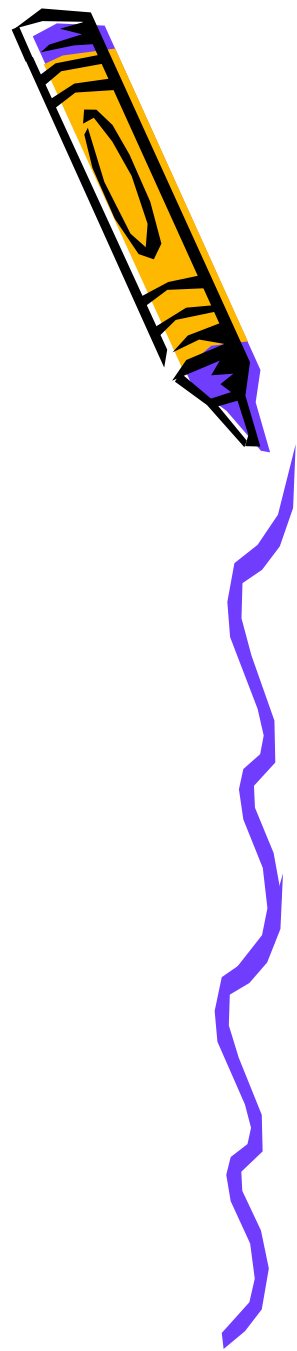


Ontology and semantic web



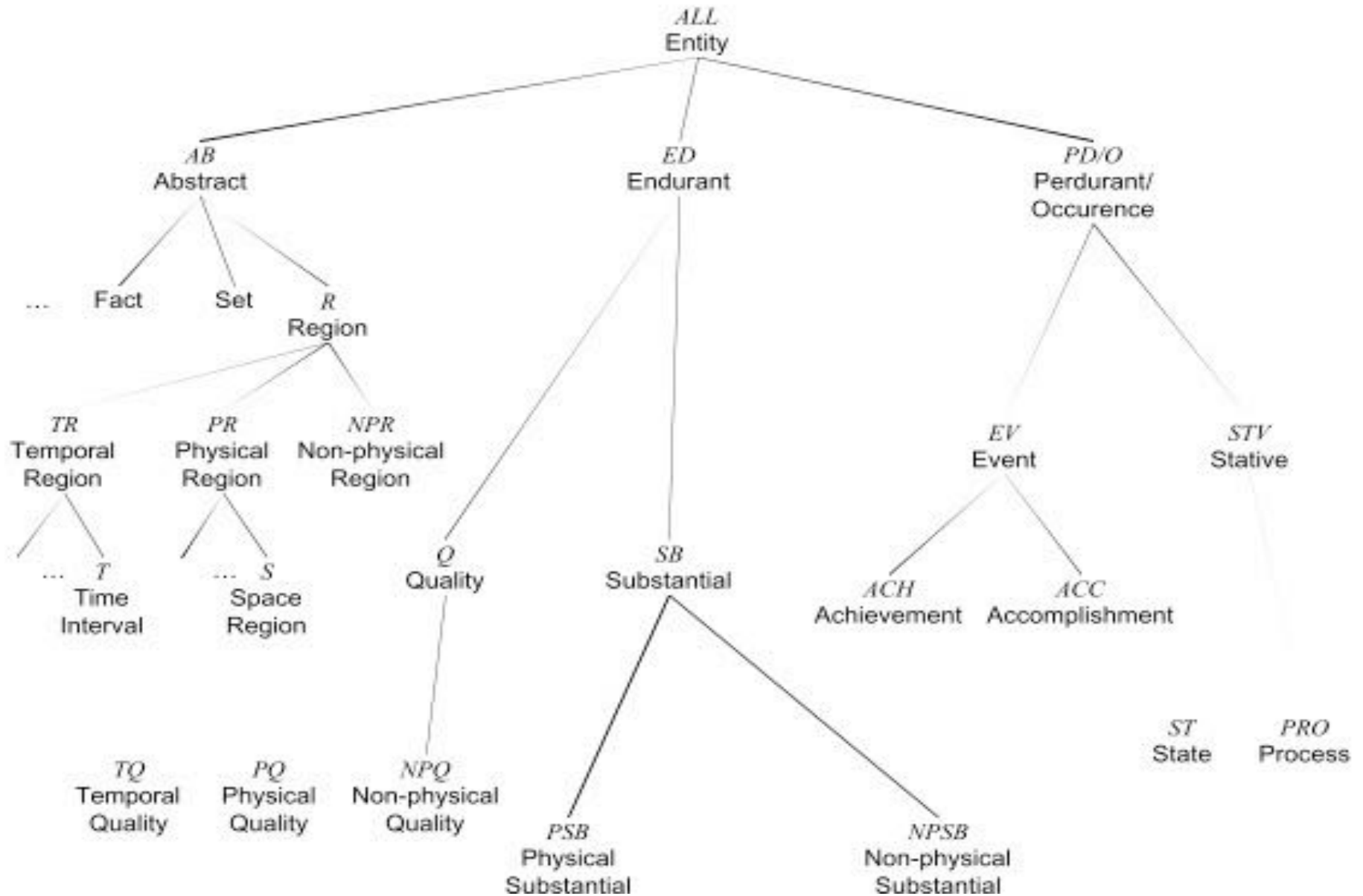
- Ontology as "Onto": Being, "logia": discourse, reasoning
- Ontology in philosophy : being study, his properties and modalities (Aristotle, Cohen, Meyer)

Several levels of Ontology (Guarino)

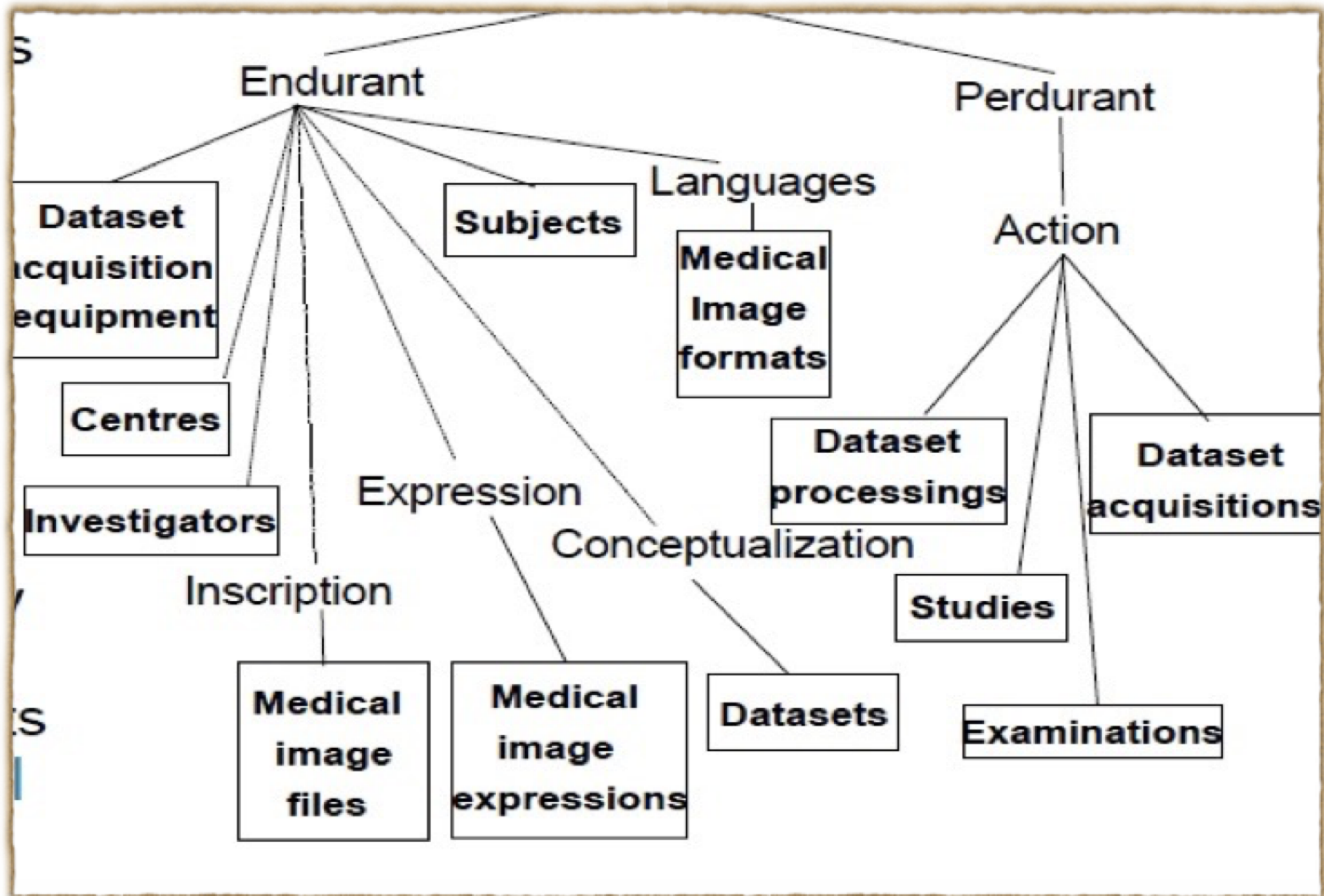
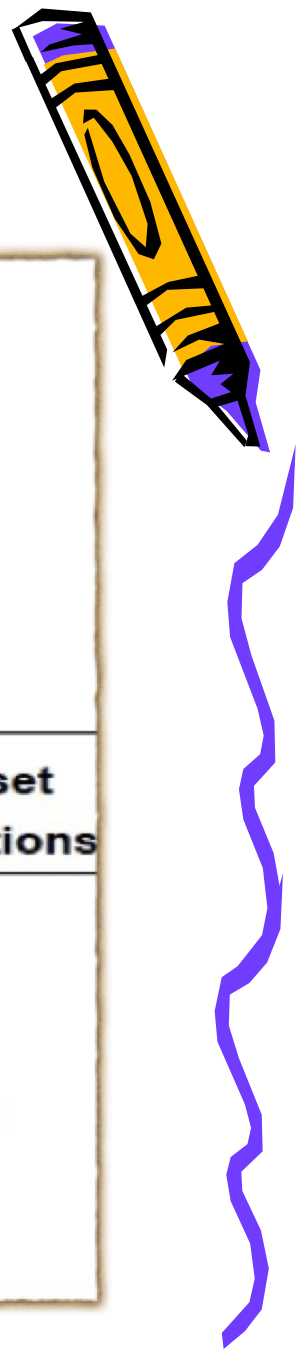


- Ontology as *Guides* to model domain:
- Top level, Domain level and Application level

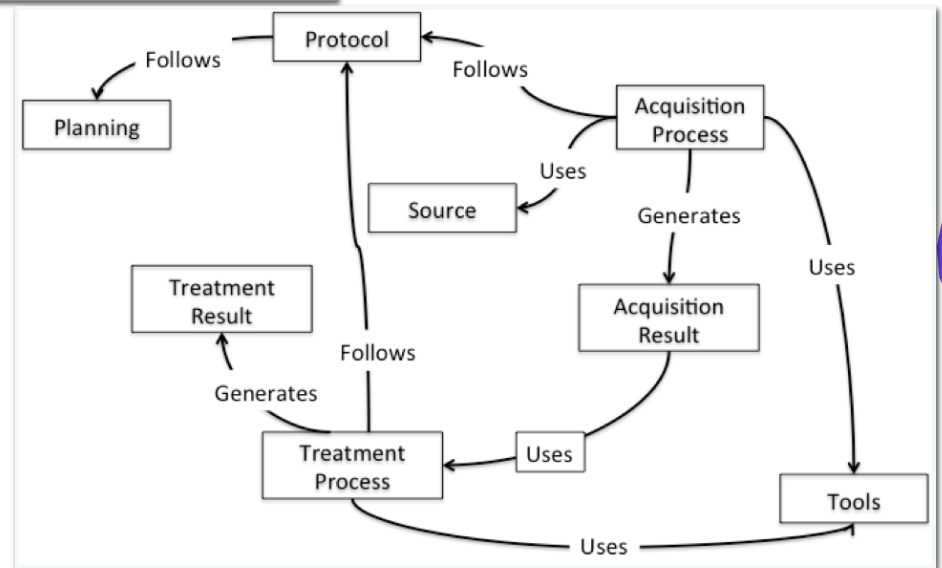
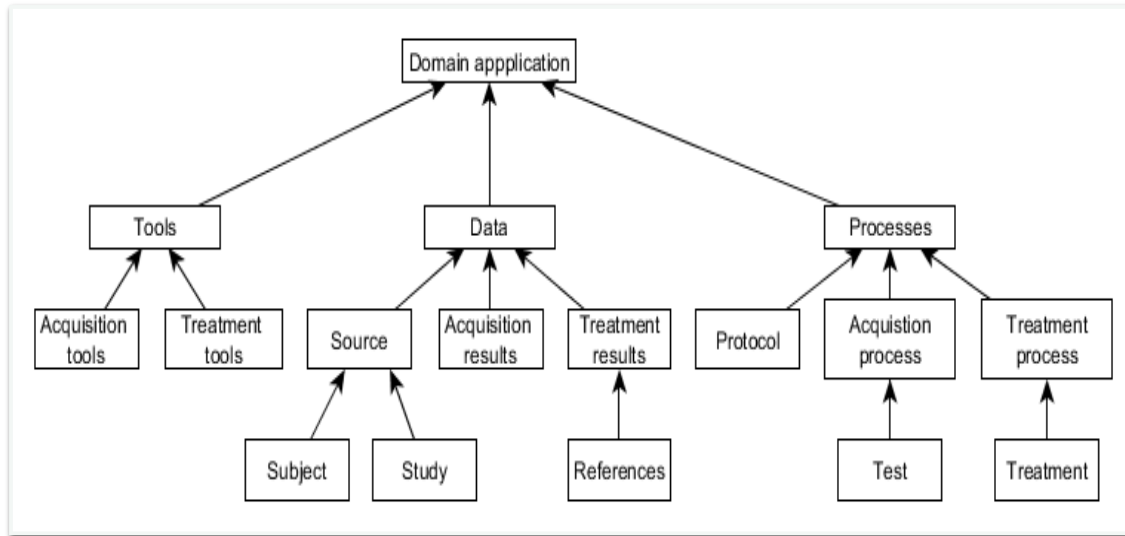
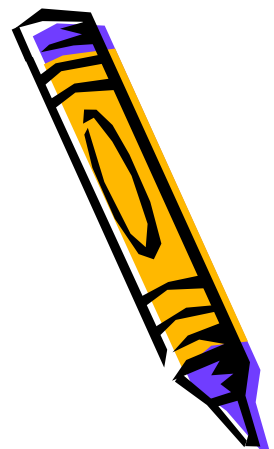
Top level (Guarino)



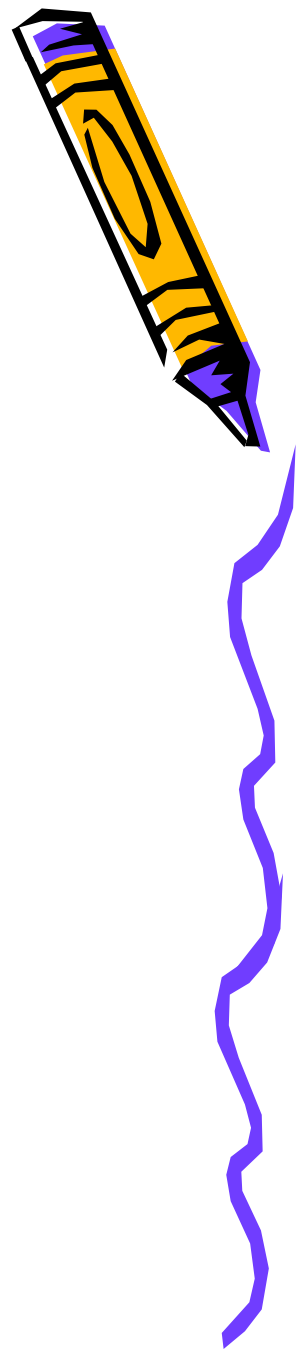
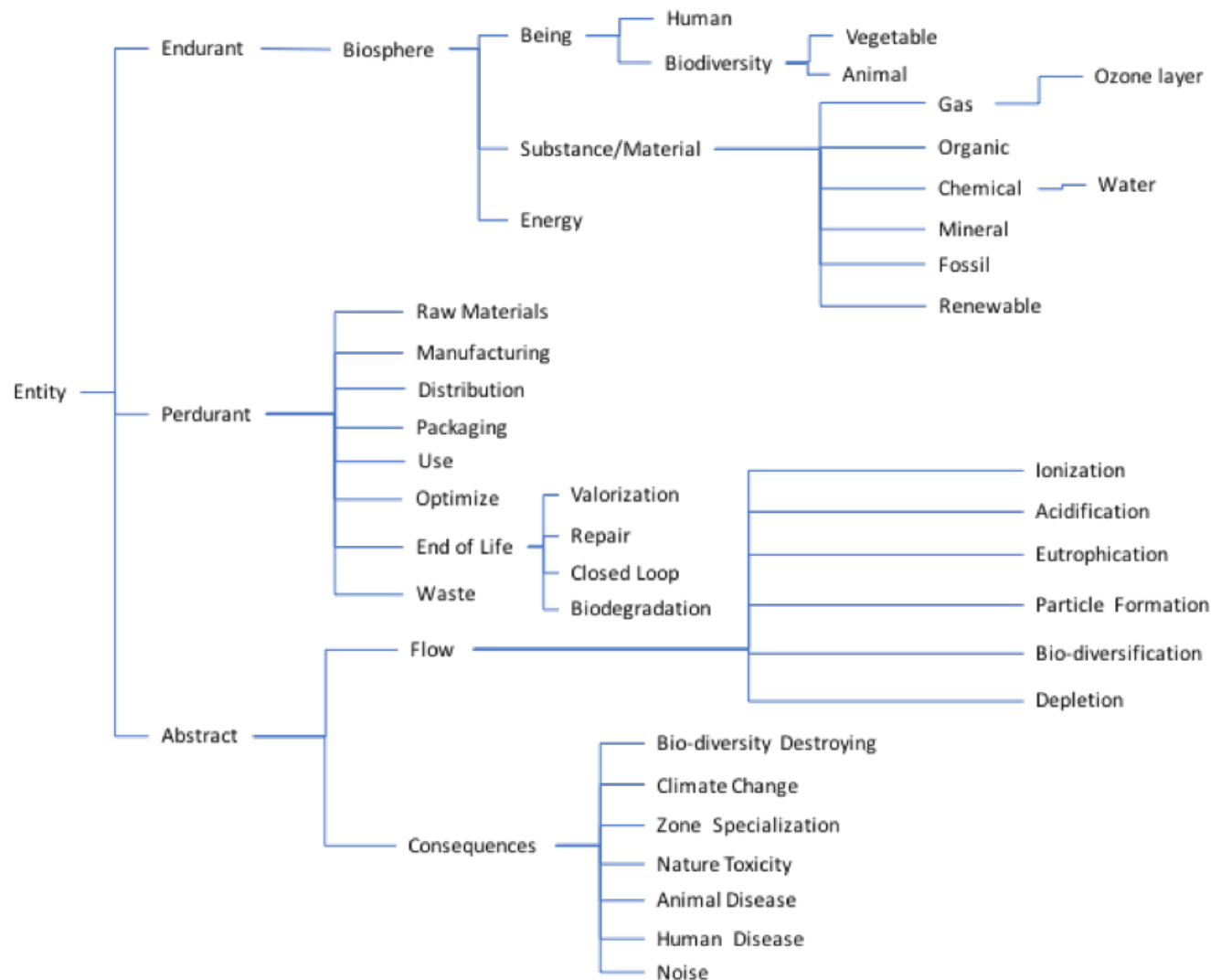
Domain level (Bio-imaging Ontology)



Application level (Gin Lab)



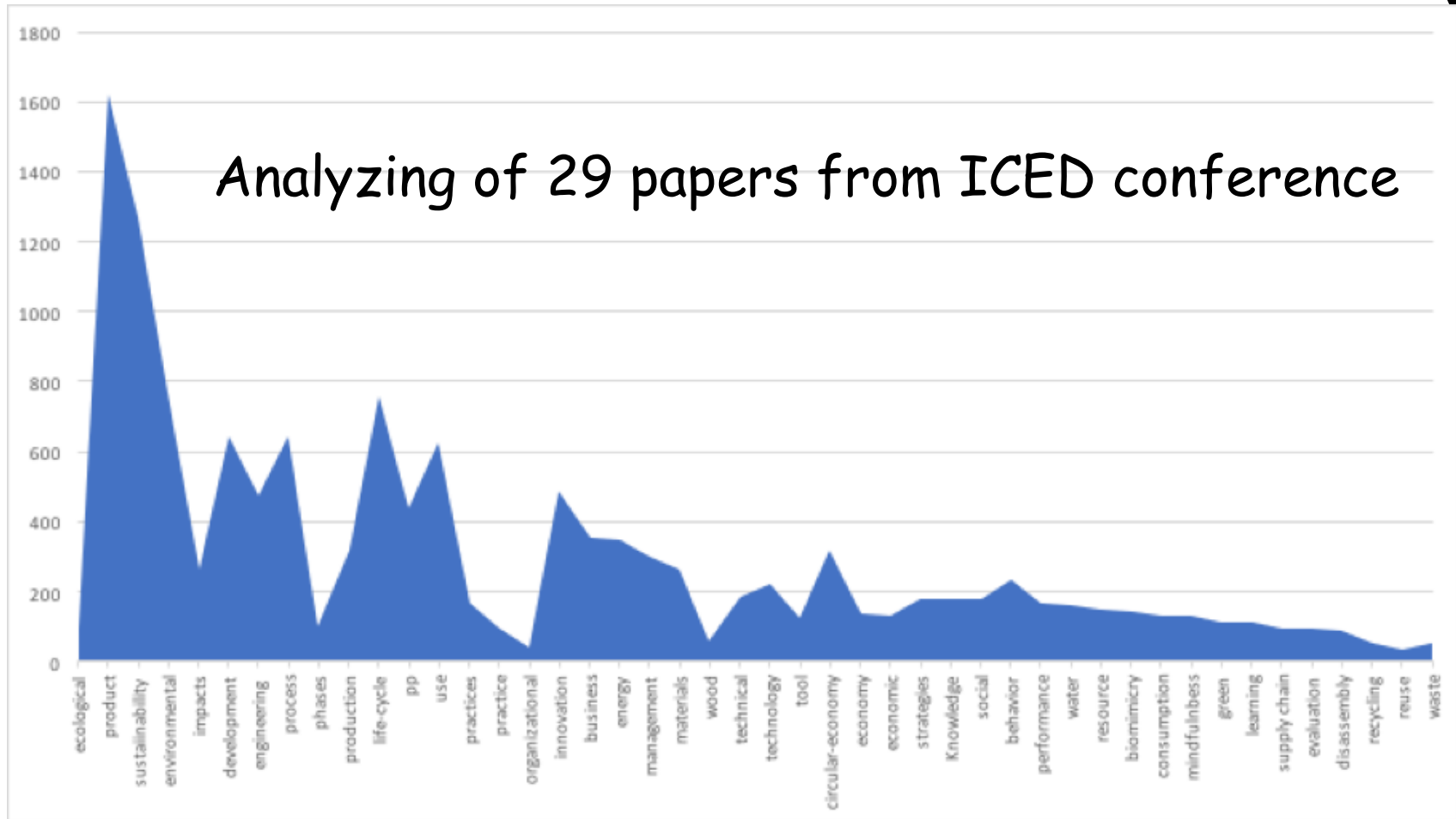
Example Definition of Ontology on Eco-design with the expert



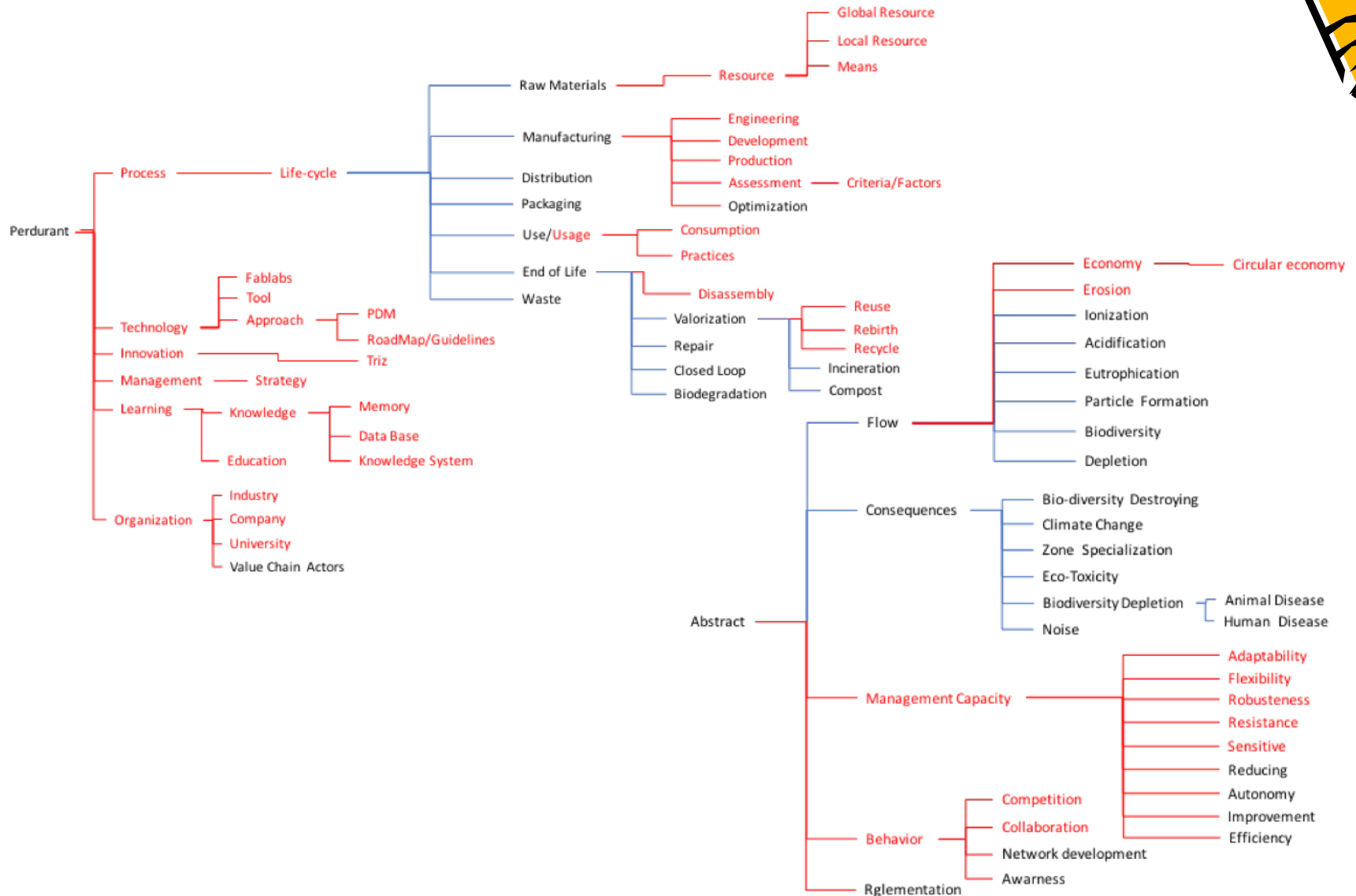
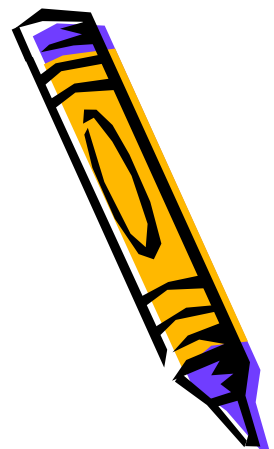
Extraction from documents using TextMining tools (Voyant-tools, Gate)



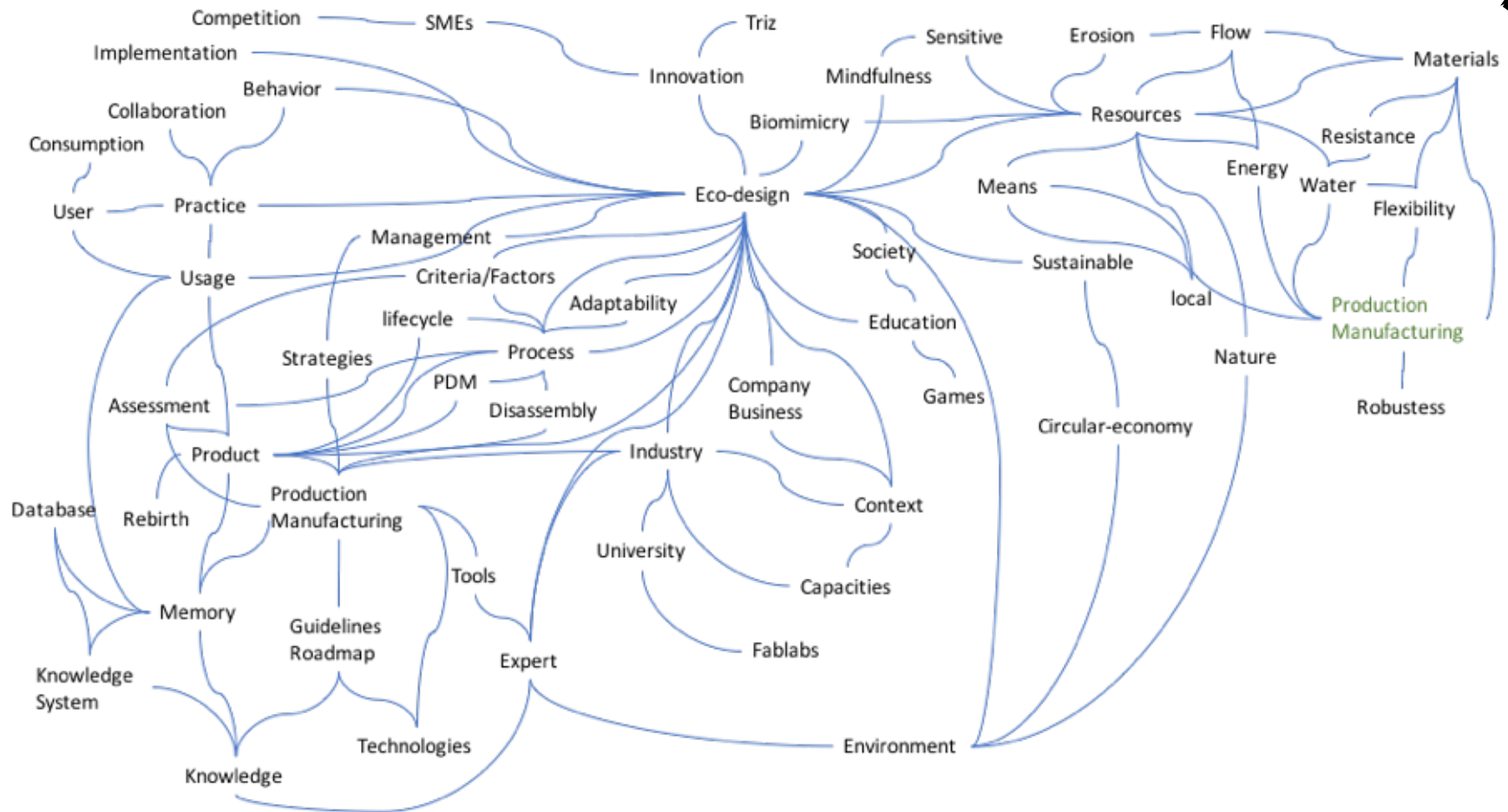
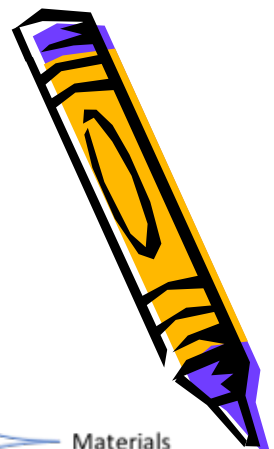
Analyzing of 29 papers from ICED conference



Enriching expert ontology



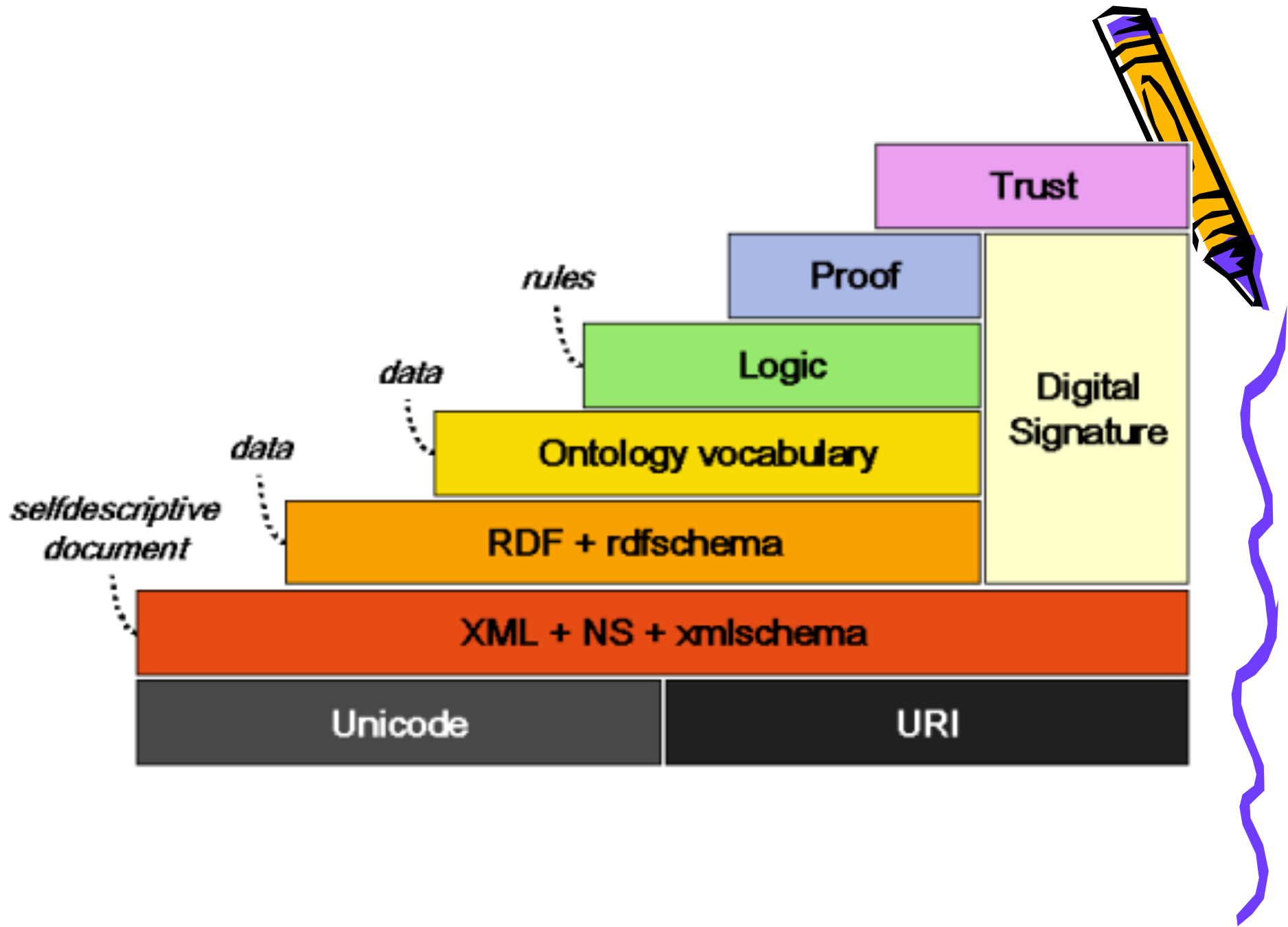
Enriching expert ontology



Semantic Web [Berners-Lee]



- The **Semantic Web** is an evolving extension of the World Wide Web in which the semantics of information and services on the web is defined, making it possible for the web to understand and satisfy the requests of people and machines to use the web content.



Example of Ontology Use (Cuong, 2016)



Biomist Ontology

Enter a keyword

ontoBiomist

- data
 - processed-data
 - dataset
 - dataset-dataunit-result
 - dataset-examination-result
 - dataset-acquisition-result
 - dataset-processing-unit-result
 - dataset-processing-result
- reference
- acquired-data
- process
 - data-acquisition
 - data-processing
 - processing
 - processing-unit
- source
 - study
 - subject
- tool
 - processing-tool
 - acquisition-tool

Query Graph Panel

Condition Relation Panel

Concept Usage Panel

SELECTED CONCEPT: **subject**

ANNOTATION:
Healthy volunteers or patient who have been recruited in a study.

RESTRICTIONS:

- + study has-source subject
- + genetics-examination-result has-source subject
- + subject is-source-of study
- + subject has-passed imaging-examination-result
- + subject has-passed genetics-examination-result
- + subject has-passed psychology-examination-result
- + psychology-examination-result has-source subject

TC Classification Branch

AcquisitionResultBranch

- Performed Imaging Acquisition
 - EEG-performed-acquisition
 - MEG-performed-acquisition
- MR-performed-acquisition
 - T1W-scan
 - T2W-scan
 - T2*W-scan
 - DW-scan
 - BOLD-scan

Attribute selection

Object Attributes:

- ☐ Id
- ☐ Name
- ☐ Description
- ☒ Serie Number
- ☒ Run Number
- ☐ Picture Number
- ☐ Remarks

Condition Expression

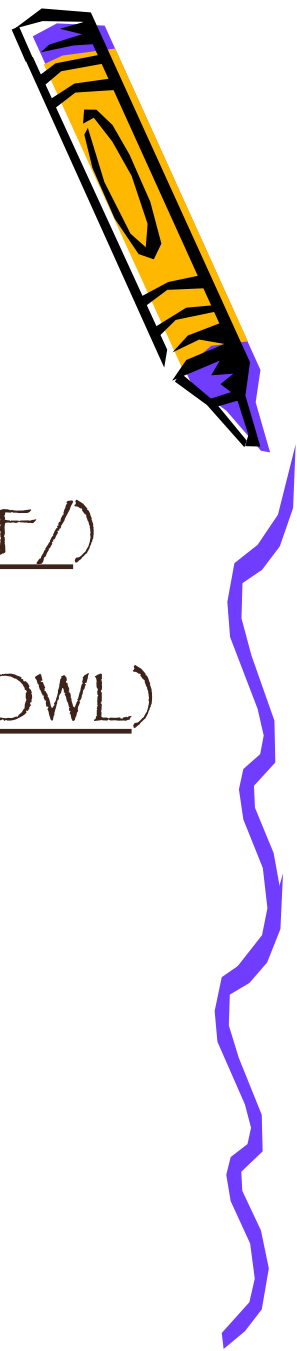
Load query Execute

subject has-passed imaging-examination-result is-associated-with acquisition-result is-associated-with dataunit-result

Selected Attributes

- acquisition-result.Serie Number
- acquisition-result.Run Number

Implementation



- ◆ Languages:
 - ◆ RDF, SPARQL... (<https://www.w3.org/RDF/>)
 - ◆ OWL (<https://www.w3.org/2001/sw/wiki/OWL>)
- ◆ Representing and inference systems
 - ◆ Protege (<http://protege.stanford.edu/>)
 - ◆ Corese (<http://wimmics.inria.fr/corese>)

Cooperative activity

A cooperative (collaborative) activity is an activity handling concurrently by a group of actors having the same goal (Schmidt et al)

