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RFC 9676
LEX: A Uniform Resource Name (URN) Namespace for Sources of Law

Abstract

This document describes LEX, a Uniform Resource Name (URN) namespace identifier that identifies, names, assigns, and manages persistent resources in the legal domain. This specification allows adoption of a common convention by multiple jurisdictions to facilitate ease of reference and access to resources in the legal domain.

This specification is an Independent Submission to the RFC Series. It is not a standard and does not have the consensus of the IETF.

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1. Introduction

1.1. The Purpose of Namespace LEX

The purpose of the LEX namespace is to assign a unique identifier in a well-defined format to documents that are sources of law. In this context, "sources of law" include any legal document within the domain of legislation, case law, administrative acts, or regulations. Potential sources of law (acts under the process of law formation, such as bills) are included as well. "Legal doctrine", that is, the body of knowledge and theoretical speculation typical of legal scholars (e.g., commentary on judgment, jurisprudence review, commentary on legislation, encyclopedic entries, monographs, articles in magazines, manuals, etc.) is explicitly not covered.

The identifier is conceived so that its construction depends only on the content of the document itself and not its online availability, physical location, and access mode. The identifier itself is assigned by the jurisdiction of the identified document. A document that is not available online may, nevertheless, have a LEX URN identifier.

The LEX URN may be used as a way to represent references (and more generally, any type of relation) among various sources of law. In an online environment with resources distributed among different web publishers, LEX URNs allow a simplified global interconnection of legal documents by means of automated resolution. LEX URNs consist of persistent and location-independent identifiers and are particularly useful when they can be mapped into or associated with locators such as HTTP URLs. Moreover, LEX URN details can be used as a reference to create persistent and location-independent identifiers that are HTTP-based [RFC3986].

1.2. Background

This specification of a unique identifier for legal documents follows a number of initiatives in the field of legal document management.

Since 2001, the Italian Government promoted the NormeInRete project through the National Center for Information Technology in the Public Administration, the Ministry of Justice, and the National Research Council of Italy (CNR). The NormeInRete project was aimed at introducing standards for describing and identifying sources of law using XML and URN techniques.

Other national initiatives in Europe introduced standards for the description of legal sources [FRAN]. Collaborations 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 of 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 (EU) Member States, as well as the increasing integration of the worldwide legal and economic processes, are causing a growing interest in the exchange of legal information at national and transnational 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 an 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. In several conferences (such as [LVI]), representatives of the Publications Office of the European Union (OP) have expressed the need for a unique identifier for sources of law, based on open standards and able to provide advanced modalities of document hyperlinking, 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] encourages 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 the European level, towards the definition of a standard interchange format for sources of law, including recommendations for defining naming conventions for them.

Additionally, the need for unique identifiers for sources of law is of particular interest in the domain of case law. This need is acutely felt within both common law systems (where cases are the main law sources) and civil law systems, because unique identifiers can provide integrated access to cases and legislation, as well as the ability 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 of (directly applicable) EU laws and also 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 Council of the European Union has underlined the importance of cross-border access to national case law, as well as the need for its standardization, with a vision of a decentralized architecture with integrated access. 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, in 2009, the Council of the European Union decided to elaborate on a uniform European system for the identification of case law (i.e., the European Case-Law Identifier (ECLI)) and a uniform set of metadata based on the Dublin Core.

The Council of the European Union invited the Member States to introduce the European Legislation Identifier (ELI) in the legal information systems, which is an HTTP-based, Semantic Web-oriented identification system for legislation of the European Union and Member States.

The LEX identifier (also referred to in this text as "LEX name") is conceived to be general enough to provide guidance at the core of the standard and offer sufficient flexibility to cover a wide variety of needs for identifying legal documents of different types, 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, in [FRBR] sense (see Section 5.2), of a legal document (that is, there is more than one manifestation (see Section 5.2) of the same legal document).

Specifications and syntax rules for the LEX identifier can also be used for HTTP-based naming conventions to cope with different requirements in legal information management, for example, the need to have an identifier that is 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.

1.3. General Characteristics of the System

The specifications in this document promote interoperability among legal information systems by defining a namespace convention and structure that will create and manage identifiers for legal documents. The identifiers are intended to have the following qualities:

- globally unique
- transparent
- reversible
- persistent
- location-independent
- language-neutral

These qualities facilitate management of legal documents and a mechanism for stable cross-collection and cross-country references.

Transparency means that, for a given act and its relevant metadata (issuing authority, type of measure, etc.), it is possible to create a related URN that is able to uniquely identify the act in a way that is reversible (from an act to its URN and from a URN to the act).

Language neutrality, in particular, is an important feature that promotes adoption of the standard by organizations that must adhere to official language requirements. This specification provides 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.

The challenge is to provide the right amount guidance at the core of the specification while providing sufficient flexibility to cover a wide variety of needs. LEX does this by splitting the identifier into parts. The first part uses a preexisting 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.

The second part depends only on the identification system for sources of law 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 unambiguously representing 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 online 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.

1.4. Linking a LEX Name to a Document

The LEX name is linked to the document through metadata, which may be specified as follows:

- Within the document itself through a specific element within an XML schema or by a meta tag [W3C.HTML].
- Externally by means of a Resource Description Framework [W3C.RDF-SCHEMA] triple, a specific attribute in a database, etc.

At least one of these references is necessary to enable automated construction, an update of catalogues (distributed and centralized), and the implementation of resolvers that associate the uniform name of a document with its physical location. LEX assumes no particular relationship between the originator of the document, its publisher, the implementer of catalogues, or resolution services.

1.5. Use of LEX Names in References

LEX names can be used in references as an HREF attribute value of the hypertext link to the referred document. This link can be created in two ways:

- Manually inserting the link with the uniform name in the referring document. This is a burdensome procedure, especially for documents that are already online.
- Automatically constructing (either permanently or temporarily) the link with the uniform name from references in the text using a parser. This procedure offers more time savings, even if it is subject to a certain percentage of errors, since references are not always accurate or complete. This solution could nevertheless be acceptable for documents that are already published.

No matter which method is adopted, new documents produced in a certain format (for example, XML, XHTML, etc.) should express references through the uniform name of the document referred to.

1.6. Definitions

The following terms are used in this document:

Source of Law: A general concept that refers to legislation, case law, regulations, and administrative acts. In its broadest sense, the source of law is anything that can be conceived as the originator of 'erga omnes' legal rules. In this document, "source of law" also refers to acts during their creation, such as bills, that might or might not become laws.

Jurisdictional Registrar: An organization in any jurisdiction that shares and defines the assignment of the main components of the resource identifier through which the identifier uniqueness is guaranteed.

1.7. 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.

1.8. Syntax Used in This Document

This document uses a syntax that is based on the Augmented Backus-Naur Form (ABNF) [RFC5234] meta-language, which is used in many RFCs.

1.9. Namespace Registration

The LEX namespace has been registered in the "Formal URN Namespaces" registry. See Section 12.

2. Registration of LEX

2.1. Identifier Structure

The identifier has the following hierarchical structure:

```
    "urn:lex:" NSS
```

where NSS is the Namespace Specific String composed as follows:

```
    NSS = jurisdiction ":" local-name
```

where:

jurisdiction: Identifies the scope (state, regional, municipal, supranational, or organizational) where a set of sources of law have validity. It is also possible to represent international organizations (either states, public administrations, or private entities).

local-name: 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 represents all aspects of an intellectual production, from its initial idea, through its evolution during the time, to its realization by different means (paper, digital, etc.).

The jurisdiction element is composed of two specific fields:

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

where:

jurisdiction-code: Usually the identification code of the country where the source of law is issued. To facilitate the transparency of the name, the jurisdiction-code usually follows the rules of identification of other Internet applications, based on domain name (for details and special cases, see Section 2.2).

Due to the differences in representation in the various languages of a country, the use of the standard [ISO.3166-1] is strongly **RECOMMENDED** for easier identification of the country. Therefore, a LEX URN ID always begins with a sequence of ASCII characters: "urn:lex:ccTLD". For all the other components that follow the jurisdiction-code, the Jurisdictional Registrar decides the mode of representation (ASCII or UTF-8 percent-encoding; see Section 3.4).

Where applicable, the domain name of the country or multinational or international organization is used. If such information is not available for a particular institution, a specific code will be defined (see Section 2.2). Examples reported in this document are hypothetical and assume that the corresponding domain name is used for the jurisdiction-code.

jurisdiction-unit   The possible administrative hierarchical sub-structures defined by each country or organization within their specific legal system. This additional information can be used when 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, the jurisdiction-unit differs for acts of the same type issued by similar authorities but pertain to different jurisdictions related to different geographical areas.
An example can be the following:
"br:governo:decreto" (decree of federal government),
"br;sao.paulo:governo:decreto" (decree of São (SU+00E3o) Paulo state)
"br;sao.paulo;campinas:governo:decreto" (decree of Campinas municipality).

The following are fictitious examples of sources of law identifiers:

```
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:1978-04-28;77-5953
     (US SC decision: Riley vs Illinois)
urn:lex:be:conseil.etat:decision:2008-07-09;185.273
     (Decision of the Belgian Council of State)
```

2.2. Jurisdiction-Code Registry

A new jurisdiction-code registry has been created. Note that this is a CNR registry and **not** an IANA registry.

Each entry contains the following elements:

jurisdiction-code: The identifier assigned to the jurisdiction (i.e., to the country or organization).

jurisdiction: The official name of the jurisdiction (i.e., the country or organization).

registrant: Essential information that identifies the organization that requested the registration of the code. The registrant will be responsible for its DNS zone, the attribution of sub-zone delegations, and so on. It is **RECOMMENDED** that each jurisdiction create a registry of all delegated levels so that the organization responsible for each sub-zone can easily be identified.

reference: A reference to the defining document (if any).

The table, available at the address lex-urn.nic.it, is initially empty. The registry is initially empty. The following are possible example entries:

```
"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 is responsible for the jurisdiction-code and the root lex-nameserver.nic.it registries of the resolution routing.

A new Jurisdictional Registrar will contact CNR or the designated expert(s) according to the established rules of governance (published on the CNR website dedicated to 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 evaluations of the DNS. Typically, such applications should come from public administrations, as authorities enacting sources of law.

The adopted registration policy is similar to that of the "Expert Review" policy specified in [RFC8126]. The 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 Country Code Top-Level Domain (ccTLD), 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 organization (e.g., European Union) or international organization (e.g., United Nations and World Trade Organization), the Top-Level Domain Name (e.g., "eu") or the Domain Name (e.g., "un.org" and "wto.org") of the organization should be used as the jurisdiction-code.
- If a multi-national or international organization does not have a registered domain, the designated expert(s) should assign something like "name.lex.arpa", where the name will be the acronym of the organization name in the language chosen by the organization itself. For example, the jurisdiction-code of the European Economic Community could be "eec.lex.arpa". The alias mechanism allows for acronyms in different languages.

Jurisdiction-codes **MUST NOT** be renamed, because that would violate the rule that URN assignments be persistent.

Jurisdiction-codes **MUST NOT** ever 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 the designated expert(s).

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

Requests for new jurisdiction-code assignments must include the organization or country requesting it and contact information (email) of who requested the assignment.

2.3. Conformance with URN Syntax

The LEX namespace identifier (NID) syntax conforms to [RFC8141]. However, a series of characters are reserved for identifying elements or sub-elements, or for future extensions of the LEX naming convention (see Section 3.2).

2.4. 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).

2.5. Scope

The scope is global. In fact, each Body that enacts sources of law can identify them by this scheme. Furthermore, other bodies (even non-enacting sources of law, such as newspapers, magazine publishers, etc.) that aim to reference legal documents can unequivocally identify them by this scheme.

3. General Syntax and Features of the LEX Identifier

This section lists the general features applicable to all jurisdictions.

3.1. Allowed and Not Allowed Characters

The characters are defined in accordance with [RFC8141]. For various reasons that are explained later, only a subset of characters is allowed in the LEX NSS. All other characters are either eliminated or converted.

For the full syntax of the uniform names in the LEX space, please see Section 8.

3.2. Reserved Characters

The following characters are reserved 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 the 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 between different formats of the same element (e.g., date).

","   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).

"*"   Reserved for future expansions.

"!"   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 is always converted into "-", except in the formal annexes (see Section 6.4.1).

3.3. Case Sensitivity

For all the languages where different cases (uppercase or lowercase) or different spellings of the same word are possible, names belonging to LEX namespace are case-insensitive. For the Latin alphabet, it is **RECOMMENDED** that names be created in lower case, but names that differ only in case or in the spelling of the same word **MUST** be considered equivalent (e.g., "Ministry" will be recorded as "ministry").

3.4. Unicode Characters Outside the ASCII Range

In order to exploit the DNS as a routing tool towards the proper resolution system, keep editing and communication more simple, and avoid character percent-encoding, it is **RECOMMENDED** that characters outside the ASCII range (e.g., national characters, diacritic signs, etc.) are turned into base ASCII characters (e.g., the Italian term "sanità" (sanitU+00E0)" replaced into "sanita", the French term "ministère" (ministU+00E8re) replaced into "ministere", in case by transliteration (e.g., "München" (MU+00FCnchen) replaced into "muenchen").

This mapping consists of:

- Transcription from non-Latin alphabets
- Transliteration of some signs (e.g., diaeresis and eszett)
- Preservation of only the basic characters, eliminating the signs placed above (e.g., accents and tilde), below (e.g., cedilla and little tail), or on (e.g., oblique cut)

The most suitable, well-known, and widespread mapping system for a given language **MUST** be chosen by the jurisdiction or by the jurisdiction-unit (in agreement with the jurisdiction) in the case of different languages in various regions, also taking into account the choices made for the same language by other jurisdictions. This mapping is simpler and more feasible for languages that use the Latin alphabet and gradually becomes more complex for other alphabets and for writing systems that use opposite orientation (from right to left) or are based on ideographic symbols.

If this conversion is not acceptable by a specific jurisdiction or it is not available in a given language, Unicode **MUST** be used, and for accessing network protocols, any Unicode code points outside the ASCII range **MUST** be converted to UTF-8 percent-encoding according to [RFC3986] and [RFC3629] .

In this case, it should be noted that the generated URN (as well as some of its parts) cannot be used directly for routing through the DNS. Therefore, the jurisdiction must adopt one of the following strategies:

- Convert non-ASCII characters within the DNS into IDN encoding using Punycode translation [RFC5894] (e.g., "münchen" (mU+00FCnchen) in xn--mnchen-3ya) and develop a software interface that converts the URN before the navigation in the DNS.
- Create a routing service relying on a software, outside of the DNS, that addresses a proper resolution service.

Note that the LEX URN ID could contain groups of characters (UTF-8 percent-encoded) of some languages with different orientations. In this case, the BiDi rules apply [RFC5893].

The preferred order is summarized as follows:

- Conversion into basic ASCII is the **RECOMMENDED** solution (because conversions for network protocols and the DNS are not needed).
- Using Unicode and converting to UTF-8 percent-encoding [RFC3629] for accessing network protocols and to Punycode [RFC5894] only for navigation in DNS via software interface.
- Creation of a routing service relying on a software outside of DNS and addressing a proper resolution service.

The first solution allows native DNS routing while the other two solutions require software development for the interface or the routing. However, it is up to the specific jurisdiction to choose the preferred solution.

The following are two examples (Latin and Cyrillic alphabets) relating to the different solutions adopted:

- A circular adopted by the Municipality of Munich (Rundschreiben der Stadt "München" (MU+00FCnchen)):

```
- ASCII: urn:lex:de:stadt.munchen:rundschreiben:...;
- Unicode: urn:lex:de:stadt.mU+00FCnchen:rundschreiben:...;
- UTF-8: urn:lex:de:stadt.m%C3%BCnchen:rundschreiben:...;
- PUNYCODE: urn:lex:de:stadt.xn--mnchen-3ya:rundschreiben:...
```

- A state law of the Russian Federation (Latin: gosudarstvo zakon; Cyrillic: "состояние закон" (U+0441U+043EU+0441U+0442U+043EU+044FU+043DU+0438U+0435 U+0437U+0430U+043AU+043EU+043D)), assuming that the Russia jurisdiction-code is expressed in ASCII ("ru") (while the Cyrillic version would be "рф" (U+0440U+0444)):

```
- ASCII: urn:lex:ru:gosudarstvo:zakon:...
- Unicode: urn:lex:ru:U+0441U+043EU+0441U+0442U+043EU+044FU+043D
            U+0438U+0435:U+0437U+0430U+043AU+043EU+043D:...
- UTF-8: urn:lex:ru:%D1%81%D0%BE%D1%81%D1%82%D0%BE%D1
            %8F%D0%BD%D0%B8%D0%B5:%D0%B7%D0%B0%D0%BA
            %D0%BE%D0%BD:...
- PUNYCODE: urn:lex:ru:xn--80aebe3cdmfdkg:xn--80ankme:...
```

3.5. Abbreviations

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

3.6. Date Format

[ISO.8601-1.2019] and [ISO.8601-2.2019] describe the international format for representing dates. Dates **MUST** always be represented in this format (4 digits for the year, 2 digits for the month, and 2 digits for the day):

```
date-iso = year "-" month "-" day
```

For example, "September 2, 99" will be written as "1999-09-02".

This format ensures interoperability between different representation systems and there are several programs for mapping other formats to this one. However, to make reading and understanding such other formats (e.g., Jewish calendar), the LEX URN scheme provides that the date can be added in the jurisdiction's own format. The date in the previous example (1999-09-02) would be as follows:

- in Hebrew characters (21 Elul 5759):

```
כ״א-בֶּאֱלֹוּל-תשנ״ט
```

  Note that the example above uses right-to-left (RTL) script, which in the context of this specification may be displayed differently by different document presentation environments. The descriptive text may be more reliable to follow than the necessarily device- and application-specific rendering.

- in U+ notation:

```
U+05D8U+05F4U+05E0U+05E9U+05EAU+002DU+05DCU+05D5U+05BCU+05DC
U+05D0U+05B1U+05D1U+05B6U+05BCU+002DU+05D0U+05F4U+05DB
```

- in UTF-8 code:

```
%d7%98%d7%b4%d7%a0%d7%a9%d7%aa-%d7%9c%d7%95%d6%bc%d7%9c%d7%
90%d6%b1%d7%91%d6%b6%d6%bc-%d7%90%d7%b4%d7%9b
```

Therefore, for all the dates in the LEX URN identifier (see Sections 6.3 and 7.1.2), it is possible to indicate the date in the local format:

```
date = date-iso ["|" date-loc]
```

For example, 1999-09-02 will be written in ISO plus Hebrew format as:

```
כ״א-בֶּאֱלוּל-תשנ״ט|02-09-1999
```

which is to be converted into UTF-8 for network protocols and for resolution (see Section 3.4). The characters that are not allowed (e.g., "/") or reserved (e.g., ",") cannot exist inside the date-loc and therefore **MUST** be turned into ".". To be aligned with ISO format, any blank between day, month, and year **MUST** be converted into "-".

In the above Hebrew character examples, the sequence of characters is as follows: "כ" (HEBREW LETTER KAF, U+05DB), "״" (HEBREW PUNCTUATION GERSHAYIM, U+05F4), "א" (HEBREW LETTER ALEF, U+05D0), "-" (HYPHEN-MINUS, U+002D), "בֶּ" (HEBREW LETTER BET, HEBREW POINT SEGOL, HEBREW POINT DAGESH OR MAPIQ, U+05D1 U+05B6 U+05BC), "אֱ" (HEBREW LETTER ALEF, HEBREW POINT HATAF SEGOL, U+05D0 U+05B1), "ל" (HEBREW LETTER LAMED, U+05DC), "וּ" (HEBREW LETTER VAV, HEBREW POINT DAGESH OR MAPIQ, U+05D5 U+05BC), "ל" (HEBREW LETTER LAMED, U+05DC), "-" (HYPHEN-MINUS, U+002D), "ת" (HEBREW LETTER TAV, U+05EA), "ש" (HEBREW LETTER SHIN, U+05E9), "נ" (HEBREW LETTER NUN, U+05E0), "״" (HEBREW PUNCTUATION GERSHAYIM, U+05F4), and "ט" (HEBREW LETTER TET, U+05D8).

4. Specific Syntax and Features of the LEX Identifier

This section discusses features related to specific jurisdictions. The implementation of these features is **RECOMMENDED**.

4.1. Spaces, Connectives, and Punctuation Marks

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

4.2. 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").

4.3. Ordinal Numbers

To standardise 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 Roman numerals, an adjective, Arabic numerals with an apex, etc. (such as IV, third, 1° (1U+00B0), and 2^). For example, "Department IV" becomes "department.4".

5. Creation of the Source of Law LEX Identifier: Baseline Structure

5.1. Basic Principles

The uniform name must identify one and only one document (more precisely a "bibliographic resource" [ISBD]; see also Section 5.2) 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, and
- representative of both the formal and the substantive aspects of the document.

5.2. Model of Sources of Law Representation

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

The first two entities reflect its contents:

work:　Identifies a distinct intellectual creation; in this document, it identifies a source of law in both its original form and its amended form over time.

expression:　Identifies a specific intellectual realization of a work; in this document, 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.

The other two entities relate to its form:

manifestation:　Identifies a physical embodiment of an expression of a work; in this document, it identifies embodiments in different media (printing, digital, etc.), encoding formats (XML, PDF, etc.), or other publishing characteristics.

item:　Identifies a specific copy of a manifestation; in this document, 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 that 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, and 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 may change as a result of amendments or annulments of other legislative or jurisprudential acts. Therefore, notes, summaries, comments, anonymizations, and other editorial activities over the same text do not produce different expressions. Instead, they produce different manifestations.

5.3. 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, three components are always present at the "work" level: the enacting authority, the measure type, and the details. A fourth component, the annex, is 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, and
- 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 that 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 that forms a uniform name for a source of law at each level (work, expression, and manifestation) is expressed in the official language of the relevant jurisdiction. More language-dependent names (aliases) are created in cases where there are multiple official languages (as in Switzerland) or more involved jurisdictions (as in international treaties).

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 that includes the following: the original main document, the annexes, and all the versions, languages, and formats that are subsequently generated.

5.4. Structure of the Document Identifier at "Work" Level

The structure of the document identifier is comprised of the four fundamental elements mentioned above, distinguished one from the other and ordered by increasingly narrow domains and competencies:

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

where:

authority: The issuing or proposing authority of the measure (e.g., state, ministry, municipality, court, etc.).

measure: The type of the measure, both public (e.g., constitution, act, treaty, regulation, decree, decision, etc.) and private (e.g., license, agreement, etc.).

details: The terms associated with the measure, typically the date (usually the signature date) and the number included in the heading of the act.

annex: The identifier of the annex, if any (e.g., Annex 1).

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

The main elements of the work name are generally divided into several elementary components, and for each component, specific rules of representation are established (criteria, modalities, syntax, and order). For the details regarding each element, see Section 6. The following are hypothetical examples of work identifiers:

```
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
```

The type of measure is important to identify case law and legislation, especially within legal systems where cases are traditionally identified only through the year of release and a number. Since the aim of the LEX schema is to identify specific materials, the type of measure or the full date are able to differentiate between materials belonging to a specific case.

The following is an example where the type of measure or the full date are essential for identify specific materials of a case:

- 4/59 Judgment 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
```

5.5. Aliases

International treaties involve multiple signatory jurisdictions and are therefore represented through multiple identifiers, each of them related to a signatory. For example, a bilateral France and Germany treaty is identified through two URNs (aliases) belonging to either the "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 German jurisdictions).

In the states or organizations that have multiple official languages, a document has multiple identifiers. Each identifier is expressed in a different official language and is 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" and "urn:lex:eu:consiglio:direttiva:2004-12-07;31").

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).

5.6. 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 to be 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:

• 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), and

• 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 version 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: 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; other specific information can be
used for particular documents. If necessary, the original version is specified by the string
"original" and is expressed in the language of the act or version (for the details regarding this
element, please see Section 7).

language: The identification code of the language in which the document is expressed,
according to [RFC5646] (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 standard German) is left to each specific jurisdiction. The information is not
necessary when the text is expressed in the sole official language of the country or
jurisdiction.

The following are hypothetical examples of document identifiers for expressions:

```
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)
```

5.7. 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:

editor: Editorial staff who produced it, expressed according to the publisher's 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 a new
manifestation with a new domain name for each object.

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 with the "-" sign.

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"), 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).

Thus, the manifestation suffix reads:

```
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, the archive name and electronic publisher for the editor and the version for format. Therefore, the main elements of the manifestation will assume the following forms:

```
editor = publisher *(";" specification)

format = mime *(";" specification)

component = part *(";" specification)

feature = attribute *(";" specification)
```

The syntax details of the manifestation element are shown in Section 8 in the related part.

The following are hypothetical examples:

- The original version of 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$parlamento.it:
  application-pdf;1.7
  ```

  ◦ 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$senato.it:text-xml;
    dtd-nir-2.2:testo
  urn:lex:it:stato:legge:2000-04-03;56$senato.it:
    application-pdf;1.7:figura.1
  ```

- The Spanish URN of the HTML format of the whole Judgment of the European Court of Justice n. 33/08 of 11/06/2009, in Spanish version, published in the Jurifast database in anonymized form:

```
urn:lex:eu:tribunal.justicia:sentencia:2009-06-11;33-08
@original:es$juradmin.eu;jurifast:text-html:todo:anonimo
```

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 (e.g., image scans of documents).

5.8. 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.

In the digital representation, a partition is represented by an element (a block of text) with its own ID; this ID aims to identify the related element and locate it. Therefore, it is possible to either extract or point to a partition.

For markup that does not fit the logical structure of the text (like HTML), generally only the starting point of the partition, rather than the whole block of text or element, is identified through a label (e.g., tag in the HTML markup language [W3C.HTML]). In this case, it is only possible to point to a partition but not extract it.

Partitions should be assigned unique labels or IDs within the including document, and their value should be the same regardless of document format.

To enable 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. For example, in legislation, paragraph 2 of article 3 might have the value "art3;par2" as the label or ID; similarly, for case law, paragraph 22 of the judgment in Case 46/76 Bauhuis v Netherlands might have the value "par22" as the label or ID.

Furthermore, it is useful to foresee the compatibility with applications that are 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 be transmitted to the servers (resolution and application). 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]
```

For example, referring to paragraph 3 of 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".

If a different separator ("~") is used after the document name, the partition ID is not withheld by the browser but is transmitted to the resolution process. If the partition syntax is compatible with the media type used, this enables the resolver to retrieve (for example, out of a database) only the referred partition; otherwise, the whole act is returned.

When resolving to HTTP, the resolver **SHALL** transform the partition ID to an appropriate internal reference (#) on the page or at the beginning if that point cannot be found. The transformation in the URI fragment is obtained by appending the "#" character followed by the partition ID to the URL (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 by eliminating sub-partitions that are not addressed. In the previous example, if only the article was identified in the act, it could return <URL-document>#art15 only.

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 always be retrieved.

6. Specific Syntax of the Identifier at "Work" Level

6.1. The Authority Element

6.1.1. Indication of the Authority

The authority element of a uniform name may indicate the following 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 political party).

6.1.2. 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)
```

This is an example: "ministry.justice+ministry.finances".

6.1.3. 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 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
```

This is an example: "ministry.finances;department.revenues;manager".

6.1.4. 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 it is not normally 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").

6.1.5. Indication of the Function

Generally, the function is indicated, sometimes instead of the Body itself:

- In the case of political, representative, or elective offices (e.g., "university.oxford;rector:decree" instead of "university.oxford;rectorship:decree").
- When referring 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 as the director or the person in charge of the structure (for example, an undersecretary, a deputy director, etc.).
- The type of measure may be both monocratic or collegial; the indication of the office eliminates the ambiguity.

6.1.6. 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's official language) as the authority. The same convention is used for constitutions, codes (civil, criminal, civil procedure, criminal procedure, etc.), and international treaties.

6.2. The Measure Element

6.2.1. Criteria for the Indication of the Type of Measure

In uniform names, the issuing authority of a document is mandatory. This makes it 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").

6.2.2. Further Specification to the Type of Measure

In the measure element, it is usually sufficient to indicate the type of a measure. As usual, rather than through the formal details (date and number), references to sources of law 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., Bolkestein directive), or the topic of the act (e.g., Bankruptcy Law), etc. In these cases, the type of measure **MAY** be followed by further specifications that are useful in referencing, even if the details are lacking:

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

These are examples: "regulations;accounting" or "act;bankruptcy".

6.2.3. Aliases for Sources of Law with Different Normative References

There are legislative measures that, although unique, are usually cited in different ways, for example, introducing them into the legal order through a legislative act (President's decree, legislative decree, etc.) or through their legislative category (regulations, consolidation, etc.). In order to ensure the validity of the references in all cases, an alias (an 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").

6.2.4. 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. Therefore, it is 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").

6.3. The Details Element

6.3.1. 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, registry, 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 setup 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 substitued for 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 general to specific, the sequence date-number has the following form:

```
details = (dates / period) ";" numbers
```

The following are examples: "2000-12-06;126" and "14.legislature;s.2544".

6.3.2. Multiple Dates

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

```
dates = date *("," date)
```

For example, 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
```

As specified in Section 3.6, all the dates can have the date typical of the jurisdiction in addition to the ISO format.

6.3.3. Unnumbered Measures

Measures not officially numbered in the publications may have a non-unequivocal identifier, because several measures of the same type can exist and can be 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
```

The following is an example: "ministry.finances:decree:1999-12-20;lex-3".

It is the responsibility of the authority issuing a document to assign a discriminating specification to it. When there are 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), are recognized by the univocal identifying label printed on the paper instead of by a progressive number. Such an identifier, even if it is unofficial but assigned to a document in an official publication, is preferred because it has the clear advantage of being public and is therefore easier to find.

6.3.4. 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:

```
number = document-id *("," document-id)
```

The following is an example: "2000-06-12;c-10-97,c-11-97,c-12-97".

The characters that are not allowed (e.g., "/") or reserved (e.g., ":"), including the comma, cannot exist inside the document-id and therefore **MUST** be turned into "-".

When 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 to distinguish the acts (e.g., bill n.123-bis-removal and 123-bis-return).

6.4. The Annex Element

6.4.1. Formal Annexes

Although annexes are an integral part of a legal document, they may be referred to and undergo amendments separately from the act to which they are annexed. Therefore, it is 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 or may not be autonomous in nature. In any case, they **MUST** be given a uniform name that includes the uniform name of the source of law to which they are attached and a suffix that identifies the annex itself.

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

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

The following is an example:

```
region.sicily;council:deliberation:1998-02-12;14:annex.a;
borders.park
```

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

6.4.2. 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). For example, Table 1 attached to the Annex 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
```

7. Specific Syntax of the Version Element of the "Expression"

7.1. The Version Element

7.1.1. Different Versions of a Legislative Document

The creation of an updated text of a document may have one of the following forms:

"multi-version":   Specific markups that identify the modified parts of a document (added, substituted, or deleted parts) and their related periods of effectiveness are indicated inside a 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, a set of metadata usually contains the life cycle 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":   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 to one another and immediately navigable.

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

[RFC8288] can be used as a 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 be inserted in the header of each version (if "single-version") or associated to each entry containing a single URN (if "multi-version").

7.1.2. Identification of the Version

In order to identify the different time versions of the same act, a specific suffix has to be added to the uniform name of the original document.

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 that the communication of the rectification or errata corrige was published.
- A specification that 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).

It is possible to add further specifications that will distinguish each of the different versions of the text to guarantee identifier unequivocalness. Examples include changes of the in-force or effectiveness of a formal 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 on 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. If 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: Contains any information that is useful to identify the version unambiguously and univocally.

event-date: Contains the date in which a version is put into force, is effective, or is published.

event: 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 the identifier of a version because it can be obtained from the heading (formal data). For example, 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 on a different date (1/1/99).

For full compatibility, every update of text, or of the effectiveness, of a "multi-version" document implies the creation of a new uniform name, even if the object remains single, containing the identifier of the virtually generated version, as in the case of a "single-version" document. Specific metadata 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 "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 version "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").

Note that if there are 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, attachments, and annexes).

As specified in Section 3.6, all the dates can have the date typical of the jurisdiction in addition to the date in ISO format.

8. 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 identifier
; - NSS = LEX Namespace Specific String
;-------------------------------------------------------------
```

```
  URN = "urn:" NID ":" NSS

  NID = "lex"
```

```
;-------------------------------------------------------------
; Structure of a LEX specific name
;-------------------------------------------------------------
```

```
  NSS = 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 = number / number-lex

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

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

editor = publisher *(";" specification)

publisher = alf-dot-hyp

format = mime *(";" specification)

mime = alf-dot-hyp

component = part *(";" specification)

part = alf-dot-hyp

feature = attribute *(";" specification)

attribute = alf-dot-hyp
```

```
;-----------------------------------------------------------
; Structure of the date
;-----------------------------------------------------------
```

```
date = date-iso ["|" date-loc]

date-iso = year "-" month "-" day

year = 4DIGIT

month = 2DIGIT

day = 2DIGIT

date-loc = *(alfadot / other)
```

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

9. Procedure of Uniform Names Assignment

9.1. Specifying the Jurisdiction Element of the LEX Identifier

Under the LEX namespace, each country or international organization is assigned 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 organizations) representation, and it is the value of the jurisdiction-code element, which preserves cross-country uniqueness of the identifiers.

9.2. Jurisdictional Registrar for Names Assignment

Any country or jurisdiction that intends to adopt this schema **MUST** identify a Jurisdictional Registrar, an organization that 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 2.2). It must appoint a Jurisdictional Registrar and must apply the Designated Experts to register the new jurisdiction-code.

For example, in a federal state, a jurisdiction-unit corresponding to the name of each Member State (e.g., "br;sao.paulo", "br;minas.gerais", etc.) may be defined.

The process of assigning the local-name is 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.

The Jurisdictional Registrar **MUST** establish, according to the guidelines indicated in this document, a uniform procedure within the country or organization to define local-name elements, make decisions about normalizations, solve and avoid possible name collisions, and 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 Jurisdictional Registrar shares and defines the rules to construct partition IDs for each document type, possibly in accordance with those already defined in other jurisdictions.

Finally, the Jurisdictional Registrar will develop and publish the rules and guidelines for the local-name construction as well as the predefined values and codes. The Jurisdictional Registrar should also promote the LEX URN 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 LEX URN identification system in a country or jurisdiction, as well as by private publishers. Each of them will be responsible for assigning names to their domains.

9.3. 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 is assigned by the issuing authority in conformance with the syntax defined in Section 5. 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 its registries and make them accessible.

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

9.4. 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, CNR is responsible for 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 associated code for country or organization 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 that is identified within each country or organization.

Therefore, each authority is responsible for assigning URNs that 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 national scope down to very local scope, **MUST** equally take responsibility for the persistence of identifiers within their scope.

10. Recommendations for the Resolution Process

10.1. General Architecture of the System

The task of the resolution service is to associate a LEX identifier with a specific document address on the Internet. In 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 inputs that are incomplete or partially incorrect, particularly those created by the automated extraction of references from 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 the DNS 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 followed.

For the LEX namespace, CNR will 1) maintain the root zone of the chain resolution, equivalent to "lex.urn.arpa" (see [RFC3405]), in the lex-nameserver.nic.it (see Section 12) and 2) update the DNS information with a new record to delegate the relative resolution when a new country (e.g., "br") or organization is added (see Section 2.2). This delegation 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 a 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 a DNS routing chain does not work for all the URN components containing percent-encoded characters. Therefore, when converting a LEX URN in UTF-8 code to a DNS query, clients **MUST** perform any necessary 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 software to query the knowledge base.

10.2. Catalogues for Resolution

Incompleteness and inaccuracy are rather frequent in legal citations; thus, incomplete or inaccurate uniform names of the referred document are 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 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, and the related manifestations.

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

10.3. Suggested Resolver Behavior

First, the resolver **SHOULD** separate the part corresponding to the partition ID from the document name, with the "~" separator.

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 registries are useful.

The resolver **SHOULD** then query the catalogue searching for the URN that corresponds exactly to the given one (normalized if necessary). Since the names coming from the references may be inaccurate or incomplete, an iterative and heuristic approach (based on partial matches) is indicated. 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, the entire document is returned.

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 the "#" character followed by the partition ID to URLs, to create URI fragments for browser pointing.

11. Security Considerations

Security considerations are those normally associated with the use and resolution URNs in general. Additional security considerations concerning the authenticity of a document do not pertain to the LEX specifications, but they pertain to security and trust issues that can be addressed with other means, like digital signatures, data encryption, etc.

12. IANA Considerations

IANA has registered LEX namespace in the "Formal URN Namespaces" registry [RFC8141].

In addition, to activate a distributed resolution system, IANA has registered the following NAPTR record in the URN.ARPA domain:

```
lex.urn.arpa.
    IN NAPTR  100  10  ""  ""  ""  lex-nameserver.nic.it.
```

Note that lex-nameserver.nic.it indicates the CNR server (see Section 2.2) that is responsible for the resolution of the LEX namespace at the time of this writing.

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13.1. Normative References

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