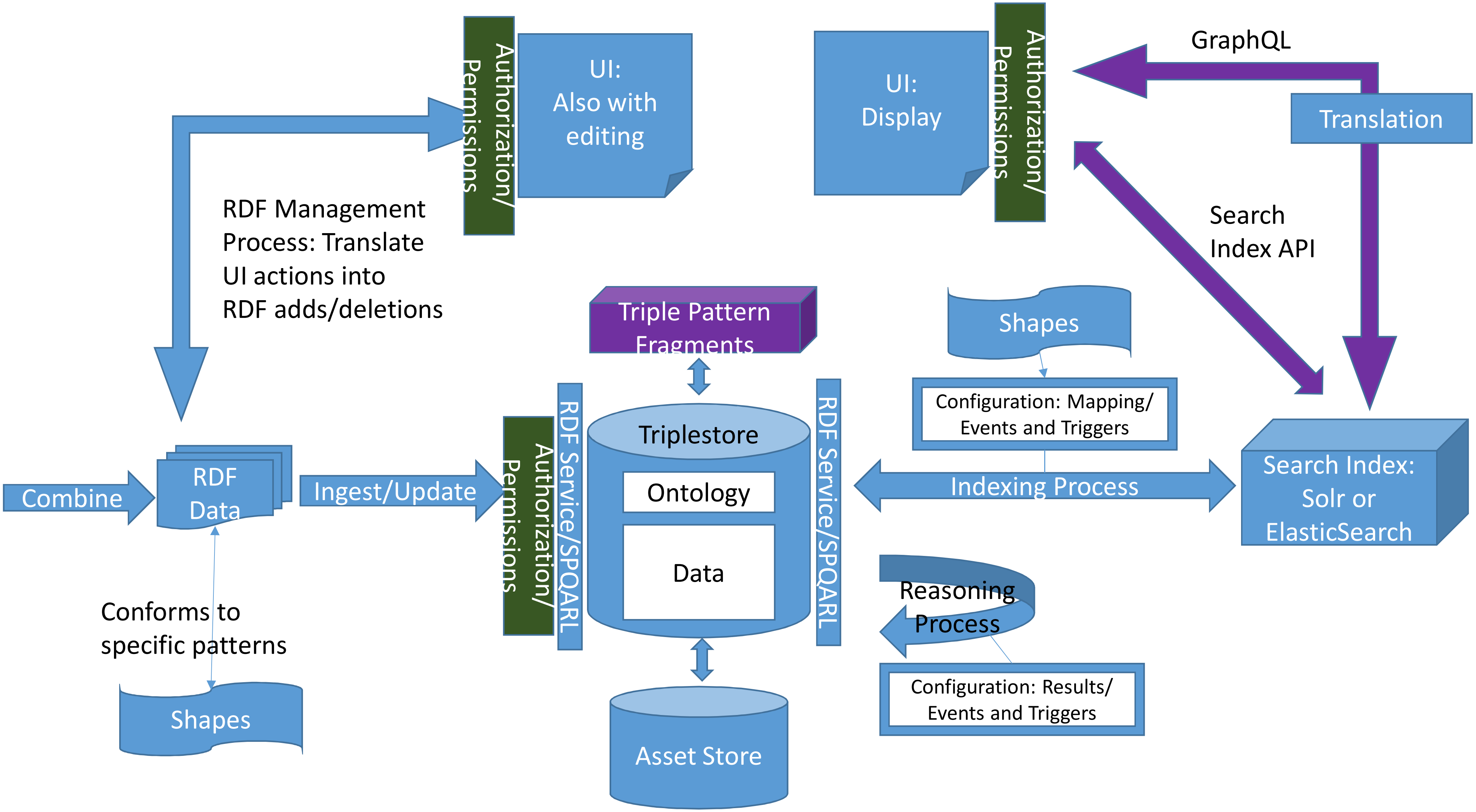
When androids dream of … oh you know



Authorization/ Permissions

UI: Also with editing

UI: Display

Authorization/ Permissions

GraphQL

Translation

RDF Management Process: Translate UI actions into RDF adds/deletions

Search Index API

Triple Pattern Fragments

Shapes

Configuration: Mapping/ Events and Triggers

Combine

RDF Data

Ingest/Update

Authorization/ Permissions

RDF Service/SPQARL

Triplestore

Ontology

Data

RDF Service/SPQARL

Indexing Process

Search Index: Solr or ElasticSearch

Reasoning Process

Configuration: Results/ Events and Triggers

Conforms to specific patterns

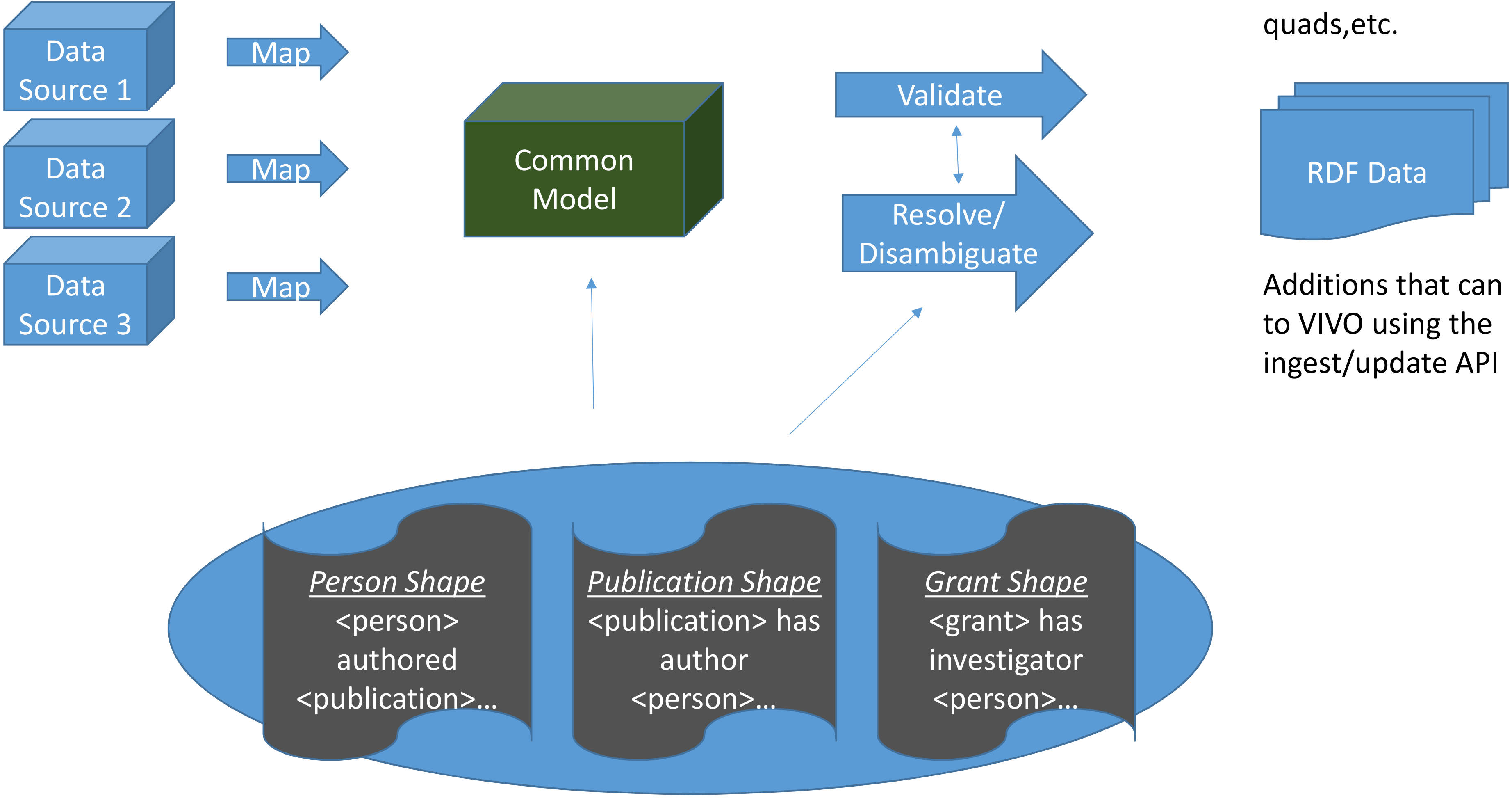
Shapes

Asset Store

Extract/Transform:
Map to common model based on shapes

Validate data based on shapes.
Deduplicate/disambiguate.

Generate serialization of RDF Data in requested format: N3, JSON-LD, quads,etc.



Data Source 1

Data Source 2

Data Source 3

Map

Map

Map

Common Model

Validate

Resolve/ Disambiguate

RDF Data

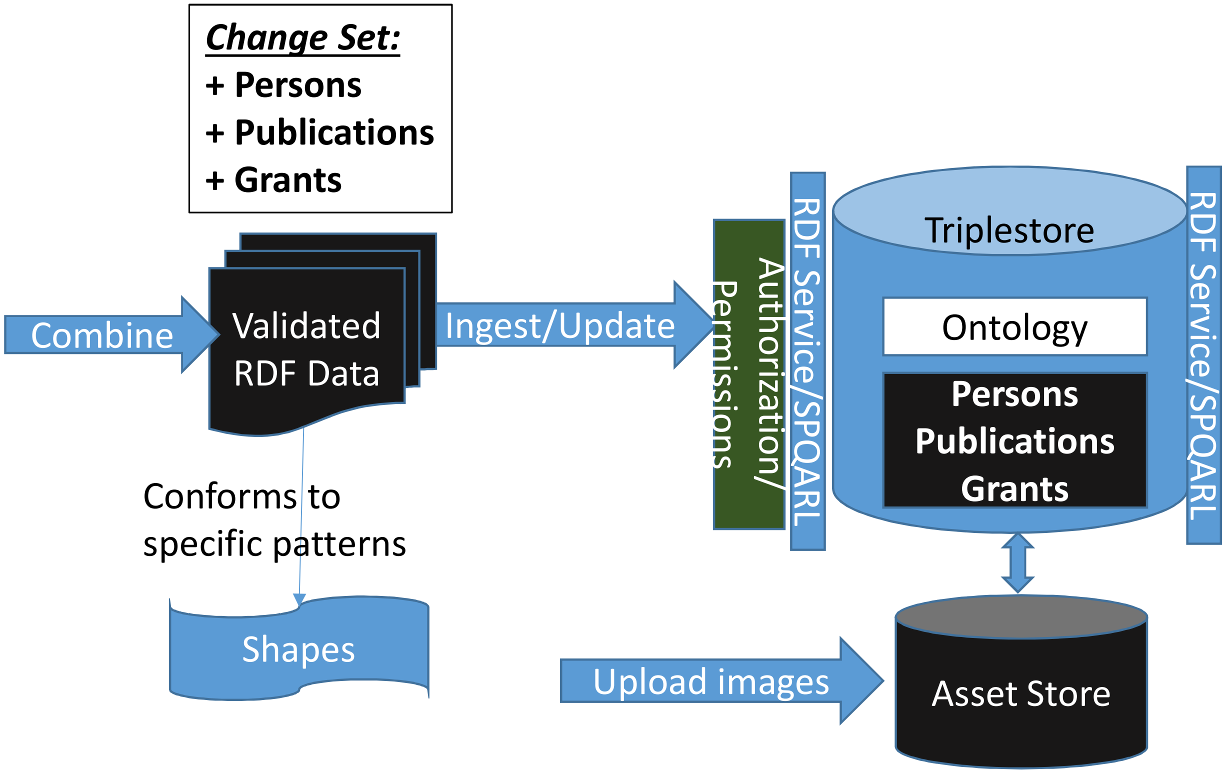
Person Shape
<person> authored <publication>…

Publication Shape
<publication> has author <person>…

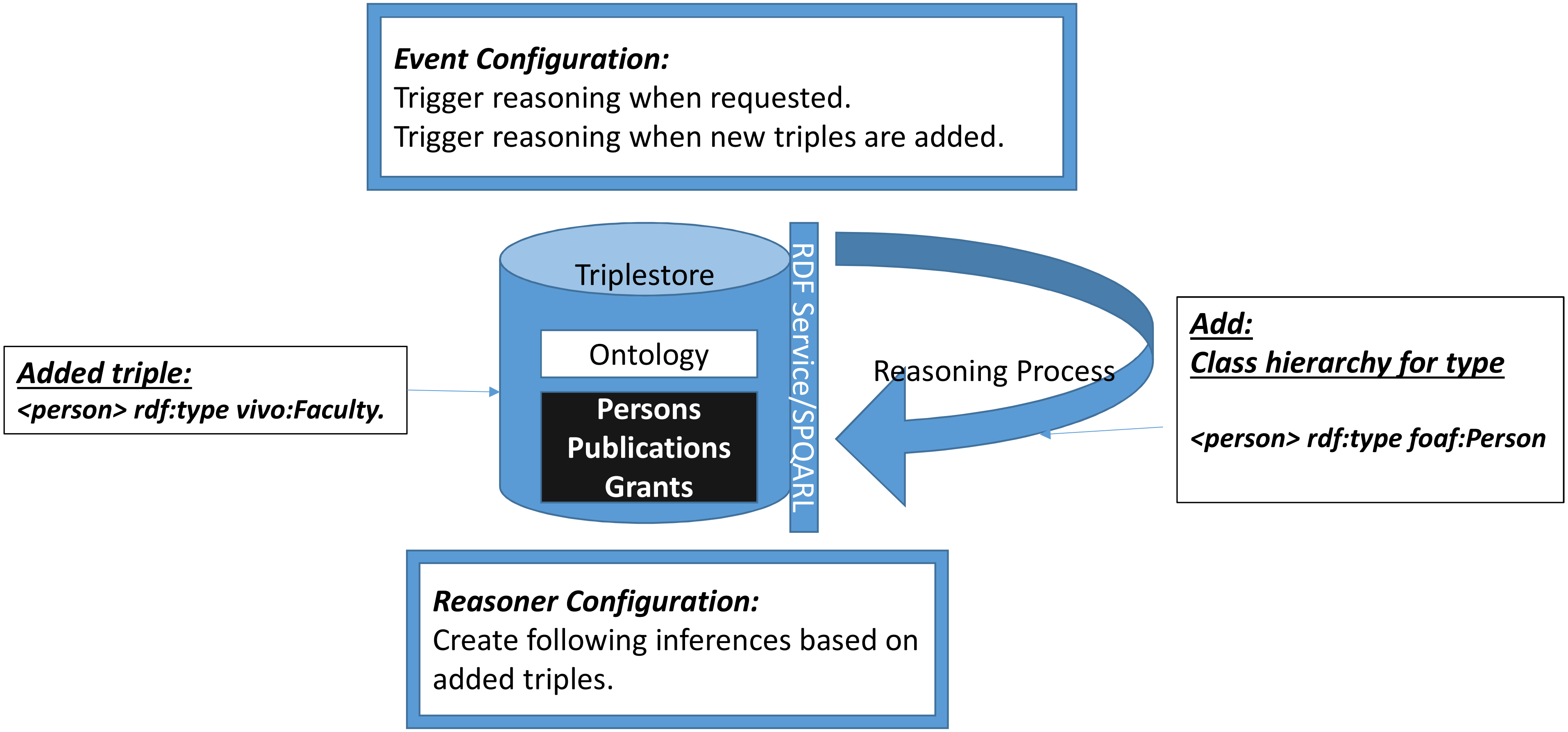
Grant Shape
<grant> has investigator <person>…

Additions that can be sent to VIVO using the ingest/update API

Persons, publications, grants, and related research information is harvested from multiple sources and made available as a change set with additions to be stored in the triple store. The ingest API (which accepts additions and retractions) populates the triple store with the provided data. Images can be added separately to the asset store using the image upload process/API.



The reasoning process can be triggered independently or in conjunction with an update. A potential new feature would be to enable configuration of the reasoned to specify through configuration what triples should be inferred and added to the triple store.



Event Configuration:
Trigger reasoning when requested.
Trigger reasoning when new triples are added.

Added triple:
<person> rdf:type vivo:Faculty.

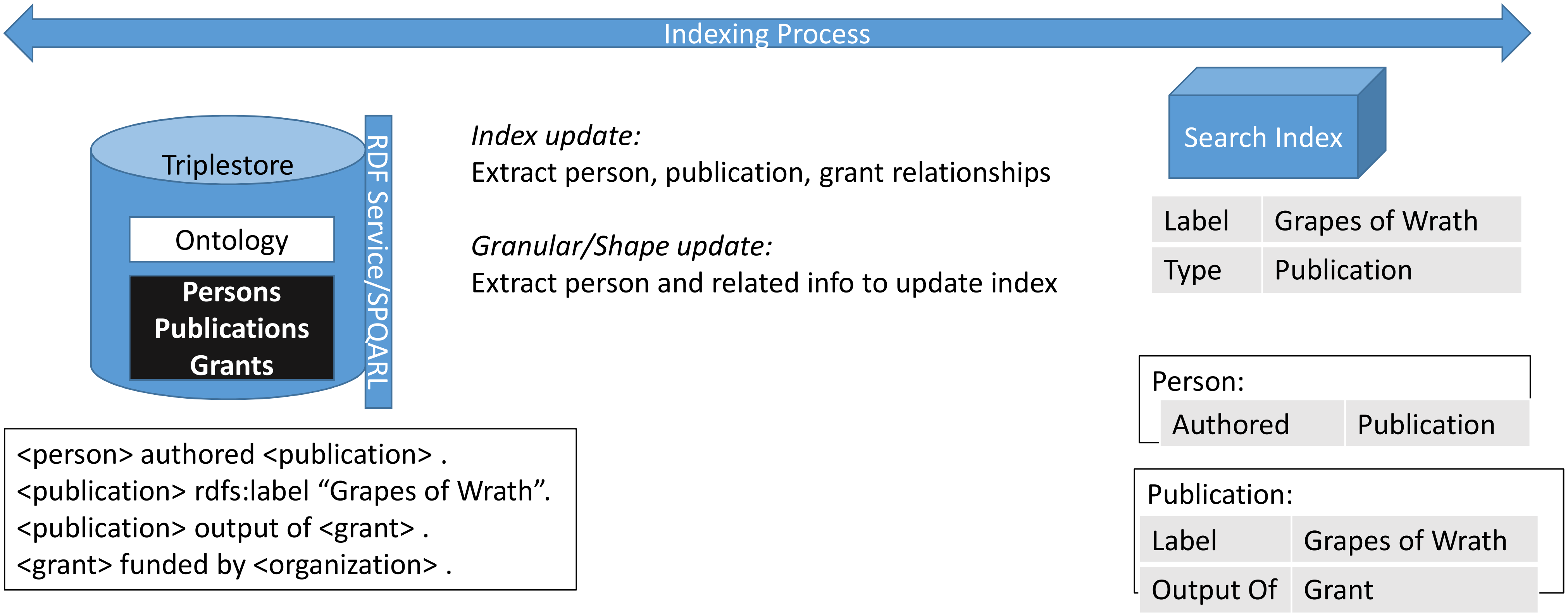
Add:
Class hierarchy for type

<person> rdf:type foaf:Person

Reasoner Configuration:
Create following inferences based on added triples.

The indexing process, further described on the next slide, can be configured to run when specific events occur (such as update to a particular ‘shape’ or entity type or on ingest) and/or on request. Queries define how information will be extracted and added to the search index.

The “index” may actually be multiple indices, with one central general search index and multiple shape-based indices.



Index update:
Extract person, publication, grant relationships

Granular/Shape update:
Extract person and related info to update index

<person> authored <publication> .
<publication> rdfs:label “Grapes of Wrath”.
<publication> output of <grant> .
<grant> funded by <organization> .

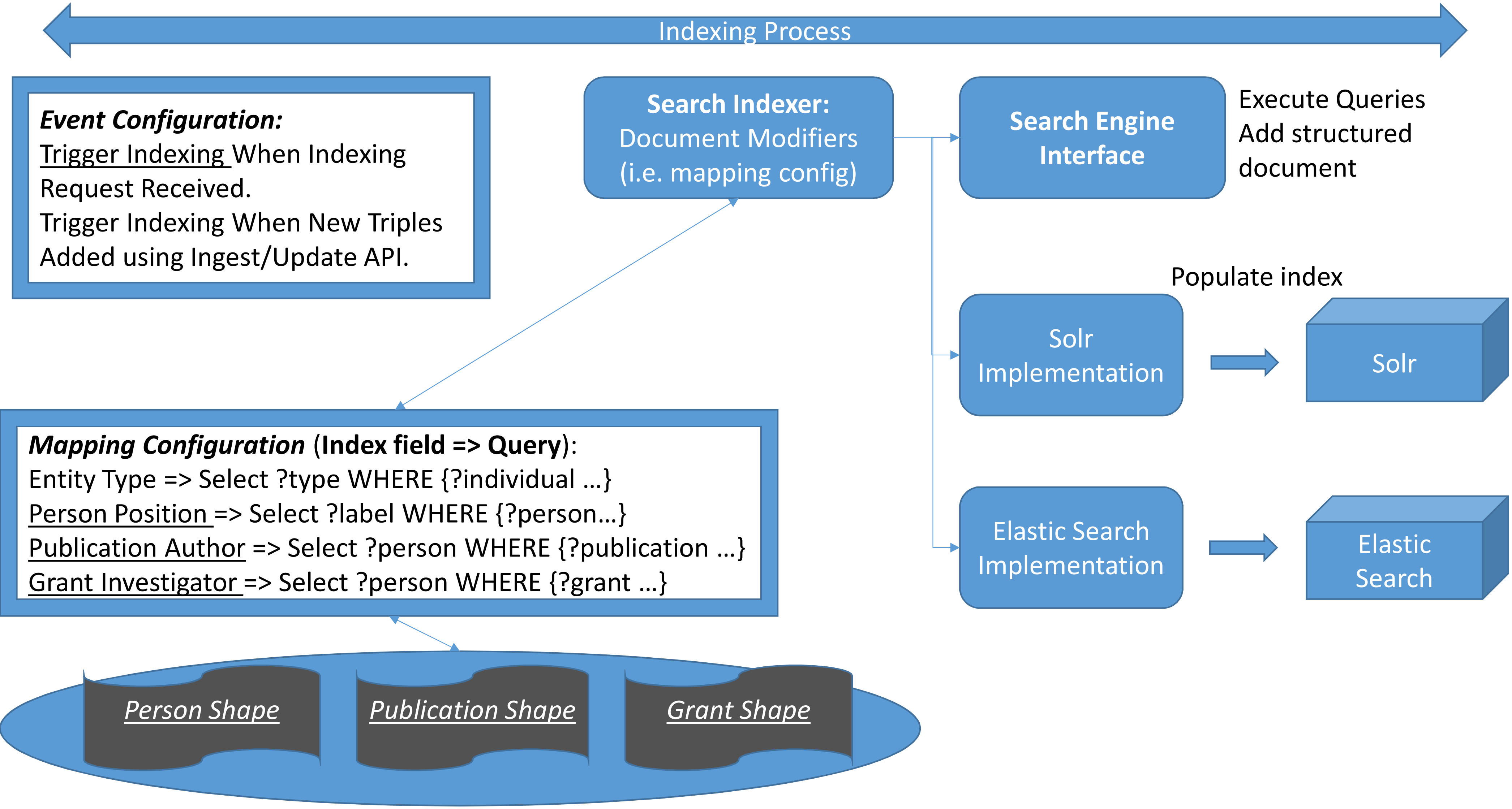
Label	Grapes of Wrath
Type	Publication

Person:

Authored	Publication

Publication:

Label	Grapes of Wrath
Output Of	Grant



Indexing Process

Event Configuration:
Trigger Indexing When Indexing Request Received.
Trigger Indexing When New Triples Added using Ingest/Update API.

Search Indexer:
Document Modifiers
(i.e. mapping config)

Search Engine Interface

Execute Queries
Add structured document

Populate index

Solr Implementation

Solr

Elastic Search Implementation

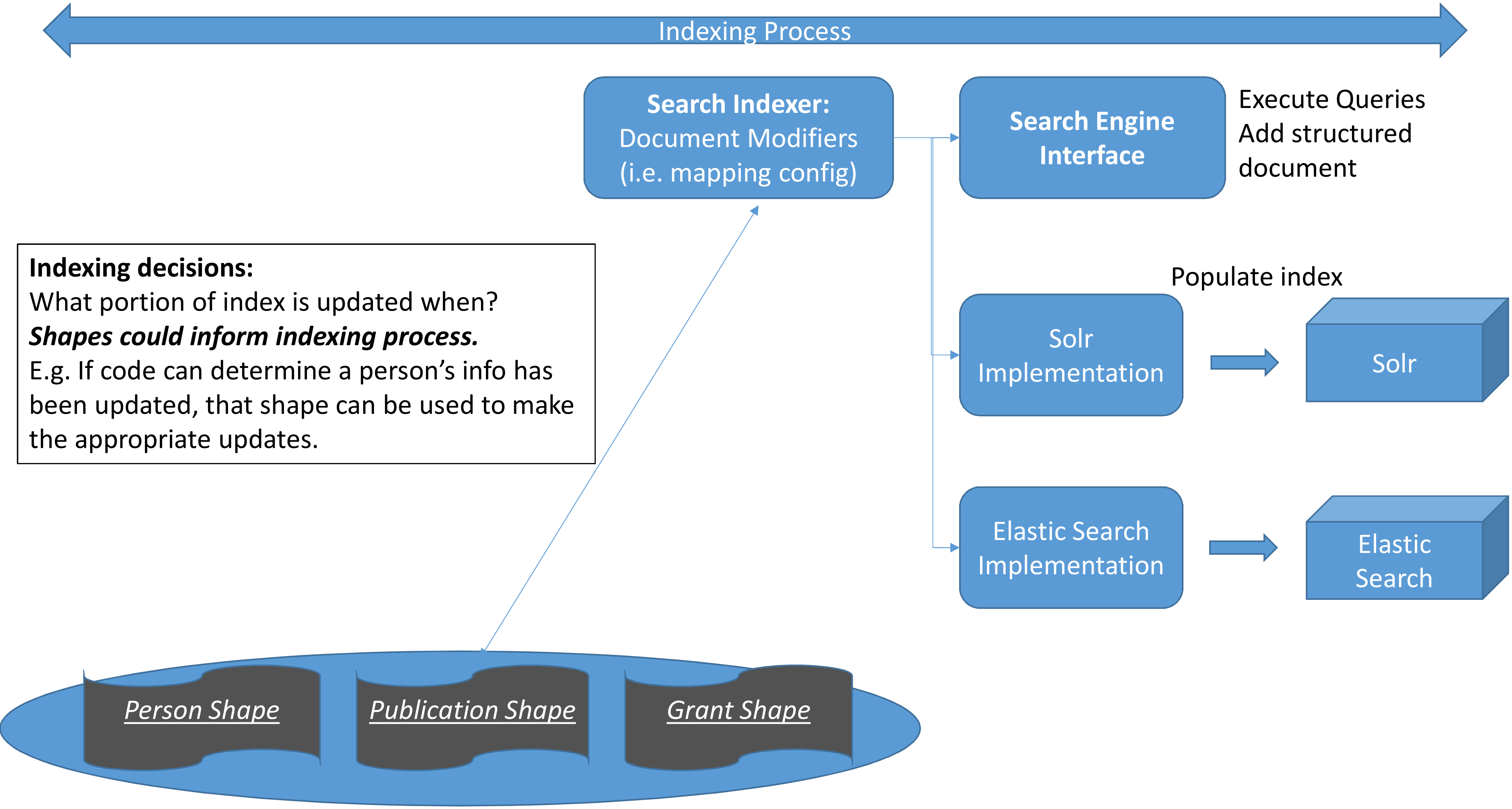
Elastic Search

Mapping Configuration **(Index field => Query)**:
Entity Type => Select ?type WHERE {?individual …}
Person Position => Select ?label WHERE {?person…}
Publication Author => Select ?person WHERE {?publication …}
Grant Investigator => Select ?person WHERE {?grant …}

Person Shape

Publication Shape

Grant Shape



Indexing Process

Search Indexer:
Document Modifiers
(i.e. mapping config)

Search Engine Interface

Execute Queries
Add structured document

Populate index

Solr Implementation

Solr

Elastic Search Implementation

Elastic Search

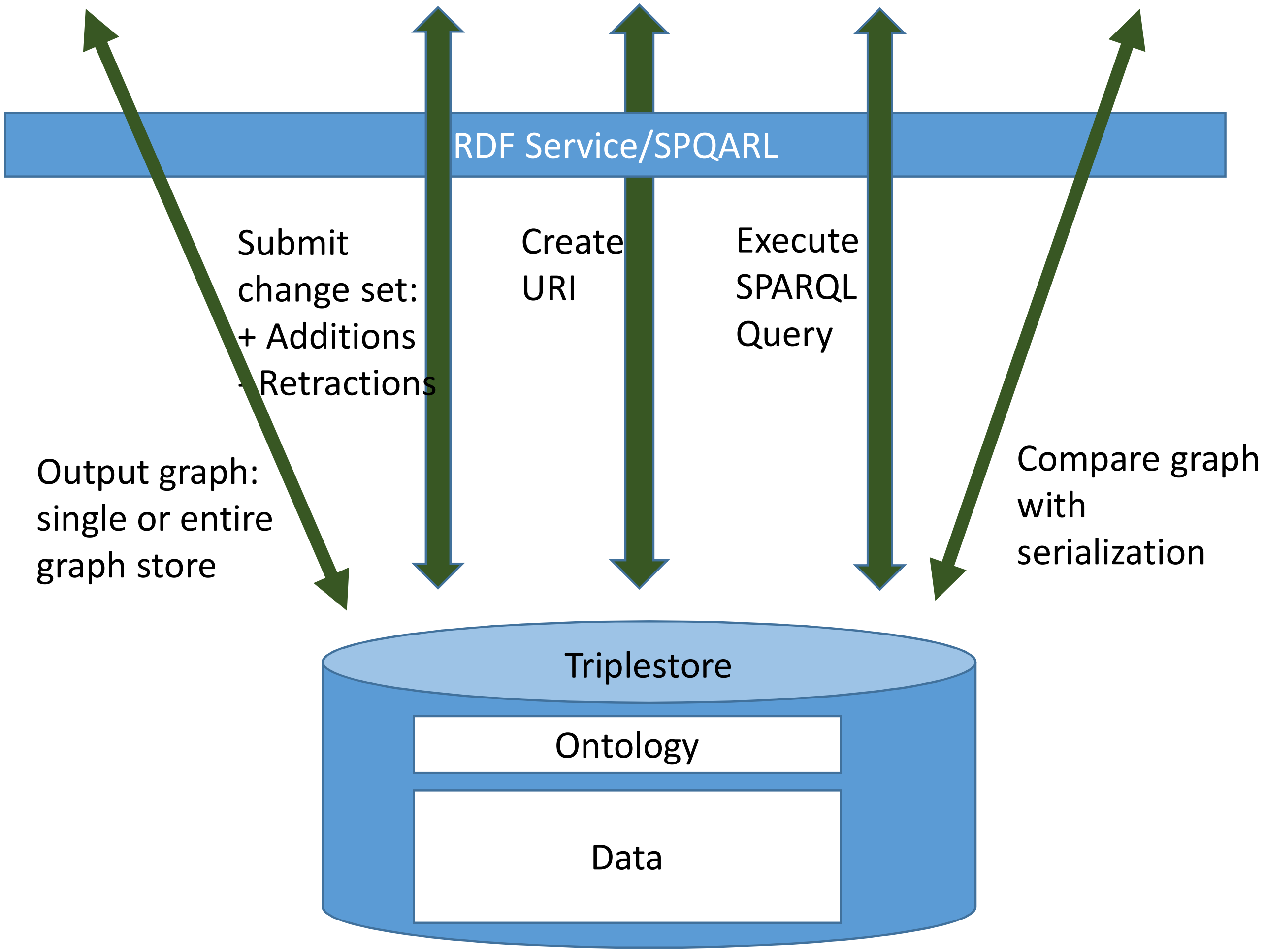
Indexing decisions:
What portion of index is updated when?
Shapes could inform indexing process.
E.g. If code can determine a person’s info has been updated, that shape can be used to make the appropriate updates.

Person Shape

Publication Shape

Grant Shape

Externalization may involve channeling requests to triple store through an API layer e.g.
RDF Service Interface or SPARQL API



RDF Service/SPQARL

Submit
change set:
+ Additions
- Retractions

Create
URI

Execute
SPARQL
Query

Output graph:
single or entire
graph store

Compare graph
with
serialization

Triplestore

Ontology

Data