NDRs for UnitsML (version ~~0.4.3~~1.0) – Rules only

2.1 Relations to standards

[STA1] The UnitsML schema design rules MUST be based on the W3C XML Schema Recommendations: XML Schema Part 1: Structures and XML Schema Part 2: Datatypes.

[STA2] The UnitsML schema MUST be based on the W3C suite of technical specifications holding recommendation status.

2.2 Overall schema structure

[GXS1 UnitsML] The UnitsML Schema MUST conform to the following physical layout as applicable:
```
<!-- ======= XML Declaration======== -->
<?xml version="1.0" encoding="UTF-8"?>
<!-- ===== Copyright Notice ===== -->
      Required OASIS full copyright notice.
<!-- ===== xsd:schema Element With Namespaces Declarations ===== -->
xsd:schema element to include version attribute and namespace declarations in the
following order:
      xmlns:xsd
      Target namespace
      Default namespace
      Unqualified Datatypes
      Qualified Datatypes
      Identifier Schemes
      Code Lists
      Attribute Declarations – elementFormDefault="qualified"
      attributeFormDefault="unqualified"
      Version Attribute
<!-- ===== Imports ===== -->
      all incorporated schemas
<!-- ===== Root Element ===== -->
      Root Element Declaration
      Root Element Type Definition
<!-- ===== Element Declarations ===== -->
      alphabetized order all element declarations
<!-- ===== Element Type Definitions ===== -->
      alphabetized order all complex type definitions
<!-- ===== Attribute Type Definitions ===== -->
      alphabetized order all attribute (group) definitions
<!-- ===== Simpletype Type definitions ===== -->
       all simple type definitions <!-- ===== Copyright Notice ===== -->
      Required OASIS full copyright notice.
```

[MDC2] Mixed content MUST NOT be used except where contained in an `xsd:documentation` element.

2.3 Reusability

[ELD2] All element declarations MUST be global

2.4 Namespaces

[NMS1] The UnitsML schema MUST have a namespace declared using the `xsd:targetNamespace` attribute.

[NMS2] Every UnitsML schema version MUST have its own unique namespace.

[NMS3] The UnitsML namespaces MUST only contain the UnitsML schema.

[NMS4] The namespace names for UnitsML Schemas holding committee draft status MUST be of the form:
`urn:oasis:names:tc:unitsml:schema:<subtype>:<document-id>`

[F] The namespace names for UnitsML Schemas holding OASIS Standard status MUST be of the form:
`urn:oasis:names:specification:unitsml:schema:<subtype>:<document-id>`

[NMS6] A published UnitsML namespace MUST never be changed.

[SSM2] A schema in a UnitsML namespace that is dependent upon type definitions or element declarations defined in another namespace MUST only import the document schema from that namespace.

2.5 Versioning

[VER1] Every UnitsML schema major version committee draft MUST have an RFC 3121 conform `document-id` of the form:
`<name>-<major>.0[.<revision>]`

[VER2] Every UnitsML schema major version OASIS Standard MUST have an RFC3121 conform `document-id` of the form:
`<name>-<major>.0`

[VER3] Every minor version release of a UnitsML schema draft MUST have an RFC3121 conform `document-id` of the form:
`<name>-<major >.<non-zero>[.<revision>]`

[VER4] Every minor version release of a UnitsML schema OASIS Standard MUST have an RFC 3121 document-id of the form
`<name>-<major >.<non-zero>`

[VER5] For UnitsML Minor version changes `<name>` MUST not change,

[VER6] Every UnitsML Schema major version number MUST be a sequentially assigned, incremental number greater than zero.

[VER7] Every UnitsML Schema minor version number MUST be a sequentially assigned, incremental non-negative integer.

2.6 General Naming Rules

[GNR1] UnitsML element, attribute, and type names MUST consist of at least one word that MUST be in the English language, as found in the Oxford English Dictionary (OED) (Latest Ed.). Where both American and English spellings of the same word are provided, the American spelling MUST be used.

[GNR4] UnitsML XML element, attribute, and simple and complex type names MUST NOT use acronyms, abbreviations, or other word truncations, except those in the list of exceptions published in Appendix A.

[GNR5] Acronyms and abbreviations MUST only be added to the UnitsML approved acronym and abbreviation list after careful consideration for maximum understanding and reuse.

[GNR6] The acronyms and abbreviations listed in Appendix A MUST always be used.

[GNR7-UnitsML] UnitsML XML element and type names MUST be in singular form unless the concept itself is plural. The sole exceptions to this rules is for the naming of the "Conversions" and "RootUnits" elements.

[GNR8-UnitsML] The UpperCamelCase (UCC) convention MUST be used for naming elements and complex types.

[GNR9-UnitsML] The lowerCamelCase (LCC) convention MUST be used for naming attributes and simple types.

[GNR10] Acronyms and abbreviations at the beginning of an attribute declaration MUST appear in all lower case. All other acronym and abbreviation usage in an attribute declaration MUST appear in upper case.

[GNR11] Acronyms MUST appear in all upper case for all element declarations and type definitions.

2.7 Type Naming Rules

[GTD1] All types MUST be named.

[GTD2-UnitsML] The xsd:anyType MUST NOT be used. Every attribute has an assigned type.

[UnitsML-GTD1] The UpperCamelCase (UCC) convention MUST be used for naming types used in elements.

[UnitsML-GTD2] The lowerCamelCase (LCC) convention MUST be used for naming types used in attributes.

2.8 Element Declarations

[ELD6] The code list xsd:import element MUST contain the namespace and schema location attributes.

[ELD7] Empty elements MUST not be declared.

[ELD9-UnitsML] The xsd:any element MUST NOT be used. The single exception to this rule is within the SymbolType complex type which uses xsd:any on purpose.

2.9 Attribute Declaration

[ATD6] Each xsd:schemaLocation attribute declaration MUST contain a resolvable URL.

[ATD7] The xsd built in nillable attribute MUST NOT be used for any UnitsML declared element.

[ATD8] The xsd:anyAttribute MUST NOT be used.

2.10 General Schema Rules

[GXS3] Built-in XSD Simple Types SHOULD be used wherever possible.

[GXS4] All W3C XML Schema constructs in the UnitsML schema MUST contain the following namespace declaration on the XSD schema element:
xmlns:xsd="http://www.w3.org/2001/XMLSchema"

[GXS5] The xsd:substitutionGroup feature MUST NOT be used.

[GXS7] xsd:notation MUST NOT be used.

[GXS8] The xsd:all element MUST NOT be used.

[GXS10] The xsd:include feature MUST NOT be used.

2.11 Instance Documents

[RED1] Every UBL instance document must use the global element defined as the root element in the schema as its root element.

[ELD1] Each UBL:DocumentSchema MUST identify one and only one global element
declaration that defines the document ccts:AggregateBusinessInformationEntity being conveyed in the
Schema expression. That global element MUST include an xsd:annotation child
element which MUST further contain an xsd:documentation child element
that declares "*This element MUST be conveyed as the root element*
in any instance document based on this Schema expression."

[IND1] All UnitsML instance documents MUST validate to the UnitsML schema.

[IND2] All UnitsML instance documents MUST always identify their character encoding with the XML declaration.

[IND3] In conformance with ISO/IETF/ITU/UNCEFACT Memorandum of Understanding Management Group (MOUMG) Resolution 01/08 (MOU/MG01n83) as agreed to by OASIS, UnitsML XML SHOULD be expressed using UTF-8.