7.7 Name and Address Datatypes

These data types provide support for names and addresses.

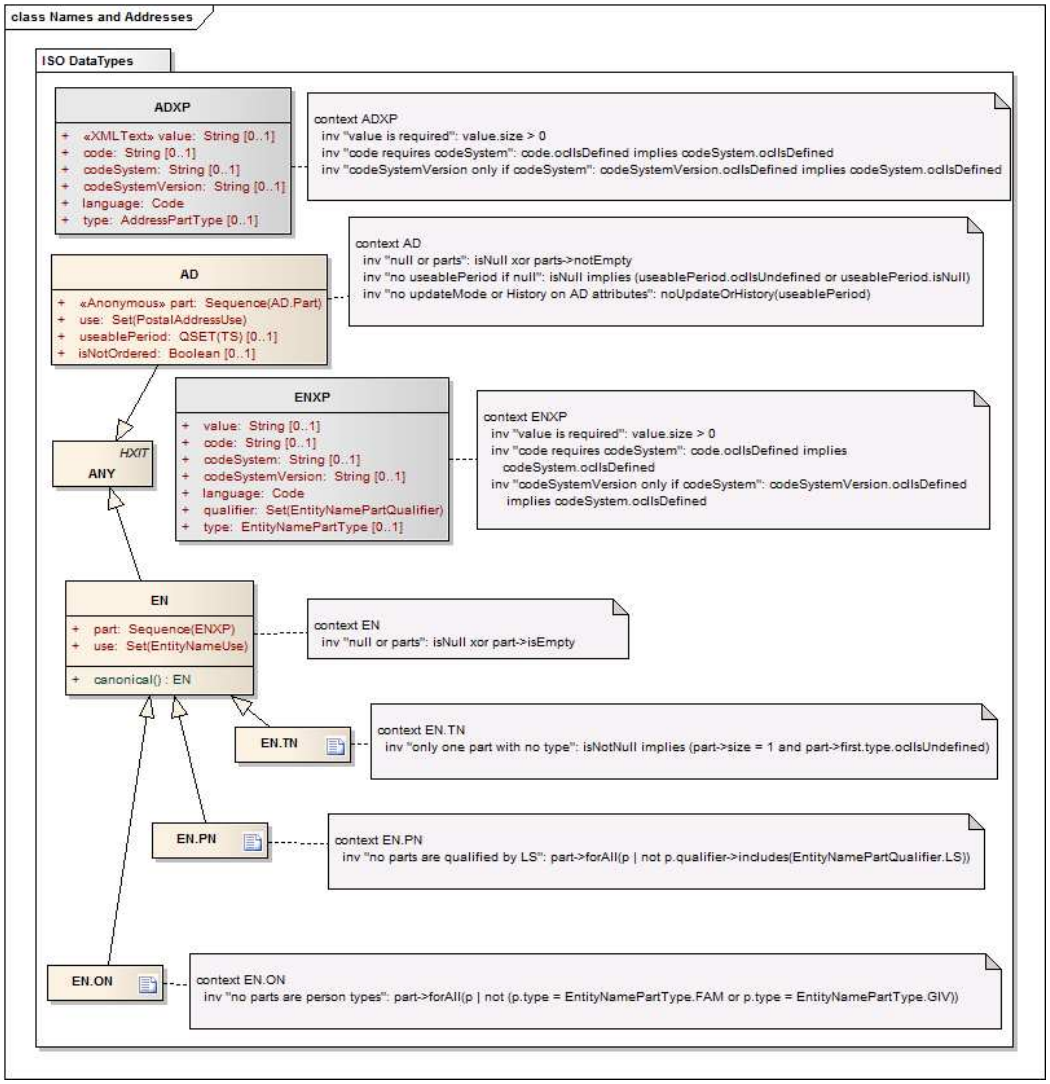

Figure 6. Name and address data types

7.7.1 ADXP (Address Part)

7.7.1.1 Description:

A character string that may have a type-tag signifying its role in the address. Typical parts that exist in about every address are street, house number, or post box, postal code, city, country but other roles may be defined regionally, nationally, or on an enterprise level (e.g. in military addresses).

Addresses are usually broken up into lines, which may be indicated by special line-breaking delimiter elements (e.g., DEL).

In addition to the string that represents the part, the part may also be encoded using the code property. The string content must always be provided whether the content is encoded or not.

7.7.1.2 ISO 11404 Syntax:

```
type ADXP = class (
  value : characterstring,
  code : characterstring,
  codeSystem : characterstring,
  codeSystemVersion : characterstring,
  language : characterstring,
  type : AddressPartType
)
```

7.7.1.3 Attributes

7.7.1.3.1 value : String: The actual string value of the part.

7.7.1.3.2 code : String: A code assigned to the part by some coding system, if appropriate.

7.7.1.3.3 codeSystem : String: The code system from which the code is taken.

The choice of coding system depends on the part type. The type CNT (Country) is bound to the 3 letter codes defined in ISO 3166. The context of use may specify other bindings for other part types.
The codeSystem SHALL be populated if a code is populated.

7.7.1.3.4 codeSystemVersion : String: The version of the coding system, if required.

The codeSystem SHALL be populated if a codeSystemVersion is populated.

7.7.1.3.5 language: Code: The human language of the content. Valid codes are taken from the IETF RFC 3066. If this attribute is null, the language may be inferred from elsewhere, either from the context or from unicode language tags, for example.

Note: While values of type ADXP may be assigned a language, the meaning of the part is not dependent on the language, and applications SHALL not be required to indicate the linguistic origin of any address part..

7.7.1.3.6 type : AddressPartType: Specifies whether an address part names the street, city, country, postal code, post box, etc.

If the type is NULL the address part is unclassified and would simply appear on an address label as is.

If populated, the value of this attribute SHALL be taken from the HL7 AddressPartType code system. The current values are:

AddressPartType Enumeration. OID: 2.16.840.1.113883.5.16			
1	AL	address line	An address line is for either an additional locator, a delivery address or a street address. An address generally has only a delivery address line or a street address line, but not both
2	ADL	additional locator	This can be a unit designator, such as apartment number, suite number, or floor. There may be several unit designators

			in an address (e.g., "3rd floor, Appt. 342"). This can also be a designator pointing away from the location, rather than specifying a smaller location within some larger one (e.g., Dutch "t.o." means "opposite to" for house boats located across the street facing houses)
3	UNID	unit identifier	The number or name of a specific unit contained within a building or complex, as assigned by that building or complex
3	UNIT	unit designator	Indicates the type of specific unit contained within a building or complex. E.g. Apartment, Floor
2	DAL	delivery address line	A delivery address line is frequently used instead of breaking out delivery mode, delivery installation, etc. An address generally has only a delivery address line or a street address line, but not both
3	DINST	delivery installation type	Indicates the type of delivery installation (the facility to which the mail will be delivered prior to final shipping via the delivery mode.) Example: post office, letter carrier depot, community mail center, station, etc
3	DINSTA	delivery installation area	The location of the delivery installation, usually a town or city, and is only required if the area is different from the municipality. Area to which mail delivery service is provided from any postal facility or service such as an individual letter carrier, rural route, or postal route
3	DINSTQ	delivery installation qualifier	A number, letter or name identifying a delivery installation. E.g., for Station A, the delivery installation qualifier would be 'A'
3	DMOD	delivery mode	Indicates the type of service offered, method of delivery. For example: post office box, rural route, general delivery, etc
3	DMODID	delivery mode identifier	Represents the routing information such as a letter carrier route number. It is the identifying number of the designator (the box number or rural route number)
2	SAL	street address line	A street address line is frequently used instead of breaking out build number, street name, street type, etc. An address generally has only a delivery address line or a street address line, but not both.
3	BNR	building number	The number of a building, house or lot alongside the street. Also known as "primary street number". This does not number the street but rather the building
4	BNN	building number numeric	The numeric portion of a building number
4	BNS	building number suffix	Any alphabetic character, fraction or other text that may appear after the numeric portion of a building number
3	STR	street name	The name of the street, including the type
4	STB	street name base	The base name of a roadway or artery recognized by a municipality (excluding street type and direction)
4	STTYP	street type	The designation given to the street. (e.g. Street, Avenue, Crescent, etc.)
3	DIR	direction	Direction (e.g., N, S, W, E)

2	INT	intersection	An intersection denotes that the actual address is located at the intersection or two or more streets
1	CAR	care of	The name of the party who will take receipt at the specified address, and will take on responsibility for ensuring delivery to the target recipient
1	CEN	census tract	A geographic sub-unit delineated for demographic purposes
1	CNT	country	Country
1	CPA	county or parish	A sub-unit of a state or province. (49 of the United States of America use the term "county;" Louisiana uses the term "parish")
1	CTY	municipality	The name of the city, town, village, or other community or delivery center
1	DEL	delimiter	Delimiters are printed without framing white space. If no value component is provided, the delimiter appears as a line break.
1	POB	post box	A numbered box located in a post station
1	PRE	precinct	A subsection of a municipality
1	STA	state or province	A sub-unit of a country with limited sovereignty in a federally organized country
1	ZIP	postal code	A postal code designating a region defined by the postal service

Note: The hierarchical nature of this code system shows composition rather than subsumption. E.g. "Street Name" is part of "Street Address Line"

7.7.1.4 ISO 11404 Syntax:

```
 type AddressPartType = enumeration (AL, ADL, UNID, UNIT,
DAL, DINST, DINSTA, DINSTQ, DMOD, DMODID, SAL, BNR, BNN,
BNS, STR, STB, STTYP, DIR, INT, CAR, CEN, CNT, CPA, CTY,
DEL, POB, PRE, STA, ZIP)
```

7.7.1.5 Equality

Two ADXP values are equal if their type and value attributes are equal. The code attributes and language are ignored.

Note (Clarification): two type attributes of null are considered equal.

7.7.1.6 Invariants

- The value cannot be empty
- if code has a value then codeSystem must have a value
- codeSystemVersion can only have a value if codeSystem has a value

OCL for Invariants:

```
inv "value is required": value.size > 0
inv "code requires codeSystem": code.oclIsDefined implies
```

```
    codeSystem.oclIsDefined
inv "codeSystemVersion only if codeSystem":
    codeSystemVersion.oclIsDefined implies
    codeSystem.oclIsDefined
```

7.7.2 AD.Part (Address)

Stereotype: «Choice»

Description: Content model for addresses. The choice stereotype denotes that exactly one of the attributes SHALL have a value. All the others must be null.

Rather than simply listing the parts of an address as simple parts with a type and value, addresses are structured as a sequence of named parts where the type is inferred from the name.

This UML diagram shows how the model is created:

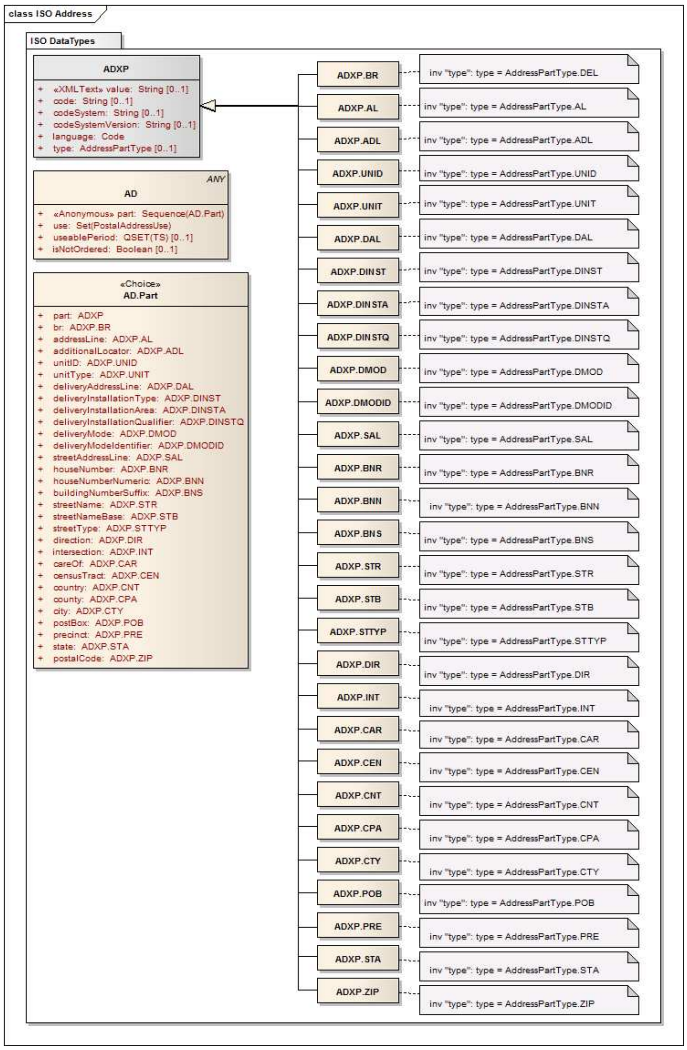

Figure 7. Address Content Model

Note that plain unadorned parts may still be used; these are required to send parts that have an unknown type, and parts that have a type code that is not defined at the time this standard is finalized. There is also a part called br that has no semantic significance but represents an explicit line break when the address is presented for human consumption.

7.7.3 AD (Address)

Specializes ANY

Description: Mailing and home or office addresses.

AD is primarily used to communicate data that will allow printing mail labels, or that will allow a person to physically visit that address. The postal address datatype is not supposed to be a container for additional information that might be useful for finding geographic locations (e.g., GPS coordinates) or for performing epidemiological studies. Such additional information should be captured by other, more appropriate data structures.

Addresses are essentially sequences of address parts, but add a "use" code and a valid time range for information about if and when the address can be used for a given purpose.

11404 Syntax:

```
type AD = class (
  validTimeLow : characterstring,
  validTimeHigh : characterstring,
  controlActRoot : characterstring,
  controlActExtension : characterstring,
  nullFlavor : NullFlavor,
  updateMode : UpdateMode,
  flavorId : characterstring,
  part : Sequence(ADXP),
  use : Set(PostalAddressUse),
  useablePeriod : QSET(TS),
  isNotOrdered : boolean
)
```

7.7.3.1 Attributes

7.7.3.1.1 part : Sequence(AD.Part) «Anonymous»: A sequence of address parts, such as street or post office Box, city, postal code, country, etc.

Note: Refer to section A.2 for the meaning of the Anonymous stereotype.

7.7.3.1.2 use : Set(PostalAddressUse): A set of codes advising a system or user which address in a set of like addresses to select for a given purpose.

An address without specific use code might be a default address useful for any purpose, but an address with a specific use code would be preferred for that respective purpose.

If populated, the values contained in this attribute SHALL be taken from the HL7 PostalAddressUse code system. The current values are:

PostalAddressUse Enumeration. OID: 2.16.840.1.113883.5.1012

1	*AddressUse*		
2	H	home address	A communication address at a home, attempted contacts for business purposes might intrude privacy and chances are one will contact family or other household members instead of the person one wishes to call. Typically used with urgent cases, or if no other contacts are available
3	HP	primary home	The primary home, to reach a person after business hours
3	HV	vacation home	A vacation home, to reach a person while on vacation
2	WP	work place	An office address. First choice for business related contacts during business hours
3	DIR	direct	Indicates a work place address or telecommunication address that reaches the individual or organization directly without intermediaries. For phones, often referred to as a 'private line'
3	PUB	public	Indicates a work place address or telecommunication address that is a 'standard' address which may reach a reception service, mail-room, or other intermediary prior to the target entity
2	BAD	bad address	A flag indicating that the address is bad, in fact, useless
2	PHYS	physical visit address	Used primarily to visit an address
2	PST	postal address	Used to send mail
2	TMP	temporary address	A temporary address, may be good for visit or mailing. Note that an address history can provide more detailed information.
1	*AddressRepresentationUse.* Identifies the different representations of the address. The representation may affect how the address is used. (E.g. use of Ideographic for formal communications)		
2	ABC	alphabetic	Alphabetic transcription of name (Japanese: romaji)
2	IDE	ideographic	Ideographic representation of name (e.g., Japanese kanji, Chinese characters)
2	SYL	syllabic	Syllabic transcription of name (e.g., Japanese kana, Korean hangul)
1	SRCH	Search Type Uses	A name intended for use in searching or matching.
2	SNDX	soundex	An address spelled according to the SoundEx algorithm
2	PHON	phonetic	The address as understood by the data enterer, i.e. a close approximation of a phonetic spelling of the address, not based on a phonetic algorithm

ISO 11404 Syntax for the postalAddressUse attribute

```
type PostalAddressUse = enumeration (H, HP, HV, WP, DIR,
PUB, BAD, TMP, ABC, IDE, SYL, PHYS, PST, SRCH, SNDX, PHON)
```

Note: Only one of the values ABC, IDE, and SYL may be used in the set. There is no constraints on the other combinations, though some of them may not make sense.

7.7.3.1.3 useablePeriod : QSET(TS): A General Timing Specification (GTS) specifying the periods of time during which the address can be used. This is used to specify different addresses for different times of the week or year.

7.7.3.1.4 isNotOrdered : Boolean: A boolean value specifying whether the order of the address parts is known or not. While the address parts are always a sequence, the order in which they are presented may or may not be known to be true or important. Where this matters, the isNotOrdered property can be used to convey this information.

7.7.3.2 Equality

Two address values are considered equal if both contain the same address parts, independent of ordering. Use code, useablePeriod, and isNotOrdered are excluded from the equality test.

Note 1: even if isNotOrdered is false – it is known that the order of the address parts is representationally significant – the order of the parts is irrelevant for checking equality of addresses.

Note 2: two values that refer to the same address but that are encoded using different address parts (perhaps to different levels of detail) would not be considered equal.

7.7.3.3 Invariants

- Either the AD is null or it has at least one part

OCL for Invariants:

```
        inv "null or parts": isNull xor part->notEmpty

nullflavor invariants:
        inv "no useablePeriod if null": isNull implies
          (useablePeriod.oclIsUndefined or
             useablePeriod.isNull)
        inv "no updateMode or History on AD attributes":
             noUpdateOrHistory(useablePeriod)
```

7.7.3.4 ISO 22220 Comments

The various address parts defined by ISO 22220 map to address part types, and the address type maps to the use attribute. The start and end date accuracy indicators are partially supported by the precision of the dates provided.

7.7.3.5 Examples

7.7.3.5.1 Address with Layout

```
<example xsi:type="AD" use="WP">
   <part>1050 W Wishard Blvd,</part>
   <br/>
   <part>RG 5th floor,</part>
   <br/>
   <part>Indianapolis, IN 46240</part>
```

```
</example>
```

This work address consists of 3 unknown parts with 2 line delimiters. None of the parts are labelled in regard to their semantic significance.

7.7.3.5.2 Address with Types

```
<example xsi:type="AD" use="WP">
   <addressLine>1050 W Wishard Blvd</addressLine>
   <addressLine>RG 5th floor</addressLine>
   <city>Indianapolis</city>
   <state>IN</state>
   <postalCode>46240</postalCode>
</example>
```

This is the same address using standard typing rather than a presentation focus. This is probably be the most common form of presentation for addresses - a series of address lines followed by city, state, zip and possibly country.

Note: Although this presentation of the address suggests that lines are required after the two address lines, this is not implied by this example. See Section 7.7.3.6.

7.7.3.5.3 Line Types

```
<example xsi:type="AD" use="WP">
   <streetAddressLine>1050 W Wishard Blvd</streetAddressLine>
   <additionalLocator>RG 5th floor</additionalLocator>
   <city>Indianapolis</city>
   <state>IN</state>
   <postalCode>46240</postalCode>
</example>
```

This is the same address from a system that differentiates between different line types .

7.7.3.5.4 Fully Typed Addresses

```
<example xsi:type="AD" use="WP">
   <houseNumber>1050</houseNumber>
   <direction>W</direction>
   <streetNameBase>Wishard</streetNameBase>
   <streetType>Blvd</streetType>
   <additionalLocator>RG 5th floor</additionalLocator>
   <city>Indianapolis</city>
   <state>IN</state>
   <postalCode>46240</postalCode>
</example>
```

The same address fully broken down. The form above is not used in the USA. However, it is useful in Germany, where many systems keep house number as a distinct field

```
<example xsi:type="AD" use="HP">
   <streetName>Windsteiner Weg</streetName>
   <houseNumber>54a</houseNumber>
   <country code="DEU"
       codeSystem="2.16.840.1.113883.11.171"/>D</country>
   <postalCode>14165</postalCode>
   <city> Berlin </city>
</example>
```

This is a home address in a standard German format. The country has been coded in ISO 3166-3 to assist with interoperability.

7.7.3.5.5 Unknown Addresses

```
<example xsi:type="AD" use="WP" nullFlavor="UNK"/>
```

The work address is unknown.

7.7.3.6 Presenting Addresses

The primary purpose of an address is to be presented on a delivery label affixed to some envelope. A fully specified address - one that includes specified line breaks - can be presented directly by simply presenting the text of the various parts with whitespace separating them, and following the explicit line breaks. If the elements are moved into the xhtml namespace, the AD content can be treated as html directly.

For this reason, the address SHOULD always be generated with appropriate line breaks included in the address. This enables applications that do not understand the semantics of the address to reproduce it correctly.

However because there is no single presentation model for addresses, applications may ignore the explicitly specified line breaks in addresses – they are not bound to follow the presentation as specified in any particular address.

7.7.4 ENXP (Entity Name Part)

7.7.4.1 Description: A character string token representing a part of a name.

May have a type code signifying the role of the part in the whole entity name, and qualifier codes for more detail about the name part type. (Typical name parts for person names are given names, and family names, titles, etc.). In addition to the string that represents the part, the part may also be encoded using the code property.

The string content must always be provided whether the content is encoded or not.

11404 Syntax:

```
type ENXP = class (
  value : characterstring,
  code : characterstring,
  codeSystem : characterstring,
  codeSystemVersion : characterstring,
  language : characterstring,
  type : EntityNamePartType,
  qualifier : Set(EntityNamePartQualifier)
)
```