

Human Markup Language Primary Base Specification 1.0

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Abstract:

This document provides an explanatory source document for the Human Markup Language Primary Base XML Schema Specification. This is the first of two foundation specifications for the family of Human Markup Language Specifications. This specification provides the primary terms and definitions of the Human Markup Language vocabulary. It is a set of fundamental concepts from which extensions can be built. The Secondary Base XML Schema of the Human Markup Language will elaborate upon this vocabulary to finish the set of Base Specifications from which more specialized, application-area-specific vocabularies and APIs will be constructed.

Status:

This is a *Committee Specification*.

The design of HumanML covers a large scope of possible applications. The Primary Base Human Markup Language Schema, located at <http://www.oasis-open.org/committees/humanmarkup/schema/huml-primary-base-1.0.xsd> is the normative document for validating XML-based applications which use it.

This document is normative for the purpose of documentation and description of the specification as of the date it is adopted by the OASIS HumanMarkup Technical Committee.

Committee members should send comments on this specification to the humanmarkup@lists.oasis-open.org list. Others should subscribe to and send comments to the humanmarkup-comment@lists.oasis-open.org list.

To subscribe, send an email message to humanmarkup-comment-request@lists.oasis-open.org with the word "subscribe" as the body of the message.

For information on whether any patents have been disclosed that may be essential to implementing this specification, and any offers of patent licensing terms, please refer to the Intellectual Property Rights section of the HumanMarkup TC web page <http://www.oasis-open.org/committees/humanmarkup/>.

The errata page for this specification is at <http://www.oasis-open.org/committees/humanmarkup/schema/huml-primary-base1.0-errata.html>

This document is normative as of the date it is adopted by the OASIS HumanMarkup Technical Committee.

If you have comments about this document, please send them to Ranjeeth Kumar Thunga rkthunga@humanmarkup.org

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1. Introduction

The Human Markup Language provides a vocabulary which will allow a wide variety of human-centric applications to be built. It will also allow for a greater depth of information about individuals to be assembled and used with existing applications at the discretion of the individual concerned.

1.1 Motivation

This effort is motivated to fill the need to:

- clarify human communication in digital information systems
- bring human perspectives, characteristics, qualities and values into information technology
- identify and focus attention on uniquely human concerns.

The Human Markup Language Primary Base Schema is not meant to be

application-specific, but rather to build a foundation on which subsequent schemata can be written to supply application-specific vocabularies.

1.2 Scope

The scope of the Human Markup Language Primary Base Schema is very broad since it is the foundation for applications as diverse as enabling realtime animated behaviors for 3D representations of humans to enhancing diplomatic communication with translation services and/or applications capable of making provisions for cultural practices.

2. Terminology

The following terminology is used specifically for and throughout this document, without any claims of applicability outside it.

When capitalized 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 [[RFC 2119](#)].

Human Markup Language (compound term with separated words with Upper and Lower case characters as shown) = the XML-based, special-purpose computer networking language specification itself and all of its associated modules and sub-specifications.

HumanML (compound term with Upper and Lower case characters as shown) = the Human Markup Language Specification.

HumanMarkup (compound term with Upper and Lower Case characters as shown) = the collective effort to build the Human Markup Language, also used for similar purposes in the name of the OASIS HumanMarkup Technical Committee.

3. Summary

The Human Markup Language Primary Base XML Schema Requirements state that this specification **MUST** contain the Elements and Attributes to

describe a basic or fundamental set of characteristics of HUMAN entities and HUMAN activities as they occur in digital information systems. In keeping with the charter of the OASIS HumanMarkup Technical Committee, which states that the aim of HumanML is to "enhance the fidelity of human communication," this schema SHOULD specifically address the HUMAN activity of communication.

It is not expected that the components contained in this initial version, or in any subsequent version of the Primary Base Schema, comprise a final and completely definitive resource. This is the first and most fundamental vocabulary, and it is intended to change and evolve as our needs and understanding evolve.

It is important to understand what the Human Markup Language is designed to be able to do, as well as what many of us hope it will actually accomplish. There is a significant difference in the requirements for the design of the language and the personal goals of many of the participants in this effort.

It is apt in this case to use a trope, a figure of speech which a later schema of the Human Markup Language will elucidate, to describe this state. This is also an aphorism.

We entered into this effort realizing that our reach will exceed our grasp.

We would like this language to improve diplomatic communications to secure World Peace, but we do not expect such a state of affairs. That does not mean that having such a goal is unrealistic, because without such goals, any improvement is all but impossible.

However, if we can make a contribution to improving the fidelity of human communication, we will have accomplished much. In truth, if all we are able to do is to help ensure the accuracy and privacy of personal information we will have accomplished much.

The table that follows summarizes the elements, attributes and types included in this XML Schema Specification.

3.1 Table of Components

Element	ComplexType	SimpleType	attributeGroup
Huml	Address	Locator	age
	Artifact	range	gender
	Belief		humlCommAtts
	BodyLocation		humlIdentifierAtts
	Channel		humlTemporalAtts
	Chronemic		physicalDescriptors
	Community		
	Culture		
	Emotion		
	GeoLocator		
	Haptic		
	Human		
	HumanGroup		
	HumanNameElements		
	Intent		
	Kinesic		
	MeasurementUnit		
	Personality		

Proxemic

Semiosis

Semiote

Sign

Signal

Symbol

Thought

3.2 Namespace

The namespace for this schema is

`urn:oasis:names:tc:huml:xsd:schema:huml-primary-base:1.0`

The schema location is <http://www.oasis-open.org/committees/humanmarkup/schema/huml-primary-base-1.0.xsd>

Future specifications are planned to share this namespace as part of the OASIS family of standards.

4. Components

As you will note, the definitions offered here begin with the the definition used in the documentation portion of the schema. The definitions are given greater detail where it seems appropriate. While there is an inherent organizational structure that emerges from the vocabulary of HumanMarkup, it is not arranged into hierarchical categories. This is intentional at this stage, since we need to ensure that any structure which is eventually adopted is only adopted because the material itself exhibits that structure. So, to follow this approach to its logical conclusion here, components are not grouped other than by their classification as element, complexTypes, simpleTypes and attribute/attributeGroups.

Components are introduced in alphabetical order within those basic categories.

4.1 Root Element

Huml

huml is the prefix that will be associated with the Human Markup Language Specifications. It indicates the first Human Markup Language schema, which forms the basis for succeeding schemata.

```
<xs:element name="Huml">
  <xs:annotation>
    <xs:documentation>
      huml is the prefix that will be associated with
the Human Markup
      Language Specifications. It indicates the first
Human Markup Language schema and which
      forms the basis for succeeding schemata.
    </xs:documentation>
  </xs:annotation>
</xs:element>
```

4.2 complexTypes

4.2.1 Address

Address Type

Address refers to an address in a named address system, such as street, city, state, etc. Note that this needs to be code-based, that is, adaptable to different naming conventions of international locales. For this purpose we have imported the Extensible Address Language from the OASIS Customer Information Quality Technical Committee, currently under review as an OASIS standard and the PostalAddress Standard XML Schema from the Human Resources Consortium (HR-XML).

Address is a part of the specification which deals with Individual

Human Identity and, as such, is the first of the elements which require harmonizing with existing standards. For this purpose we have imported the namespaces mentioned, and we will also ensure harmonization with the standards of the eXtensible Name Service protocol, made available by The XNS Public Trust Organization (XNSORG).

This specification avoids duplicating those standards, and for this purpose defines a sequence of elements which define types of specific interest to this specification.

```
<xs:complexType name="Address">
  <xs:annotation>
    <xs:documentation>
      Address Type
      An address in a named address system, such as
street, city, state, etc.
      Note that this needs to be code-based, that is,
adaptable to different naming
      conventions of international locales. For this
purpose we have imported the
      Extensible Address Language from the OASIS
Customer Information Quality
      Technical Committee under review as an OASIS
standard and the PostalAddress
      Standard XML Schema from the Human Resources
Consortium (HR-XML).
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="postal" type="xs:string"/>
    <xs:element name="residential" type="xs:string"
minOccurs="0"/>
    <xs:element name="email" type="xs:string"
minOccurs="0"/>
    <xs:element name="previous" type="xs:string"
minOccurs="0"/>
    <xs:element name="current" type="xs:string"
minOccurs="0"/>
  </xs:sequence>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
</xs:complexType>
```

```
</xs:complexType>
```

4.2.2 Artifact

Human Artifact

A trace object, usually human-made, and/or assigned human meaning. When we use the term trace, we mean in the sense of tangible evidence.

Usually acts as sign or symbol as in semiosis. Typically clothing, jewelry, pictures, trinkets, and such artifacts are often used to communicate information about oneself, which express one's interests, hobbies, status, or lifestyle.

Artifact, as with many terms which we define for HumanMarkup purposes, also has wide use in scientific and academic contexts. We have included these domains within our scope. Therefore, there are specific usages in archeology and anthropology, which our definitions **MUST** support. These will be supplied in due course.

```
<xs:complexType name="Artifact" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Artifact
      A trace object, usually human made, and/or
assigned human meaning. Usually
      acts as sign or symbol. Typically clothing,
jewelry, pictures, trinkets, etc.,
      artifacts are often used to communicate
information about oneself, which express
      one's interests, hobbies, status, or lifestyle.
There are specific
      usages in archeology and anthropology, which our
definitions MUST support.
    </xs:documentation>
  <xs:appinfo>NONE</xs:appinfo>
</xs:annotation>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
  <xs:attributeGroup ref="humlCommAtts"/>
  <xs:attributeGroup ref="humlTemporalAtts"/>
</xs:complexType>
```

4.2.3 Belief

Human Belief

The huml term **Belief** designates any human belief. A human belief is a conviction held by a human or humanGroup of the truth of a statement or assertion. A distinction will inevitably be made between a simple belief, such as believing in deity, and a belief system such as Judaism or Buddhism, which could be the basis of extension for this complexType, but for our purpose the simplest definition will be adopted for this schema.

It should also be noted that no attempt is made or envisioned to determine the veracity of any belief. We are not setting out to judge the truth of beliefs or belief systems.

```
<xs:complexType name="Belief" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Belief
      A human belief is a conviction held by a human or
humanGroup of the truth of
      a statement or assertion. A distinction will
inevitably be made between a simple
      belief, such as believing in deity, and a belief
system such as Judaism or Buddhism,
      which could be the basis of extension for this
complexType, but for our purpose the
      simplest definition will be adopted for this
schema.
    </xs:documentation>
  <xs:appinfo>NONE</xs:appinfo>
</xs:annotation>
<xs:attributeGroup ref="humlIdentifierAtts"/>
</xs:complexType>
```

4.2.4 BodyLocation

Body Location

The huml term **BodyLocation** is used for a location on a body part. Used

in haptics, artifacts, etc.

```
<xs:complexType name="BodyLocation">
  <xs:annotation>
    <xs:documentation>
      Body Location
      This is a location on a body part. Used in
      haptics, artifacts, etc.
    </xs:documentation>
  <xs:appinfo>NONE</xs:appinfo>
</xs:annotation><
  <xs:attribute ref="bodyPart"/>
  <xs:attribute name="location" type="Locator"/>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
</xs:complexType>
```

4.2.5 Channel

Human Communication Channel

A **Channel** is one of the senses or faculties by which a Human communication is transmitted and/or received. These elements will be enumerated in subsequent huml schemata. The elements included here serve as examples, as placeholders for sensory receiving or input channels which will likely be replaced by importing the namespace and schema location of the subsequent huml schema.

However, it is important to provide the operational means by which sample implementations can be constructed in order to display the intended functionality of this specification, so the inclusion of this sequence of elements allows for that.

We mention this to explain why this complexType and some others include examples and elaborations while others do not. As we move into subsequent specifications it will become more apparent how these specifications and their specific schemata work together to form a modular, coherent whole.

```

<xs:complexType name="Channel" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Communication Channel
      These are one of the senses or faculties by which
a Human communication is
      transmitted and/or received. These elements will
be enumerated in subsequent
      huml schema. The elements included here serve as
examples, as placeholders for
      sensory receiving or input channels which will
likely be replaced by importing
      the namespace and schema location of the
subsequent huml schema.
    <xs:sequence>
      <xs:element name="sight" type="boolean"
default="true"/>
      <xs:element name="hearing"
type="boolean" default="true"/>
      <xs:element name="touch" type="boolean"
default="true"/>
      <xs:element name="taste" type="boolean"
default="true"/>
      <xs:element name="smell" type="boolean"
default="true"/>
      <xs:element name="kinesthetic"
type="boolean" default="true"/>
    </xs:sequence>
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attributeGroup ref="humlTemporalAtts"/>
  <xs:attribute ref="intensity"/>
</xs:complexType>

```

4.2.6 Chronemic

Human Time Factors

Chronemic is used for time characterization. Human awareness and use of time can be associated with cultural characteristics and treated as a non-verbal communication element. The study of chronemics as a

variable in communications has an acceptable body of support. Chronemics can be seen to be used very differently with respect to individuals and cultures. Time perceptions include punctuality, willingness to wait, and interactions. Time use affects lifestyles, daily agendas, speed of speech and movements, how long people are willing to listen, etc. However both as cultural characteristic and as communication factor, chronemic factors exhibit two states, monochronic and polychronic.

Chronemic is the first of several complexTypes which add the most particular kind of added value which the Human Markup Language aims to provide. By this we mean the largely non-verbal range of factors which can provide greater depth of context to communications and which, by their lack in common usage, represent a set of messages that are not received clearly, if recognized, and are presently poorly understood at best.

```
<xs:complexType name="Chronemic" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Time Factors
      Human awareness and use of time can be associated
with cultural characteristics and
      as a non-verbal communication element. The study
of chronemics as a variable in
      communications has an acceptable body of support.
Chronemics can be seen to be used
      very differently with respect to individuals and
cultures. Time perceptions include
      punctuality, willingness to wait, and
interactions. Time use affects lifestyles, daily
      agendas, speed of speech and movements, how long
people are willing to listen, etc.
      However, as both cultural characteristic and
communication factor, chronemic factors
      exhibit two states, monochronic and polychronic.
        Monochronic: one thing at a time
(sequential).
        Polychronic: several things at once
(parallel).
    </xs:documentation>
  <xs:appinfo>NONE</xs:appinfo>
```

```

    </xs:annotation>
      <xs:attributeGroup ref="humlTemporalAtts"/>
      <xs:attributeGroup ref="humlCommAtts"/>
      <xs:attribute name="chronemicType">
        <xs:simpleType>
          <xs:restriction base="xs:string">
            <xs:enumeration
value="characteristicFactor"/>
            <xs:enumeration
value="communicationFactor"/>
            <xs:enumeration
value="monochronic"/>
            <xs:enumeration
value="polychronic"/>
          </xs:restriction>
        </xs:simpleType>
      </xs:attribute>
    </xs:complexType>

```

4.2.7 Community

Community - Abstract Human Organization

(Note that HumanGroup is the atomic unit of human organization. See: HumanGroup.)

A HumanGroup attains the status of **Community** when it exhibits organization usually typified by a set of beliefs held in common or actions performed together. These might be communicating, creating some common artifact, a common purpose such as study, worship, business, sports, etc. Criteria for inclusion will be specific to named communities which will in turn be specified in subsequent huml schemata.


```

<xs:complexType name="Community">
  <xs:annotation>
    <xs:documentation>
      Abstract Human Organization
      A humanGroup attains the status of community when
it exhibits organization usually
      typified by a setof beliefs held in common or
actions performed together. These
      might be communication, creating somecommon
artifact, a common purpose such as
      study, worship, business, sports, etc. Criteria
for inclusion will be specific to
      named communities.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attributeGroup ref="humlTemporalAtts"/>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
</xs:complexType>

```

4.2.8 Culture

Human Culture

(Note that HumanGroup is the atomic unit of human organization. See: HumanGroup.)

Cultural characteristics emerge as the defining set of elements which a community shares and which distinguish the community as a cultural group per se. This partakes of the semiotic basis for communication processes as a contextual element.

To the extent possible, descriptions of cultures should be compatible with academic practices and should also be generated by members of the culture being described. The huml term is **Culture**.

```

<xs:complexType name="Culture" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Culture
      Cultural characteristics emerge as the defining
set of elements which a community
      shares and which distinguish the community as a
culture per se. This partakes of
      the semiotic basis for communication processes as
a contextual element.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attributeGroup ref="humlTemporalAtts"/>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
</xs:complexType>

```

4.2.9 Emotion

Human Emotion

A basic set of primitive human emotions; the six basic emotions that have well-documented facial expressions associated with them, to which we can assign strength values in the range we have established as a relative measure of intensity and which we can take as standard primitives are provided.

With this set we will be able to produce a simple implementation to provide a clear example of the uses to which the Human Markup Language can be put. The huml term is **Emotion**.

```

<xs:complexType name="Emotion" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Emotion
      A basic set of primitive human emotions.The six
basic emotions that have
      well-documented facial expressions associated
with them, to which we can
      assign strength values in the range we have
established as a relative measure
      of intensity and which we can take as standard
primitives are provided.
    <xs:sequence>
      <xs:element name="sadness"
type="boolean" default="true"/>
      <xs:element name="joy" type="boolean"
default="true"/>
      <xs:element name="anger" type="boolean"
default="true"/>
      <xs:element name="fear" type="boolean"
default="true"/>
      <xs:element name="disgust"
type="boolean" default="true"/>
      <xs:element name="surprise"
type="boolean" default="true"/>
    </xs:sequence>
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attribute ref="intensity"/>
  <xs:attributeGroup ref="humlTemporalAtts"/>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
</xs:complexType>

```

4.2.10 GeoLocator

Geographic Location

The huml term **GeoLocator** is used for a 3D address type based on map coordinate systems. We will provide references to standards. These will include the Geospatial Positioning Accuracy Standards Part 4: Standards of Architecture, Engineering, Construction (A/E/C) and

Facility Management FGDC-STD-007.4-2002 adopted by the Federal Geographic Data Committee and the ISO candidate standard specification amendment to the ISO VRML97 standard (ISO/IEC 14772-1 1997) which can be referenced at <http://www.geovrml.org/1.1/doc/index.html>. Other International Standards may also be cited.

```
<xs:complexType name="GeoLocator">
  <xs:annotation>
    <xs:documentation>
      Geographic Location
      A 3D address type based on map coordinate
systems. We will provide references
      to standards. These will include the Geospatial
Positioning Accuracy Standards
      Part 4: Standards of Architecture, Engineering,
Construction (A/E/C) and Facility
      Management FGDC-STD-007.4-2002 adopted by the
Federal Geographic Data Committee
      and the ISO candidate standard specification
amendment to the ISO VRML97 standard
      (ISO/IEC 14772-1 1997) which can be referenced at
http://www.geovrml.org/1.1/doc/
      index.html. Other International Standards may
also be cited.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
</xs:complexType>
```

4.2.11 Haptic

Haptic: Human Touching Behaviors

Haptics refers to the study of touching behavior in different societies and cultures. **Haptic** is a communication factor that applies to a wide variety of behaviors indicating state of mind and emotion. It can range widely, as from hostility (kicking) to intimacy (kissing). Haptics is also the study of tactile response in a strictly scientific framework, such as studies about feedback in touch-controlled computer pointing devices such as the mouse and keyboard. Because of its range of applications, haptic will require more

consideration than a set of simpleType elements.

The HumanML haptic model is based on the strength, location, and body part used in a touching behavior. It does not provide a semantic model for interpretation. To understand how to use this complexType, an example is provided. Theorists have proposed, for example, five degrees of the haptic and an intensity value for force of behavior (e.g., strength of a handshake) as they affect emotional states:

1. functional/professional
2. social/polite
3. friendship/warmth
4. love/intimacy
5. sexual arousal

HumanML notes such theories but does not assign values per the abstract haptic definition, instead leaving that to the derived application languages. This is because there can be differing applicable models, e.g., the strength of the act of physical therapy can and does approach that of sexual arousal, yet the model shown above might classify this as a functional/professional contact, indicating a low degree of arousal.

Some models would claim that sexual and emotional arousal are different states. Contact strengths could be defined differently for individuals, cultures and communities, but the scale has to be assigned so that, for instance, on a scale of zero through one, .20 is (1), .40 is (2), .60 (3) and so on, expresses a norm. For an individual, the rating expresses a real state of arousal based on a touch.

```

<xs:complexType name="Haptic" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Haptic: Human Touching Behaviors
      Haptic is the study of touching behavior in
different societies and cultures. Haptic
      is communication factor that applies to a wide
variety of behaviors indicating state
      of mind and emotion from hostility (kicking) to
intimacy (kissing). Haptic is also the
      study tactile response in a strictly scientific
framework, such as studies about
      feedback in touch-controlled computer pointing
devices such as the mouse and keyboard.
      With this range of applications, haptic will
require more consideration than a set of
      simpleType elements.

      The HumanML haptic model is based on the
strength, location, and body part used in a
      touching behavior. It does not provide a semantic
model for interpretation. To
      understand how to use this complexType, an
example is provided. Theorists propose five
      degrees of haptic and an intensity value for
force of behavior (eg, strength of a
      handshake) as they affect emotional states:

          functional/professional
          social/polite
          friendship/warmth
          love/intimacy
          sexual arousal

      HumanML notes such theories but does not assign
values per the abstract haptic leaving
      this to the derived application languages. This
is because there can be other
      applicable models, eg, the strength of the act of
physical therapy can and does
      approach that of sexual arousal, yet the model
shown above might classify this as a

```

functional/professional degree contact indicating a low state of arousal. Some models would claim that sexual and emotional arousal are different states.

Different contact strengths could be defined for individuals, cultures and communities, but the scale has to be assigned. In other words, by this scale. .20 is (1), .40 is (2), .60 (3) and so on, but individuals, cultures, and and< communities would vary. For a group (culture or community), this expresses a norm. For an individual, it expresses a real state of arousal based on a touch.

```

</xs:documentation>
<xs:appinfo>NONE</xs:appinfo>
</xs:annotation>
<xs:sequence>
  <xs:element name="touchWhere"
type="BodyLocation"/>
  <xs:element name="touchWith"
type="BodyLocation"/>
</xs:sequence>
<xs:attributeGroup ref="humlCommAtts"/>
<xs:attributeGroup ref="humlTemporalAtts"/>
<xs:attribute ref="intensity"/>
</xs:complexType>

```

4.2.12 Human

Human

An entity which exhibits the basic characteristics of humans.

Some explanation of the huml term **Human** is called for at this point. We are not adopting a particular scientific classification for the human species in this specification. We are striving to be interoperable with the community of interest which requires identity authentication, certification and verifiability, but not in the sense of taking part in those operations. Our interest is aside from establishing basic identity, for we are committed to simultaneously documenting greater depth of individual information while introducing

no procedures to distinguish between a living human being and a representation of a human, even if, and especially if, that representation is an agent such as a software program acting according to its instructions, whether on behalf of a living human being or not. An entity which represents itself as human, is human as far as this specification is concerned.

NOTE: Starting here, we get into the types that may be moved out into application modules.

```
<xs:complexType name="Human">
  <xs:annotation>
    <xs:documentation>
      Human
      An entity which exhibits the basic
characteristics of humans.
      NOTE: Starting here, we get into the types that
may be moved
      out into application modules.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:complexContent>
    <xs:extension base="HumanNameElements">
      <xs:attributeGroup ref="humlIdentifierAtts"/>
    </xs:extension>
  </xs:complexContent>
</xs:complexType>
```

4.2.13 HumanGroup

Fundamental Unit of Human Groups

A **HumanGroup** is the most basic, fundamental unit of Humans grouped or grouping together. It is defined as two or more humans gathered in an environment. It is necessary to define it this way because it is possible for there to exist a HumanGroup that does not constitute a Community.

This fundamental distinction is necessary in the same way that our definition of Human is necessary. By adopting no criterion for what

constitutes a Human other than self-assertion and no criterion for what constitutes a HumanGroup other than co-existence in any kind of environment, we allow for better clarity in chronicling the set of characteristics which describe a particular Human or HumanGroup, and we require better fundamental descriptions that take nothing for granted.

```
<xs:complexType name="HumanGroup">
  <xs:annotation>
    <xs:documentation>
      Fundamental Unit of Human Groups
      A humanGroup is the most basic, fundamental unit
of Humans grouped or
      grouping together. It is defined as two or more
humans gathered in an
      environment. It is necessary because it is
possible for there to exist a
      humanGroup that does not constitute a community.
    </xs:documentation>
  <xs:appinfo>NONE</xs:appinfo>
</xs:annotation>
<xs:attributeGroup ref="humlIdentifierAtts"/>
</xs:complexType>
```

4.2.14 HumanNameElements

Human Name Attributes

HumanNameElements is a set of attributes for documenting the names and aliases of real or artificial humans, communities, businesses, etc.

This specification does not supercede the standards which have been cited, nor does it wish to establish its own different standards. It only adds its own elements which can be used in applications that do not need or for any reason do not want to use the somewhat duplicated, but interoperable, terms listed in this complexType.

```

<xs:complexType name="HumanNameElements">
  <xs:annotation>
    <xs:documentation>
      HumanML Name Attributes
      This is a set of attributes for documenting the
names and aliases
      of real or artificial humans, communities,
businesses, etc.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:sequence>
    <xs:element name="last" type="xs:string"/>
    <xs:element name="first" type="xs:string"
minOccurs="0"/>
    <xs:element name="middle" type="xs:string"
minOccurs="0"/>
    <xs:element name="prefix" type="xs:string"
minOccurs="0"/>
    <xs:element name="suffix" type="xs:string"
minOccurs="0"/><
  </xs:sequence>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
  <xs:attribute name="isAlias" type="xs:boolean"/>
</xs:complexType>

```

4.2.15 Intent

Human Intent

Intent is the state of mind and emotion, characterized by purpose and volition, with which a human acts or prepares to act.

NOTE: This complexType is a key factor in communication.

An example of Intent is the planning of a presentation. It is almost guaranteed that there will be a flood of elements in this complexType stemming from almost all areas of human characteristics and communications.

```

<xs:complexType name="Intent" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Intent
      Human intent is the state of mind and emotion,
characterized by purpose
      and volition, with which a human acts or prepares
to act.

      NOTE: This complexType is a key factor in
communication
      An example of intent is planning a presentation.
It is almost guaranteed
      that there will be flood of elements in this
complexType stemming
      from almost all areas of human characteristics
and communications.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attribute ref="intensity"/>
  <xs:attributeGroup ref="humlCommAtts"/>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
  <xs:attributeGroup ref="humlTemporalAtts"/>
</xs:complexType>

```

4.2.16 Kinesic

Kinesic: Human Movements

Communicational Kinesics constitute some vocabulary of body language used to portray moods and emotions and to add emphasis to verbal communication. As a study concerned with how bodily and facial gestures function as a factor in communication, kinesics is fairly well understood. For our purposes we expect enumeration of body language gestures to be included in culture-specific subsets.

A kinesic vocabulary is deferred to either the Secondary Base Schema or other subsequent huml schemata. The provided for this expansion is huml **Kinesic**.

```

<xs:complexType name="Kinesic" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Kinesic: Human Movements
      Communicational Kinesics constitute a vocabulary
of body language
      used to portray moods and emotions and to add
emphasis to verbal
      communication. As a study concerned with how
bodily and facial
      gestures function as a factor in communication,
kinesics is fairly
      well understood. For our purposes we expect
enumeration of body
      language gestures to be included in culture-
specific subsets.
    </xs:documentation>
  <xs:appinfo>NONE</xs:appinfo>
</xs:annotation>
<xs:attributeGroup ref="humlCommAtts"/>
<xs:attributeGroup ref="humlTemporalAtts"/>
<xs:attribute ref="intensity"/>
</xs:complexType>

```

4.2.17 MeasurementUnit

Measurement Unit

The complexType is used to create measurement values.

Specifically, the complexType **MeasurementUnit** is used to establish the use of a recognized measurement system. Systems of measurement vary by unit, name (for example English units vs. metric units) and measurement type. For example, for radius used to determine proximity some unit of distance is needed. We anticipate a corresponding RDF Schema to act as a facility for connecting a resource reference to an application that wishes to use this and the subsequent huml schema. We may decide to include elements from such reference schemata or to import the namespaces of such measurement system standards.

```

<xs:complexType name="MeasurementUnit">
  <xs:annotation>
    <xs:documentation>
      Measurement Unit
      Used to create measurement values.

      This complexType is used to establish the use of
a recognized
      measurement system. Systems of measurement vary
by unit, name
      (for example English units vs metric units) and
measurement type.
      For example, for radius used to determine
proximity some unit of
      distance is needed. We anticipate a corresponding
RDF Schema to
      act as a facility for connecting a resource
reference to an
      application that wishes to use this and the
subsequent huml
      schema. We may decide to include elements from
such reference
      schemata or to import the namespaces of such
measurement
      system standards.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
</xs:complexType>

```

4.2.18 Personality

Human Personality Type

This complexType is used to establish the use of a **Personality** typing system. There are several, and this specification makes no determination as to the validity or value of any such system.

```

<xs:complexType name="Personality" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Personality Type
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
</xs:complexType>

```

4.2.19 Proxemic

Proxemic: Human Space/Time Relationships

Proxemic factors in communication indicate both time and space as well as relative body positions (given some organization of the features of the space in which communication occurs). The huml term **Proxemic** includes physical distance or closeness maintained between individuals, which affect messageTypes such as body heat they give off, odors perceived in social situations, angles of vision they maintain while talking and the like. Derived from proximity, proxemic considerations include:

- fixed feature space (unmovable boundaries, such as divisions within an office building)
- semi-fixed feature space such as furniture
- informal space including
 - personal distance
 - social distance

NOTE: Proxemic elements will fall into two main categories, communication and spatial. Because there is not a significant body of literature supporting these categorizations, it is deferred to the Secondary Base Schema and subsequent huml schema to enumerate and extend.

```

<xs:complexType name="Proxemic" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Proxemic: Human Space/Time Relationships
      Proxemic factors in communication indicate both
time and space as well as
      relative body positions (given some organization
of the features of the
      space in which communication occurs). Includes
physical distance or closeness
      maintained between individuals, which affect
messageTypes such as body heat
      they give off, odors perceived in social
situations, angles of vision they
      maintain while talking and the like. Derived from
proximity, proxemic
      considerations include:
        fixed feature space (unmovable
boundaries, such as
        divisions within an office
building),
        semi-fixed feature space such as
furniture
        informal space including
          personal distance
          social distance
      NOTE: Proxemic elements will fall into two main
categories, communication and
      spatial. Because there is not a significant body
of literature supporting
      these categorizations, it is deferred to the
Secondary Base Schema and
      subsequent huml schema to enumerate and extend.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation><
  <xs:attributeGroup ref="humlCommAtts"/>
  <xs:attributeGroup ref="humlTemporalAtts"/>
</xs:complexType>

```

4.2.20 Semiosis

Semiotic Communication Mode

Semiosis is a meaningful exchange of signs, signals and symbols among cognitive agents.

NOTE: This process is the model of the human communication process upon which HumanML is based. It can be, and we expect that it will be, further enumerated by semiotic types and extended in the Secondary Base Schema and subsequent huml schemata.

```
<xs:complexType name="Semiosis" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Semiotic Communication Mode
      Semiosis is a meaningful exchange of signs,
signals and symbols
      among cognitive agents.

      NOTE: This process is the model of the human
communication
      process upon which HumanML is based. It can be,
and we expect
      that it will be further enumerated by semiotic
types and extended
      in the Secondary Base Schema and subsequent huml
schema.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attributeGroup ref="humlTemporalAtts"/>
  <xs:attributeGroup ref="humlCommAtts"/>
</xs:complexType>
```

4.2.21 Semiote

Cognitive Agent

A **Semiote** is a cognitive agent who participates in meaningful signal exchange among cognitive agents.

NOTE: This element is the actor in the semiotic model of communication. It is comprised of some set of processors capable of emitting,

receiving and responding to signals.

```

<xs:complexType name="Semiote" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Cognitive Agent
      A Semiote is a cognitive agent who participates
in meaningful
      signal exchange among cognitive agents.

      NOTE: This element is the actor in the semiotic
model of communication
      It is set of processors capable of emitting,
receiving and responding
      to signals.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attributeGroup ref="humlCommAtts"/>
</xs:complexType>

```

4.2.22 Sign

Human Sign

A concrete denotation of a specific meaning. Common signs include pictures or drawings, although a human posture like a clenched fist, an outstretched arm, or a hand posed in a "Stop" gesture may also serve as signs. The main difference between a sign and a signal is that a sign has a specific meaning and usually requires training. For example, an ape or dog can be taught to respond consistently and appropriately to signs but teaching them Morse Code is much harder if at all doable. Communicating simple messages swiftly and efficiently, simple signs may be culturally and location-specific, that is, meaningful in a locale (a stop sign) or culture (the Hindu greeting of folded hands).

```

<xs:complexType name="Sign" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Sign
      A concrete denotation of a specific meaning.
Common
      signs include pictures or drawings, although a
human posture
      like a clenched fist, an outstretched arm, or a
hand posed in
      a "Stop" gesture may also serve as signs. The
main difference
      between a sign and a signal is that a sign has a
specific meaning
      and usually requires training. For example, an
ape or dog can be
      taught to respond consistently and appropriately
to signs but
      teaching them Morse Code (a signal) is much
harder if at all doable.
      Signs communicate simple messages swiftly
efficiently, may be culturally
      and location-specific, is, meaningful in a locale
(a stop sign)
      or culture (the Hindu greeting of folded hands).
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attributeGroup ref="humlCommAtts"/>
</xs:complexType>

```

4.2.23 Signal

Human Signal

A huml **Signal** constitutes perceptible change in an environmental factor that can be used to transfer meaning. The basic function of such signals is to attract attention and to transfer meaning. The vocalization of language is a clear example.

```

<xs:complexType name="Signal" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Signal
      A perceptible change
      in an environmental factor
      that can be used to transfer meaning. The basic
      function of such signals is to provide the change
      of a single environmental facto to attract
      attention
      and to transfer meaning. The vocalization of
      language
      is a clear example.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attributeGroup ref="humlTemporalAtts"/>
  <xs:attributeGroup ref="humlCommAtts"/>
</xs:complexType>

```

4.2.24 Symbol

Human Symbol

Any device with which an abstraction can be made. May include written and spoken language as well as visual objects. May include a process of symbolization. May be culturally specific and often used as a means to communicate cultural values. May and often do appear in clusters and depend on one another for meaning and value.

```

<xs:complexType name="Symbol" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Symbol
      Any device with which an abstraction can be made.
      May
      include written and spoken language as well as
      visual
      objects. May include a process of symbolization.
      May be
      culturally specific and often used as a means to
      communicate
      cultural values. May and often do appear in
      clusters and depend
      upon one another for meaning and value.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attributeGroup ref="humlCommAtts"/>
</xs:complexType>

```

4.2.25 Thought

Human Thought

The physiological process of mentation.

NOTE: We are including this complexType **Thought** without any stipulation for how a set of thought elements or types could or should or will be constructed. There are any number of ways this concept might be used, but an accepted definition, which involves the much-disputed concept of what constitutes self-consciousness or awareness in terms other than physiological, is not within our present scope to support or defend.

An example of Thought which could be described as a process from the viewpoint of an observer though perhaps not characterized as coherent awareness or communication would be the brain activity of an autistic person or someone in a coma or even someone asleep.

```

<xs:complexType name="Thought" abstract="true">
  <xs:annotation>
    <xs:documentation>
      Human Thought
      The physiological process of mentation.

      NOTE: We are including this complexType without
any stipulation
for how a set of thought elements or types could
or should or
this concept
might be used, but an accepted definition, which
involves the
much-disputed concept of what constitutes self-
consciousness or
awareness in terms other than physiological, is
not within our present
scope to support or defend.

      An example of thought which could be described as
a process
from the viewpoint of an observer but could not
be characterized
as coherent awareness or communication would be
the brain activity
of an autistic person or someone in a coma or
even someone in sleep.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attribute ref="intensity"/>
  <xs:attributeGroup ref="humlCommAtts"/>
  <xs:attributeGroup ref="humlIdentifierAtts"/>
  <xs:attributeGroup ref="humlTemporalAtts"/>
</xs:complexType>

```

4.3 simpleTypes

This specification contains two simpleTypes.

4.3.1 Locator

Location

A simple set of relative positional locations on an object can be referred to with the huml term **locator**.

```
<xs:simpleType name="Locator">
  <xs:annotation>
    <xs:documentation>
      Location
      A simple set of names of locations on an object.
    </xs:documentation><
  <xs:appinfo>NONE</xs:appinfo>
</xs:annotation>
  <xs:restriction base="xs:string">
    <xs:enumeration value="upper"/>
    <xs:enumeration value="lower"/>
    <xs:enumeration value="back"/>
    <xs:enumeration value="front"/>
    <xs:enumeration value="inner"/>
    <xs:enumeration value="outer"/>
    <xs:enumeration value="left"/>
    <xs:enumeration value="right"/>
    <xs:enumeration value="top"/>
    <xs:enumeration value="bottom"/>
  </xs:restriction>
</xs:simpleType>
```

4.3.2 range

range

The attribute **range** is used for establishing the strength or intensity values of elements such as emotions.

```
<xs:simpleType name="range">
  <xs:restriction base="xs:decimal">
    <xs:minInclusive value="0"/>
    <xs:maxInclusive value="1"/>
  </xs:restriction>
</xs:simpleType>
```

4.4 attributeGroups

This set of attributeGroups is used by many of our complexTypes.

4.4.1 age

age

This huml attributeGroup **age** is a set of attributes for documenting or determining the age of a human.

```
<xs:attributeGroup name="age">
  <xs:annotation>
    <xs:documentation>
      Age
      This is a set of attributes for documenting or
determining
      the age of a human.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attribute name="dateOfBirth" type="xs:date"
use="required"/>
  <xs:attribute name="dateOfDeath" type="xs:date"
use="required"/>
</xs:attributeGroup>
```

4.4.2 gender

gender

This huml term **gender** is a set of attributes for documenting the gender of a human.

NOTE: Needs code list for values, e.g., male, female, hemaphrodite, which is deferred to Secondary Base Schema.

```

<xs:attributeGroup name="gender">
  <xs:annotation>
    <xs:documentation>
      Gender
      This is a set of attributes for documenting
      the gender of a human.

      NOTE: Needs code list for values, eg, male,
      female, hemaphrodite.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo><
    </xs:annotation>
    <xs:attribute name="genderAtBirth"
type="xs:string"/>
    <xs:attribute name="currentGender"
type="xs:string"/>
    <xs:attribute name="impersonator" type="xs:boolean"/>
  </xs:attributeGroup>

```

4.4.3 humlCommAtts

Human Communication Attributes

This huml term **humlCommAtts** is used for identifier uniqueness and huml element names. It is used to indicate use in communication.

```

<xs:attributeGroup name="humlCommAtts">
  <xs:annotation>
    <xs:documentation>
      Human Communication Attributes
      This is used for identifier uniqueness and huml
      element names. It is used to indicate use in
      communication.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attribute name="id" type="xs:ID" use="required"/>
  <xs:attribute name="humlName" type="xs:string" use="required"/>
</xs:attributeGroup>

```


4.4.4 humlIdentifierAtts

Human Identifier Attributes

This huml term **humlIdentifierAtts** is used for identifier uniqueness and huml element names. It is used to indicate use in identifying characteristics.

```

<xs:attributeGroup name="humlIdentifierAtts">
  <xs:annotation>
    <xs:documentation>
      Human Identifier Attributes
      This is used for identifier uniqueness and huml
element
      names. It is used to indicate use in identifying
      characteristics.
    </xs:documentation>
  <xs:appinfo>NONE</xs:appinfo>
</xs:annotation>
  <xs:attribute name="id" type="xs:ID" use="required"/>
  <xs:attribute name="humlName" type="xs:string"
use="required"/>
</xs:attributeGroup>

```

4.4.5 humlTemporalAtts

Human Temporal Attributes

This hum term **humlTemporalAtts** is used for identifier uniqueness and huml element names. It is used to indicate specified periods of time from one date and/or time to a later date and/or time.

```

<xs:attributeGroup name="humlTemporalAtts">
  <xs:annotation>
    <xs:documentation>
      Human Temporal Attributes
      This is used for identifier uniqueness and huml
      element names. It is used to indicate specified
periods
      of time from one date and/or time to a later date
      and/or time.
    </xs:documentation>
    <xs:appinfo>NONE</xs:appinfo>
  </xs:annotation>
  <xs:attribute name="id" type="xs:ID" use="required"/>
  <xs:attribute name="humlName" type="xs:string"
use="required"/>
  <xs:attribute name="fromDate" type="xs:dateTime"
use="required"/>
  <xs:attribute name="toDate" type="xs:dateTime"
use="required"/>
</xs:attributeGroup>

```

4.4.6 physicalDescriptors

Physical Descriptors

This huml term **physicalDescriptors** is a set of attributes for a physical description of a human.

NOTE: The height and weight types should be numbers but have to allow for different measurement systems.

NOTE: The hair color, eyeColor, race or build attributes need code lists for values.

NOTE: Scars, Marks and Tattoos should be a complex type for graphic, location, body part.

NOTE: These issues are deferred to the Human Physical Characteristics Description Markup Language.

```

<xs:attributeGroup name="physicalDescriptors">
  <xs:annotation>
    <xs:documentation>
      Physical Descriptors
      This is a set of attributes for a physical
description of a human.

      NOTE: The height and weight types should be
numbers but have to allow
      for different measurement systems.

      NOTE: The race, hair color, eyeColor, build
attributes
      need code lists for values.

      NOTE: Scars, Marks and Tattoos should be a
complex type for graphic,
      location, body part
    </xs:documentation>
  <xs:appinfo>NONE</xs:appinfo>
</xs:annotation>
<xs:attribute name="height" type="xs:string"/>
<xs:attribute name="weight" type="xs:string"/>
<xs:attribute name="race" type="xs:string"/>
<xs:attribute name="hairColor" type="xs:string"/>
<xs:attribute name="eyeColor" type="xs:string"/>
<xs:attribute name="build" type="xs:string"/>
<xs:attribute name="scarsMarksTattoos" type="xs:string"/>
</xs:attributeGroup>

```

Appendix A. OASIS HumanMarkup Technical Committee

The following individuals helped in the formulation of this document:

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Non-Normative

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