CLOUD COMPUTING APPLICATIONS

Graphs: Semantic Web

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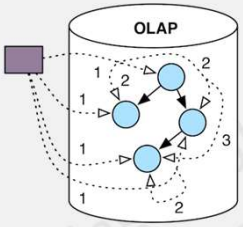
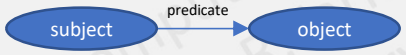
Semantic web

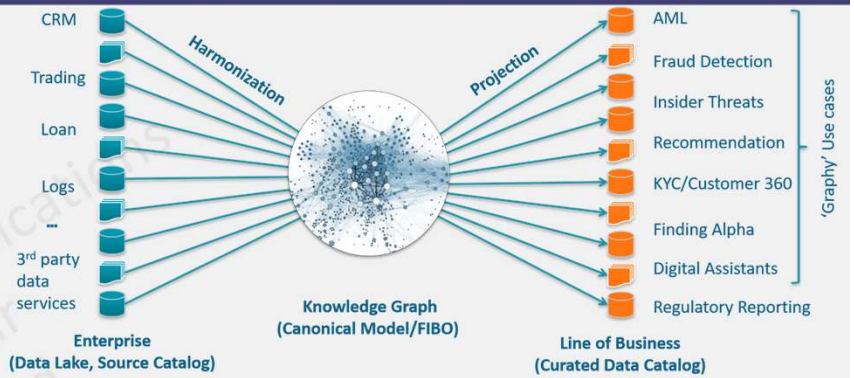
- Link explicit “data” on the world wide web in a machine readable format
  - Targeted semantic search
  - Automated agents
  - Fraud Detection
- Technologies
  - Data Model: RDF, RDF*
    - Collection of triples
    - RDF is the model, syntaxes vary: RDF/XML, Turtle, JSON-LD, etc.
      - **Terse RDF Triple Language** (**Turtle**)
        - Subject Predicate Object
  - Query language: SPARQL, GQL
  - Ontology language: OWL

<http://example.org/tea.owl> **rdf:type owl:Ontology** .

:Tea rdf:type owl:Class .

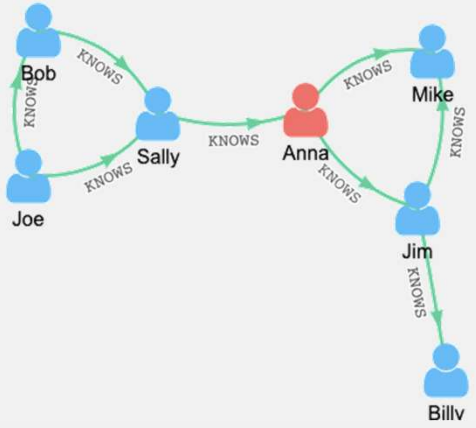






SPARQL

```
PREFIX foaf: http://xmlns.com/foaf/0.1/
SELECT   ?name
         ?email
WHERE
  {
       ?person      a            foaf:Person .
       ?person      foaf:name    ?name .
       ?person      foaf:mbox    ?email .
  }
```



Graph Query Languages

- RDF
  - SPARQL → Query
- Property Graph
  - Cypher → Query
    - Neo4j
    - Supported by SAP HANA
  - Gremlin → Traversal
    - Apache TinkerPop
      - DataStax
  - Apache Spark Graphframes .find() → Query
  - GQL: Voted as a new standard in 2019 → Query
    - Rooted in Cypher and Oracle's PGQL
- Competition is fierce!
  - There may be more than one winner