**O30 determined position (was determined by)**

Domain:

S23 Position Measurement

Range:

E94 Space Primitive

Subproperty of:

S4 Observation: O16 observed value (value was observed by): E1 CRM Entity

Quantification:

many to many (0,n:0,n)

Scope note:

This property associates an instance of S23 Position Measurement with the instance of E94 Space Primitive which is the result of that measurement. The instance of E94 Space Primitive approximates the place occupied by the entity whose position is being measured.

Examples:

* The measurement of the position of the Titanic by captain Smith after hitting an iceberg (S23) *O30 determined position* 41°44′N 50°24′W (E94) [This was quickly measured based on the distance travelled since the previous known location] (Tikkanen, 2022)
* The measurement of the position of the Titanic by officer Joseph G. Boxhall after the initial distress signal was sent (S23) *O30 determined position* 41°46′N 50°14′W (E94) [This was measured with more precision and revised the original position] (Tikkanen, 2022)
* The measurement of the position of the Titanic by Robert Ballard after the Titanic ship-wreck was found (S23) *O30 determined position* 41°43′32″N 49°56′49″W (E94) ('Wreck of the Titanic', Wikipedia, 2022)

In First Order Logic:

Oxx1(x,y) ⇒ S23(x)

Oxx1(x,y) ⇒ E94(y)

**O31 has validity time-span (is time-span validity for)**

Domain:

S23 Position Measurement

Range:

E52 Time-Span

Subproperty of:

E2 Temporal Entity: P4 has time-span (is time-span of): E52 Time-Span

Quantification:

many to one, necessary (1,1:0,n)

Scope note:

This property associates an instance of S23 Position Measurement with the instance of E53 Time-Span for which the measurement is valid. No inferences can be made in relation to the validity of the measurement outside this time-span despite the fact that some measured entities are relatively stable and their positions may remain the same after the measurement. The time-span of validity should fall within (*P86 falls within (contains)*) the overall time-span *(P4 has time-span (is time-span of)* of the process of measurement.

Examples:

* The measurement of the position of the Titanic by captain Smith after hitting an iceberg (S23) *O31 has validity time-span* from 15 April 1912 00:15 to 15 April 1912 00:20 (E52) [This was only valid while the position was being re-measured] (Tikkanen, 2022)
* The measurement of the position of the Titanic by officer Joseph G. Boxhall after the initial distress signal was sent (S23) *O31 has validity time-span* from 15 April 1912 00:20 to 15 April 1912 02:17 (E52) [This was valid after the position was re-measured with more precision and was the measured position of the ship until the final distress signal was sent] (Tikkanen, 2022)
* The measurement of the position of the Titanic by Robert Ballard after the Titanic ship-wreck was found (S23) *O31 has validity time-span* 1 September 1985 12:48 (E52) ('Wreck of the Titanic', Wikipedia, 2022)

In First Order Logic:

Oxx2(x,y) ⇒ S23(x)

Oxx2(x,y) ⇒ E52(y)

Oxx2(x,y) ⇒ P4(x,z) ) ∧ P86(y,z)

**O32 measured position of (was located by)**

Domain:

S23 Position Measurement

Range:

S15 Observable Entity

Subproperty of:

S4 Observation: O8 observed (was observed by): S15 Observable Entity

Quantification:

many to one, necessary (1,1:0,n)

Scope note:

This property connects an instance of S23 Position Measurement with the instance of S15 Observable Entity whose position is being measured.

Examples:

* The measurement of the position of the Titanic by captain Smith after hitting an iceberg (S23) *O32 measured position of* the Titanic (E22) (Tikkanen, 2022)
* The measurement of the position of the Titanic by officer Joseph G. Boxhall after the initial distress signal was sent (S23) *O32 measured position of* the Titanic (E22) (Tikkanen, 2022)
* The measurement of the position of the Titanic by Robert Ballard after the Titanic ship-wreck was found (S23)  *O32 measured position of* the Titanic (E22) ('Wreck of the Titanic', Wikipedia, 2022)

In First Order Logic:

Oxx3(x,y) ⇒ S23(x)

Oxx3(x,y) ⇒ S15(y)

For completion examples for S23 Position Measurement:

**S23 Position Measurement**

* the measurement of the position of the Titanic by captain Smith after hitting an iceberg (S23) (Tikkanen, 2022)
* the measurement of the position of the Titanic by officer Joseph G. Boxhall after the initial distress signal was sent (S23) (Tikkanen, 2022)
* the measurement of the position of the Titanic by Robert Ballard after the Titanic ship-wreck was found (S23) ('Wreck of the Titanic', Wikipedia, 2022)