

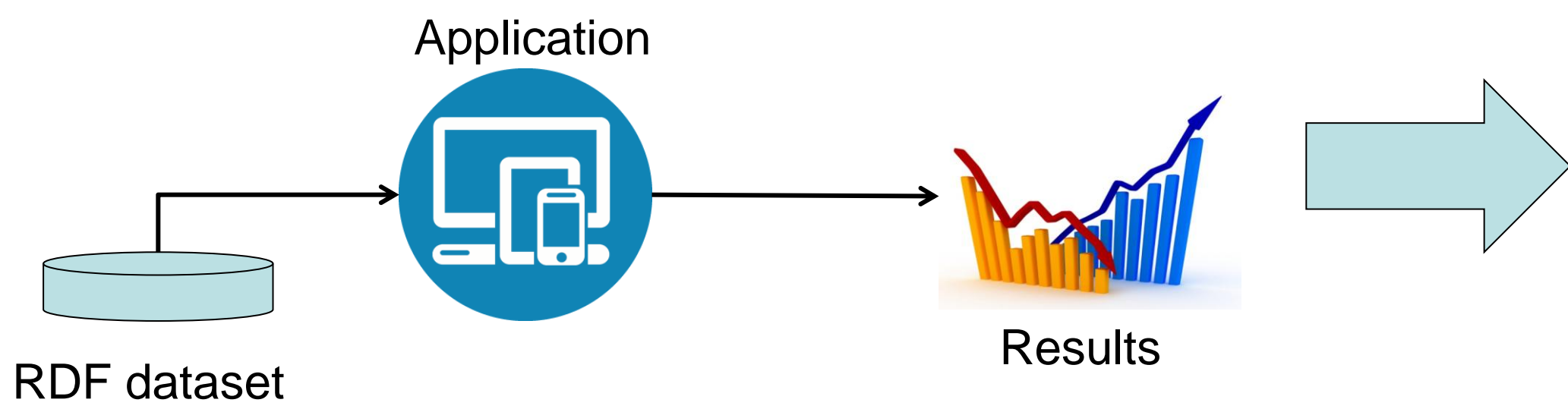
# Reasoning over RDF Knowledge Bases: where we are



**Simona Colucci**  
(Politecnico di Bari)  
simona.colucci@poliba.it

**Francesco M. Donini**  
(Università della Tuscia)  
donini@unitus.it

**Eugenio Di Sciascio**  
(Politecnico di Bari)  
eugenio.disciascio@poliba.it



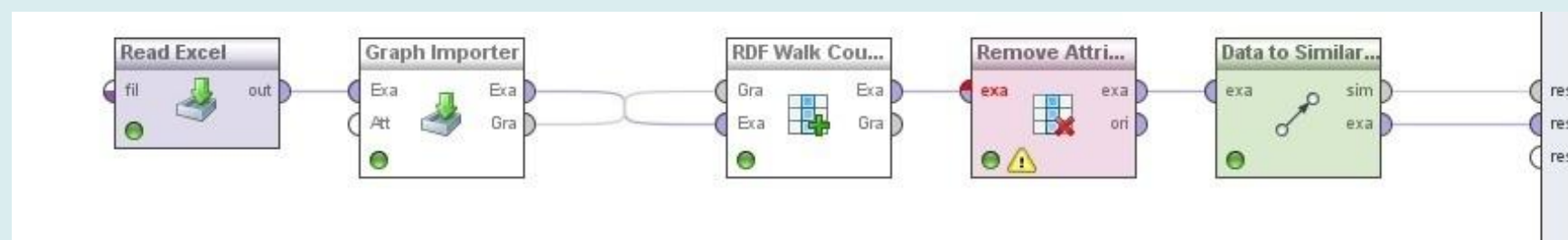
When the application may be defined a *Semantic Web* application?

- Design of an **experiment** checking if applications:
1. correctly interpret some predicates defined in RDFS-semantics;
  2. manage blank nodes as special RDF resources.

## The experiment

### Target application:

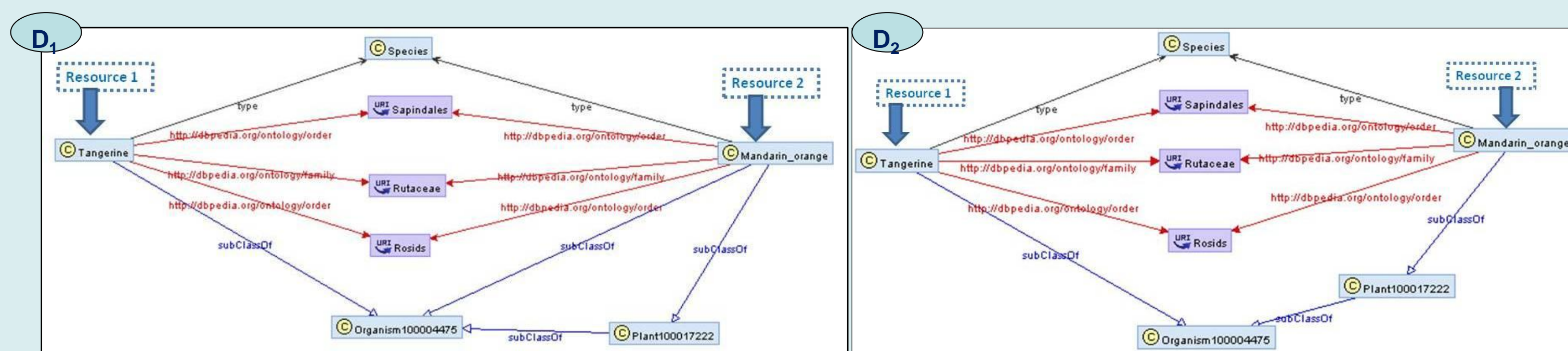
- computation of a similarity measure  $s_i(x, y)$  between two RDF resources,  $x$  and  $y$ , modeled in a data source  $D_i$ .
- deployed in a workflow in the machine learning tool RapidMiner, equipped with the Linked Open Data extension (LODEExtension) to mine data from RDF data sources;



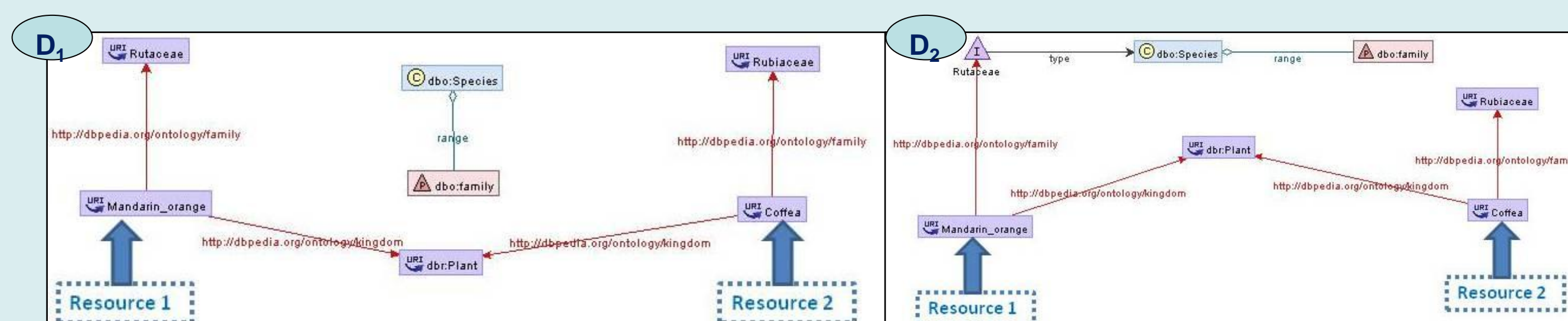
### Experimental Settings:

#### 1. Interpretation of RDFS semantics

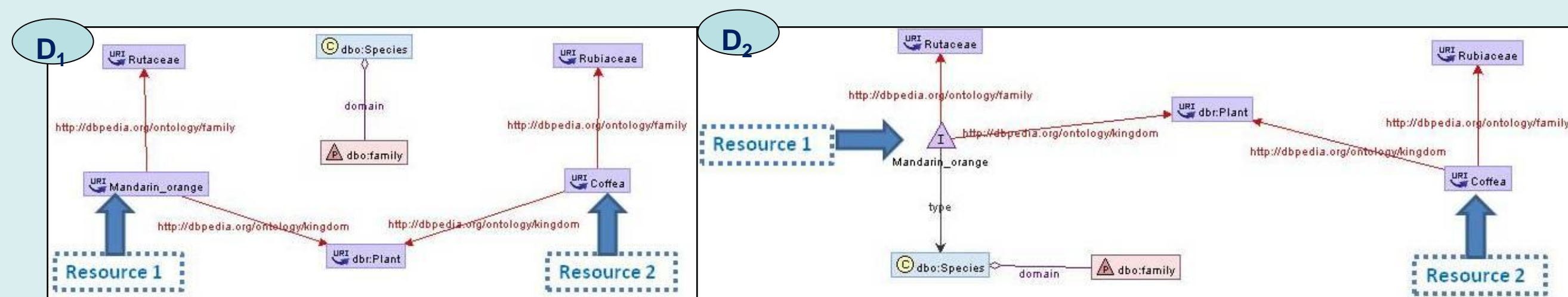
- **Goal:** checking the sensitivity of the target application to syntactical changes in the input RDF dataset
- **Input data :** two semantically equivalent data sources  $D_1$  and  $D_2$ , syntactically different because of statements involving the predicates  $rdfs:subClassOf$ ,  $rdfs:range$ ,  $rdfs:domain$
- **Expected result:**  $s_1(Resourcel, Resource2) = s_2(Resourcel, Resource2)$
- **Results:**



$$s_1(Resourcel, Resource2) = s_2(Resourcel, Resource2)$$



$$s_1(Resourcel, Resource2) \neq s_2(Resourcel, Resource2)$$



$$s_1(Resourcel, Resource2) \neq s_2(Resourcel, Resource2)$$

#### 2. Management of blank nodes

- **Goal:** Checking if the target application attempts any unification on blank nodes or just reverts to their Skolemization
- **Input Data:** a data source  $D$  including the following patterns

Resource1 r a .	Resource2 r _:b1 .	Resource3 r c .	Resource4 r a .	Resource5 r _:b2 .
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- **Expected result:**  
 $s(Resourcel, Resource3) < s(Resource2, Resource5) < s(Resourcel, Resource4)$

#### Results:

$$s(Resourcel, Resource3) = s(Resource2, Resource5) < s(Resourcel, Resource4)$$

