|  |  |
| --- | --- |
| Project | **IEEE 802.21a** **<https://mentor.ieee.org/802.21>** |
| Title | **Revised Basic Schema with 802.21a** |
| DCN | 21-10-0082-01-0sec |
| Date Submitted |  |
| Source(s) | Yoshihiro Ohba (Toshiba) |
| Re: |  |
| Abstract | This document contains revised basic schema supporting 802.21a. The revised schema also refines non-802.21a related parts of the basic schema defined in 802.21-2008. The revised schema is validated by OWL validator http://owl.cs.manchester.ac.uk/validator/. |
| Purpose | Proposes changes in the current draft |
| Notice | This document has been prepared to assist the IEEE 802.21 Working Group. It is offered as a basis for discussion and is not binding on the contributing individual(s) or organization(s). The material in this document is subject to change in form and content after further study. The contributor(s) reserve(s) the right to add, amend or withdraw material contained herein. |
| Release | The contributor grants a free, irrevocable license to the IEEE to incorporate material contained in this contribution, and any modifications thereof, in the creation of an IEEE Standards publication; to copyright in the IEEE’s name any IEEE Standards publication even though it may include portions of this contribution; and at the IEEE’s sole discretion to permit others to reproduce in whole or in part the resulting IEEE Standards publication. The contributor also acknowledges and accepts that IEEE 802.21 may make this contribution public. |
| Patent Policy | The contributor is familiar with IEEE patent policy, as stated in [Section 6 of the IEEE-SA Standards Board bylaws](http://standards.ieee.org/guides/opman/sect6.html#_blank) <[http://standards.ieee.org/guides/bylaws/sect6-7.html#6](http://127.0.0.1:4664/cache?event_id=757737&schema_id=1&s=5X0vID10lu_E6yrIkWkNd4Wz2H8&q=hancock#_blank)> and in *Understanding Patent Issues During IEEE Standards Development* [http://standards.ieee.org/board/pat/faq.pdf](http://standards.ieee.org/board/pat/faq.pdf#_blank) |

# Proposal

Replace Annex H as follows.

**Annex H**

**(normative)**

**MIIS basic schema**

The following text defines the RDF vocabularies for MIIS.

(Editor’s Note: IEEE SA needs to allocate a persistent URL (a link) where the schema is stored and always available ih a downloadable format, with with text URL\_TO\_BE\_ASSIGNED in <!ENTITY mihbasic "URL\_TO\_BE\_ASSIGNED#"> replaced with the allocated URL.. Once this is achieved, this annex can be removed from the specification and the text “The basic schema is defined in Annex H.” in clause 6.5.7.2 should be replaced by “The basic schema is available at <http://URL_TO_BE_ASSIGNED>”.)

<?xml version="1.0"?>

 <!DOCTYPE rdf:RDF [

 <!ENTITY rdf "http://www.w3.org/1999/02/22-rdf-syntax-ns#">

 <!ENTITY rdfs "http://www.w3.org/2000/01/rdf-schema#">

 <!ENTITY mihbasic "URL\_TO\_BE\_ASSIGNED#">

 <!ENTITY owl "http://www.w3.org/2002/07/owl#">

 <!ENTITY xsd "http://www.w3.org/2001/XMLSchema#">

]>

<rdf:RDF xmlns:rdf="&rdf;" xmlns:rdfs="&rdfs;"

 xmlns:mihbasic="&mihbasic;" xml:base="&mihbasic;"

 xmlns:owl="&owl;" xmlns:xsd="&xsd;">

 <owl:Ontology rdf:about="">

 <rdfs:label>

 Basic Schema for IEEE 802.21 Information Service

 </rdfs:label>

 <owl:versionInfo>1.0</owl:versionInfo>

 </owl:Ontology>

 <owl:DatatypeProperty rdf:ID="ie\_type\_identifier">

 <rdfs:subPropertyOf rdf:resource="&rdfs;label"/>

 <rdfs:range rdf:resource="&xsd;hexBinary"/>

 <rdfs:comment>

 A type identifier values for Information Elements.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="bit\_number">

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 <rdfs:comment>

 This property represents a bit number that has

 the value as true.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_container\_list\_of\_networks">

 <mihbasic:ie\_type\_identifier>0x10000300</mihbasic:ie\_type\_identifier>

 <rdfs:range rdf:resource="#LIST\_OF\_NETWORKS"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="LIST\_OF\_NETWORKS">

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_container\_network"/>

 <owl:minCardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:minCardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 </owl:Class>

 <owl:ObjectProperty rdf:ID="ie\_container\_network">

 <mihbasic:ie\_type\_identifier>0x10000301</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#LIST\_OF\_NETWORKS"/>

 <rdfs:range rdf:resource="#NETWORK"/>

 <rdfs:comment>

 This class contains General Information depicting and Access

 Network Specific Information.

 </rdfs:comment>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="NETWORK">

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_network\_type"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_operator\_id"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 </owl:Class>

 <owl:ObjectProperty rdf:ID="ie\_network\_type">

 <mihbasic:ie\_type\_identifier>0x10000000</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="#NETWORK\_TYPE"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="NETWORK\_TYPE">

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="link\_type">

 <rdfs:domain rdf:resource="#NETWORK\_TYPE"/>

 <rdfs:range rdf:resource="&xsd;unsignedInt"/>

 <rdfs:comment>

 Link type of a network. The following values are assigned:

 1: Wireless - GSM

 2: Wireless - GPRS

 3: Wireless - EDGE

 15: Ethernet

 18: Wireless - Other

 19: Wireless - IEEE 802.11

 22: Wireless - CDMA2000

 23: Wireless - UMTS

 24: Wireless - cdma-2000-HRPD

 27: Wireless - IEEE 802.16

 28: Wireless - IEEE 802.20

 29: Wireless - IEEE 802.22

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="revision">

 <rdfs:subPropertyOf rdf:resource="#bit\_number"/>

 <rdfs:domain rdf:resource="#NETWORK\_TYPE"/>

 <rdfs:comment>

 The range of #bit\_number is 0-63.

 </rdfs:comment>

 </owl:ObjectProperty>

 <owl:DatatypeProperty rdf:ID="type\_ext">

 <rdfs:domain rdf:resource="#NETWORK\_TYPE"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_operator\_id">

 <mihbasic:ie\_type\_identifier>0x10000001</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="#OPERATOR\_ID"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="OPERATOR\_ID">

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#op\_name"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#op\_namespace"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="op\_name">

 <rdfs:domain rdf:resource="#OPERATOR\_ID"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 <rdfs:comment>

 The value is a non NULL terminated

 string whose length shall not exceed 253 octets.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="op\_namespace">

 <rdfs:domain rdf:resource="#OPERATOR\_ID"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 <rdfs:comment>

 A value of Operator Type:

 0: GSM/UMTS

 1: CDMA

 2: REALM

 3: ITU-T/TSB

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="ie\_service\_provider\_id">

 <mihbasic:ie\_type\_identifier>0x10000002</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 <rdfs:comment>

 A non-NULL terminated string whose length shall not exceed 253 octets.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="ie\_country\_code">

 <mihbasic:ie\_type\_identifier>0x10000003</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="ie\_network\_id">

 <mihbasic:ie\_type\_identifier>0x10000100</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 <rdfs:comment>

 A non-NULL terminated string whose length shall not exceed 253 octets.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="ie\_network\_aux\_id">

 <mihbasic:ie\_type\_identifier>0x10000101</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 <rdfs:comment>

 It is SSID if network type is IEEE 802.11.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_roaming\_partner">

 <mihbasic:ie\_type\_identifier>0x10000102</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="#OPERATOR\_ID"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="ie\_cost">

 <mihbasic:ie\_type\_identifier>0x10000103</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="#COST"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="COST">

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#cost\_unit"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#cost\_value"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#cost\_curr"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="cost\_unit">

 <rdfs:domain rdf:resource="#COST"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 <rdfs:comment>

 The unit of the cost:

 0: second

 1: minute

 2: hours

 3: day

 4: week

 5: month

 6: year

 7: free

 8: flat rate

 9-255: Reserved

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="cost\_value">

 <rdfs:domain rdf:resource="#COST"/>

 <rdfs:range rdf:resource="&xsd;double"/>

 <rdfs:comment>

 The cost value in Currency/Unit

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="cost\_curr">

 <rdfs:domain rdf:resource="#COST"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 <rdfs:comment>

 A three-letter currency code(e.g. "USD") specified by

 ISO 4217.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_network\_qos">

 <mihbasic:ie\_type\_identifier>0x10000105</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="#QOS\_LIST"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="QOS\_LIST">

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="num\_qos\_types">

 <rdfs:domain rdf:resource="#QOS\_LIST"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 </owl:DatatypeProperty>

 <owl:Class rdf:ID="COS">

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#cos\_id"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#cos\_value"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="cos\_id">

 <rdfs:domain rdf:resource="#COS"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 <rdfs:comment>

 A type to represent a class of service identifier.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="cos\_value">

 <rdfs:domain rdf:resource="#COS"/>

 <rdfs:range rdf:resource="&xsd;unsignedShort"/>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="min\_pk\_tx\_delay">

 <rdfs:domain rdf:resource="#QOS\_LIST"/>

 <rdfs:range rdf:resource="#COS"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="avg\_pk\_tx\_delay">

 <rdfs:domain rdf:resource="#QOS\_LIST"/>

 <rdfs:range rdf:resource="#COS"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="max\_pk\_tx\_delay">

 <rdfs:domain rdf:resource="#QOS\_LIST"/>

 <rdfs:range rdf:resource="#COS"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="pk\_delay\_jitter">

 <rdfs:domain rdf:resource="#QOS\_LIST"/>

 <rdfs:range rdf:resource="#COS"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="pk\_loss\_rate">

 <rdfs:domain rdf:resource="#QOS\_LIST"/>

 <rdfs:range rdf:resource="#COS"/>

 </owl:ObjectProperty>

 <owl:DatatypeProperty rdf:ID="ie\_network\_data\_rate">

 <mihbasic:ie\_type\_identifier>0x10000106</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="&xsd;unsignedInt"/>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_net\_channel\_range">

 <mihbasic:ie\_type\_identifier>0x10000107</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="#CH\_RANGE"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="ie\_net\_ip\_cfg\_methods">

 <mihbasic:ie\_type\_identifier>0x10000108</mihbasic:ie\_type\_identifier>

 <rdfs:subPropertyOf rdf:resource="#bit\_number"/>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:comment>

 The range of #bit\_number is 0-31.

 </rdfs:comment>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="ie\_net\_capabilities">

 <mihbasic:ie\_type\_identifier>0x10000109</mihbasic:ie\_type\_identifier>

 <rdfs:subPropertyOf rdf:resource="#bit\_number"/>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:comment>

 The range of #bit\_number is 0-31.

 </rdfs:comment>

 </owl:ObjectProperty>

 <owl:DatatypeProperty rdf:ID="ie\_net\_supported\_lcp">

 <mihbasic:ie\_type\_identifier>0x1000010A</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_net\_mob\_mgmt\_prot">

 <mihbasic:ie\_type\_identifier>0x1000010B</mihbasic:ie\_type\_identifier>

 <rdfs:subPropertyOf rdf:resource="#bit\_number"/>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:comment>

 The range of #bit\_number is 0-15.

 </rdfs:comment>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="ie\_net\_emserv\_proxy">

 <mihbasic:ie\_type\_identifier>0x1000010C</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="#PROXY\_ADDR"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="PROXY\_ADDR">

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="proxy\_addr\_ip">

 <rdfs:domain rdf:resource="#PROXY\_ADDR"/>

 <rdfs:range rdf:resource="#TRANSPORT\_ADDR"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="proxy\_addr\_fqdn">

 <rdfs:domain rdf:resource="#PROXY\_ADDR"/>

 <rdfs:range rdf:resource="&xsd;String"/>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_net\_ims\_proxy\_cscf">

 <mihbasic:ie\_type\_identifier>0x1000010D</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="#PROXY\_ADDR"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="ie\_container\_poa">

 <mihbasic:ie\_type\_identifier>0x10000302</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#NETWORK"/>

 <rdfs:range rdf:resource="#POA"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="POA">

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_poa\_mac\_addr"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_poa\_location"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_poa\_channel\_range"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_poa\_system\_info"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_poa\_subnet\_info"/>

 <owl:minCardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:minCardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_poa\_ip\_addr"/>

 <owl:minCardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:minCardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_authenticator\_link\_addr"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_authenticator\_ip\_addr"/>

 <owl:minCardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:minCardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ie\_pos\_ip\_addr"/>

 <owl:minCardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:minCardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:comment>

 This class contains all the information depicting a PoA.

 </rdfs:comment>

 </owl:Class>

 <owl:ObjectProperty rdf:ID="ie\_poa\_mac\_addr">

 <mihbasic:ie\_type\_identifier>0x10000200</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#POA"/>

 <rdfs:range rdf:resource="#TRANSPORT\_ADDR"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="ie\_poa\_location">

 <mihbasic:ie\_type\_identifier>0x10000201</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#POA"/>

 <rdfs:range rdf:resource="#LOCATION"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="LOCATION">

 </owl:Class>

 <owl:Class rdf:ID="BIN\_GEO\_LOC">

 <rdfs:subClassOf rdf:resource="#LOCATION"/>

 <rdfs:comment>

 This class has properties that represent geographic coordinate.

 The format is based on the Location Configuration Information (LCI)

 defined in RFC 3825.

 </rdfs:comment>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="la\_res">

 <rdfs:domain rdf:resource="#BIN\_GEO\_LOC"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="latitude">

 <rdfs:domain rdf:resource="#BIN\_GEO\_LOC"/>

 <rdfs:range rdf:resource="&xsd;double"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="lo\_res">

 <rdfs:domain rdf:resource="#BIN\_GEO\_LOC"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="longitude">

 <rdfs:domain rdf:resource="#BIN\_GEO\_LOC"/>

 <rdfs:range rdf:resource="&xsd;double"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="at">

 <rdfs:domain rdf:resource="#BIN\_GEO\_LOC"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 <rdfs:comment>

 Following codes are defined:

 1: Meters: in 2s-complement fixed-point 22-bit integer part with

 8-bit fraction. If AT = 1, an AltRes value 0.0 would indicate

 unknown altitude. The most precise Altitude would have an AltRes

 value of 30. Many values of AltRes would obscure any variation

 due to vertical datum differences.

 2: Floors: in 2s-complement fixed-point 22-bit integer part with

 8-bit fraction. AT = 2 for Floors enables representing altitude in

 a form more relevant in buildings which have different

 floor-to-floor dimensions.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="alt\_res">

 <rdfs:domain rdf:resource="#BIN\_GEO\_LOC"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 <rdfs:comment>

 Altitude resolution. 6 bits indicating the number of valid bits

 in the altitude. Values above 30 (decimal) are undefined and

 reserved.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="altitude">

 <rdfs:domain rdf:resource="#BIN\_GEO\_LOC"/>

 <rdfs:range rdf:resource="&xsd;double"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="datum">

 <rdfs:domain rdf:resource="#BIN\_GEO\_LOC"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 <rdfs:comment>

 Following codes are defined:

 1: WGS

 2: NAD 83 (with associated vertical datum for North American

 vertical datum for 1998)

 3: NAD 83 (with associated vertical datum for Mean Lower Low Water

 (MLLW))

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:Class rdf:ID="XML\_GEO\_LOC">

 <rdfs:subClassOf rdf:resource="#LOCATION"/>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="xml\_geo\_location">

 <rdfs:domain rdf:resource="#XML\_GEO\_LOC"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 <rdfs:comment>

 Geo address elements as described in RFC4119.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:Class rdf:ID="BIN\_CIVIC\_LOC">

 <rdfs:subClassOf rdf:resource="#LOCATION"/>

 <rdfs:comment>

 This class has properties that represent civic address.

 The format is defined in IETF RFC 4676.

 </rdfs:comment>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="civic\_cntry\_code">

 <rdfs:domain rdf:resource="#BIN\_CIVIC\_LOC"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 <rdfs:comment>

 Two-letter ISO 3166 country code in capital ASCII letters.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="civic\_addr">

 <rdfs:domain rdf:resource="#BIN\_CIVIC\_LOC"/>

 <rdfs:range rdf:resource="#CIVIC\_ADDR"/>

 <rdfs:comment>

 This property contains the civic address elements.

 The format of the civic address elements is described

 in Section 3.4 of IETF RFC 4676 with a TLV pair

 (whereby the Type and Length fields are one octet long).

 </rdfs:comment>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="CIVIC\_ADDR">

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#catype"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#cavalue"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="catype">

 <rdfs:domain rdf:resource="#CIVIC\_ADDR"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 <rdfs:comment>

 A one-octet descriptor of the data civic address value.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="cavalue">

 <rdfs:domain rdf:resource="#CIVIC\_ADDR"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 <rdfs:comment>

 The civic address value.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:Class rdf:ID="XML\_CIVIC\_LOC">

 <rdfs:subClassOf rdf:resource="#LOCATION"/>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="xml\_civic\_location">

 <rdfs:domain rdf:resource="#XML\_CIVIC\_LOC"/>

 <rdfs:range rdf:resource="&xsd;string"/>

 <rdfs:comment>

 Geo address elements as described in RFC4119.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:Class rdf:ID="LOCATION\_CELL\_ID">

 <rdfs:subClassOf rdf:resource="#LOCATION"/>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="location\_cell\_id">

 <rdfs:domain rdf:resource="#LOCATION\_CELL\_ID"/>

 <rdfs:range rdf:resource="&xsd;unsignedInt"/>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_poa\_channel\_range">

 <mihbasic:ie\_type\_identifier>0x10000202</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#POA"/>

 <rdfs:range rdf:resource="#CH\_RANGE"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="CH\_RANGE">

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#low\_ch\_range"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#high\_ch\_range"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="low\_ch\_range">

 <rdfs:domain rdf:resource="#CH\_RANGE"/>

 <rdfs:range rdf:resource="&xsd;unsignedInt"/>

 <rdfs:comment>

 Lowest channel frequency in MHz

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="high\_ch\_range">

 <rdfs:domain rdf:resource="#CH\_RANGE"/>

 <rdfs:range rdf:resource="&xsd;unsignedInt"/>

 <rdfs:comment>

 Highest channel frequency in MHz

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_poa\_system\_info">

 <mihbasic:ie\_type\_identifier>0x10000203</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#POA"/>

 <rdfs:range rdf:resource="#SYSTEM\_INFO"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="SYSTEM\_INFO">

 </owl:Class>

 <owl:ObjectProperty rdf:ID="system\_info\_network\_type">

 <rdfs:domain rdf:resource="#SYSTEM\_INFO"/>

 <rdfs:range rdf:resource="#NETWORK\_TYPE"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="system\_info\_mac\_address">

 <rdfs:domain rdf:resource="#SYSTEM\_INFO"/>

 <rdfs:range rdf:resource="#TARNSPORT\_ADDR"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="system\_info\_parameters">

 <rdfs:domain rdf:resource="#SYSTEM\_INFO"/>

 <rdfs:range rdf:resource="#PARAMETERS"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="PARAMETERS">

 </owl:Class>

 <owl:Class rdf:ID="DCD\_UCD">

 <rdfs:subClassOf rdf:resource="#PARAMETERS"/>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="dcd\_ucd\_base\_id">

 <rdfs:domain rdf:resource="#DCD\_UCD"/>

 <rdfs:range rdf:resource="&xsd;unsignedShort"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="bandwidth">

 <rdfs:domain rdf:resource="#DCD\_UCD"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="du\_ctr\_frequency">

 <rdfs:domain rdf:resource="#DCD\_UCD"/>

 <rdfs:range rdf:resource="&xsd;unsignedInt"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="eirp">

 <rdfs:domain rdf:resource="#DCD\_UCD"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="ttg">

 <rdfs:domain rdf:resource="#DCD\_UCD"/>

 <rdfs:range rdf:resource="&xsd;unsignedShort"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="rtg">

 <rdfs:domain rdf:resource="#DCD\_UCD"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="down\_burst\_profile">

 <rdfs:subPropertyOf rdf:resource="#bit\_number"/>

 <rdfs:domain rdf:resource="#DCD\_UCD"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="up\_burst\_profile">

 <rdfs:subPropertyOf rdf:resource="#bit\_number"/>

 <rdfs:domain rdf:resource="#DCD\_UCD"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="initial\_code">

 <rdfs:domain rdf:resource="#DCD\_UCD"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="ho\_code">

 <rdfs:domain rdf:resource="#DCD\_UCD"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 </owl:DatatypeProperty>

 <owl:Class rdf:ID="SIB">

 <rdfs:subClassOf rdf:resource="#PARAMETERS"/>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="cell\_id">

 <rdfs:domain rdf:resource="#SIB"/>

 <rdfs:range rdf:resource="&xsd;unsignedInt"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="fq\_code\_num">

 <rdfs:domain rdf:resource="#SIB"/>

 <rdfs:range rdf:resource="&xsd;unsignedShort"/>

 </owl:DatatypeProperty>

 <owl:Class rdf:ID="SYS\_PARAMS">

 <rdfs:subClassOf rdf:resource="#PARAMETERS"/>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="base\_id">

 <rdfs:domain rdf:resource="#SYS\_PARAMS"/>

 <rdfs:range rdf:resource="&xsd;unsignedShort"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="pilot\_pn">

 <rdfs:domain rdf:resource="#SYS\_PARAMS"/>

 <rdfs:range rdf:resource="&xsd;unsignedShort"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="freq\_id">

 <rdfs:domain rdf:resource="#SYS\_PARAMS"/>

 <rdfs:range rdf:resource="&xsd;unsignedShort"/>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="band\_class">

 <rdfs:domain rdf:resource="#SYS\_PARAMS"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_poa\_subnet\_info">

 <mihbasic:ie\_type\_identifier>0x10000204</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#POA"/>

 <rdfs:range rdf:resource="#IP\_SUBNET\_INFO"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="IP\_SUBNET\_INFO">

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#ip\_prefix\_len"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#subnet\_address"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="ip\_prefix\_len">

 <rdfs:domain rdf:resource="#IP\_SUBNET\_INFO"/>

 <rdfs:range rdf:resource="&xsd;unsignedByte"/>

 <rdfs:comment>

 The bit length of the prefix of the subnet to which subnet\_address

 property belongs. The prefix\_length is less than or equal to 32

 for IPv4 subnet and less than or equal to 128 for IPv6 subnet.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="subnet\_address">

 <rdfs:domain rdf:resource="#IP\_SUBNET\_INFO"/>

 <rdfs:range rdf:resource="#TRANSPORT\_ADDR"/>

 <rdfs:comment>

 An IP address of the PoA encoded as Address base type defined in

 RFC3588. The first 2-octet contains AddressType, which may be

 either 1 (IPv4) or 2 (IPv6). If AddressType==1, the subnet\_address

 property contains a 4-octet IPv4 address. If AddressType==2, the

 subnet\_address property contains a 16-octet IPv6 address.

 </rdfs:comment>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="ie\_poa\_ip\_addr">

 <mihbasic:ie\_type\_identifier>0x10000205</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#POA"/>

 <rdfs:range rdf:resource="#TRANSPORT\_ADDR"/>

 </owl:ObjectProperty>

 <owl:Class rdf:ID="TRANSPORT\_ADDR">

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#address\_type"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 <rdfs:subClassOf>

 <owl:Restriction>

 <owl:onProperty rdf:resource="#address\_value"/>

 <owl:cardinality rdf:datatype="&xsd;nonNegativeInteger">1

 </owl:cardinality>

 </owl:Restriction>

 </rdfs:subClassOf>

 </owl:Class>

 <owl:DatatypeProperty rdf:ID="address\_type">

 <rdfs:domain rdf:resource="#TRANSPORT\_ADDR"/>

 <rdfs:range rdf:resource="&xsd;unsignedShort"/>

 <rdfs:comment>

 An Address Family defined in

 http://www.iana.org/assignments/address-family-numbers.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:DatatypeProperty rdf:ID="address\_value">

 <rdfs:domain rdf:resource="#TRANSPORT\_ADDR"/>

 <rdfs:range rdf:resource="&xsd;hexBinary"/>

 <rdfs:comment>

 An address value specific to address\_type.

 </rdfs:comment>

 </owl:DatatypeProperty>

 <owl:ObjectProperty rdf:ID="ie\_authenticator\_link\_addr">

 <mihbasic:ie\_type\_identifier>0x10000206</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#POA"/>

 <rdfs:range rdf:resource="#TRANSPORT\_ADDR"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="ie\_authenticator\_ip\_addr">

 <mihbasic:ie\_type\_identifier>0x10000207</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#POA"/>

 <rdfs:range rdf:resource="#TRANSPORT\_ADDR"/>

 </owl:ObjectProperty>

 <owl:ObjectProperty rdf:ID="ie\_pos\_ip\_addr">

 <mihbasic:ie\_type\_identifier>0x10000208</mihbasic:ie\_type\_identifier>

 <rdfs:domain rdf:resource="#POA"/>

 <rdfs:range rdf:resource="#TRANSPORT\_ADDR"/>

 </owl:ObjectProperty>

</rdf:RDF>