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Revised Civic Location Format for PIDF-LO  
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Abstract

This document defines an XML format for the representation of civic location. This format is designed for use with PIDF Location Object (PIDF-LO) documents. The format is based on the civic address definition in PIDF-LO, but adds several new elements based on the civic types defined for DHCP, and adds a hierarchy to address complex road identity schemes. The format also includes support for the xml:lang language tag and restricts the types of elements where appropriate.

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## 1. Introduction

Since the publication of the original PIDF-L0 civic specification, in [[I-D.ietf-geopriv-pidf-lo](#)], it has been found that the specification is lacking a number of additional parameters that can be used to more precisely specify a civic location. These additional parameters have been largely captured in [[I-D.ietf-geopriv-dhcp-civil](#)].

This document revises the GEOPRIV civic form to include the additional civic parameters captured in [[I-D.ietf-geopriv-dhcp-civil](#)]. The document also introduces a hierarchical structure for thoroughfare (road) identification which is employed in some countries. New elements are defined to allow for even more precision in specifying a civic location.

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## [2.](#) Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

The term "thoroughfare" is used in this document to describe a road or part of a road or other access route along which a final point is identified. This is consistent with the definition used in [UPU-S42].

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### [3.](#) Changes from PIDF-L0

#### [3.1.](#) Additional Civic Address Types

[I-D.ietf-geopriv-dhcp-civil] provides a full set of parameters that may be used to describe a civic location. Specifically [I-D.ietf-geopriv-dhcp-civil] lists several civic address types (CAtypes) that require support in the formal PIDF-L0 definition that are not in [\[I-D.ietf-geopriv-pidf-lo\]](#).

These changes include and new elements that are required to support more complex structures for naming street addresses, this is described in more detail in [Section 3.2](#).

| New Civic Field | CAtype | Description             | Example      |
|-----------------|--------|-------------------------|--------------|
| BLD             | 24     | Building (structure)    | Hope Theatre |
| UNIT            | 26     | Unit (apartment, suite) | 12a          |

|         |    |                                   |             |
|---------|----|-----------------------------------|-------------|
| ROOM    | 28 | Room                              | 450F        |
| PLC     | 29 | Place-type                        | office      |
| POBOX   | 31 | Post office box (P.O. box)        | U40         |
| ADDCODE | 32 | Additional Code                   | 13203000003 |
| SEAT    | 33 | Seat (desk, cubicle, workstation) | WS 181      |
| RD      | 34 | Primary road or street            | Broadway    |
| RDSEC   | 35 | Road section                      | 14          |
| RDBR    | 36 | Road branch                       | Lane 7      |
| RDSUBBR | 37 | Road sub-branch                   | Alley 8     |
| PRM     | 38 | Road pre-modifier                 | Old         |
| POM     | 39 | Road post-modifier                | Extended    |

Table 1: New Civic PIDF-L0 Types

**Building:** The "building" (BLD) conveys the name of a single building if the street address includes more than one building or the building name is helpful in identifying the location. (For example, on university campuses, the house number is often not displayed on buildings, while the building name is prominently shown.)

**Unit:** The "unit" (UNIT) contains the name or number of a part of a structure where there are separate administrative units, owners or tenants, such as separate companies or families who occupy that structure. Common examples include suite or apartment designations.

**Room:** A "room" (ROOM) is the smallest identifiable subdivision of a structure.

Place type: The "type of place" element (PLC) describes the type of place described by the civic coordinates. For example, it describes whether it is a home, office, street or other public space. The values are drawn from the items in the location types registry [[I-D.ietf-geopriv-location-types-registry](#)]. This information makes it easy, for example, for the DHCP client to then populate the presence information.

Post office box: The "post office box" element (POBOX) describes a container, such as a pigeon hole, at a central mailing location, where mail is held.

Additional code: The "additional code" item (ADDCODE) provides an additional, country-specific code identifying the location. For example, for Japan, it contains the Japan Industry Standard (JIS) address code. The JIS address code provides a unique address inside of Japan, down to the level of indicating the floor of the building.

Seat: The "seat" element (SEAT) describes a single place where a person might sit. Common examples include a seat in a theatre and a cubicle in a cube farm.

Primary Road Name: The "primary road name" item (RD) is the name given to the root road or street associated with the address. In many cases this will be the name of the road or street on which an office or house exists, in some cases it will be the name of road or street from which more granular information stems. In most countries, this field should be used in preference to the "A6" element, which was previously used for street information.

Road Section: The "road section" item (RDSEC) is an identifier that represents a specific section or stretch of a primary road. This is a new thoroughfare element and is useful where a primary road reuses street numbering, or branch street names and there is no other way to identify that this has occurred, such as a change in municipality or suburb.

Branch Road Name: The "branch road name" item (RDBR) represents the

name or identifier of a road/street that intersects or is associated with a primary road. The road branch is a new thoroughfare element and is envisaged being used where branch roads along a primary road reuse names and there is no other way, other than the road section (RDSEC) identifier, to discern a difference between them, such as a change in municipality or suburb.

Sub-Branch Road Name: The "sub-branch road name" item (RDSUBBR) represents the name or identifier of a road/street that intersects or is associated with a branch road (RDBR). The road sub-branch is a new thoroughfare element and is envisaged being used where sub-branch roads reuse names and there is no way, other than the road section (RDSEC) identifier, to discern a difference between them, such as a change in municipality or suburb.

Road Pre-Modifier: The "road pre-modifier" item (PRM) is an optional element of the complete street name. It is a word or phrase that precedes all other elements of the street name and modifies it, but is separated from the street name by a street name pre-directional. An example is "Old" in "Old North First Street".

Road Post-Modifier: The "road post-modifier" item (POM) is an optional element of the complete street name. It is a word or phrase that follows all other elements of the street name and modifies it, but is separated from the street name by a street name post-directional and/or street suffix. An example is "Extended" in "East End Avenue Extended".

### [3.2.](#) New Thoroughfare Elements

In some countries a thoroughfare can be broken up into sections, and it is not uncommon for street numbers to be repeated between sections. A road section identifier is required to ensure that an address is unique. For example, "West Alice Parade" has 5 sections, each numbered from 1; unless the section is specified "7 West Alice Parade" could exist in 5 different places. The "RDSEC" element is used to specify the section.

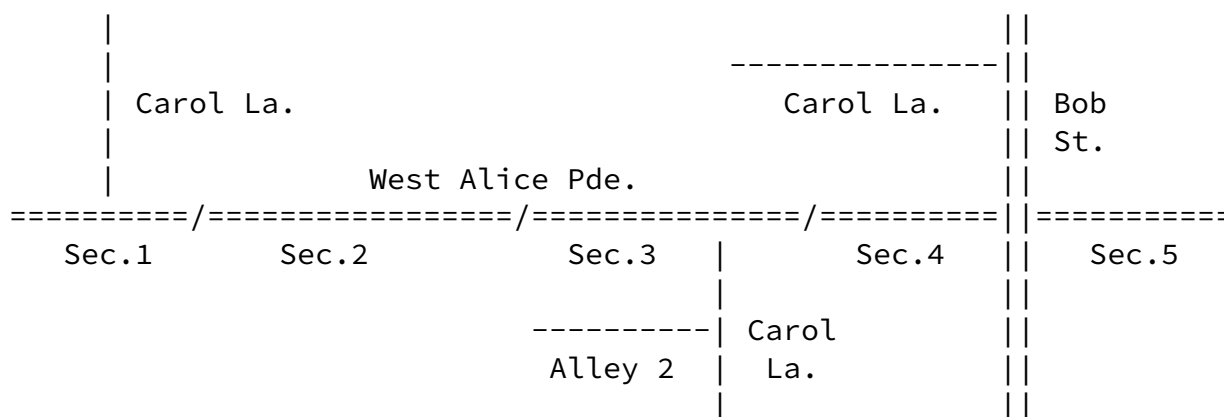
Minor streets can share the same name, so that they can only be

distinguished by the major thoroughfare with which they intersect.



Similar to the way that a road branch is associated with a road, a road sub-branch is associated with a road branch. The "RDSUBBR" element is used to identify road sub-branches.

The following example figure shows a fictional arrangement of roads where these new thoroughfare elements are applicable.



The introduction of new thoroughfare elements affects the interpretation of several of more specific civic address data. In particular, street numbering (the "HNO" element) applies to the most specific road element specified. That is, the first specified element from: "RDSUBBR", "RDBR", "RDSEC", or "RD".

The "PRM", "POM", "PRD", "POD" and "STS" elements always apply to the value of the "RD" element only. If road branches or sub-branches require street suffixes or qualifiers, they MUST be included in the "RDBR" or "RDSUBBR" element text.

### [3.3.](#) Country Element

The "country" element differs from that defined in [I-D.ietf-geopriv-pidf-lo] in that it now restricts the value space of the element to two upper case characters, which more closely matches the definition in [[ISO.3166.1988](#)].

### [3.4.](#) Languages and Scripts

The XML schema defined for civic addresses allows for the addition of the "xml:lang" attribute to all elements except "country" and "PLC", which both contain enumerated values.

The "script" field defined in [[I-D.ietf-geopriv-dhcp-civil](#)] is omitted in favour of using the "xml:lang" attribute.

It is RECOMMENDED that each "civicAddress" element use one language only, or a combination of languages that is consistent. Where a civic location is represented in multiple languages multiple "civicAddress" elements SHOULD be included in the PIDF-L0 document.

### [3.5.](#) Whitespace

The XML schema [[W3C.REC-xmlschema-2-20041028](#)] defined in [Section 4](#) uses a base type of "token" instead of "string" as used in [I-D.ietf-geopriv-pidf-lo].

The "token" type ensures that whitespace within instance documents is normalized and collapsed before being passed to a processor. This ensures that the following fragments are considered equivalent by XML processors:

```
<A1>New South Wales</A1>
```

```
<A1>New
  South Wales</A1>
```

```
<A1>
  New  South
  Wales    </A1>
```

Whitespace may still be included in values by using character references, such as "&#x20;".

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#### 4. Civic Address Schema

```
<?xml version="1.0"?>
<xs:schema
  targetNamespace="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:ca="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"
  xmlns:xml="http://www.w3.org/XML/1998/namespace"
  elementFormDefault="qualified" attributeFormDefault="unqualified">

  <xs:import namespace="http://www.w3.org/XML/1998/namespace"
    schemaLocation="http://www.w3.org/2001/xml.xsd"/>

  <xs:simpleType name="iso3166">
    <xs:restriction base="xs:token">
      <xs:pattern value="[A-Z]{2}"/>
    </xs:restriction>
  </xs:simpleType>

  <xs:complexType name="caType">
    <xs:simpleContent>
      <xs:extension base="xs:token">
        <xs:attribute ref="xml:lang" use="optional"/>
      </xs:extension>
    </xs:simpleContent>
  </xs:complexType>

  <xs:element name="civicAddress" type="ca:civicAddress"/>
  <xs:complexType name="civicAddress">
    <xs:sequence>
      <xs:element name="country" type="ca:iso3166" minOccurs="0"/>
      <xs:element name="A1" type="ca:caType" minOccurs="0"/>
      <xs:element name="A2" type="ca:caType" minOccurs="0"/>
      <xs:element name="A3" type="ca:caType" minOccurs="0"/>
      <xs:element name="A4" type="ca:caType" minOccurs="0"/>
      <xs:element name="A5" type="ca:caType" minOccurs="0"/>
      <xs:element name="A6" type="ca:caType" minOccurs="0"/>
      <xs:element name="PRM" type="ca:caType" minOccurs="0"/>
      <xs:element name="PRD" type="ca:caType" minOccurs="0"/>
    </xs:sequence>
  </xs:complexType>
</xs:schema>
```

```

<xs:element name="RD" type="ca:caType" minOccurs="0"/>
<xs:element name="STS" type="ca:caType" minOccurs="0"/>
<xs:element name="POD" type="ca:caType" minOccurs="0"/>
<xs:element name="POM" type="ca:caType" minOccurs="0"/>
<xs:element name="RDSEC" type="ca:caType" minOccurs="0"/>
<xs:element name="RDBR" type="ca:caType" minOccurs="0"/>
<xs:element name="RDSUBBR" type="ca:caType" minOccurs="0"/>
<xs:element name="HNO" type="ca:caType" minOccurs="0"/>
<xs:element name="HNS" type="ca:caType" minOccurs="0"/>

```

```

<xs:element name="LMK" type="ca:caType" minOccurs="0"/>
<xs:element name="LOC" type="ca:caType" minOccurs="0"/>
<xs:element name="FLR" type="ca:caType" minOccurs="0"/>
<xs:element name="NAM" type="ca:caType" minOccurs="0"/>
<xs:element name="PC" type="ca:caType" minOccurs="0"/>
<xs:element name="BLD" type="ca:caType" minOccurs="0"/>
<xs:element name="UNIT" type="ca:caType" minOccurs="0"/>
<xs:element name="ROOM" type="ca:caType" minOccurs="0"/>
<xs:element name="SEAT" type="ca:caType" minOccurs="0"/>
<xs:element name="PLC" type="xs:token" minOccurs="0"/>
<xs:element name="POBOX" type="ca:caType" minOccurs="0"/>
<xs:element name="ADDCODE" type="ca:caType" minOccurs="0"/>
<xs:any namespace="##other" processContents="lax"
    minOccurs="0" maxOccurs="unbounded"/>
</xs:sequence>
<xs:attribute ref="xml:lang" use="optional"/>
</xs:complexType>
</xs:schema>

```

## [5.](#) Example

```
<?xml version="1.0"?>
<civicAddress xml:lang="en-AU"
  xmlns="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr">
  <country>AU</country>
  <A1> New South Wales </A1>
  <A3>      Wollongong
</A3><A4>North Wollongong
</A4>
  <RD>Flinders</RD><STS>Street</STS>
  <RDBR>Campbell Street</RDBR>
  <LMK>
    Gilligan's Island
  </LMK> <LOC>Corner</LOC>
  <NAM> Video Rental Store </NAM>
  <PC>2500</PC>
  <ROOM> Westerns and Classics </ROOM>
  <PLC>store</PLC>
  <POBOX>Private Box 15</POBOX>
</civicAddress>
```

## [6.](#) Security Considerations

The XML representation described in this document is designed for inclusion in a PIDF-L0 document. As such, it is subject to the same security considerations as are described in [\[I-D.ietf-geopriv-pidf-lo\]](#). Considerations relating to the inclusion of this representation in other XML documents are outside the scope of this document.

## [7.](#) IANA Considerations

### [7.1.](#) URN sub-namespace registration for 'urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr'

This document calls for IANA to register a new XML namespace, as per the guidelines in [\[RFC3688\]](#).

URI: urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr

Registrant Contact: IETF, GEOPRIV working group (geopriv@ietf.org),

Martin Thomson (martin.thomson@andrew.com).

XML:

```
BEGIN
  <?xml version="1.0"?>
  <!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN"
    "http://www.w3.org/TR/xhtml1/DTD/xhtml1-strict.dtd">
  <html xmlns="http://www.w3.org/1999/xhtml" xml:lang="en">
    <head>
      <title>GEOPRIV Civic Address</title>
    </head>
    <body>
      <h1>Format for Distributing Civic Address in GEOPRIV</h1>
      <h2>urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr</h2>
      [[NOTE TO IANA/RFC-EDITOR: Please update RFC URL and replace XXXX
        with the RFC number for this specification.]]
      <p>See <a href="[[RFC URL]]">RFCXXXX</a>.</p>
    </body>
  </html>
END
```

## [7.2.](#) XML Schema Registration

This section registers an XML schema as per the procedures in [\[RFC3688\]](#).

URI: urn:ietf:params:xml:schema:pidf:geopriv10:civicAddr

Registrant Contact: IETF, GEOPRIV working group, (geopriv@ietf.org),  
Martin Thomson (martin.thomson@andrew.com).

The XML for this schema can be found as the entirety of [Section 4](#) of this document.

## [8.](#) References

### [8.1.](#) Normative References



- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [W3C.REC-xmlschema-2-20041028]  
Malhotra, A. and P. Biron, "XML Schema Part 2: Datatypes Second Edition", W3C REC REC-xmlschema-2-20041028, October 2004.
- [I-D.ietf-geopriv-dhcp-civil]  
Schulzrinne, H., "Dynamic Host Configuration Protocol (DHCPv4 and DHCPv6) Option for Civic Addresses Configuration Information",  
[draft-ietf-geopriv-dhcp-civil-08](#) (work in progress), December 2005.
- [I-D.ietf-geopriv-location-types-registry]  
Schulzrinne, H. and H. Tschofenig, "Location Types Registry", [draft-ietf-geopriv-location-types-registry-03](#) (work in progress), August 2005.
- [ISO.3166.1988]  
International Organization for Standardization, "Codes for the representation of names of countries, 3rd edition", ISO Standard 3166, August 1988.

## [8.2](#). Informative References

- [RFC3688] Mealling, M., "The IETF XML Registry", [BCP 81](#), [RFC 3688](#), January 2004.
- [I-D.ietf-geopriv-pidf-lo]  
Peterson, J., "A Presence-based GEOPRIV Location Object Format", [draft-ietf-geopriv-pidf-lo-03](#) (work in progress), September 2004.
- [UPU-S42] Universal Postal Union (UPU), "International Postal Address Components and Templates", UPS SB42-4, July 2004.

## [Appendix A](#). Acknowledgements

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