# 531: Observable Entity

MD presented his HW.

Summary of proposals put forth:

* alter the definition of S4 Observation (for the proposed definition see [below](#_Proposed_definition_for))
  + NOT (S4 Observation IsA E13 Attribute Assignment)
  + Scope-note of S4 Observation redrafted
  + deprecation of properties O9 observed property type and O16 observed value
  + introduction of new property Oxx observed Situation [D: S4 Observation, R: Sxx Observable Situation]
* redrafting of S15 Observable Entity (for the proposed definition see [below](#_Proposed_definition_for_1))

## Proposed definition for S4 Observation

**S4 Observation**

Subclass of:

Superclass of: [S21](about:blank) Measurement

[S19](about:blank) Encounter Event

Scope note: This class comprises the activity of gaining scientific knowledge about particular states of physical reality through empirical evidence, experiments and measurements.

We define observation in the sense of natural sciences, as a kind of human activity: at some place and within some time-span, certain physical things and their behavior and interactions are observed by human sensory impression, and often enhanced by tools and measurement devices.

Observed situations or dimensions may pertain to properties confined to a single instance of S15 Observable Entity or pertain to constellations of multiple instances and relations between them, in particular distances.

The output of the internal processes of measurement devices that do not require additional human interaction are in general regarded as part of the observation and not as additional inference. Primary data from measurement devices are regarded in this model to be results of observation and can be interpreted as propositions believed to be true within the (known) tolerances and degree of reliability of the device.

Measurements and witnessing of events are special cases of observations. Observations result in a belief about certain propositions to hold at a time within the time-span of observation. In this model, the degree of confidence in the observed properties is regarded to be “true” by default, but could be described differently by adding a property *P3 has note* to an instance of S4 Observation.

Observations represent the transition between reality and propositions in the form of instances of a formal ontology, and can be subject to data evaluation from this point on. For instance, detecting an archaeological site on satellite images is not regarded as an instance of S4 Observation, but as an instance of S6 Data Evaluation. Rather, only the production of the images is regarded as an instance of S4 Observation.

Examples:

* The observation (S4) of the density (S9) of the X-Ray image of cupid's head from the painting “Cupid complaining to Venus” (S15) as “high density” (E1), on the 19th of March 1963 (Cranach Digital Archive, http://lucascranach.org/UK\_NGL\_6344).
* The observation (S4) of visible light absorption (S9) of the painting “Cupid complaining to Venus” (S15) as “having red pigment”, in 2015 (Foister, S., 2015).
* Oxxx observed situation (was observed by): Observable Situation

In First Order Logic:

S4(x) ⊃ E13(x)

Properties:

[O8](about:blank) observed entity (was observed by): [S15](about:blank) Observable Entity

## Proposed definition for S15 Observable Entity

**S15 Observable Entity**

Subclass of: [E1](https://docs.google.com/document/d/147W_DS7lmyL2cQ2yqVmQ8YcShTNZnFH_/edit#heading=h.1fob9te) CRM Entity

Superclass of: E5 Event

O10 Material Substantial

Scope note:

This class comprises instances of E5 Event and O10 Material Substantial, i.e. items or phenomena, such as physical things, their behavior, current state and interactions or events that can be observed by human sensory impression as well as enhanced by using tools and measurement or detection devices.

In order to be observable, instances of E5 Event must consist of some interaction or action of material substance. In some cases, the confinement of the event itself, such as a flash, a car stopping etc. marks the observation. In other cases, such as the situation of a car passing by a certain object, the event of observing itself, i.e. noticing the sight of it, a light emission, marks a situation in course taken by the car.

Examples:

* The domestic goose from Guangdong/1/1996 (H5N1) (S15) that was identified in 1996 in farmed geese in southern China as circulating highly pathogenic H5N1 (Wan, 2012) .
* The crow flight he observed over the waters of Minamkeak Lake during the summer of 2015
* The eruption of Krakatoa volcano at Indonesia in 1883 (F.A.R., Archibald and Whipple, 1888).
* The density of the cupid head area in the X-Ray of the painting “Cupid complaining to Venus” (http://lucascranach.org/UK\_NGL\_6344).

 In First Order Logic:

S15(x) ⊃ E1(x)

Properties:

[O12](https://docs.google.com/document/d/147W_DS7lmyL2cQ2yqVmQ8YcShTNZnFH_/edit#heading=h.tyjcwt) has dimension (is dimension of): [E54](https://docs.google.com/document/d/147W_DS7lmyL2cQ2yqVmQ8YcShTNZnFH_/edit#heading=h.3dy6vkm) Dimension

## Discussion points:

**MD**: Observable Entities should be determined on the basis of some rule of thumb. Any instance of Measurement measures a Situation. Proposed to postpone deciding on [issue 388](http://www.cidoc-crm.org/Issue/ID-388-reference-to-the-measurements-of-position-of-things), until after we have had some concrete understanding of the relation between Situation and measurement types.

**SdS**: scope note of S15 Observable Entity refers to a “confinement of the event”. Is this confinement spatial, temporal or both? This part needs to be reworked to evoke the right kind of confinement.

**TV**: is not confident that we have defined Sxx Situation well enough (in terms of scope-note, properties linking from it, examples) to be using it in other places?

**SdS**: in agreement, I11 Situation in CRMinf is poorly defined. MD’s HW (Oxx observed situation: Sxx Observable Situation) is a subset thereof. A particular instance of I11 Situation that can be subject of measurements and observations. I11 refers to persisting value ranges, the subset we’re talking about relates to measurable/observable value ranges.

### What is the appropriate model for Sxx Observable Situation to be incorporated in? CRMsci or CRMinf?

**MD**: CRMinf might be more appropriate

**OE**: Observable Situation is highly relevant for the documentation of performing arts. The documented “objects” are of a different nature compared to the museum objects and the restoration activities performed on them –that form the basis of CRMsci. Does not seem very fitting for CRMsci.   
The context of an Observation must be included in the documentation system. This requires Observable Situation to be properly defined. In the case documenting theatrical productions, the Observable Situation would help provide context on the thing documented: one particular performance; a series of performances during once season; multiple series of performances spanning over multiple seasons etc.

**MD**: Apart from the treaty on what an observable entity is, no scope-note available at the moment for Observable Situation. His proposal is about implementing constraints on the I11 Situation (isA I4 Proposition Set). He needs help on how to confine the Proposition Set, possibly in the form of examples. By providing an adequate definition for Observable Situation we can start working towards reconciling Observations (simple and multiple) with Attribute Assignment.

**SdS**: We need to start by finding examples to determine the rules for inclusion in Observable Situation. If Observable Situation is to go to CRMinf, he could start writing a definition for an new Ixx class. But it won’t be made part of the CRMinf next release yet. He will attempt writing a definition for its linking properties [Jxx observed situation (was observed by) and Jxx held at least for]

**OE**: examples from the performative arts.

**DH**: provided the example of Monet’s painting “Soleil levant” which marks the beginning of Impressionism.

**MD**: the examples do not to be referenced for the time being, they serve to help us identify the defining aspects of Observable Situation. What we’re interested in, is types of events –not an actual event that was documented in such and such manner.

### Representing complex constructs in CRM

**GH**: the more we go into proposition sets that we ‘re using in CRMinf, the more we see that the relevant concepts are poorly documented in RDF. Maybe we should focus on finding a solution to represent these things.

**SdS**: NC mentioned that RDF-Star is a step in that direction.

**OE**: there is a common practice of using named graphs that must be taken into consideration, but it should not drive the models we’re working with. Can we just start thinking whether we’ll have to change from RDF? and should this be the case, what are we going to express the CRM in? Even TEI, which is XML-based, does not consider the XML to necessary for its expression. They are not going to abandon it any time soon, but they are not bound to it for eternity. There is an analogy with CIDOC CRM and RDF.

**MD**: We need an FOL equivalent for named graphs.

**CEO**: one cannot make an FOL representation without using a name for a set of propositions. We should not swap to a second order logic, or higher level still.

## Decision:

* Pursue this issue further by attempting to define a more general concept of Observation and see how that translates into defining Observable Situations in CRMinf.
* Postpone 388.

**HW**: SdS definitions for I12 Observable Situation, Jxx observed situation, Jxx held at least for

**HW**: OE provide examples from the performing arts, MD categorical examples.