Workshop on Contextualised Knowledge Graphs
Co-located with ISWC 2018, Monterey, California, USA
CC-BY-4.0

Engaging Content
Engaging People

Towards Knowledge-based Systems for GDPR Compliance

Harshvardhan J. Pandit, Declan O' Sullivan, Dave Lewis
@coolharsh55 pandith@tcd.ie
ADAPT Centre - Trinity College Dublin - Ireland
https://openscience.adaptcentre.ie/

The ADAPT Centre is funded under the SFI Research Centres Programme (Grant 13/RC/2106) and is co-funded under the European Regional Development Fund.

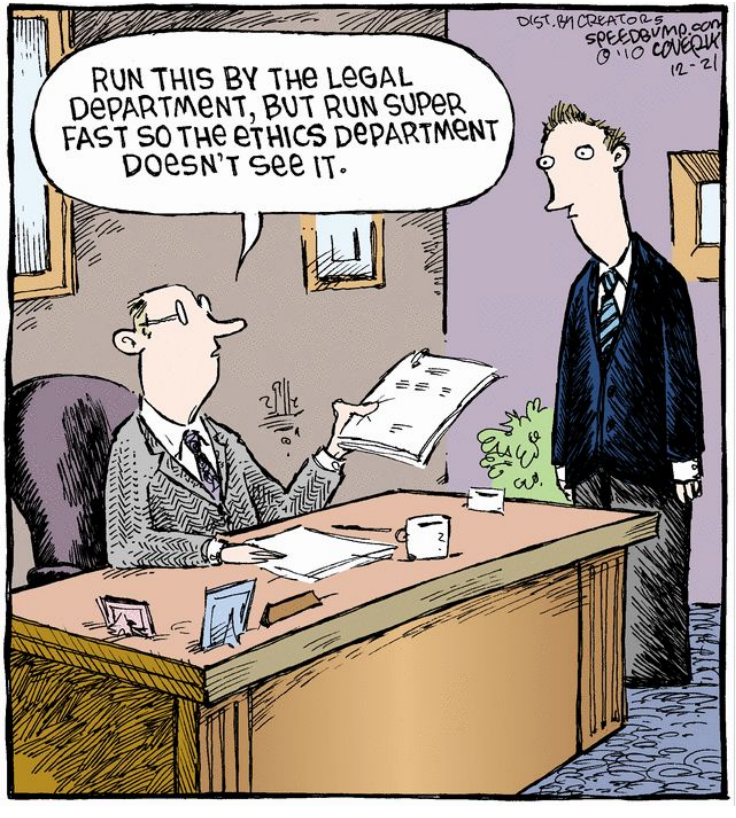
What is a Knowledge Graph?

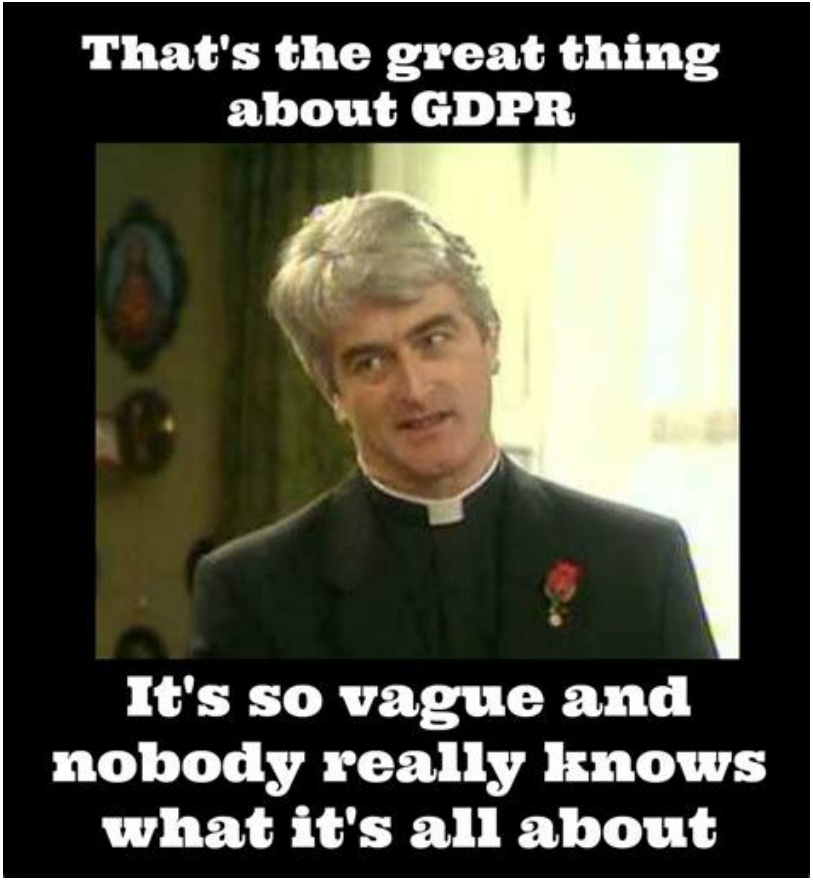
- Knowledge Base used by Google - Wikipedia
- What is a Knowledge Base ?
- Store complex structured and unstructured information
- What is a Contextual Knowledge Graph ?
- What is a Context? Is it the same as Semantics ?
- Does everything defined using semantics become 'knowledge' ?
- Are all semantic data graphs also 'knowledge graphs' ?

How close are we to redefining the concepts associated with the semantic web such as terms and relations and ontologies going towards knowledge ???

(IMHO → semantics provides a way to define information ↑)

Why do we need a CKG for GDPR?





"**Towards Knowledge-based Systems for GDPR Compliance**"

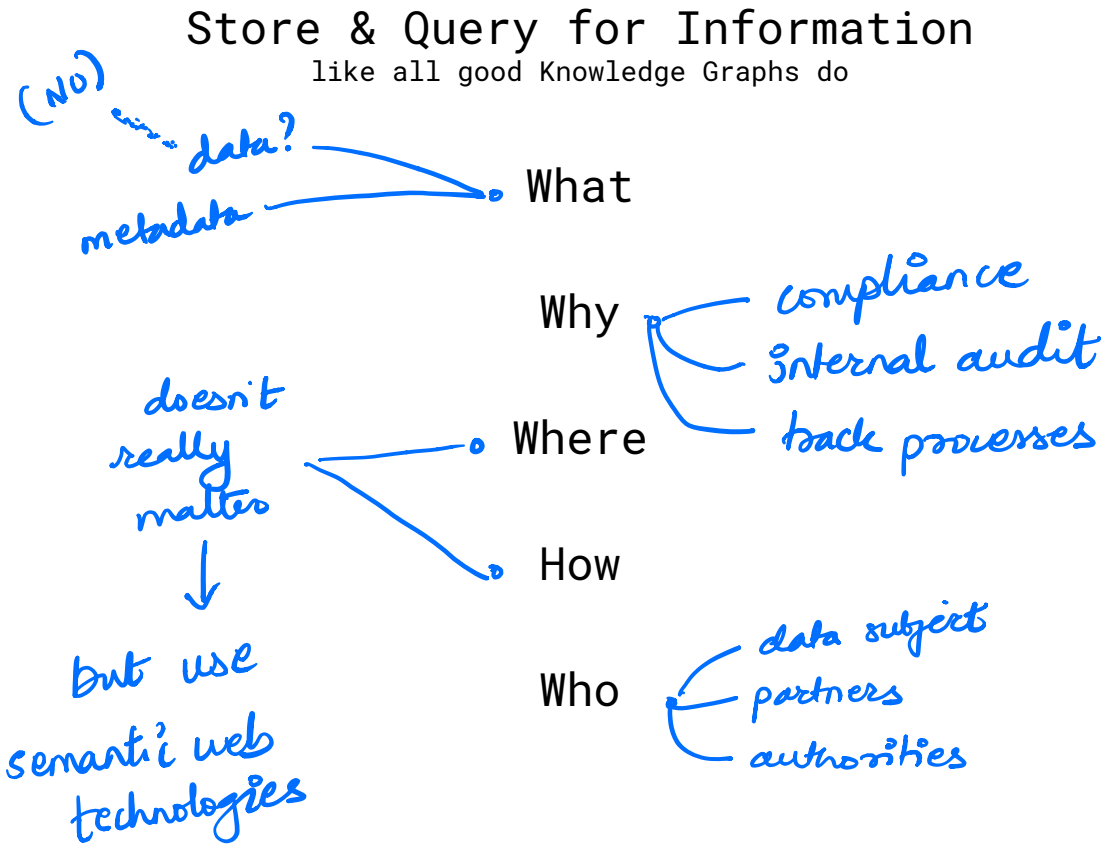
http://openscience.adaptcentre.ie/ | pandith@tcd.ie | @coolharsh55

CKG 2018 (ISWC 2018) ; Monterey California, USA ; Presented by: Harshvardhan J. Pandit

Why do we need a CKG for GDPR?

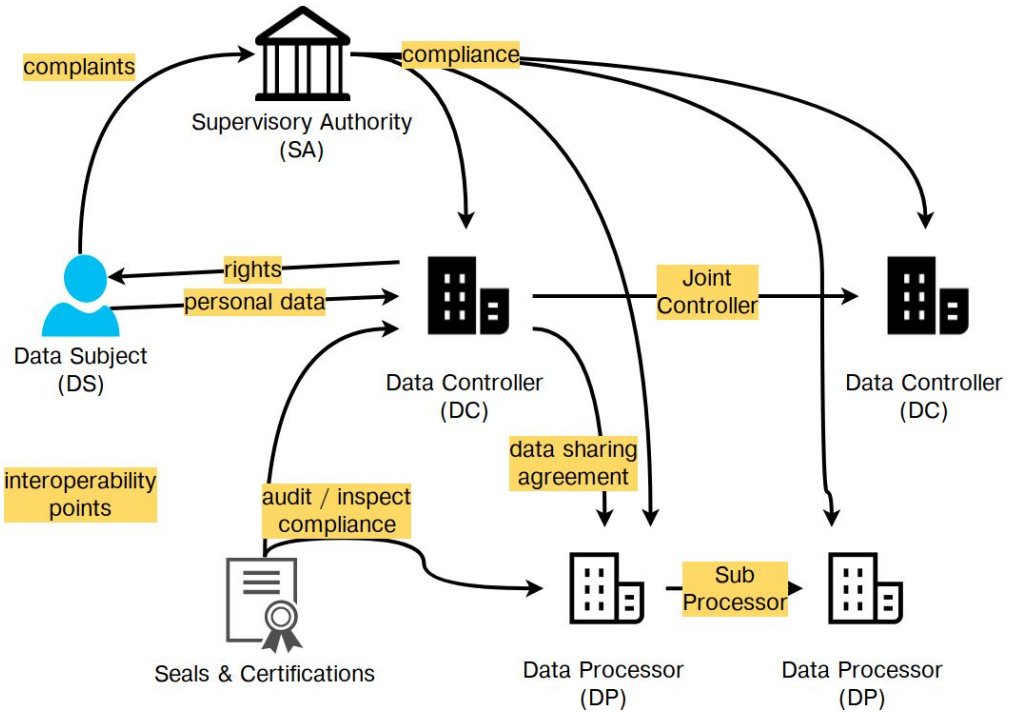
1. More information is associated with compliance than ever before
2. This information is inherently linked to other information
   a. business processes
   b. activities, entities, datasets, practices, audits
   c. security
   d. other laws
3. Combine all the information → Generalise
4. Extract contextual information → Specialise
5. Flexible to expand and include more information

What will the CKG do for GDPR?



Sources / Actors / Agents

1. Data Subject
2. Data Controller
3. Data Processor
4. Certificate Authority
5. Supervisory Authority
   Regulatory Body



GDPR Interoperability Model
EURAS 2018

Information Types

- Provenance
- Consent
- Data Sharing Agreements
- Certification
- Compliance

source, usage, lifecycles

data — personal data

consent

shared activities, obligations

document → demonstrate

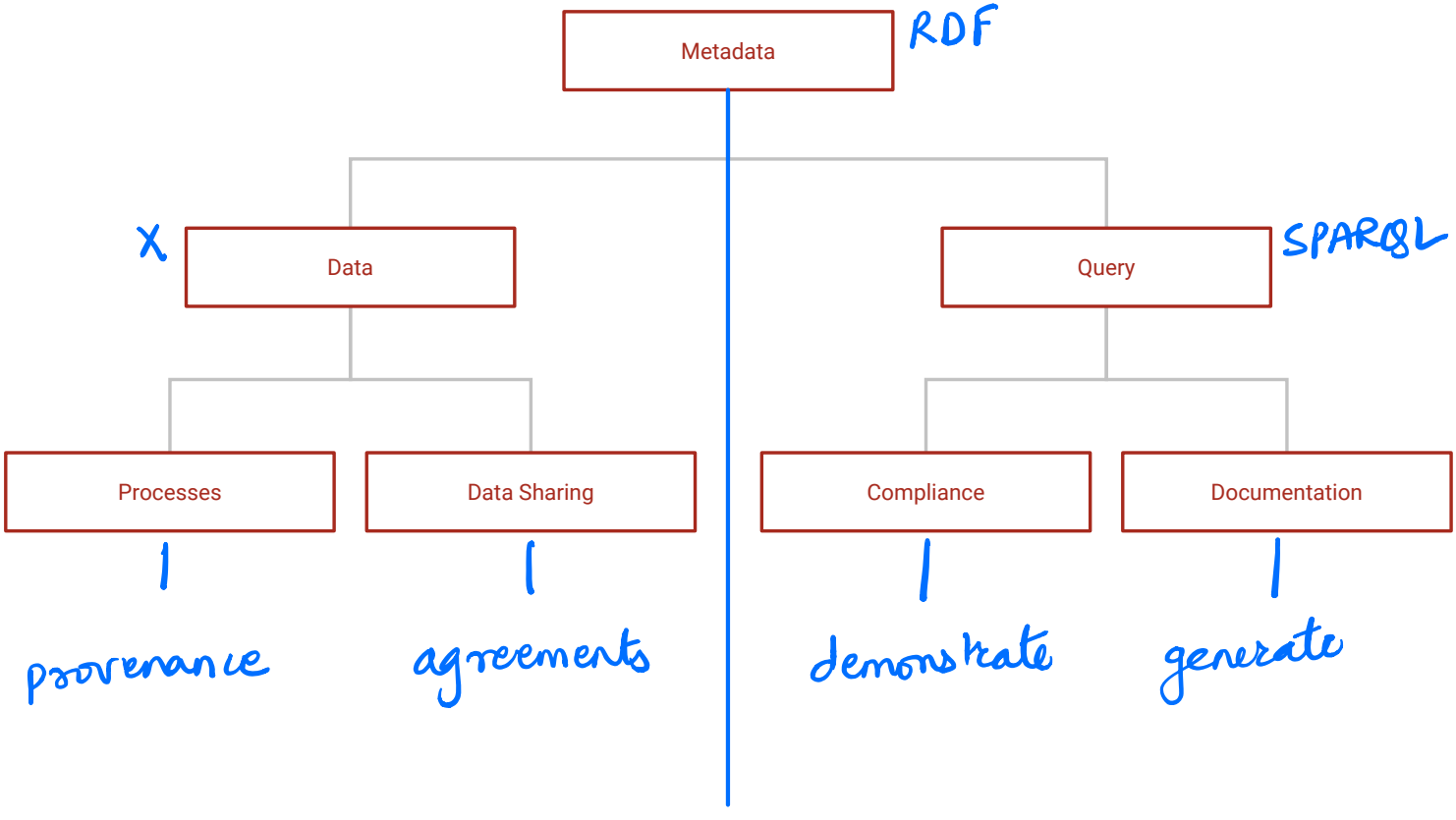
Question:

What level of conceptual mapping should queries use/expose to the underlying data model?

Answer:

Depends on the Actor/Agent and their specific needs

Smarter Interfaces

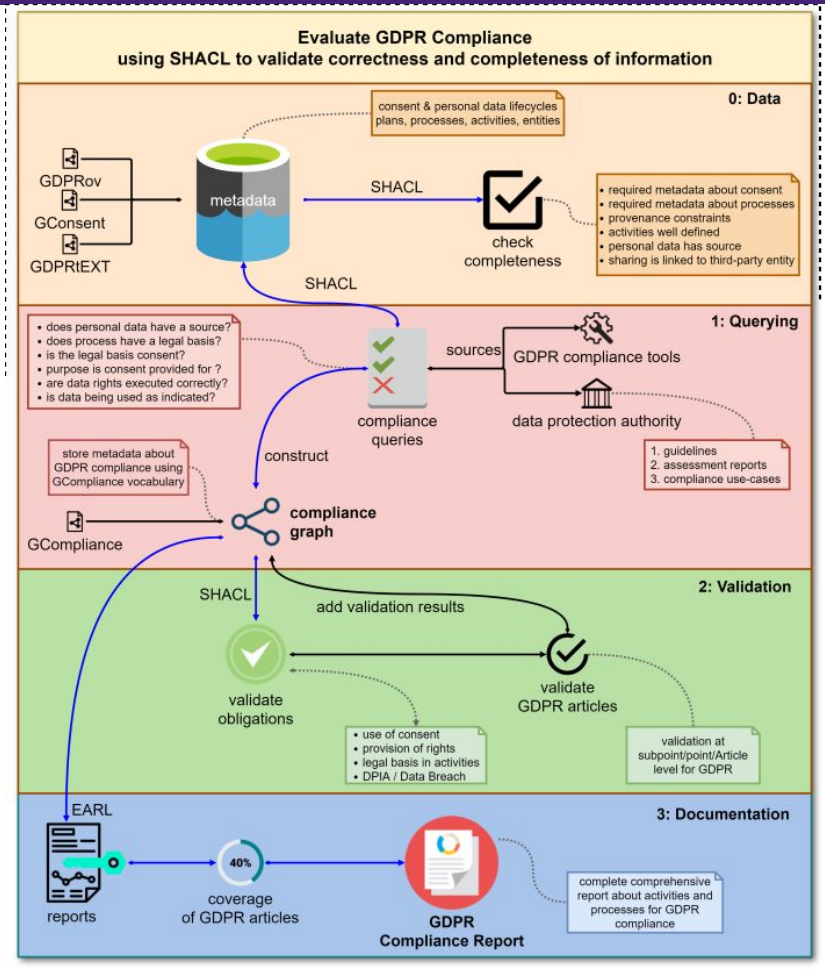


Metadata Completeness / Validation

① completeness

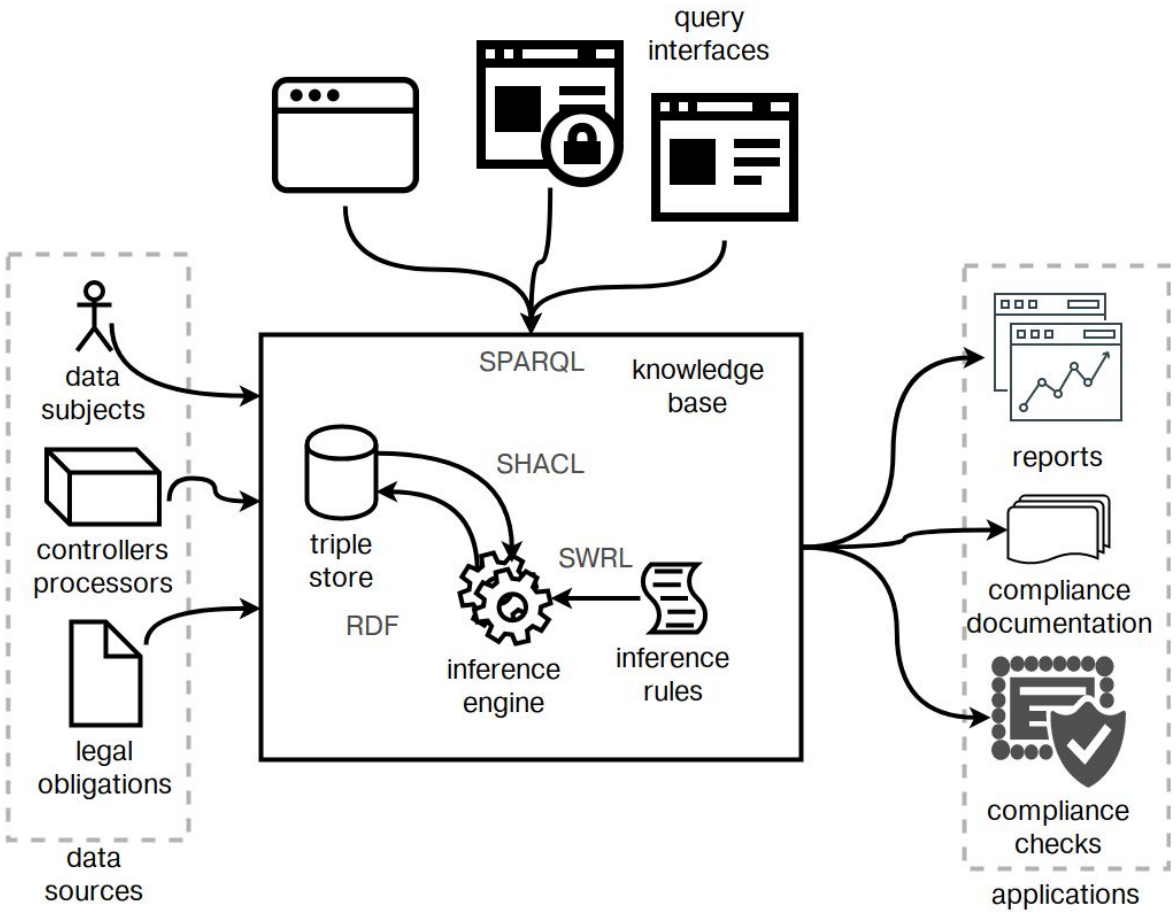
② compliance graph

③ validation & documentation

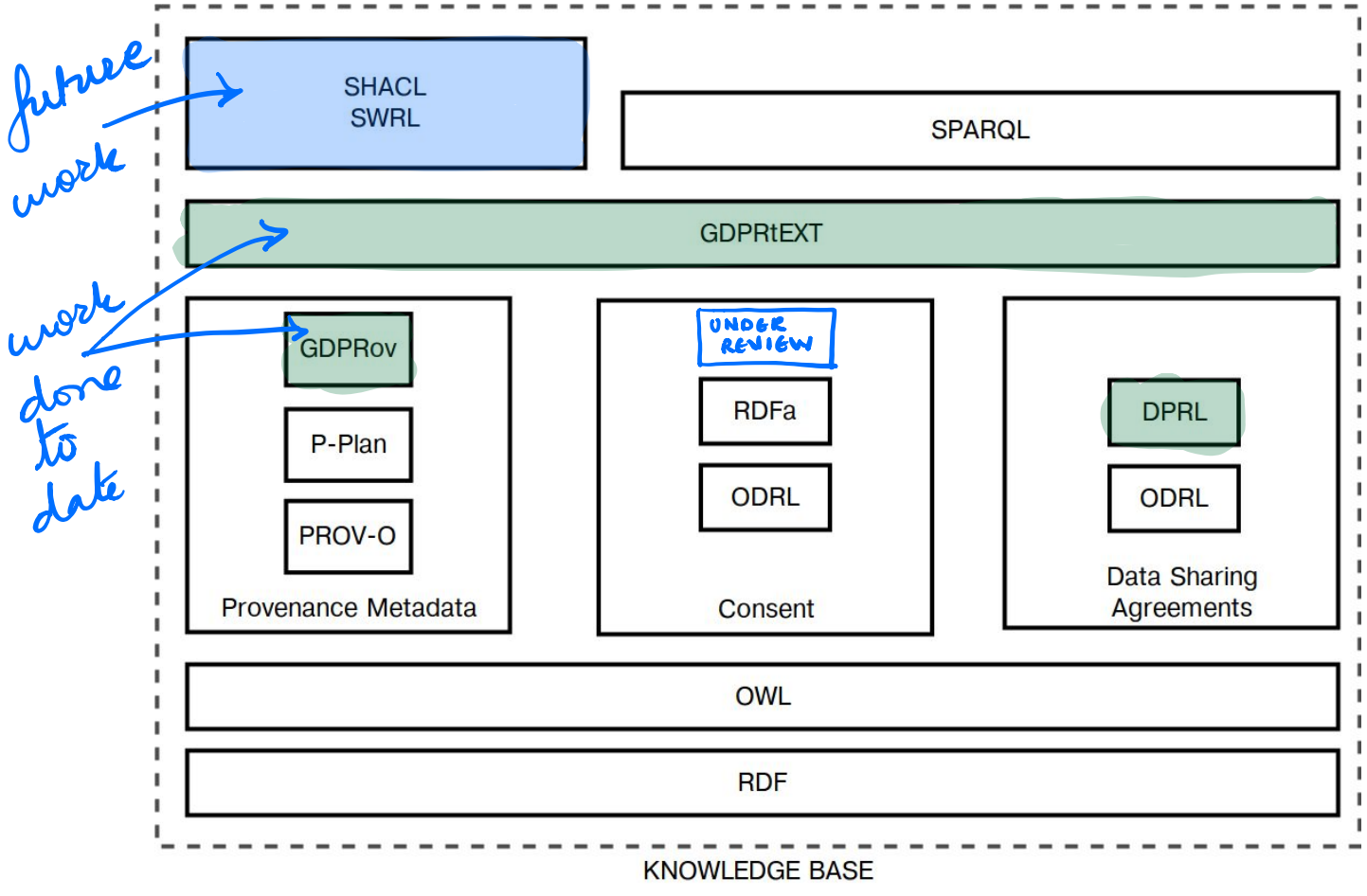
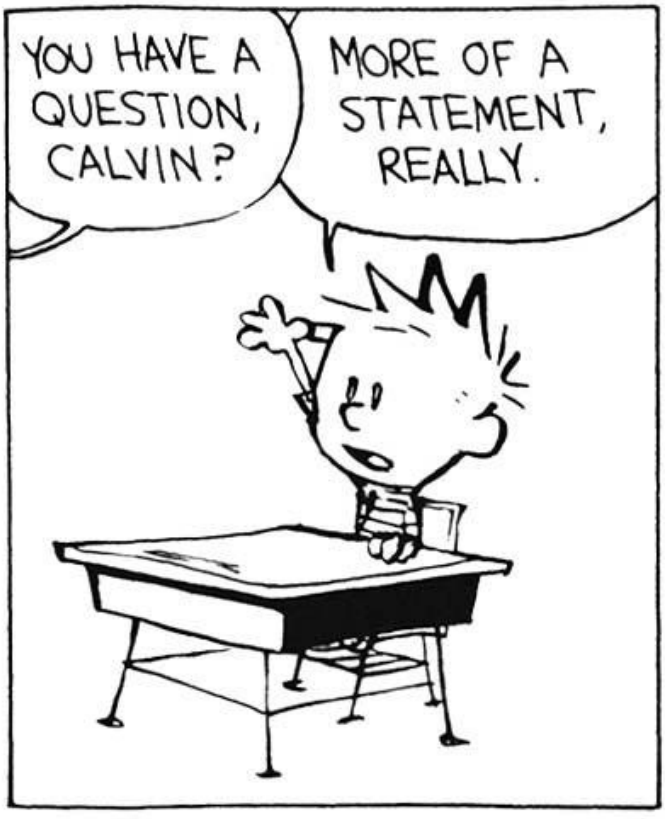


Posters presented at SEMANTICS 2018

Approach


query
interfaces
SPARQL
knowledge
base
data
subjects
controllers
processors
legal
obligations
data
sources
triple
store
RDF
SHACL
SWRL
inference
engine
inference
rules
reports
compliance
documentation
compliance
checks
applications

Approach


future work
work done to date
SHACL
SWRL
SPARQL
GDPRtEXT
GDPRov
P-Plan
PROV-O
Provenance Metadata
UNDER REVIEW
RDFa
ODRL
Consent
DPRL
ODRL
Data Sharing Agreements
OWL
RDF
KNOWLEDGE BASE

END OF PRESENTATION