

RS Symposium
t 2018

Gilles-Antoine
n-Paul Kasprzyk
re Hallot
en Roland

Towards an ontology for the
structuring of remote sensing
operations shared by different
processing chains

Background

Increase of use of remote sensing

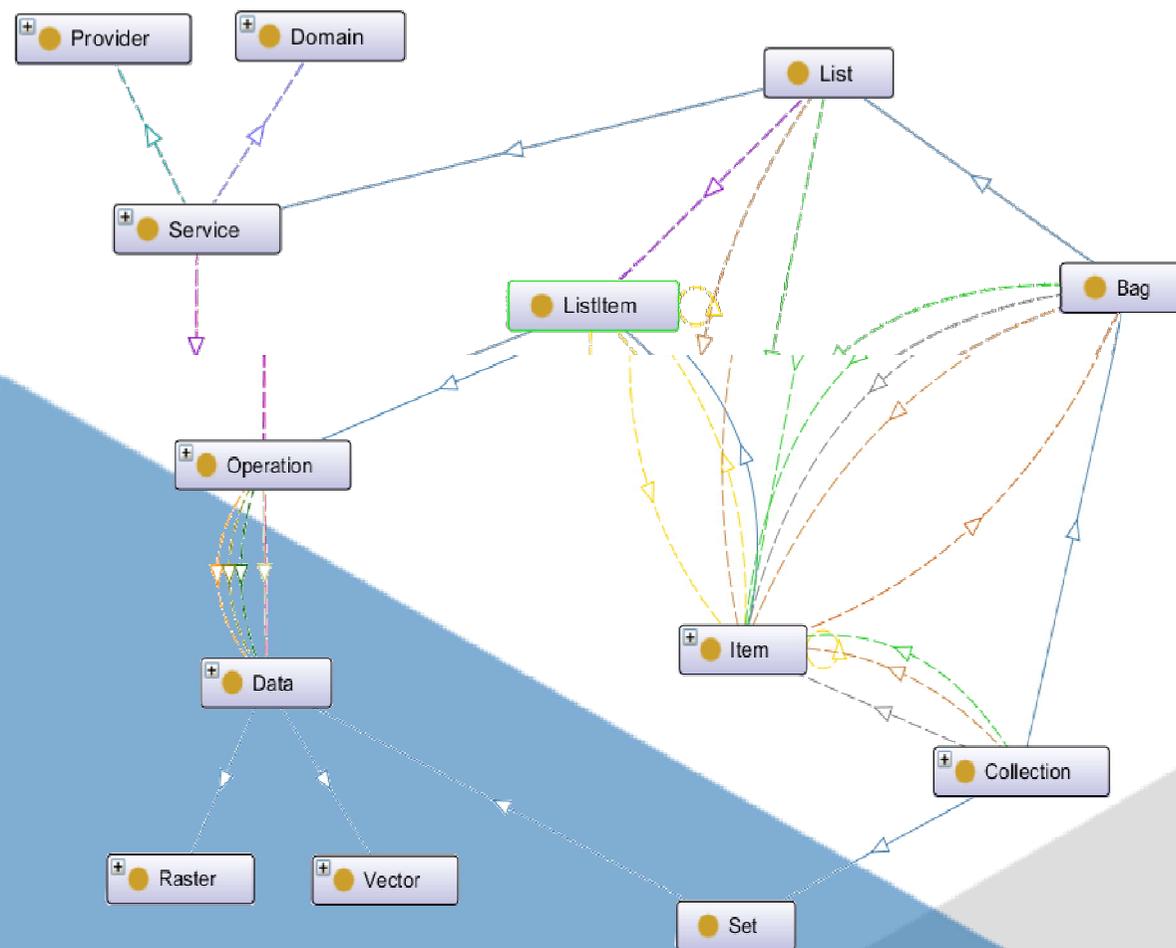
Background

- ▶ New web platforms are created as market place about remote sensing products
- ▶ Many trades find utility in remote sensing

Research hypothesis

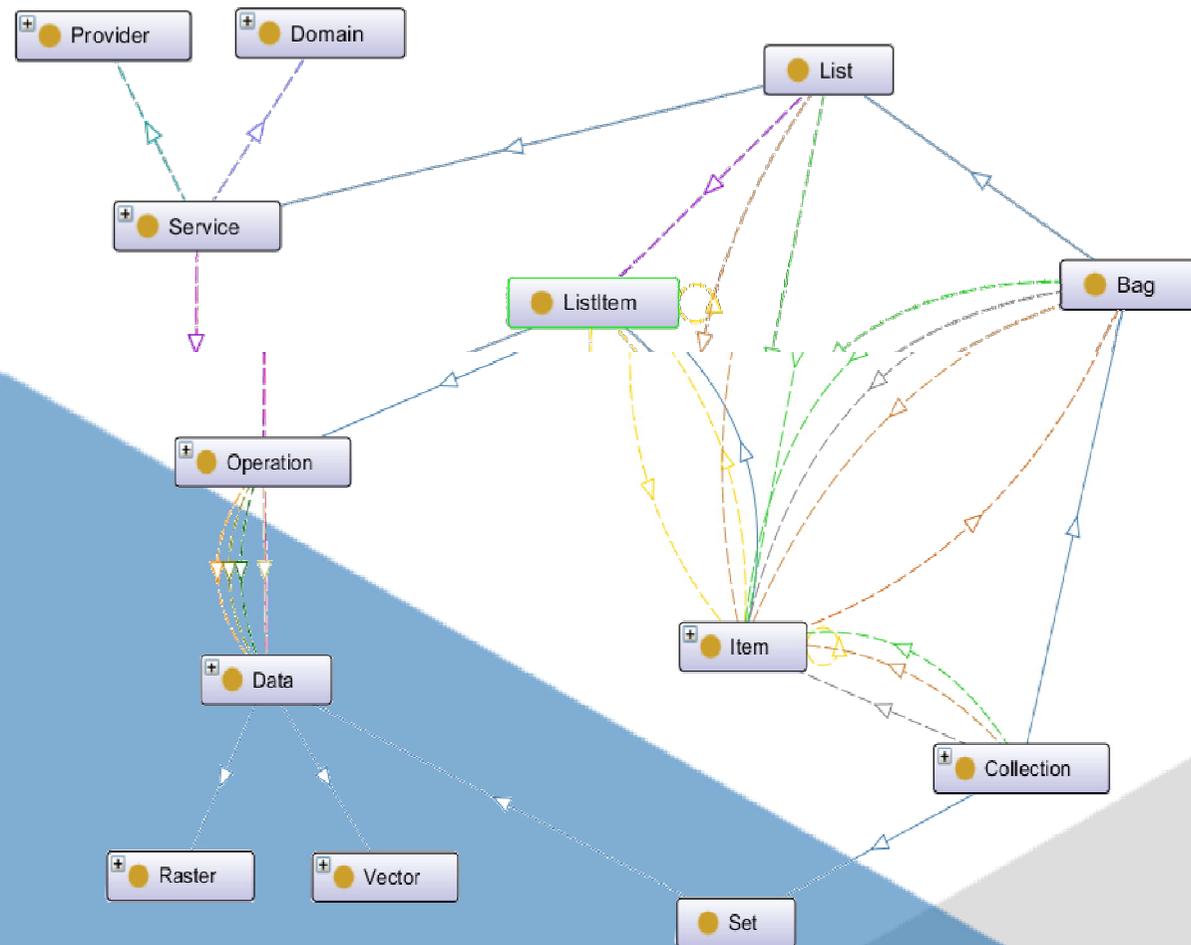
- ▶ Creation of a formal ontology structuring the proposition of services may improve the creation of web platforms dedicated to remote sensing.
- ▶ Implementing such an ontology in a NoSQL graph database and providing applications

Hybrid ontology



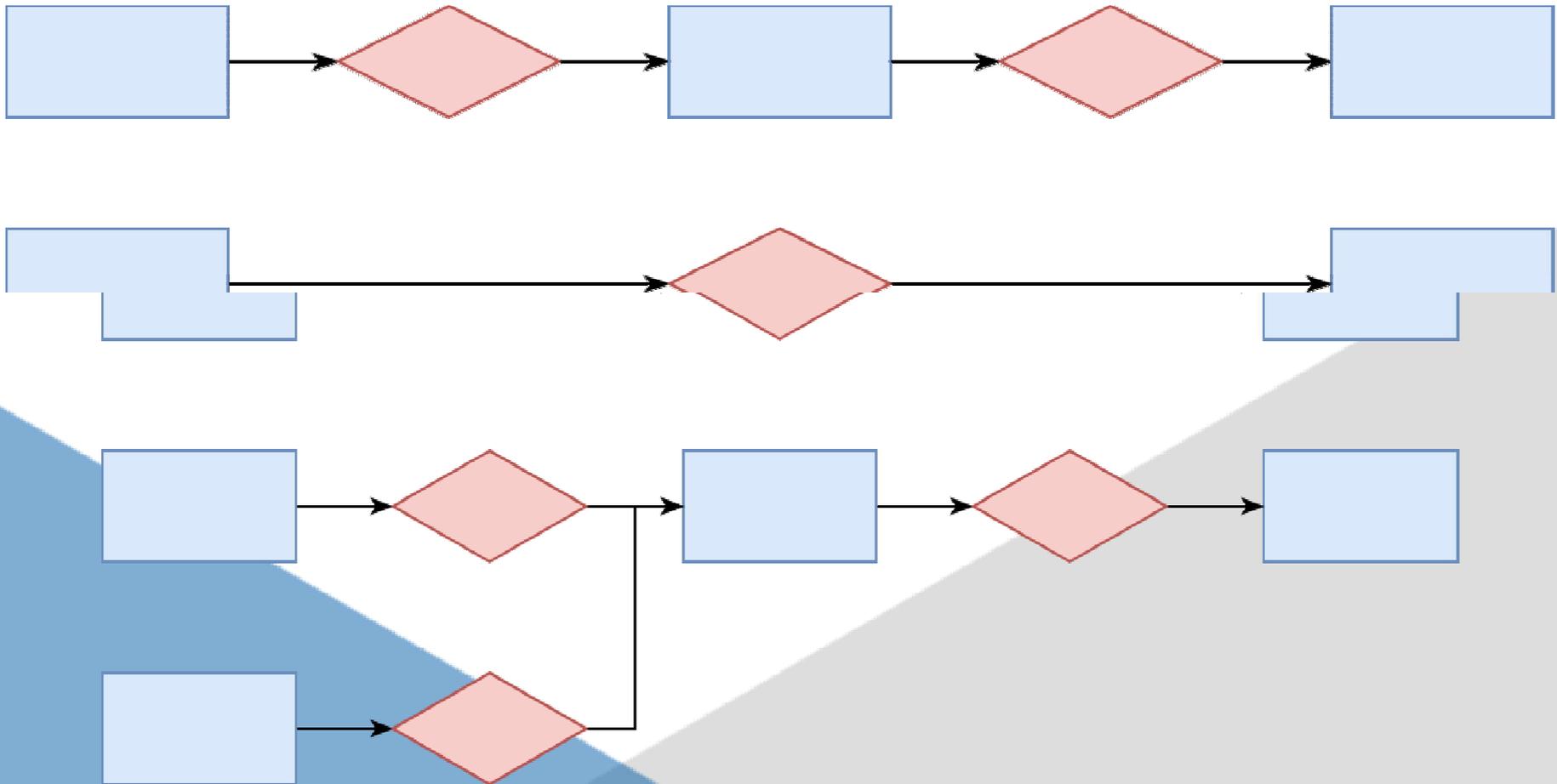
- ▶ Application ontology dedicated to processing chains structuring
- ▶ Domain ontology structuring the collections concepts
(Cicarresse & Peroni, 2014)

Hybrid ontology

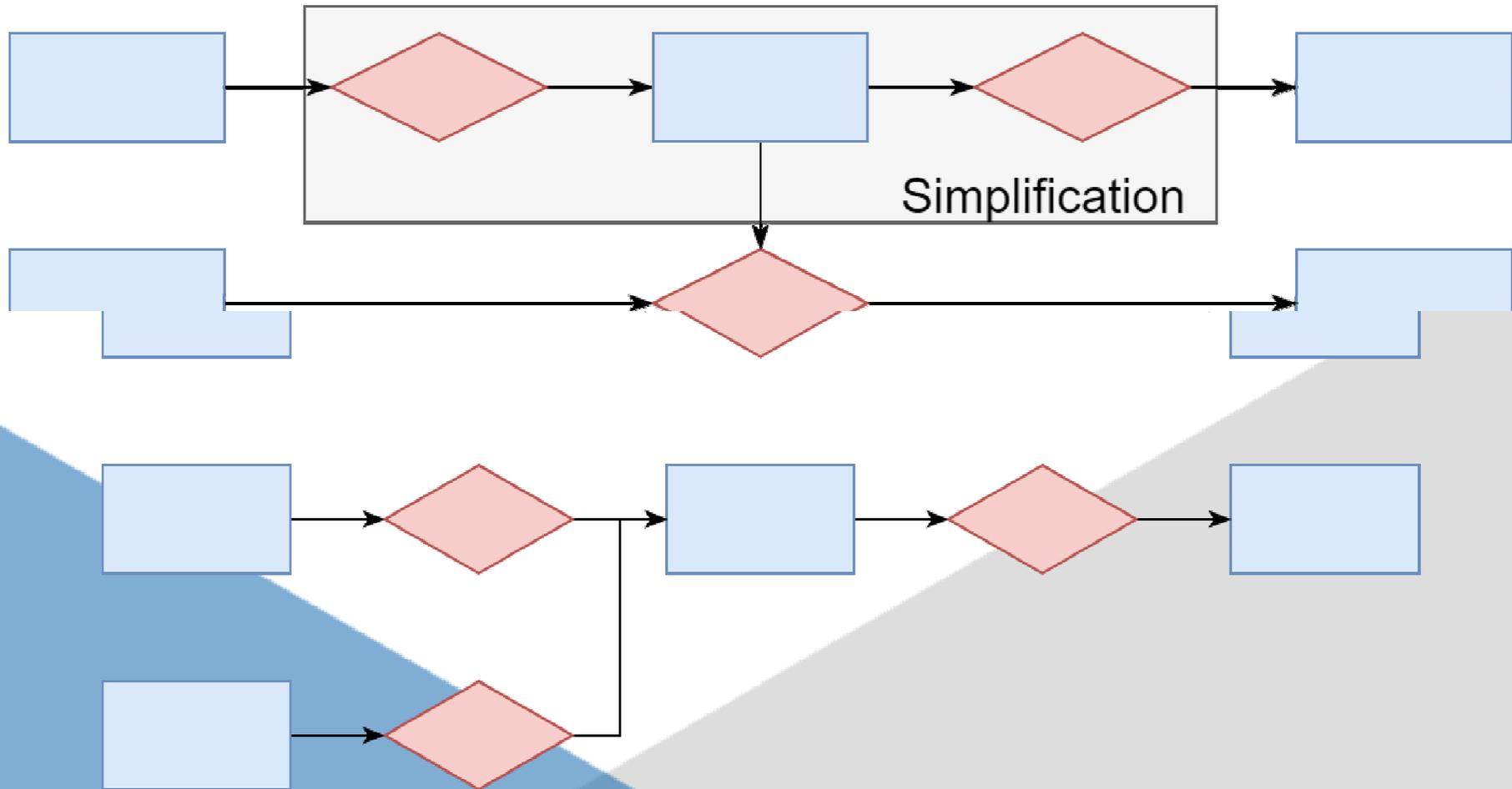


- ▶ Application ontology dedicated to processing chains structuring
- ▶ Domain ontology structuring the collections concepts
(Cicarresse & Peroni, 2014)

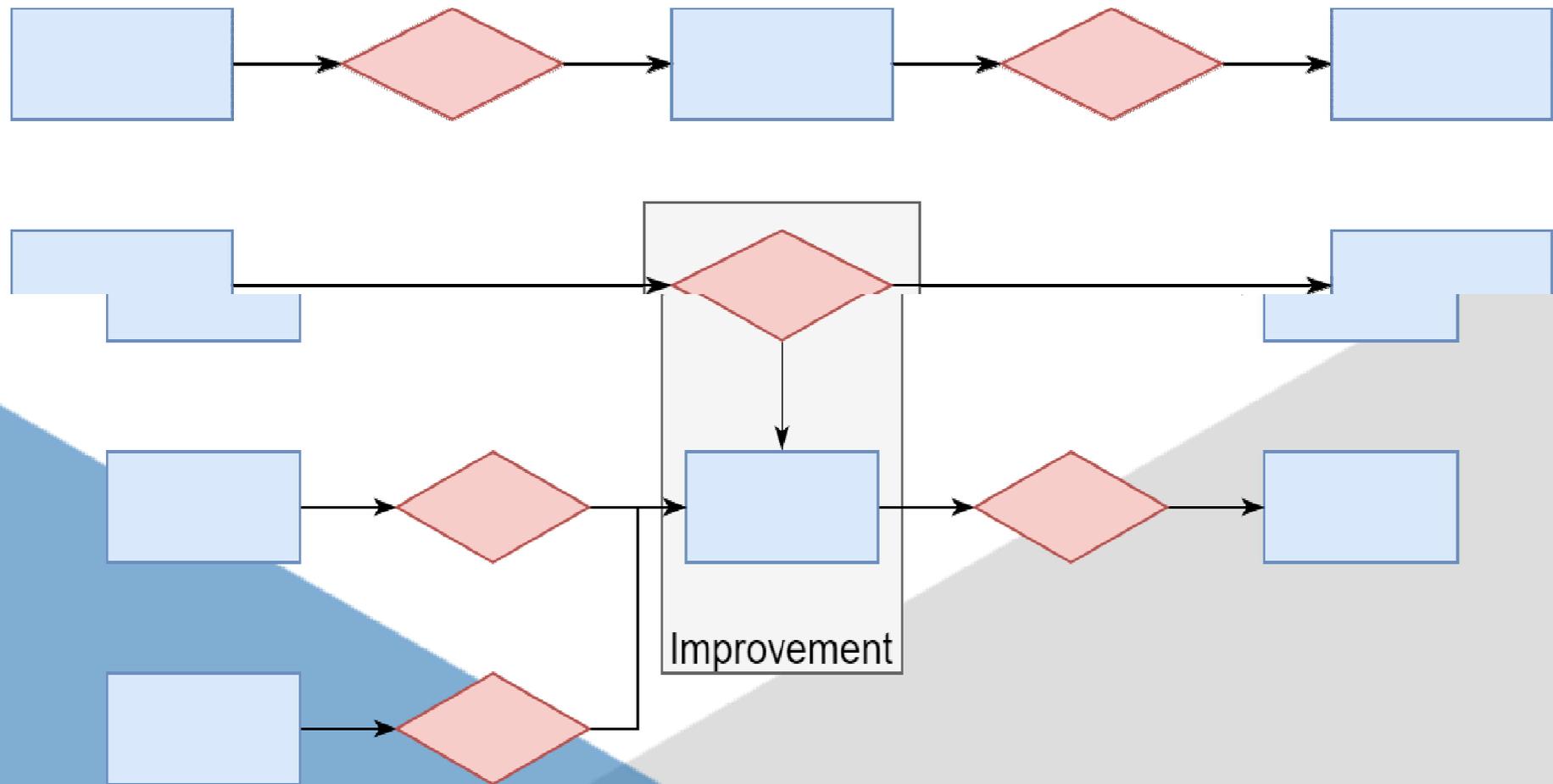
Processing chains



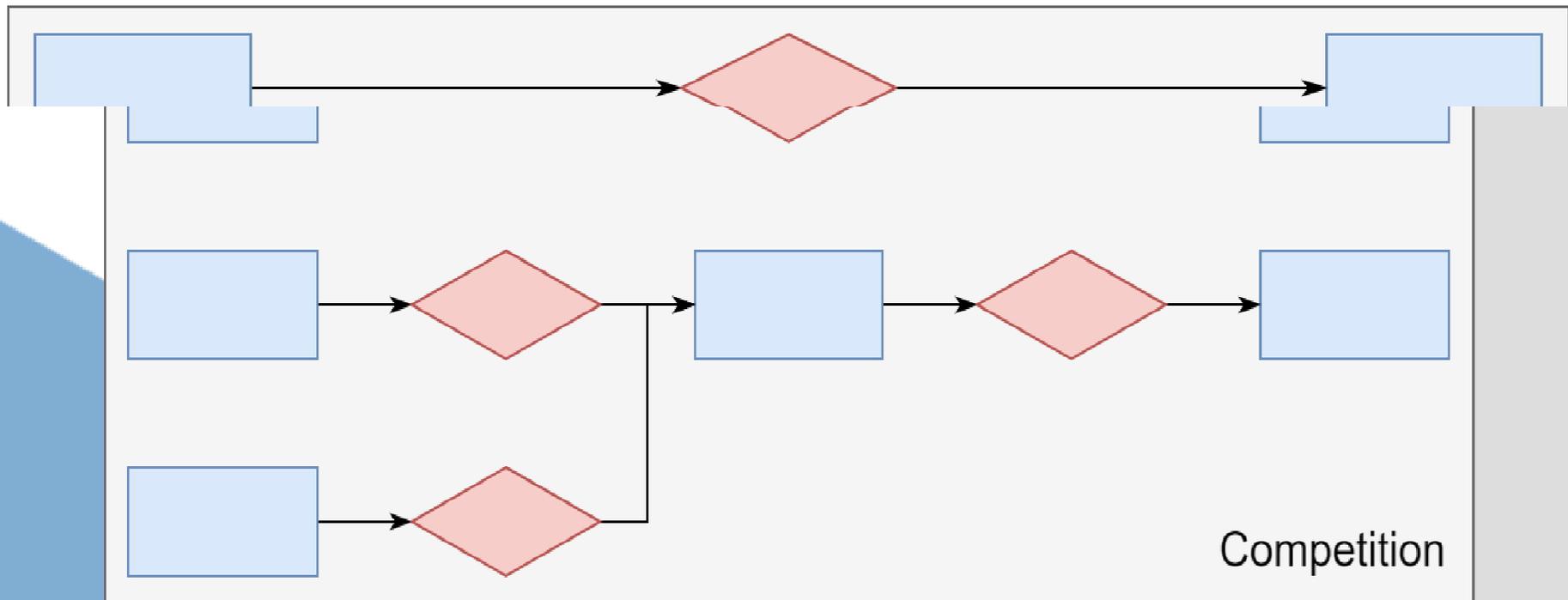
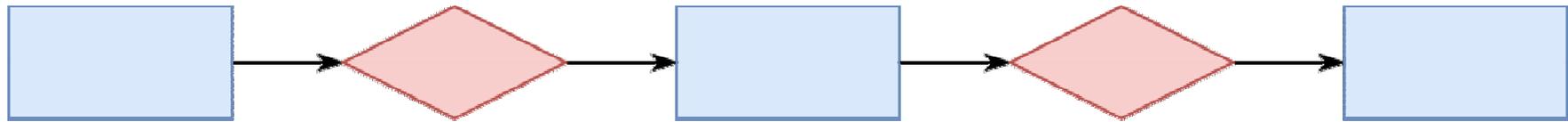
Processing chains



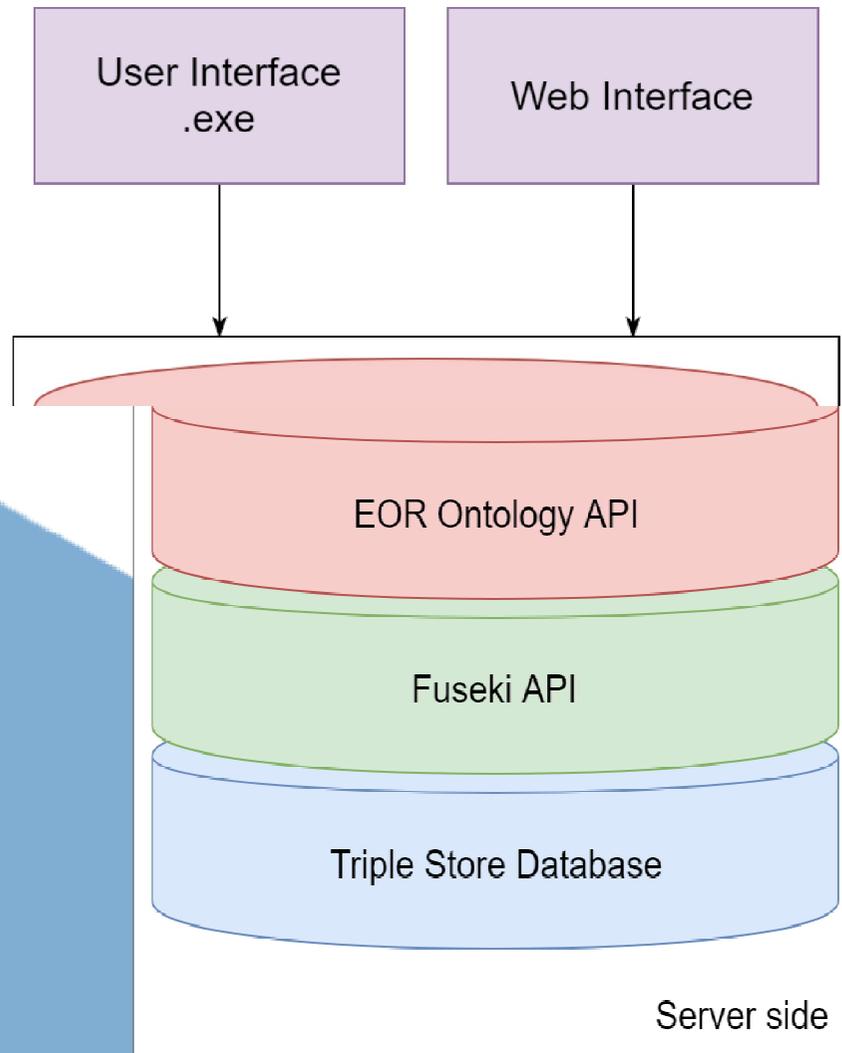
Processing chains



Processing chains

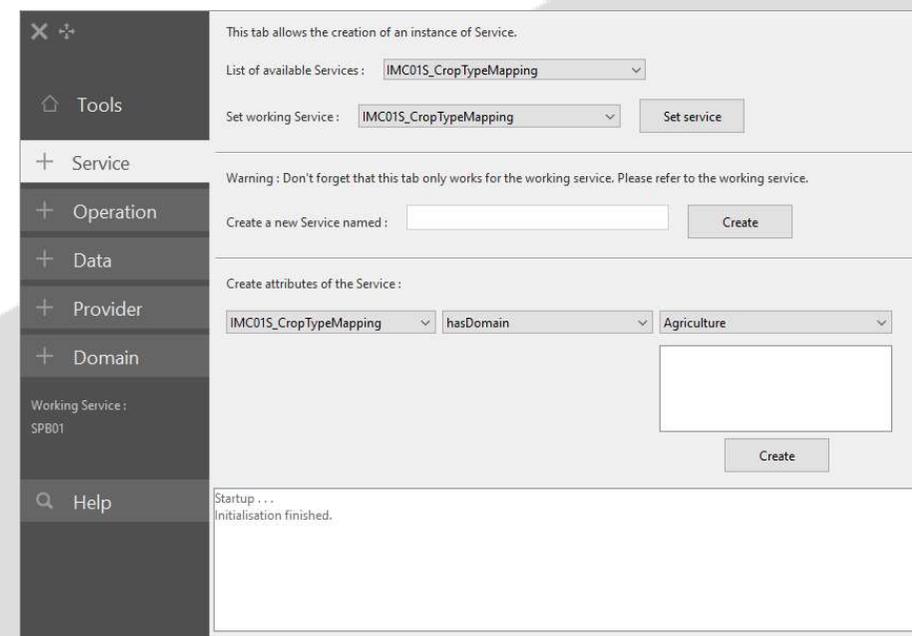


Architecture



Classic architecture (Jena Apache)

Two different access point



Knowledge discovery

- ▶ Jaccard Index to compare processing chains

$$J(i, j) = \frac{|S_i \cap S_j|}{|S_i \cup S_j|}$$

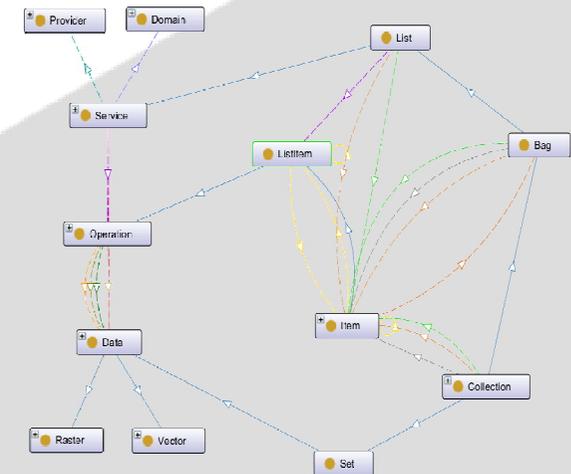
Knowledge discovery

► Studies on pattern recognition for rules discovery

1. Does Operation type A often follows Operation type B ?
2. How often?
3. Why ?

Conclusion

- ▶ Application Ontology
- ▶ Processing chains -> elementary operations linking data
- ▶ Knowledge discovery and rules learning
- ▶ Insufficient number of processing chains

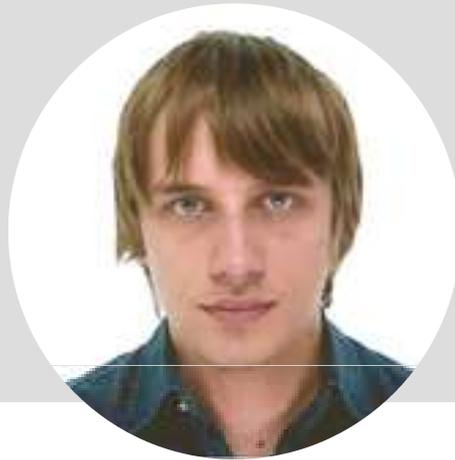


Future work

- ▶ More metadata to describe the data
- ▶ Switching Datatype Properties to Object Properties
- ▶ `dc:description` : Semantic Web search engine for services market place



Gilles-Antoine Nys
ganys@uliege.be
@GA_Nys



Jean-Paul Kasprzyk
jp.kasprzyk@uliege.be



Pierre Hallot
p.hallot@uliege.be
@p_hallot
LNA/DIVA Labs



Roland Billen
rbillen@uliege.be
@RolandBillen

Feel free to contact us