



timbr

SQL Knowledge Graph™

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THE DATABASE GAP

THE GAP

HOW DATA IS USUALLY



THE CONNECTED

STORED

Modern relational databases

WORLD

Semantic Web initiative

“LEGACY”

“MODERNITY & FUTURE”

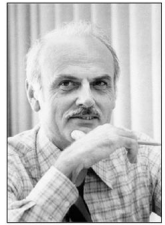
USES CASES, DATA CENTRICITY,
MANAGEMENT FASHIONS..... REALLY?

Entity-relation model (tables/views)

Knowledge Graph (ontologies)

DATABASE TIMELINE

RELATIONAL DBs
Edgar Codd-IBM



SQL

80%
Mkt Sh

75%
Mkt Sh

1970

1980

1990

2000

2010

2020

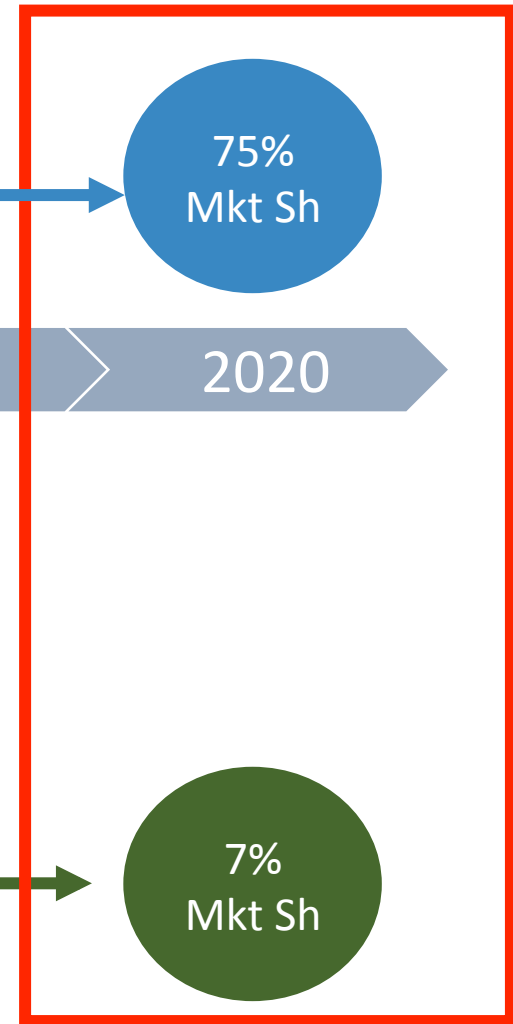
proposals
for the web
data
standard
from W3C
like XML
and RDF

Semantic Web:
TBL - JHendler

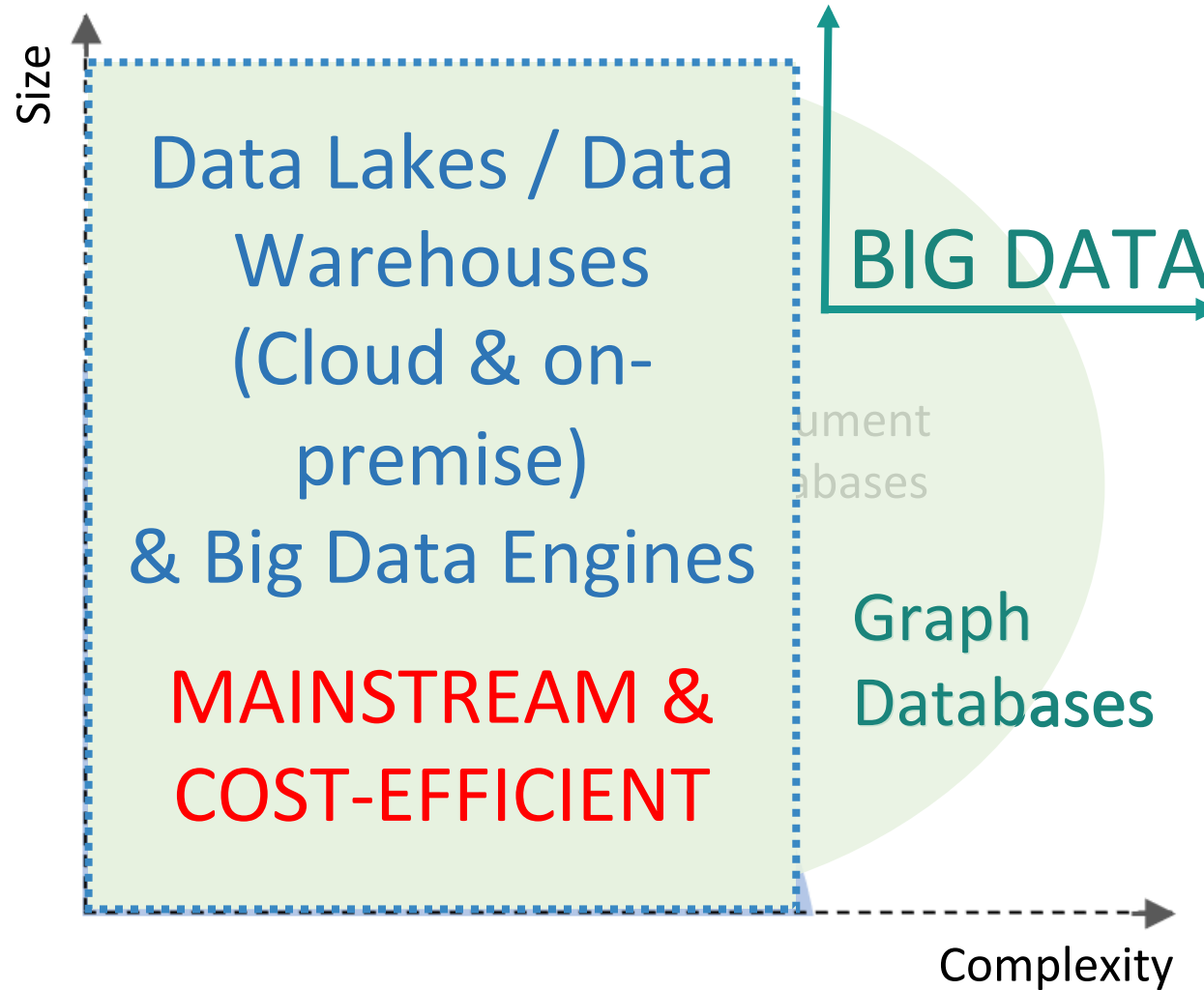


SPARQL
Cypher

7%
Mkt Sh



SIZE vs COMPLEXITY: A TRADEOFF?



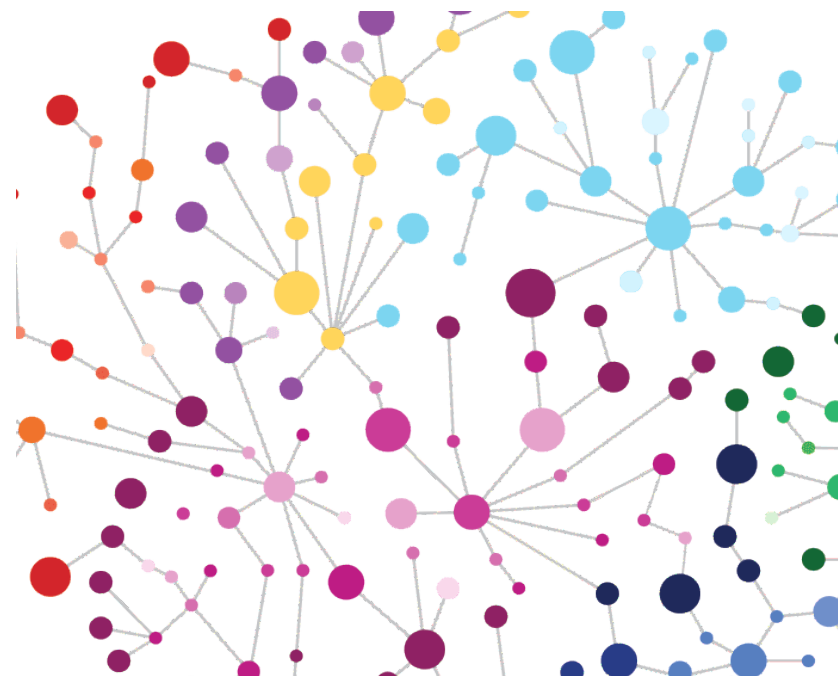
BARRIERS TO ADOPTION



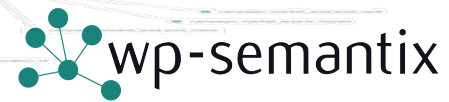
Non-standardization
(non-compliance with
standards)
Language
Scalability
Expertise
Backend
ETL

Graph DBs / Knowledge

Graphs
SPARQL and other languages



THE SQL KNOWLEDGE GRAPH



ONTOLOGIES IN SQL ON DATA WAREHOUSES / DATA LAKES



MAKING KNOWLEDGE GRAPHS ACCESSIBLE



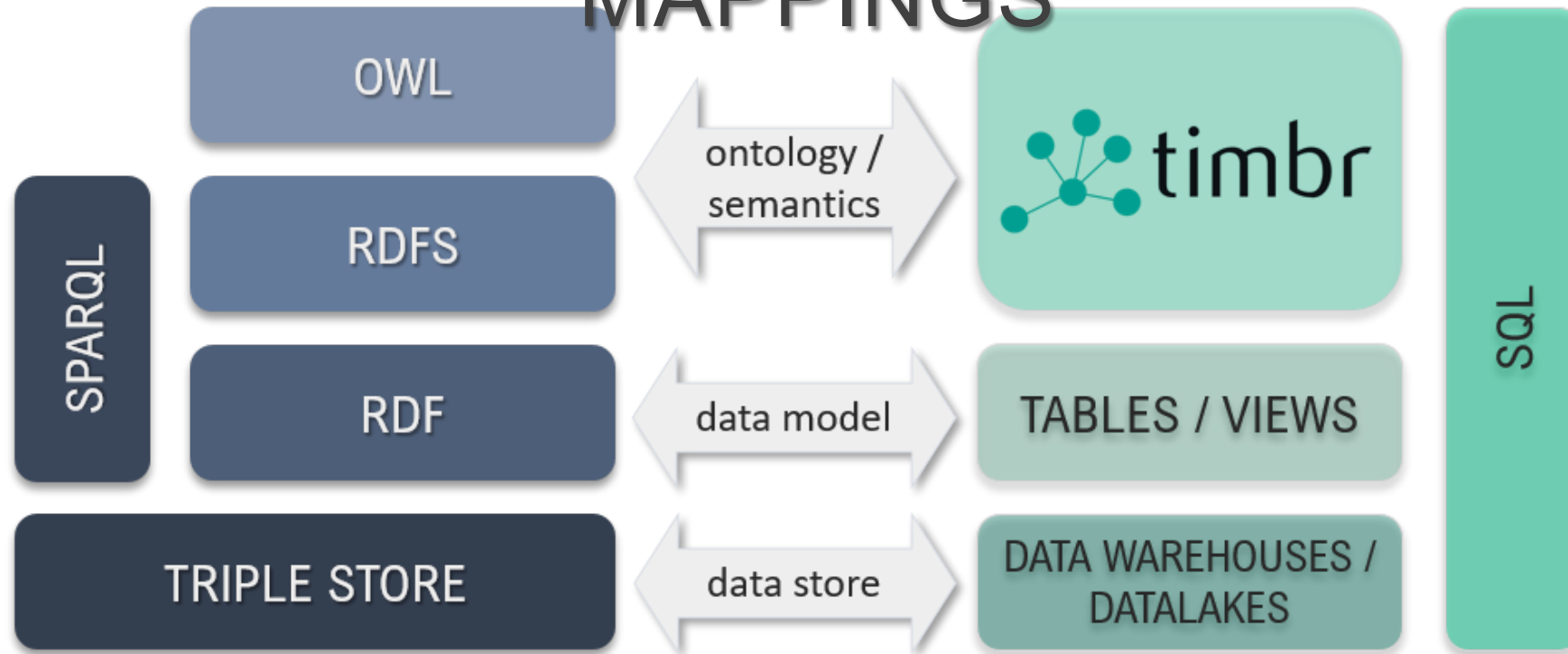
Truly translate into enterprise realm:

- Integration into corporate knowledge bases that use “standard” infrastructure scalable to deal with Big Data.
- Accessible to Business Intelligence solutions (“analytics for the masses”).
- Shorten learning curve.
- Shorten implementation curve.

SEMANTIC WEB PRINCIPLES IN SQL

SUPPORT OF STANDARD OWL/RDFS

MAPPINGS



GRAPH AND NoSQL CAPABILITIES



- ✓ **Graph capabilities:**
Graph traversals in SQL without the need to explicitly write joins.
- ✓ **NoSQL capabilities:**
Allowing a relatively flexible schema declaration and evolution.
- ✓ **Virtual:**
No ETL. Enables iterative, exploratory model for ontology

PERFORMANCE AND SCALABILITY



- ✓ Virtualization engine with a front-end compiler.
- ✓ Full utilization of the back-end **performance** (push-down).
- ✓ **Scalable** to whatever the backend scales.
- ✓ Query optimization techniques.

SQL MEANS: SEAMLESS INTEGRATION wp-semantic

Popular BI Solutions



Organizational Knowledge



Machine Learning



Popular RDBMS & Big Data Engines

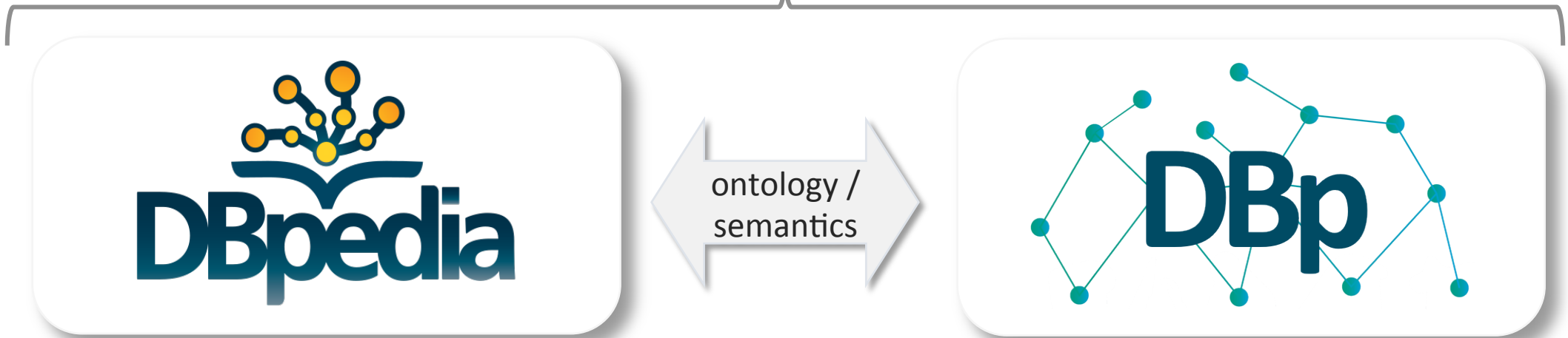
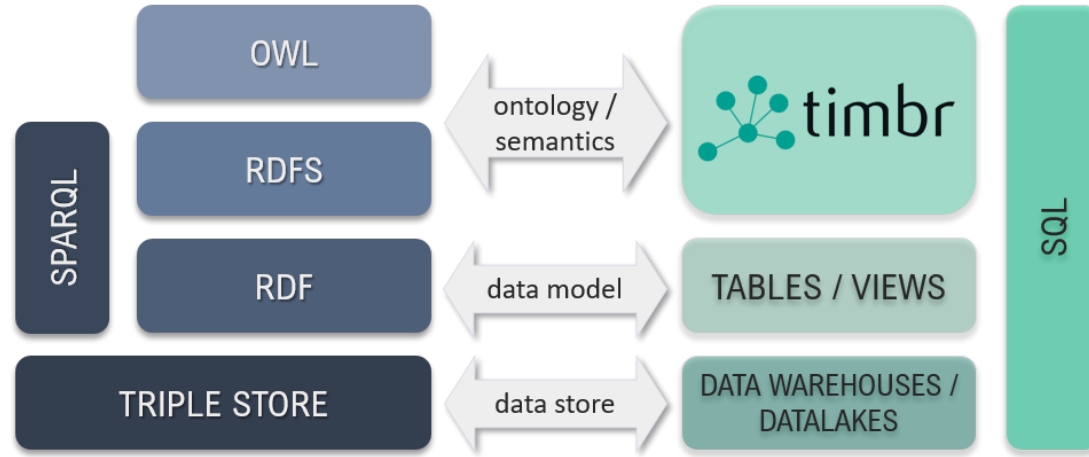




timbr-DBpedia

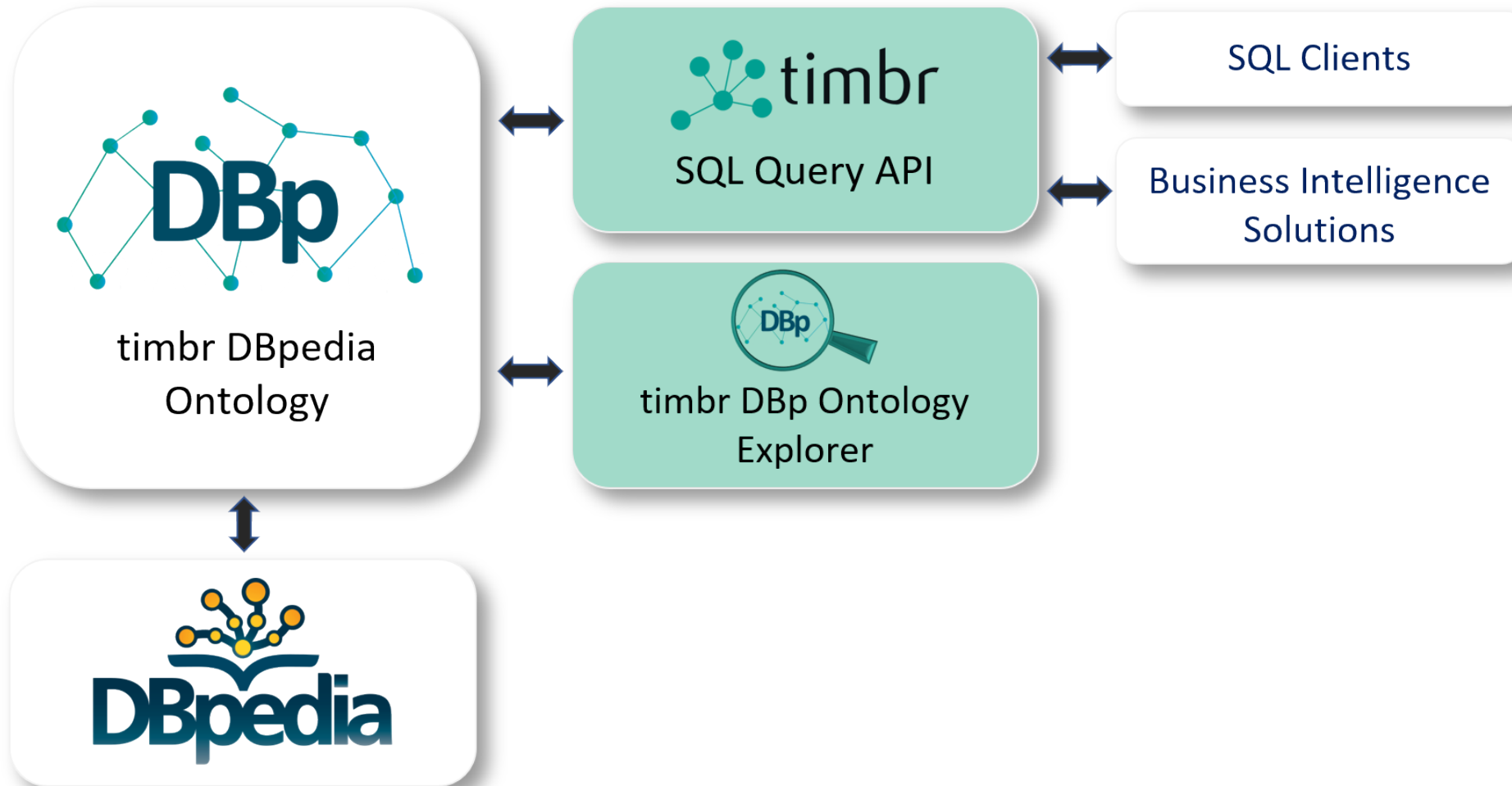
SQL access to the world's knowledge

timbr-DBpedia ONTOLOGY

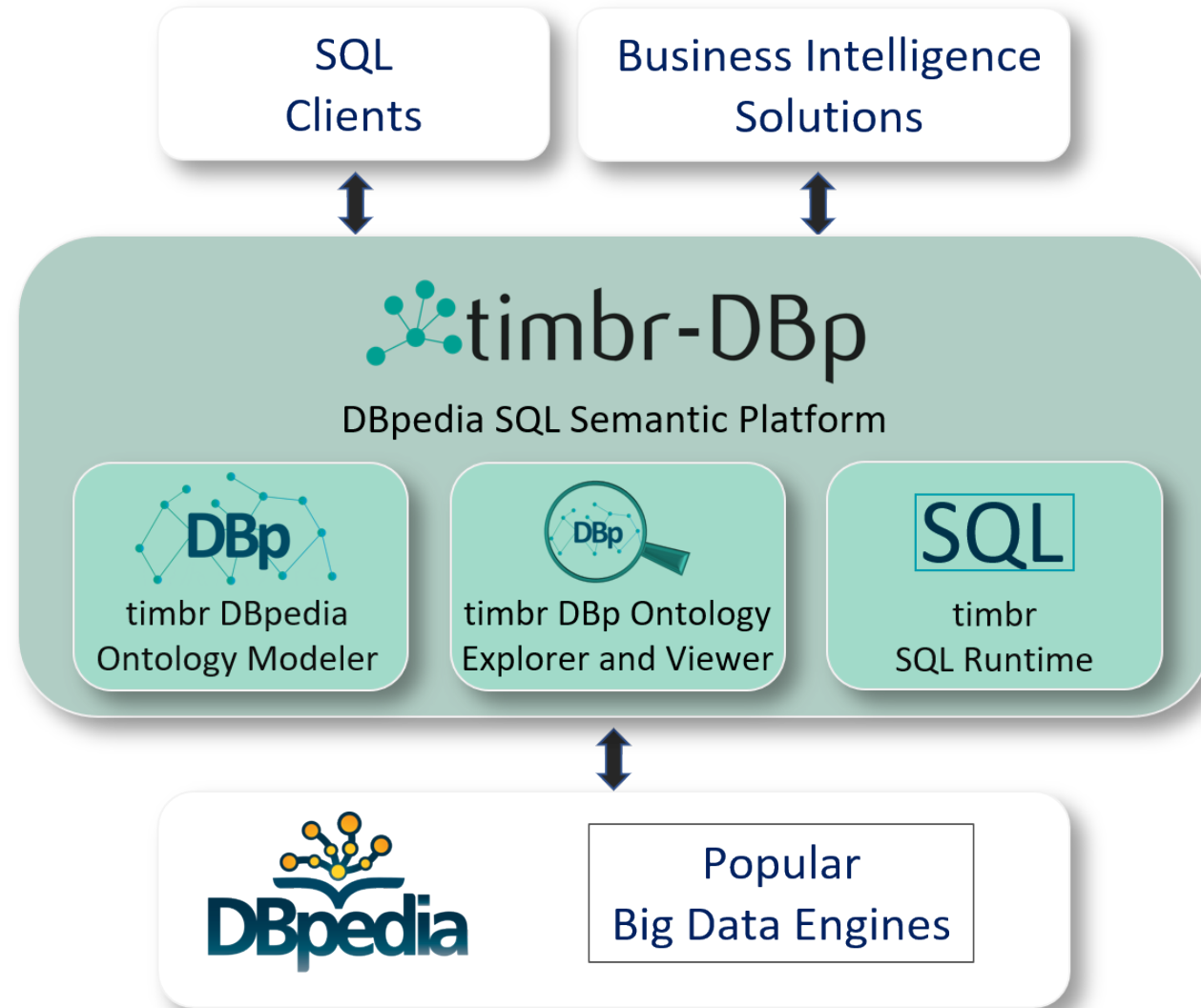


timbr DBpedia Ontology

timbr-DBpedia QUERY SERVICE



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QUERY SERVICE AND API



QUERY DBPEDIA IN

SQL

QUERY DBPEDIA IN

APACHE

SPARK

QUERY DBPEDIA IN

R

QUERY DBPEDIA IN

PHYTON



wp-semantic

Empowering the
Knowledge Revolution