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# Context is Highly Contextual!

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# Context is highly contextual!

**EuroSSC 2009 panel on Future Internet and  
Context-awareness:**

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# Context

The set of facts or circumstances within a surrounding environment

**For example,**

A physical context would include a set of **objects** and **events** within a region of **space** and **time**

... also known as a **situation** (or situational context)

**To effectively represent physical context,**

We must have a way of modeling **space, time, objects,**  
and **events**

... in addition, we must model **sensors** and  
**observations** used for detecting objects and events

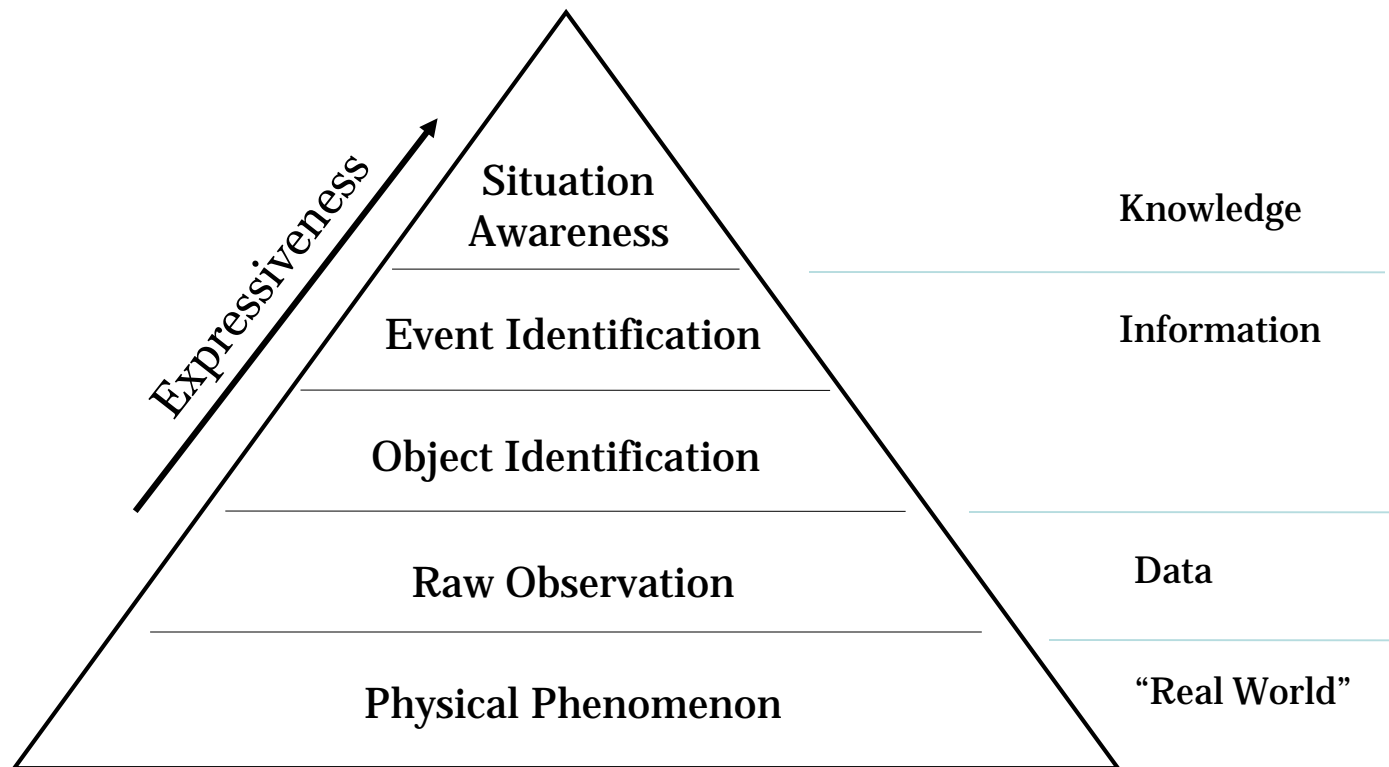
## **There is current research on modeling each of these domains with ontologies**

- Space           W3C Geospatial Incubator Group
- Time            W3C OWL-Time Ontology
- Objects        Internet of Things
- Events         EventWeb (Ramesh Jain)
  
- Sensors and Observations  
                  W3C Semantic Sensor Networks  
                  Incubator Group

## **In order to represent physical context, there is a data-to-knowledge progression from**

- real-world phenomena (of multiple types), to
- raw observational data (of multiple layers), to
- object and event information (of degrees of complexity), to
- situational context knowledge

# Situational Context Pyramid





# Context for specifying a context: informational, sensor, physical world, human

how do you construct for situations of varying complexity such as:

- event in general (starting with spatial, temporal and thematic properties)
- events for which you have multimodal information (and various levels of abstractions)
- events in the context of ambient intelligence (such as when sensors have observed what a human is doing and has an idea of his/her activity)
- events for which there is both computerized digital information and perception (such as those captured by sensors) and human perception (potentially with nuance of languages and associated social context including emotions, sentiments, etc.) and cognition
- above with history

- Kno.e.sis project on Semantic Sensor Web:  
<http://knoesis.wright.edu/projects/sensorweb/>
- W3C, Time Ontology in OWL, <http://www.w3.org/TR/owl-time/>
- W3C, Geospatial Incubator Group, <http://www.w3.org/2005/Incubator/geo/>
- Amit Sheth, Cory Henson, and Satya Sahoo, "Semantic Sensor Web," IEEE Internet Computing, July/August 2008, p. 78-83.  
<http://knoesis.wright.edu/library/resource.php?id=00311>