Circular Economy Ontology Network (CEON) - Subset of the QUDT Schema

Metadata

IRI

http://w3id.org/CEON/ontology/qudt/

Title

Circular Economy Ontology Network (CEON) - Subset of the QUDT Schema

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Version Iri

http://w3id.org/CEON/ontology/qudt/2.1/

Preferred Namespace Prefix

qudt

Preferred Namespace Uri

http://qudt.org/2.1/schema/qudt#

Description

The QUDT, or "Quantity, Unit, Dimension and Type" schema defines the base classes properties, and restrictions used for modeling physical quantities, units of measure, and their dimensions in various measurement systems. The goal of the QUDT ontology is to provide a unified model of, measurable quantities, units for measuring different kinds of quantities, the numerical values of quantities in different units of measure and the data structures and data types used to store and manipulate these objects in software.

Except for unit prefixes, all units are specified in separate vocabularies. Descriptions are provided in both HTML and LaTeX formats. A quantity is a measure of an observable phenomenon, that, when associated with something, becomes a property of that thing; a particular object, event, or physical system.

A quantity has meaning in the context of a measurement (i.e. the thing measured, the measured value, the accuracy of measurement, etc.) whereas the underlying quantity kind is independent of any particular measurement. Thus, length is a quantity kind while the height of a rocket is a specific quantity of length; its magnitude that may be expressed in meters, feet, inches, etc. Or, as stated at Wikipedia, in the language of measurement, quantities are quantifiable aspects of the world, such as time, distance, velocity, mass, momentum, energy, and weight, and units are used to describe their measure. Many of these quantities are related to each other by various physical laws, and as a result the units of some of the quantities can be expressed as products (or ratios) of powers of other units (e.g., momentum is mass times velocity and velocity is measured in distance divided by time).

Classes

Quantity [c]

IRI	http://qudt.org/schema/qudt/Quantity
Is Defined By	http://qudt.org/2.1/schema/qudt
Description	A **quantity** is the measurement of an observable property of a particular object, event, or physical system. A quantity is always associated with the context of measurement (i.e. the thing measured, the measured value, the accuracy of measurement, etc.) whereas the underlying **quantity kind** is independent of any particular measurement. Thus, length is a quantity kind while the height of a rocket is a specific quantity of length; its magnitude that may be expressed in meters, feet, inches, etc. Examples of physical quantities include physical constants, such as the speed of light in a vacuum, Planck's constant, the electric permittivity of free space, and the fine structure constant. In other words, quantities are quantifiable aspects of the world, such as the duration of a movie, the distance between two points, velocity of a car, the pressure of the atmosphere, and a person's weight; and units are used to describe their numerical measure. Many **quantity kinds** are related to each other by various physical laws, and as a result, the associated units of some quantity kinds can be expressed as products (or ratios) of powers of other quantity kinds (e.g., momentum is mass times velocity and velocity is defined as distance divided by time). In this way, some quantities can be calculated from other measured quantities using their associations to the quantity kinds in these expressions. These quantity kind relationships are also discussed in dimensional analysis. Those that cannot be so expressed can be regarded as "fundamental" in this sense. A quantity is distinguished from a "quantity kind" in that the former carries a value and the latter is a type specifier.
Restriction	has quantity kind [op] only Quantity [c] quantity value [op] only Quantity [c] has quantity kind [op] *min* 0 Quantity [c]

Quantity Kind [c]

IRI	http://qudt.org/schema/qudt/QuantityKind
Is Defined By	http://qudt.org/2.1/schema/qudt
Description	A Quantity Kind is any observable property that can be measured and quantified numerically. Familiar examples include physical properties such as length, mass, time, force, energy, power, electric charge, etc. Less familiar examples include currency, interest rate, price to earning ratio, and information capacity. A **Quantity Kind** is any observable property that can be measured and quantified numerically. Familiar examples include physical properties such as length, mass, time, force, energy, power, electric charge, etc. Less familiar examples include currency, interest rate, price to earning ratio, and information capacity.
In Range Of	has quantity kind [op]

Quantity Value [c]

IRI	http://qudt.org/schema/qudt/QuantityValue
Description	A Quantity Value expresses the magnitude and kind of a quantity and is given by the product of a numerical value n and a unit of measure U. The number multiplying the unit is referred to as the numerical value of the quantity expressed in that unit.
In Range Of	quantity value [op]

Unit [c]

IRI	http://qudt.org/schema/qudt/Unit
Is Defined By	http://qudt.org/2.1/schema/qudt
Description	A unit of measure, or unit, is a particular quantity value that has been chosen as a scale for measuring other quantities the same kind (more generally of equivalent dimension). For example, the meter is a quantity of length that has been rigorously defined and standardized by the BIPM (International Board of Weights and Measures). Any measurement of the length can be expressed as a number multiplied by the unit meter. More formally, the value of a physical quantity Q with respect to a unit (U) is expressed as the scalar multiple of a real number (n) and U, as (Q = nU).
In Range Of	has unit [op]
Restriction	has quantity kind [op] only Unit [c]

Object Properties

has quantity kindhas quantity kind [op]

IRI	http://qudt.org/schema/qudt/hasQuantityKind
Is Defined By	http://qudt.org/2.1/schema/qudt
Range	Quantity Kind [c]

has unithas unit op

IRI	http://qudt.org/schema/qudt/hasUnit
Is Defined By	http://qudt.org/2.1/schema/qudt
Description	• This property relates a system of units with a unit of measure that is either a) defined by the system, or b) accepted for use by the system and is convertible to a unit of equivalent dimension that is defined by the system. Systems of units may distinguish between base and derived units. Base units are the units which measure the base quantities for the corresponding system of quantities. The base units are used to define units for all other quantities as products of powers of the base units. Such units are called derived units for the system. • This property relates a system of units with a unit of measure that is either a) defined by the system, or b) accepted for use by the system and is convertible to a unit of equivalent dimension that is defined by the system. Systems of units may distinguish between base and derived units. Base units are the units which measure the base quantities for the corresponding system of quantities. The base units are used to define units for all other quantities as products of powers of the base units. Such units are called derived units for the system.
Range	Unit c

quantity value op

IRI	http://qudt.org/schema/qudt/quantityValue
Is Defined By	http://qudt.org/2.1/schema/qudt
Range	Quantity Value c

Datatype Properties

numerical value dp

IRI	http://qudt.org/schema/qudt/numericalValue
Range	xsd:double

Namespaces

:

http://qudt.org/2.1/schema/qudt#

dc

http://purl.org/dc/elements/1.1/

dcterms

http://purl.org/dc/terms/

owl

http://www.w3.org/2002/07/owl#

prov

http://www.w3.org/ns/prov#

qudt

http://qudt.org/schema/qudt/

rdf

http://www.w3.org/1999/02/22-rdf-syntax-ns#

rdfs

http://www.w3.org/2000/01/rdf-schema#

vann

http://purl.org/vocab/vann/

xsd

http://www.w3.org/2001/XMLSchema#

Legend

c	Classes
op	Object Properties
dp	Datatype Properties