

Philosophy

Theory

Practice

Background

The human brain constantly organizes incoming information into something meaningful and conceptualizes it into something known. This is how we bring meaning to our experiences.

The ambiguous duck-rabbit figure published in Die Fliegende Blätter 1892 is a classic illustration of our brains' conceptualizing abilities: looking at the picture you see either a rabbit or a duck, but never both at the same time or nothing. The Capish Holon was developed as a means to process and conceptualize complex data.



wikipedia

Important Foundations

Concept

Steven Pinker clarified the neurological basis for concepts in our brains which is the foundation of Capish Holons. A concept can be described as a mental representation of something.

Holon

Arthur Koestler & Ken Wilber defined and suggested the holon as a stable element within a scientific area. A holon is something that is simultaneously a whole and a part.

Ontology

Parmenides proposed an "ontological characterization of the fundamental nature of reality". Ontology is a philosophical term for dealing with questions concerning what entities exist and how such entities may be grouped and related.

Classification

The "Dewey Decimal System" is a library classification system and was selected for defining a scientific area/knowledge domain of a Capish Holon.

Definition of a Capish Holon

The Capish Holon is an artificial representation of the philosophical concept Holon. A Capish Holon is

- a concept - understandable and meaningful by itself
- classified based on content
- an information carrier - groups, fields, values and attributes
- related to other Holons - directly or indirectly
- a building block in the ontology
- system independent

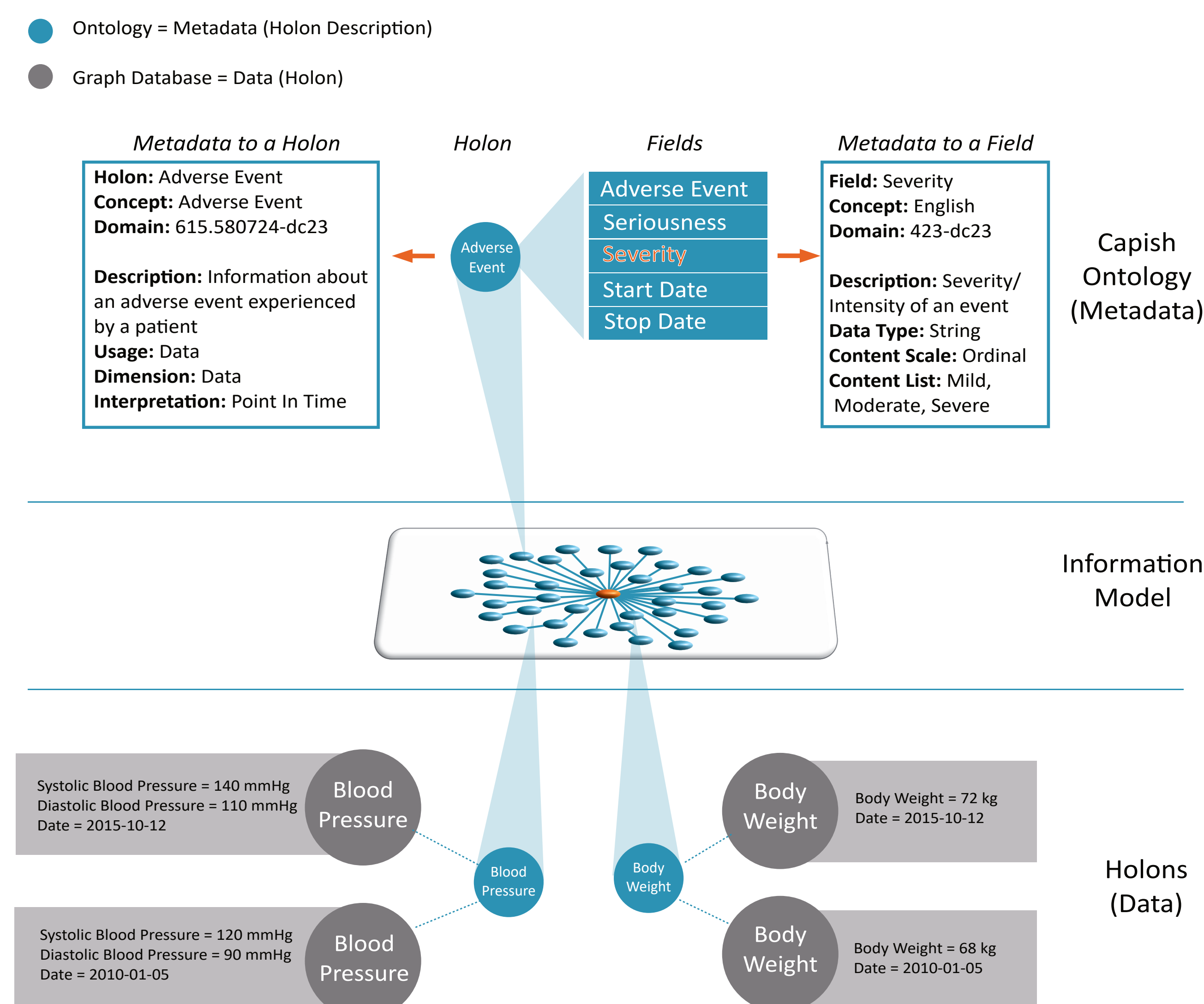


The Holon in a Context

The Capish Holon (Holon) collects data corresponding to a common and well-known concept. Both data and metadata are stored in a Holon which makes it understandable by itself. Example of Holons are Adverse Event, Body Weight and Blood Pressure.

Holons connected with relations create a mind map of information that is interpretable by both human and a computer.

The Capish Ontology describes the structure of the metadata and contains all the rules for the information model. The Ontology defines how the Holons relate to each other, which fields can be included in each Holon, the datatypes of the fields, units to be used, etc.



The actual data is stored in instances (Holons) of the Ontology. The Holon is thereby an information carrier that consists of groups, fields, values and attributes, i.e. data and metadata. Every Holon should be large enough to convey meaning for use in decision making and small enough to be like "Lego pieces" to make a complete description.

Storage Format

In practice a Holon is like a document with content and relations to other documents. Together they create huge graphs of related information. Technically the Holon is a simple structured text message tagged in the XML syntax. It is generic in nature and has only six tags.

```
<o
  holonType="Body Weight.Results"
  holonConcept="Body Weight"
  dimension="Data"
  domain="616.0754-dc23"
  ontology="(G5.24.1.0)ClinSci.ontology@capish.se"
  usage="Data"
>
<k>
  <f>Body Weight.Results Key<v>BodyWeightKey...</v></f>
</k>

Message
{
  <f>Date<v standard="ISO 8610">2010-01-05</v></f>
  <f>Body Weight<v unit="kg">68</v></f>
  <f>Body Weight.Original<v unit="pounds">150</v></f>

Relation
{
  <r
    reverse="Has" dimension="Data" holonType="Patient">
    Of
  </r>
  <f>Patient Key<v>PatientKey...</v></f>
  </f>
}
</o>
```

Having XML messages in flat files is also ideal for digital archiving since the information and its descriptions can be read by both computers and a human's "naked eye". Tagged flat files are also easy to secure both with respect to data integrity through check sums and digital signatures.

Effects of Holons

The Holons are stored in a graph database where a patented index structure enables rapid search and retrieval of a broader result set, as the direct and indirect relations between the Holons are utilized.

The Holon is an efficient information carrier that makes it possible to study the individual Holon as such, as well as aggregate all data across Holons. The ontology-based information model makes it possible to easily identify and graphically display the data of interest for a user.

As an additional effect, this approach allows several dimensions, such as provenance, traceability and archiving.

Conclusion

Capish Holons, information carriers linked by relations, create a graph that together with an advanced index structure enables end users to answer complex questions. New Holons and relationships can easily be incorporated without disturbing the existing graph. Once data has been properly curated and put in Holons, data can be exported as xml-files, e.g. one file per patient or concept. Data can then be reused repeatedly for many different purposes over many years as the information remains understandable.