

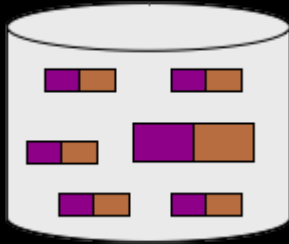
A decorative graphic consisting of several colored rectangular blocks and rounded corners. A tall purple bar is on the far left. Below it, a blue bar extends to the right. Further right, a horizontal bar is divided into four segments: purple, yellow, and red. A yellow bar is at the bottom right. The text 'Titan' is centered in orange, and 'Dan Bye' is centered below it in yellow.

# Titan

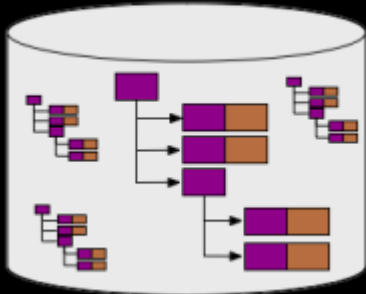
Dan Bye

# Intro to Graph Databases

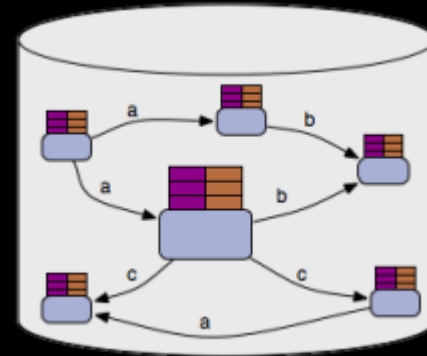
Key/Value Store



Document Store



Graph Database



# Languages

## Gremlin

- Widely used language for graph traversal
- Open source, works with many graph database systems

## SPARQL

- Graph-based pattern matching.
- Behaves similar to document querying in document stores

# The Property Graph Model

## Vertices

- Unique identifier
- Set of outgoing edges
- Set of incoming edges
- Collection of properties defined by a map from key to value

## Edges

- Unique identifier
- Outgoing tail vertex
- Incoming head vertex
- Label denoting relationship between nodes
- Collection of properties defined by a map from key to value

# Live Demo

See sources for Graph Traversal examples, as well as walkthroughs ranging from no experience to advanced use.

# Benefits of using Titan

- Graphs scale with number of machines in the cluster
- Concurrent transactions
- Geo, numeric range, and full text search
- Vertex-centric indices help with the “super node problem”
- Distributed with Cassandra, HBase, and BerkeleyDB

Partitionability

APACHE  
HBASE



*Cassandra*



Consistency

ORACLE

BERKELEY DB

Availability

Cap Theorem

# Sources

- <https://github.com/thinkaurelius/titan/wiki/>
- <http://markorodriguez.com/2011/04/30/putting-and-getting-data-from-a-database/>
- <https://github.com/tinkerpop/blueprints/wiki/Property-Graph-Model>