

Visual Schemas and Queries for Knowledge Graph Exploration

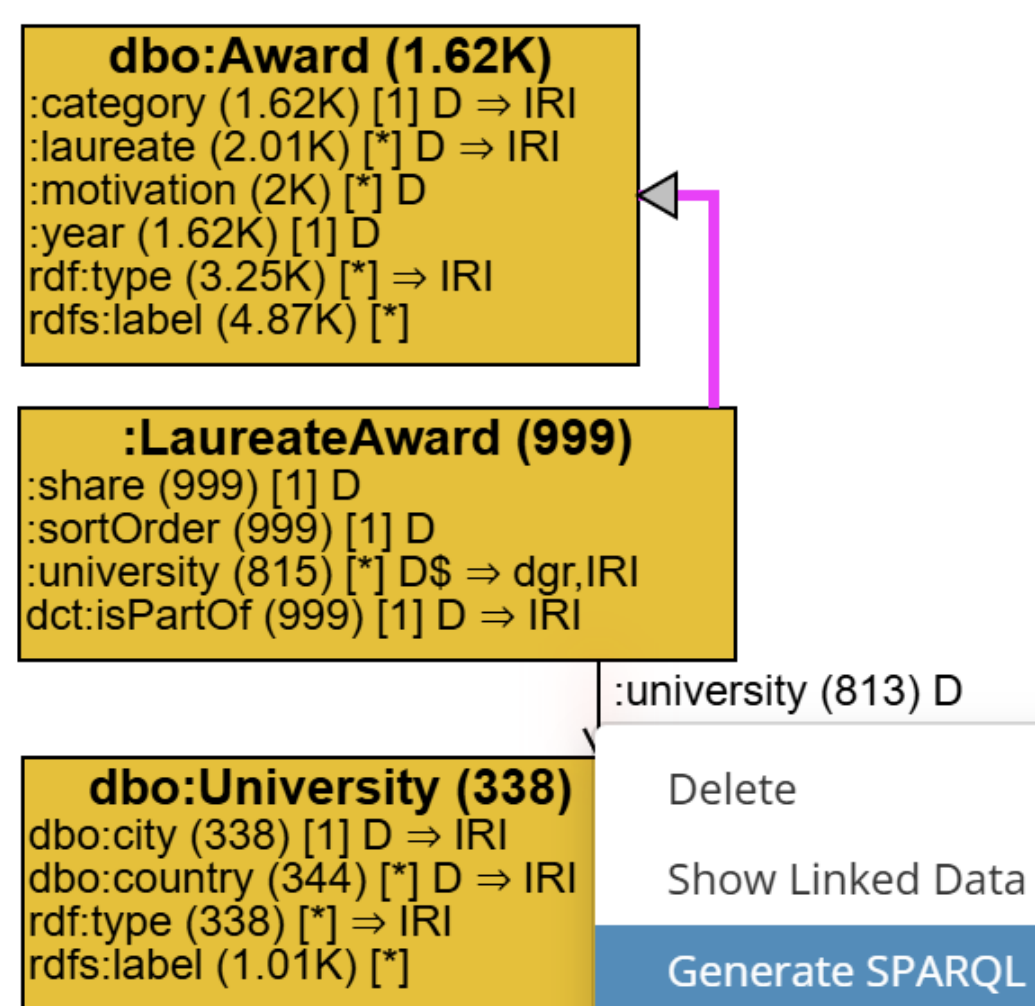
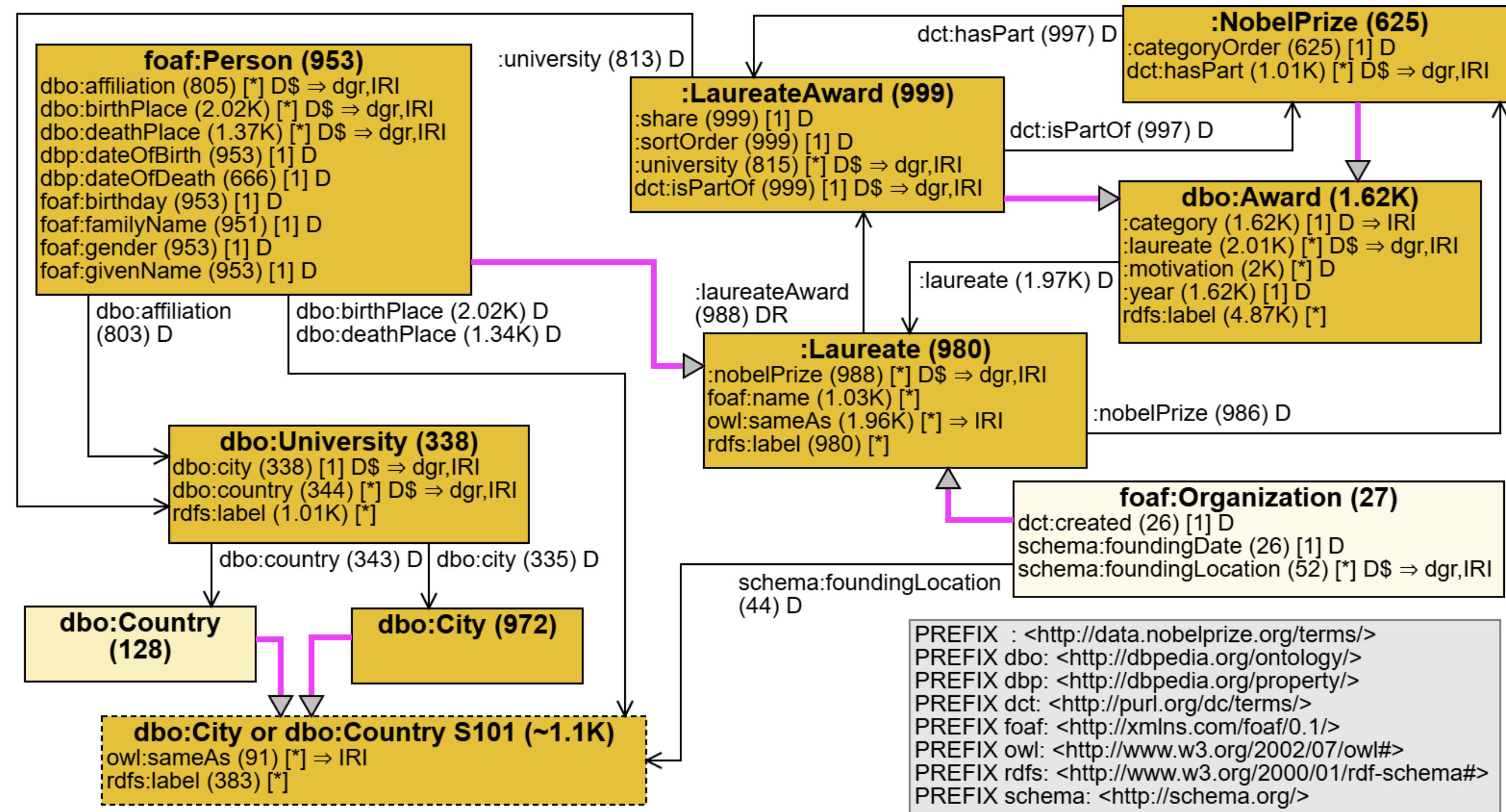


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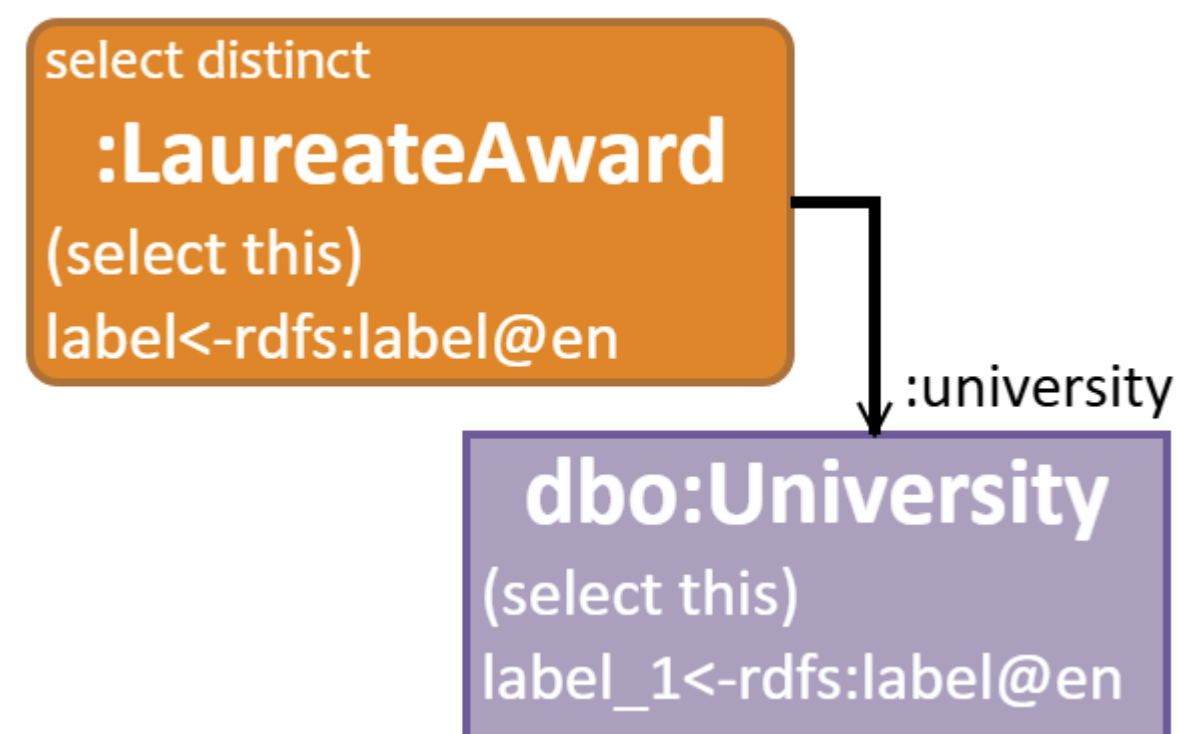


ViziQuer: visual data schema exploration and visual queries

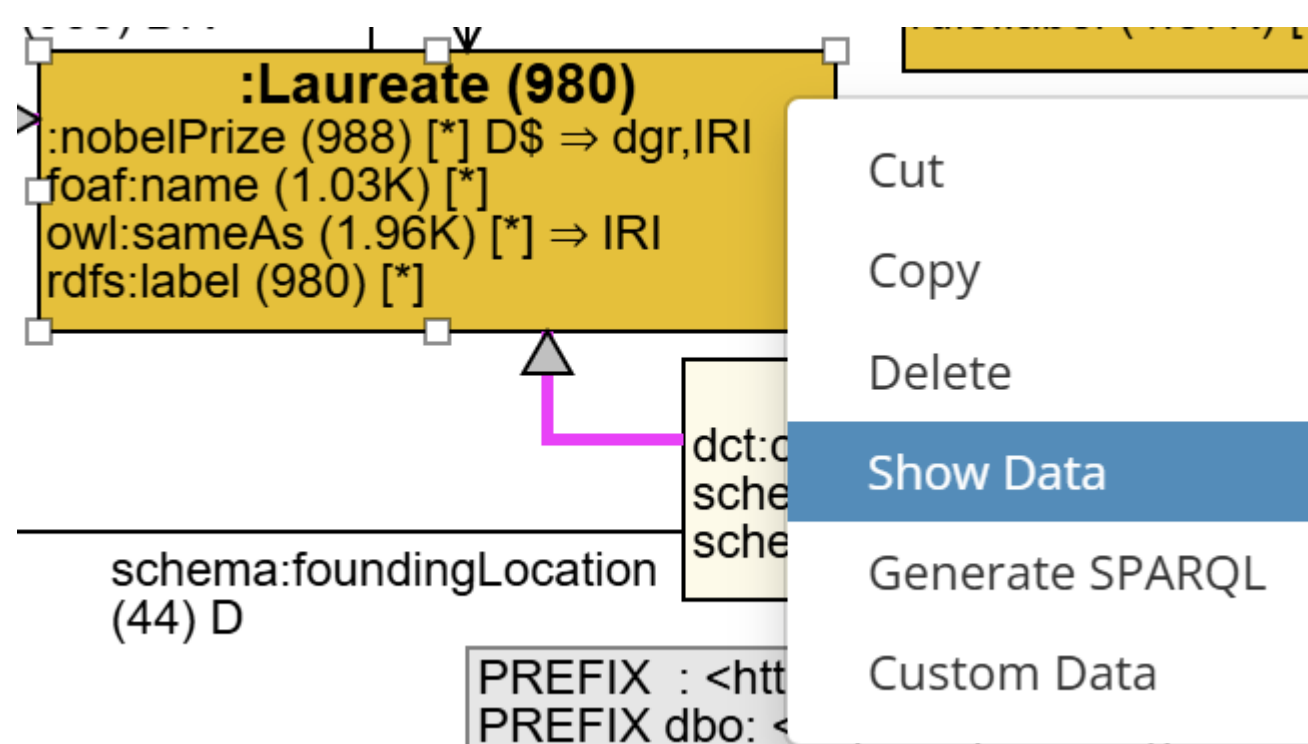
- **Extract schema** from a data endpoint, store in the tools' database
- **Visualize the schema** (in detailed or summary form) as a UML style diagram
- Schema-backed (full) **visual query environment** (with query auto-completion)
- **New! Query the data from the schema diagram**



```
SELECT DISTINCT * WHERE {  
  ?LaureateAward :university ?University .  
  ?LaureateAward rdf:type :LaureateAward .  
  OPTIONAL{?LaureateAward rdfs:label ?label .  
    FILTER(lang(?label)='en') }  
  ?University rdf:type dbo:University .  
  OPTIONAL{?University rdfs:label ?label_1 .  
    FILTER(lang(?label_1)='en') } }|
```



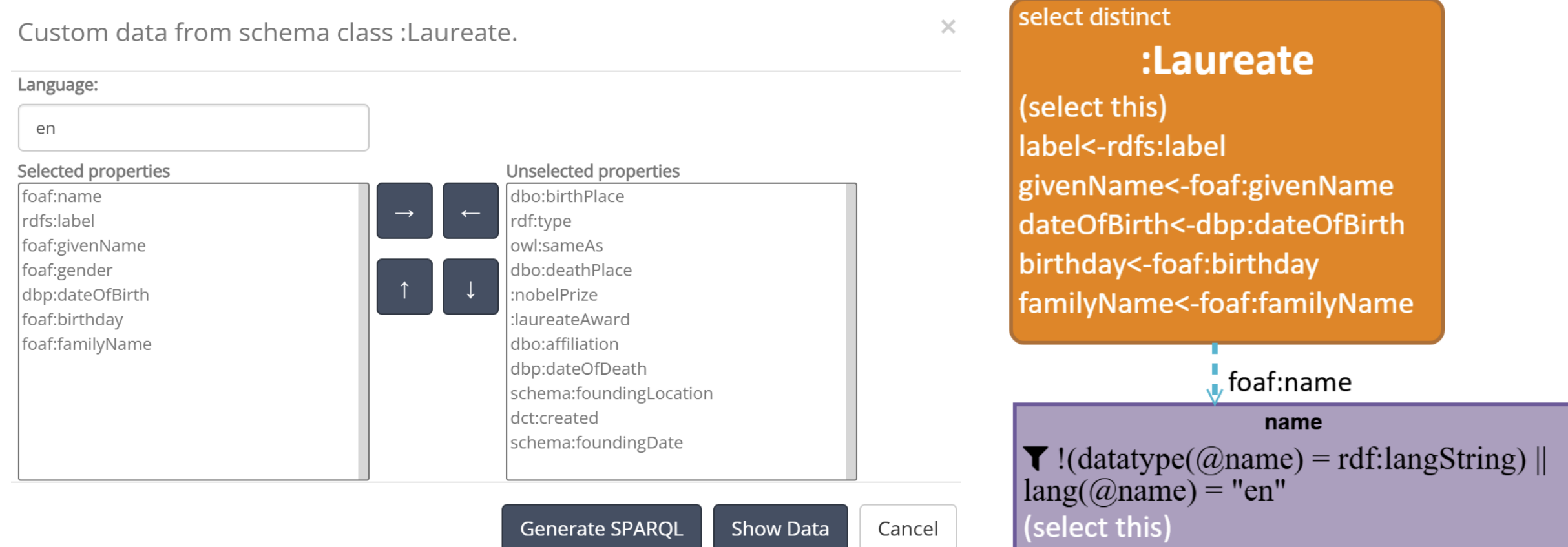
Edit the query
in visual or
SPARQL form



Only 50 rows shown. Total number of rows: 980.

#	Laureate	name	label	givenName	gender	dateOfBirth	birthday	familyName
1	http://data.nobelprize.org/resource/laure.../618	André Gide	André Paul Guillaume Gide	André	male	1869-11-22	1869-11-22	Gide
2	http://data.nobelprize.org/resource/laure.../960	Arthur Ashkin	Arthur Ashkin	Arthur	male	1922-09-02	1922-09-02	Ashkin
3	http://data.nobelprize.org/resource/laure.../961	Gérard Mourou	Gérard Mourou	Gérard	male	1944-06-22	1944-06-22	Mourou
4	http://data.nobelprize.org/resource/laure.../962	Donna Strickland	Donna Strickland	Donna	female	1959-05-27	1959-05-27	Strickland

```
SELECT DISTINCT * WHERE {  
  ?Laureate rdf:type :Laureate .  
  OPTIONAL{?Laureate foaf:name ?name .  
    FILTER(!(datatype(?name)=rdf:langString) || lang(?name)='en') }  
  OPTIONAL{?Laureate rdfs:label ?label . }  
  OPTIONAL{?Laureate foaf:givenName ?givenName . }  
  OPTIONAL{?Laureate foaf:gender ?gender . }  
  OPTIONAL{?Laureate dbp:dateOfBirth ?dateOfBirth . }  
  OPTIONAL{?Laureate foaf:birthday ?birthday . }  
  OPTIONAL{?Laureate foaf:familyName ?familyName . } }
```



Open-source resources:

- ViziQuer: <https://viziquer.lumii.lv/>
- <https://github.com/LUMII-Syslab/viziquer>
- ViziQuer Playground (about 180 schemas pre-loaded): <https://viziquer.app>
- (Docker) container environment (local installation): <https://github.com/LUMII-Syslab/viziquer-tools>
- Schema extractor: <https://github.com/LUMII-Syslab/OBIS-SchemaExtractor>

Future Work:

- Expand in-schema query capabilities (conditions, etc.)
- Automate transition to full visual query environment
- Evaluate the approach

Demo:

<https://github.com/LUMII-Syslab/viziquer/tree/development/doc/demo/schema-diagrams>

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