with the following format:
- <jurisdiction-code>: the identifier code of jurisdiction, assigned
  to the country or organisation;
- <jurisdiction>: the official denomination of the jurisdiction,
  country or organisation;
- <registrant>: essential information to identify the organization
  that requested the registration of the code. Such organization will
  be responsible for its DNS zone and for the attribution of sub-zone
  delegations, and so on. It is desirable that each jurisdiction
  creates a register of all delegated levels so that the organization
  responsible of each sub-zone can easily be identified;
- <reference>: a reference to the defining document (if any).

The table is initially empty. Possible example entries are:
"br"; "Brazil"; "Prodasen, Federal Senate, <address>, <contact>";
[reference]
"eu"; "European Union"; "DG Digit, European Commission, <address>,
<contact>"; [reference]
"un.org"; "United Nations"; "DPI, United Nations, <address>,
<contact>"; [reference]

CNR will take care to create and maintain the registry for
<jurisdiction-code> and the root <lex-nameserver> of the resolution
routing.

A new Jurisdictional Registrar will contact CNR or the Designated
Expert(s) according to the established rules of governance (published
in the CNR website dedicated to the LEX governance). The application
will be evaluated according to the Jurisdictional Registrar
authoritativeness and the offered guarantees. The Designated
Expert(s) will evaluate such applications, with a similar approach as
of the DNS. Typically such applications should come from public
administrations, as authorities enacting sources of law.

The adopted registration policy is compliant with the "Expert Review"
as specified in [RFC8126]. Designated Expert(s) will assign
jurisdiction codes based on the following principles:
- if a request comes from a jurisdiction that corresponds to a
  country and the jurisdiction code is the same as a top level ccTLD,
  which is not yet registered, then the top level ccTLD should be
  used as the jurisdiction code;
- if a request comes from a jurisdiction that corresponds to a multi-
  national (e.g., European Union) or international (e.g., United
  Nations, World Trade Organization) organizations the Top Level
  Domain Name (e.g., "eu") or the Domain Name (e.g., "un.org",
  "wto.org") of the organization should be used as the jurisdiction
  code;
- in case when such multi-national or international organization does
  not have a registered domain, Designated Expert(s) should assign
  something like <name>.lex.arpa, where <name> will be the English
  acronym of the organization name. For example, the jurisdiction
  code of the European Economic Community could be "eec.lex.arpa".

Jurisdiction codes can't be renamed, because allowing for renames
would violate rules that URN assignments are persistent.

Jurisdiction codes can never be deleted. They can only be marked as
"obsolete", i.e. closed for new assignments within the jurisdiction.
Requests to obsolete a jurisdiction code are also processed by
Designated Expert.

Designated Expert(s) can unilaterally initiate allocation or obsolescence of a jurisdiction code.

Request for new jurisdiction code assignment must include Organization or Country requesting it and Contact information (email) of who requested the assignment.

12 References

12.1 Normative References

[BCP47]   A. Phillips, M. Davis, "Tags for Identifying Languages", BCP 47, RFC 5646, September 2009

[STD63]   F. Yergeau, "UTF-8, a transformation format of ISO 10646", STD 63, RFC 3629, November 2003.

[RFC2045]   N. Freed, N. Borenstein, "Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies", RFC 2045, November 1996.

[RFC2119]   S. Bradner, Key words for use in RFCs to Indicate Requirement Levels, BCP 14, RFC 2119, March 1997.

[RFC3404]   M. Mealling, Dynamic Delegation Discovery System (DDDS), Part Four: The Uniform Resource Identifiers (URI) Resolution Application, RFC 3404, October 2002.

[RFC3405]   M. Mealling, Dynamic Delegation Discovery System (DDDS), Part Five: URI.ARPA Assignment Procedures, RFC 3405, October 2002.

[RFC3986]   Berners-Lee, T., Fielding, R., and L. Masinter, "Uniform Resource Identifiers (URI): Generic Syntax", STD 66, RFC 3986, January 2005.

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

[RFC5891]   J. Klensin, Internationalized Domain Names in Applications (IDNA): Protocol, RFC 5891, August 2010.

[RFC5894]   J. Klensin, "Internationalized Domain Names for Applications (IDNA): Background, Explanation, and Rationale", RFC 5894, August 2010

[RFC7231]   R. Fielding, J. Reschke, "Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content", RFC 7231, June 2014

    [RFC8126]   M. Cotton, B. Leiba, T. Narten, "Guidelines for Writing
                 an IANA Considerations Section in RFCs", RFC 8126, June
                 2017

    [RFC8141]   P. Saint-Andre, J.C. Klensin, "Uniform Resource Names
                 (URNs)", RFC 8141, April 2017

    [RFC8174]   B. Leiba, "Ambiguity of Uppercase vs Lowercase in RFC
                 2119 Key Words", BCP 14, RFC 8174, May 2017.

    [RFC8288]   M. Nottingham, "Web Linking", RFC 8288, October 2017

    [ISO8601]   ISO 8601, "Data elements and interchange formats", ISO
                 8601:2004

    [HTML]   W3C, HyperText Markup Language, https://www.w3.org/html/

12.2 Informative References

    [FRAN]   E. Francesconi, "Technologies for European Integration.
                 Standards-based Interoperability of Legal Information
                 Systems", ISBN 978-88-8398-050-3, European Press Academic
                 Publishing, 2007.

    [FRBR]   Functional Requirements for Bibliographic Records,
                 https://www.ifla.org/files/assets/cataloguing/frbr/
                 frbr_2008.pdf

    [HCPIL]   The Hague Conference on Private International Law "Access
                 to Foreign Law in Civil and Commercial Matters.
                 Conclusions and Recommendations"
                 (https://assets.hcch.net/docs/
                 b093f152-a4b3-4530-949e-65c1bfc9cda1.pdf)

    [ISBD]   ISBD: International Standard Bibliographic Description -
                 Consolidated Edition. Edited by the Standing Committee of
                 the IFLA Cataloguing Section Berlin/Munich: De Gruyter
                 Saur, 2011 ISBN 978-3-11-026379-4 (IFLA Series on
                 Bibliographic Control; Nr 44)

    [LVI]   Ginevra Peruginelli, Mario Ragona (eds.), "Law via the
                 Internet. Free Access, Quality of Information,
                 Effectiveness of Rights", European Press Academic
                 Publishing, 2008, ISBN 9788883980589.

    [RDF]   W3C, RDF Schema 1.1, February 2014,
                 https://www.w3.org/TR/rdf-schema/

[SART]   G. Sartor, M. Palmirani, E. Francesconi, M. Biasiotti
            (Eds.), Legislative XML for the Semantic Web. Principles,
            Models, Standards for Document Management, Law,
            Governance and Technology Series, Springer, 2011, ISBN
            978-94-007-1886-9.

[SPIN]   P.L. Spinosa, "The Assignment of Uniform Names to Italian
            Legal Documents", URN-NIR 1.4, June, 2010, ITTIG
            Technical Report n. 8/2010.

13 Acknowledgements

14 Author's Addresses

PierLuigi Spinosa
(ICT consultant)
Via Zanardelli, 15
50136 Firenze
Italy
Telephone: +39 339 5614056
e-mail: pierluigi.spinosa@gmail.com

Enrico Francesconi
Consiglio Nazionale delle Ricerche (CNR)
Via de' Barucci, 20
50127 Firenze
Italy
Telephone: +39 055 43995
e-mail: enrico.francesconi@cnr.it

Caterina Lupo
(ICT consultant)
Via San Fabiano, 25
00165 Roma
Italy
Telephone: +39 3382632348
e-mail: caterina.lupo@gmail.com

Attachment A -- Summary of the Syntax of the Uniform Names of the "lex"
Namespace

```
;----------------------------------------------------------------------
; Structure of a Uniform Resource Name (URN) of the "lex" namespace
; NID-lex = namespace
; NSS-lex = specific name
;----------------------------------------------------------------------
URN-lex = "urn:" NID-lex ":" NSS-lex

NID-lex = "lex"

;----------------------------------------------------------------------
; Structure of a "lex" specific name
;----------------------------------------------------------------------
NSS-lex = jurisdiction ":" local-name

;----------------------------------------------------------------------
; Structure of the <jurisdiction> element
;----------------------------------------------------------------------
jurisdiction = jurisdiction-code *(";" jurisdiction-unit)

jurisdiction-code = 2*alf-dot

jurisdiction-unit = alf-dot

;----------------------------------------------------------------------
; Structure of the <local-name> element
;----------------------------------------------------------------------
local-name = work ["@" expression] ["$" manifestation]

;----------------------------------------------------------------------
; Structure of the <work> element
;----------------------------------------------------------------------
work = authority ":" measure ":" details *(":" annex)

;----------------------------------------------------------------------
; Structure of the <authority> element
;----------------------------------------------------------------------
authority = issuer *("+" issuer)

issuer = (institution *(";" body-function)) / office

institution = alf-dot

body-function = alf-dot
```

```
office = alf-dot

;-----------------------------------------------------------------------
; Structure of the <measure> element
;-----------------------------------------------------------------------
measure = measure-type *(";" specification)

measure-type = alf-dot

specification = alf-dot

;-----------------------------------------------------------------------
; Structure of the <details> element
;-----------------------------------------------------------------------
details = (dates / period) ";" numbers

dates = date *("," date)

period = alf-dot

numbers = (document-id *("," document-id)) / number-lex

document-id = alf-dot-oth

number-lex = "lex-" 1*DIGIT

;-----------------------------------------------------------------------
; Structure of the <annex> element
;-----------------------------------------------------------------------
annex = annex-id *(";" specification)

annex-id = alf-dot

;-----------------------------------------------------------------------
; Structure of the <expression> element
;-----------------------------------------------------------------------
expression = version [":" language]

;-----------------------------------------------------------------------
; Structure of the <version> element
;-----------------------------------------------------------------------
version = (amendment-date / specification)
          *(";" (event-date / event))

amendment-date = date

event-date = date
```

```
event = alf-dot

;-----------------------------------------------------------------------
; Structure of the <language> element
;-----------------------------------------------------------------------
language = 2*3alfa *["-" extlang] / 4*8alfa

extlang  = 3alfa *2("-" 3alfa)

;-----------------------------------------------------------------------
; Structure of the <manifestation> element
;-----------------------------------------------------------------------
manifestation = format ":" editor
                [":" component [":" feature]]

format = mime *(";" specification)

mime = alf-dot-hyp

editor = publisher *(";" specification)

publisher = alf-dot-hyp

component = part *(";" specification)

part = alf-dot-hyp

feature = attribute *(";" specification)

attribute = alf-dot-hyp

;-----------------------------------------------------------------------
; Structure of the date
;-----------------------------------------------------------------------
date = year "-" month "-" day

year  = 4DIGIT
month = 2DIGIT
day   = 2DIGIT

;-----------------------------------------------------------------------
; Allowed, reserved and future characters
;-----------------------------------------------------------------------
; allowed = alfadot / other / reserved
; reserved = ":" / "@" / "$" / "+" / ";" / "," / "~"
; future   = "*" /  "!"

alf-dot = alfanum *alfadot
```

```
alf-dot-hyp = alfanum *(alfadot / "-")

alf-dot-oth = alfanum *(alfadot / other)

alfadot = alfanum / "."

alfa = lowercase / uppercase

alfanum = alfa / DIGIT / encoded

lowercase = %x61-7A        ; lower-case ASCII letters (a-z)

uppercase = %x41-5A        ; upper-case ASCII letters (A-Z)

DIGIT     = %x30-39        ; decimal digits (0-9)

encoded   = "%" 2HEXDIG

HEXDIG = DIGIT / %x41-46 / %x61-66 ; hex digits (0-9,A-F,a-f)

other     = "-" / "_" / "'" / "=" / "(" / ")"
```

Attachment B -- Specific Syntax of the Identifier at Work Level

B1 The <authority> Element

B1.1 Indication of the Authority

   The <authority> element of a uniform name may indicate, in the
   various cases:
   - the actual authority issuing the legal provision. More
     specifically, the authority adopting the provision or enacting it;
   - the institution where the provision is registered, known and
     referenced to, even if produced by others (e.g., the bills
     identified through the reference to the Chamber where they are
     presented);
   - the institution regulated (and referred to in citations) by the
     legal provision even when this is issued by another authority
     (e.g., the statute of a Body);
   - the entity that proposed the legal material not yet included in the
     institutional process (e.g. a proposed bill written by a a
     political party).

B1.2 Multiple Issuers

   Some sources of law are enacted by a number of issuing parties (e.g.,
   inter-ministerial decrees, agreements, etc.). In this case, the
   <authority> element contains all the issuing parties (properly
   separated), as follows:

                   authority = issuer *("+" issuer)

   (e.g., "ministry.justice+ministry.finances")

B1.3 Indication of the Issuer

   Each issuing authority is essentially represented by either an
   institutional office (e.g., Prime Minister) or an institution (e.g.,
   Ministry); in the last case, the authority is indicated in accordance
   with the institution's hierarchical structure, from the more general
   to more specific (Council, Department, etc.), ending with the
   relative office (President, Director, etc.).
   Therefore, the structure of the issuer is as follows:

          issuer = (institution *(";" body-function)) / office

   (e.g., "ministry.finances;department.revenues;manager")

B1.4 Indication of the Body

Depending on the kind of measure, the body within the issuing
authority is unambiguously determined (e.g., the Council for Regional
Acts) and normally it is not indicated in the references.
Just like in practice, the indication of the enacting authority is
limited to the minimum in relation to the type of measure.
(e.g., "region.tuscany:act" and not "region.tuscany;council:act")

B1.5 Indication of the Function

Generally, the function is indicated, sometimes instead of the body
itself:
- in case of political, representative or elective offices
  (e.g., "university.oxford;rector:decree" instead of
  "university.oxford;rectorship:decree");
- when it refers to a top officer in the institution (e.g., general
  manager, general secretary, etc.) which is not always possible to
  associate a specific internal institutional structure to
  (e.g., "national.council.research;general.manager").

It is not indicated when it clearly corresponds to the person in
charge of an institution (typically, a general director); in this
case, only the structure and not the person in charge is indicated
(e.g., "ministry.justice;department.penitentiary.administration").

The function MUST be indicated when:
- it is not the same of the director or the person in charge of the
  structure (for example, in case of an undersecretary, a deputy
  director, etc.);
- the type of measure may be both monocratic or collegial: the
  indication of the office eliminates the ambiguity.

B1.6 Conventions for the Authority

Acts and measures bearing the same relevance as an act, issued or
enacted since the foundation of the State, have conventionally
indicated "state" (expressed in each country official language) as
authority; the same convention is used for constitutions, codes
(civil, criminal, civil procedure, criminal procedure, etc) and
international treaties.

B2 The <measure> Element

B2.1 Criteria for the Indication of the Type of Measure

In uniform names the issuing authority of a document is mandatory.
This makes unnecessary to indicate any further qualification of the
measure (e.g., ministerial decree, directorial ordinance, etc.), even
if it is widely used.

   When the authority-measure combination clearly identifies a specific
   document, the type of measure is not defined through attributes
   referring to the enacting authority.
   (e.g., "region.tuscany:act" and not "region.tuscany:regional.act")

B2.2 Further Specification to the Type of Measure

   In the <measure> element, it is usually sufficient to indicate the
   type of a measure. As usual, references to sources of law, rather
   than through the formal details (date and number), may be made
   through some of their characteristics such as the subject-matter
   covered (e.g., accounting regulations), nicknames referring to the
   promoter (e.g., Bassanini Act) or to the topic of the act (e.g.,
   Bankruptcy Law), etc..
   In these cases, the type of measure MAY be followed by further
   specifications useful in referencing even if the details are lacking:

                measure = measure-type *(";" specification)

   (e.g., "regulations;accounting" or "act;bankruptcy")

B2.3 Aliases for Sources of Law with Different Normative References

   There are legislative measures that, although unique, are usually
   cited in different ways, for example through the legislative act
   introducing them into the legal order (President's decree,
   legislative decree, etc.) or through their legislative category
   (regulations, consolidation, etc.).
   In order to ensure, in all the cases, the validity of the references,
   an alias (additional URN LEX identifier), that takes into account the
   measure category, is added to what represents the legislative form of
   the same act.
   (e.g., "state:decree.legislative:1992-07-24;358" and
   "state:consolidation;public.contracts:1992-07-24;358").

B2.4 Relations between Measure and Authority in the Aliases

   The sources of law including different normative references are
   usually introduced in legislation through the adoption or the issuing
   of an act, which they are either included or attached to. It is,
   therefore, necessary to create an alias linking the two aspects of
   the same document. Specifically, the different measures can be:
   - adopted/issued by an authority different from the one regulated by
     the provision (e.g., the statute of a Body); in this case, the
     correlation is established between two uniform names each featuring
     a completely different <authority> element
     (e.g., "italian.society.authors.publishers:statute" and
     "ministry.cultural.activities+ministry.finances.budget.economic.

      planning:decree");
  - issued by the institution itself either because it has issuing
    authority or by virtue of a proxy (e.g., a provision that refers to
    the functioning of the Body itself); in this case, the two aliases
    share the first part of the authority;
    (e.g., "municipality.firenze:statute" and
    "municipality.firenze;council:deliberation");
  - issued by the same Body to regulate a particular sector of its own
    competence; in this case the <authority> element is the same
    (e.g., "ministry.justice:regulation;use.information.tools.
    telematic.process" and "ministry.justice:decree").

B3 The <details> Element

B3.1 Indication of the Details

   The details of a source of law usually include the date of the
   enactment and the identification number (inclusion in the body of
   laws, register, protocol, etc.).
   Some measures can have multiple dates; there are also cases in which
   the number of the measure does not exist (unnumbered measures) or a
   measure has multiple numbers (e.g., unified cases). For these
   reasons, the set up of both elements (date and number) includes
   multiple values.

   Some institutions (e.g., the Parliaments) usually identify documents
   through their period of reference (e.g., the legislature number)
   rather than through a date, which would be much less meaningful and
   never used in references (e.g., Senate bill S.2544 of the XIV
   legislature). In these cases, the component <period> is used in
   substitution of the component <dates>.

   Usually details of a measure are not reported according to a specific
   sequence; in accordance with the global structure of the uniform
   name, which goes from the general to the specific, the sequence date-
   number has the following form:

                 details = (dates / period) ";" numbers

   (e.g., "2000-12-06;126", "14.legislature;s.2544")

B3.2 Multiple Dates

   Some sources of law, even if unique, are identified by more than one
   date; in this case, in the field <dates> all the given dates are to
   be reported and indicated as follows:

                    dates = date *("," date)

(e.g., the measure of the Data Protection Authority of December 30,
1999- January 13, 2000, No. 1/P/2000 has the following uniform name:
"personal.data.protection.authority:measure:1999-12-30,2000-01-13;
1-p-2000").

B3.3 Unnumbered Measures

   Measures not officially numbered in the publications may have a non-
   unequivolcal identifier, because several measures of the same type
   can exist, issued on the same day by the same authority.
   To ensure that the uniform name is unambiguous, the <numbers> field
   MUST, in any case, contain a discriminating element, which can be any
   identifier used internally, and not published, by the authority
   (e.g., protocol).
   If the authority does not have its own identifier, one identifier
   MUST be created for the name system. In order to easily differentiate
   it, such number is preceded by the string "lex-":

                     number-lex = "lex-" 1*DIGIT

   (e.g., "ministry.finances:decree:1999-12-20;lex-3")

   It is responsibility of the authority issuing a document to assign a
   discriminating specification to it; in case of multiple authorities,
   only one of them is responsible for the assignment of the number to
   the document (e.g., the proponent).
   The unnumbered measures published on an official publication (e.g.,
   the Official Gazette), instead of by a progressive number are
   recognized by the univocal identifying label printed on the paper.
   Such an identifier, even if unofficial but assigned to a document in
   an official publication, is to be preferred because it has the clear
   advantage to be public and therefore easier to be found.

B3.4 Multiple Numbers

   Some legal documents (e.g., bills), even if unique, are identified by
   a set of numbers (e.g., the unification of cases or bills).
   In this case, in the <numbers> field, all the identifiers are
   reported, according to the following structure:

                  numbers = document-id *("," document-id)

   (e.g., "2000-06-12;c-10-97,c-11-97,c-12-97")
   The characters which are not allowed (e.g., "/") or reserved (e.g.,
   ":"), including the comma, cannot exist inside the <document-id>, and
   therefore MUST be turned into "-".
   Where special characters contained in the number of the act are
   distinctive of the act itself (e.g. bill n. 123-bis (removal of 123)

and n. 123/bis (return of 123)) and would disappear with the
conversion to "-", a further ending must be added, allowing to
distinguish the acts (e.g. bill n.123-bis-removal and 123-bis-
return).

B4 The <annex> Element

B4.1 Formal Annexes

Although annexes are an integral part of the legal document, they may
be referred to and undergo amendments separately from the act to
which they are annexed. It is, therefore, necessary that both the
main document as well as each formal individual annex is
unequivocally identified.

Formal annexes may be registered as separate parts or together with a
legal provision; they may also be autonomous in nature or not. In any
case, they MUST be given a uniform name, which includes the uniform
name of the source of law to which they are attached, and a suffix
which identifies the annex itself.

The suffix of formal annexes includes the official heading of the
annex and, possibly, further specifications (e.g., the title) which
will facilitate the retrieval of the annex in case the identifier is
missing:

                  annex = annex-id *(";" specification)

(e.g., "region.sicily;council:deliberation:1998-02-12;14:annex.a;
borders.park")

The characters which are not allowed (e.g. "/") or which are reserved
(e.g. ":") must not be featured in the <annex-id> and therefore MUST
be turned into ".".

B4.2 Annexes of Annexes

When there are annexes to an annex, their corresponding identifiers
are created by adding to the identifier of the original annex those
of the annexes that are connected with it (that is, attached to it).

(e.g., Table 1 attached to Attachment A of the preceding legal act
has the following uniform name:
"region.sicily;council:deliberation:1998-02-12;14:annex.a;
borders.park:table.1;municipality.territories").

Attachment C -- Specific Syntax of the <version> Element of the
   Expression

C1 The <version> Element

C1.1 Different Versions of a Legislative Document

   The creation of an updated text of a document may have one of the
   following forms:
   - "multi-version": when specific mark-ups which identify the modified
     parts of a document (added, substituted or deleted parts) and their
     related periods of effectiveness are indicated inside one single
     object (e.g., an xml file). Such a document will be able, in a
     dynamic way, to appear in different forms according to the
     requested date of effectiveness.
     In this document type, usually a set of metadata contains the
     lifecycle of the document (from the original to the last
     modification), including the validity time interval of each version
     and of each related text portion;
   - "single-version": when, on the contrary, a new and distinct object
     is created for each amendment to the text at a given time. Each
     object is, therefore, characterized by its own period of validity.
     In any case all the versions SHOULD be linked one another and
     immediately navigable.

   In a "multi-version" document each time interval should have a link
   to the related in-force document version which can be therefore
   displayed.
   In a "single-version" document, the metadata should contain links to
   the all the previous modifications and a link only to the following
   version, if any.

   [RFC8288] can be used as reference to establish links between
   different document versions, either in the "multi-version" or in the
   "single-version" document. According to [RFC8288] the following
   relations are useful:
   - current (or last or last-version): in-force version
   - self: this version
   - next: next version
   - previous: previous version
   - first: original version
   It is RECOMMENDED that these relations are inserted in the header of
   each version (if "single-version") or associated to each entry
   containing a single URN (if "multi-version").

C1.2 Identification of the Version

In order to identify the different time versions of the same act, to
the uniform name of the original document has to be added a specific
suffix.
Such a suffix identifies each version of a legal provision and
includes, first and foremost, one of the following elements:
- the issuing date of the last amending measure taken into account;
- the date in which the communication of the rectification or of the
  errata corrige, is published;
- a specification which must identify the reason concerning the
  amendment (e.g., the specific phase of the legislative process),
  for the cases in which the date is not usually used (e.g., bills).

Anyway it is possible to add further specifications that will
distinguish each of the different versions of the text to guarantee
identifier unequivocalness. For example with regard to changes of the
in-force or effectiveness of any partition or portion of the text
itself (e.g., when the amendments introduced by an act are applied at
different times) or different events occurring in the same date.

                 version = (amendment-date / specification)
                          *(";" (event-date / event))

   where:
   - <amendment-date> contains the issuing date of the last considered
     amendment or of the last communication of amendment. In case the
     original text introduces differentiated periods in which an act is
     effective and the information system produces one version for each
     of them, such element contains the string "original" expressed in
     the language of the act or version;
   - <specification> any information useful to identify unambiguously
     and univocally the version;
   - <event-date> contains the date in which a version is put into
     force, is effective or is published;
   - <event> is a name assigned to the event producing a further version
     (e.g., amendment, decision, etc.).

The issuing date of an amending act was chosen as identifier of a
version because it can be obtained from the heading (formal data).

(e.g., the name "state:royal.decree:1941-01-30;12@1998-02-19"
identifies the updated text of the "Royal Decree of 30/1/1941, No.
12" with the amendments introduced by the "Law Decree of 19/2/1998,
No. 51", without any indication of its actual entry into force. The
same uniform name with the additional ending ";1999-01-01" indicates
the in-force or effective version starting in a different date (from
1/1/99).

For a full compatibility, every updating of a text or of the

effectiveness of a "multi-version" document implies the creation of a new uniform name, even if the object remains only one, containing the identifier of the virtually generated version, exactly as in the case of a "single-version" document. A specific meta-data will associate every uniform name with the period of time during which such a name together with its corresponding text is to be considered valid.

(e.g., the multi-version document containing the "R.D. of 01/30/1941, no. 12", updated by the amendments introduced by the "D.Lgs. of 02/19/1998, no. 51", contains the name of the original "state:royal.decree:1941-01-30;12" as well as the name of the updated version "state:royal.decree:1941-01-30;12@1998-02-19").

Please note that in case of attachments or annexes, the creation of a new version (even in the case of only one component) would imply the creation of a new uniform name for all the connected objects in order to guarantee their alignment (i.e., the main document, the attachments and annexes).

Attachment D -- Http LEX Identifier

D1 Http URI

   Http URIs have been promoted [RFC3986] as stable and location-
   independent identifiers. According to this syntax, at all levels,
   resource IDs belong to the http scheme and are normally resolved
   using mechanisms widely available in browsers and web servers.

   Such kind of identifiers have been suggested also within the set of
   principles and technologies, known as "Linked Data" as a basic
   infrastructure of the semantic web to enable data sharing and reuse
   on a massive scale.

   Such principles, introduced by Tim Berners-Lee in his Web
   architecture note "Linked Data"
   (http://www.w3.org/DesignIssues/LinkedData.html), are synthetically:

   - Use URIs as names for things;
   - Use HTTP URIs, so that people can look up those names;
   - When someone looks up a URI, provide useful information, using the
     standards (RDF, SPARQL);
   - Include links to other URIs, so that they can discover more things.

   The second principle is the one more affecting a discussion about the
   scheme to be used for legal resources identification; in particular
   to the aim of guaranteeing the access to the resources, http
   identifiers are suggested. This property is addressed as
   "dereferenceability", meaning a resource retrieval mechanism using
   any of the Internet protocols, e.g. HTTP, so that HTTP clients, for
   instance, can look up the URI using the HTTP protocol and retrieve a
   description of the resource that is identified by the URI.
   Such property is available for http identifiers either with or
   without a resolver allowing a 1-to-1 association with the "best copy"
   of the resource; in the legal domain it is related to the unique act
   manifestation of a specific publisher and format.

   The same property holds for URN identifiers, as long as a resolver is
   properly set-up, allowing 1-to-N association with more manifestations
   of a resource (act).

   Therefore an http identifier, stable and independent from the
   resource location, can be effectively used when a single publisher
   provides a specific item of this resource (1-to-1 mapping between an
   identifier and manifestation of an act). The independence from the
   resource location is managed by a "303 See Other" status code (see
   [RFC7231]) which may require a resolver able to access the physical
   location of the resource (e.g., through submitting a query to a

database). A URN identifier, stable and independent form the resource
location, can be effectively used within a federative environment
where different publishers can provide different items of the same
act (1-to-N mapping between an identifier and different
manifestations of an act).

In order to comply with the Linked Data principles and to build http
identifiers using the LEX namespace specifications, the LEX schema
and metadata set can be serialized according to an http URI syntax.
It is worthwhile to mention that URN focuses on acts identification,
while Linked Data principles focus on identifying a resource on the
Web.

In the following sections the http serialization of the urn LEX
schema is reported.

D2 The Http LEX Identifier Structure

The http hierarchical structure of the LEX identifier is the
following:

        "http://" host-name "/lex/" jurisdiction "/" local-name

where:
- <host-name> represents the name of the organization server
  publishing the resource;
- "lex" is the equivalent of the URN namespace ID and provides the
  reference to the naming convention adopted;
- <jurisdiction> and <local-name> share meaning and syntax of the
  corresponding components in the LEX specifications.

The <jurisdiction> element follows the syntax rules of the
corresponding element in the URN specification, therefore it has the
following structure:

        jurisdiction = jurisdiction-code *(";" jurisdiction-unit)

The character ";" still separates the identification code of the
country or jurisdiction where the source of law is issued
(<jurisdiction-code>) from any possible administrative hierarchical
sub-structures defined by each country or organisation according to
its own legal system.

The <local-name> follows the [FRBR] model as implemented by the LEX
specifications, therefore its http structure is the following:

        local-name = work "/@/" expression "/$/" manifestation

The content of URN:LEX identifier elements is directly transferred to
the corresponding elements of its http version, except for characters
outside the ASCII set: such characters have to be converted into a
valid ASCII format using the typical URL percent encoding rules.

D3 The Http LEX Identifier at Work Level

According to the corresponding level of the URN version, the http LEX
identifier structure at work level is the following:

        work = authority "/" measure "/" details *("/" annex)

The elements <authority>, <measure> and <annex> follow the same
syntax rules of the corresponding elements in the URN specification.

Examples of http identifiers at <work> level, corresponding to the
urn examples in Section 6.4, are the following:

http://<host-name>/lex/it/stato/legge/2006-05-14;22
http://<host-name>/lex/uk/ministry.justice/decree/1999-10-07;45
http://<host-name>/lex/ch;glarus/regiere/erlass/2007-10-15;963
http://<host-name>/lex/es/tribunal.supremo/decision/2001-09-28;68
http://<host-name>/lex/fr/assemblee.nationale/proposition.loi/
    13.legislature;1762
http://<host-name>/lex/br/estado/constituicao/1988-10-05;lex-1
http://<host-name>/lex/nl/hoge.raad/besluit/2008-04-01;bc8581 ,br
http://<host-name>/lex/un.org/united.nations;general.assembly/
    resolution/1961-11-28;a-res-1661

D4 The Http LEX Identifier at Expression Level

According to the corresponding level of the URN version, the http LEX
structure at expression level is the following:

                  expression = version ["/" language]

The elements <version> and <annex> follow the same syntax rules of
the corresponding elements in the URN specification.

Examples of http identifiers at expression level, corresponding to
the urn examples in Section 6.6, are the following:

http://<host-name>/lex/ch/etat/loi/2006-05-14;22/@/originel/fr
    (original version in French)
http://<host-name>/lex/ch/staat/gesetz/2006-05-14;22/@/original/de
    (original version in German)
http://<host-name>/lex/ch/etat/loi/2006-05-14;22/@/2008-03-12/fr
    (amended version in French)

```
   http://<host-name>/lex/ch/staat/gesetz/2006-05-14;22/@/2008-03-12/de
      (amended version in German)
   http://<host-name>/lex/be/conseil.etat/decision/2008-07-09;185.273
      /@/originel/fr
      (original version in French of a Belgian decision)
```

D5 The Http LEX Identifier at Manifestation Level

   Information provided in the URN version at manifestation level is
   differently accommodated in the corresponding level of the http LEX
   identifier.

   The <editor> element, reported at manifestation level in the urn LEX
   version, is an information already contained in the <host-name> of
   the http LEX identifier, therefore it is omitted in the
   <manifestation> elements.
   Similarly the <feature> element is omitted since it loses its meaning
   which would derived from the comparison between different
   manifestations.

   The <format> element is reported as unique extension of the data
   format in which the manifestation is drafted. The value is compliant
   with the registered file extensions, thus it can be "pdf" for PDF,
   "doc" for MS Word, "xml" for XML documents, "tif" for tiff image
   format, etc.

   Therefore the http LEX structure at manifestation level is the
   following:

```
      manifestation = [ component *(";" specification)] "." format
```

   The element <component> follows the same syntax rules of the
   corresponding element in the URN specification.

   Examples of http identifiers at manifestation level, corresponding to
   the urn examples in Section 6.7 are the following:

   http://www.senato.it/lex/it/stato/legge/2000-04-03;56/$/testo.xml
      (body of the Italian law 3 April 2000, n. 56, published by the
      Italian Senate in xml format)
   http://www.senato.it/lex/it/stato/legge/2000-04-03;56/$/figura.1.pdf
      (Figure 1 in PDF format of the Italian law 3 April 2000, n. 56,
      published by the Italian Senate)
   http://www.juradmin.eu/jurifast/lex/eu/tibunal.justicia/sentencia/
      2009-06-11;33-08/@/original/es/$/todo.html
      (the Spanish http LEX identifier of the html format of the whole
      Judgement of the European Court of Justice n. 33/08 of 11/06/2009,
      in Spanish version, published by the Juriadmin site in the

      Jurifast data base)
   http://eur-lex.europa.eu/lex/eu/commission/directive/
      2010-03-09;2010-19-EU/$/body.xml
      (body of the EU Directive n. 2010-19-EU, dated 2010-03-09, in its
      XML format published by Eur-Lex)