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Interior Location in the Presence Information Data Format - Location
Object
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Abstract

[RFC5139](#) defines explicit tags for interior building location such as "BLD" (building), "UNIT", "ROOM". There is wide variation in how interior spaces are named, and the rigid element names provided do not allow accurate representation of interior spaces that don't use the element tags defined. This memo provides an alternative mechanism that provides an extensible flexible way to name spaces in any kind of addressable location.

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1. 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](#)].

2. Introduction

[RFC4119] provides a way to specify an addressable civic location, naming the country, region, city, street name, etc. Within that document is an element FLR (floor) which specifies location within the addressable location. [[RFC5139](#)] extends the ability to locate interior spaces by defining BLD (Building), UNIT, ROOM, and SEAT. The problem with these elements is that there is very wide variation in how interior spaces are named, and these fixed elements don't allow one to specify interior location that matches signage, drawings or other conventions that are needed to properly locate targets within an addressable location. An example of where the BLD/FLR/UNIT/ROOM doesn't work is an airport. Interior location may be given as Terminal 2, Concourse A, Gate 27.

Additionally, since interior location may vary within a structure (Terminal 2, Food Court, Store 13), and every building could have different conventions, it is essential that a way to parse a sign, drawing, or other representation of interior space to the elements needed to specify that space in a PIDF, or the reverse: creating a human readable string from a PIDF matching signage or drawings, it must be possible to specify how the conversion from human readable to PIDF and vice versa can be accomplished.

3. INT element

This memo introduces a new CAtype for PIDF-LO called "INT" (for interior) which has two new attributes:

- N The locally significant name of a "level" of interior space. Examples include "Floor", "Concourse" and "Suite".
- R An enumeration of how the name and value are represented in a human readable form.

A PIDF-LO may have multiple INT elements. If there are more than one, the order in which they appear in the PIDF can be significant.

The R attribute has the following values:

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- B The name is expressed before the value as in "Concourse A".
- A The name is expressed after the value as in "Presidential Suite".

If the R subelement is not present, the default value "B" is assumed.

An IANA registry of N values is established by this document. As the names are only required to be locally significant, adding new values to the registry should be simple.

While the existing BLD/FLR/UNIT/ROOM/SEAT elements are not deprecated by this document, their use should be restricted to existing implementations. New implementations SHOULD use INT. As always, recipients of PIDF-LO should be liberal in what they accept, which would mean both INT and BLD/FLR/UNIT/ROOM/SEAT.

[4.](#) Examples

```
<civicAddress xml:lang="en-AU"
  xmlns="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr">
  <country>AU</country>
  <A1>NSW</A1>
  <A3>Wollongong</A3>
  <A4>North Wollongong</A4>
  <RD>Flinders</RD><STS>Street</STS>
  <NAM> Video Rental Store </NAM>
  <PC>2500</PC>
  <INT N='Room' R='A'>Westerns and Classics</INT>
```

```

</civicAddress>

<civicAddress xml:lang="en-US"
  xmlns="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr">
  <country>US</country>
  <A1>PA</A1>
  <A3>Findlay</A3>
  <RD>Airport</RD><STS>RD</STS>
    <INT N='Terminal'>1</INT>
  <INT N='Concourse'>A</INT>
  <INT N='Gate'>37</INT>
</civicAddress>

```

5. Civic Address Schema

```

<?xml version="1.0"?>
<xs:schema
  targetNamespace="urn:ietf:params:xml:ns:pidf:geopriv10:civicAddr"

```

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```

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="iso3166a2">
  <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:complexType name="intType">
  <xs:simpleContent>
    <xs:attribute name="N" type="xs:string" use="optional"/>
    <xs:attribute name="R" use="optional", default="B"
      <xs:restriction base="xs:string">
        <xs:pattern value="[AB]"/>
      </xs:restriction>
    <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:iso3166a2" 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:element name="RD" type="ca:caType" minOccurs="0"/>
    <xs:element name="STS" type="ca:caType" minOccurs="0"/>
  </xs:sequence>
</xs:complexType>

```

```

<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="PCN" type="ca:caType" minOccurs="0"/>
    <xs:element name="POBOX" type="ca:caType" minOccurs="0"/>
    <xs:element name="STP" type="ca:caType" minOccurs="0"/>
    <xs:element name="HNP" type="ca:caType" minOccurs="0"/>
    <xs:element name="INT" type="ca:intType" minOccurs="0"/>
    <xs:element name="ADDCODE" type="ca:caType" minOccurs="0"/>
    <xs:any namespace="##other" processContents="lax"
        minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
  <xs:anyAttribute namespace="##any" processContents="lax"/>
</xs:complexType>
</xs:schema>

```

[6.](#) Security Considerations

The XML representation described in this document is designed for inclusion in a PIDF-LO document. As such, it is subject to the same security considerations as are described in [\[RFC4119\]](#). Considerations relating to the inclusion of this representation in other XML documents are outside the scope of this document.

This extension may make it possible to more precisely locate a target, and thus raise more privacy concerns. However, since [\[RFC5139\]](#) already can locate to a seat in a room, this concern does not seem to be significant.

[7.](#) IANA Considerations

[7.1.](#) 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),

Brian Rosen (brian.rosen@neustar.biz).

The XML for this schema can be found as the entirety of [Section 5](#). of this document.

[7.2](#). CAtype Registry Update

This document updates the civic address type registry established by [\[RFC4776\]](#). One additional value is added:

40	INT	Interior Location
----	-----	-------------------

[7.3](#). INT Name Registry

This document creates a new registry managed by IANA for the values that may appear in an "N" attribute in an INT element.

The name of this registry is "INT Names"

Each entry in the registry includes the Name which can appear in the N attribute (a text string).

The policy for this registry is "first come, first served"

The initial values for this registry are "Building", "Floor", "Suite", "Room", "Seat", "Terminal", "Concourse" and "Gate".

[8](#). Acknowledgements

The authors would like to acknowledge James Polk and Marc Linsner for their contributions to this document.

[9](#). References

[9.1](#). Normative References

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

Format", [RFC 4119](#), December 2005.

- [RFC5139] Thomson, M. and J. Winterbottom, "Revised Civic Location Format for Presence Information Data Format Location Object (PIDF-L0)", [RFC 5139](#), February 2008.

[9.2](#). Informative References

- [RFC3688] Mealling, M., "The IETF XML Registry", [BCP 81](#), [RFC 3688](#), January 2004.
- [RFC4776] Schulzrinne, H., "Dynamic Host Configuration Protocol (DHCPv4 and DHCPv6) Option for Civic Addresses Configuration Information", [RFC 4776](#), November 2006.

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