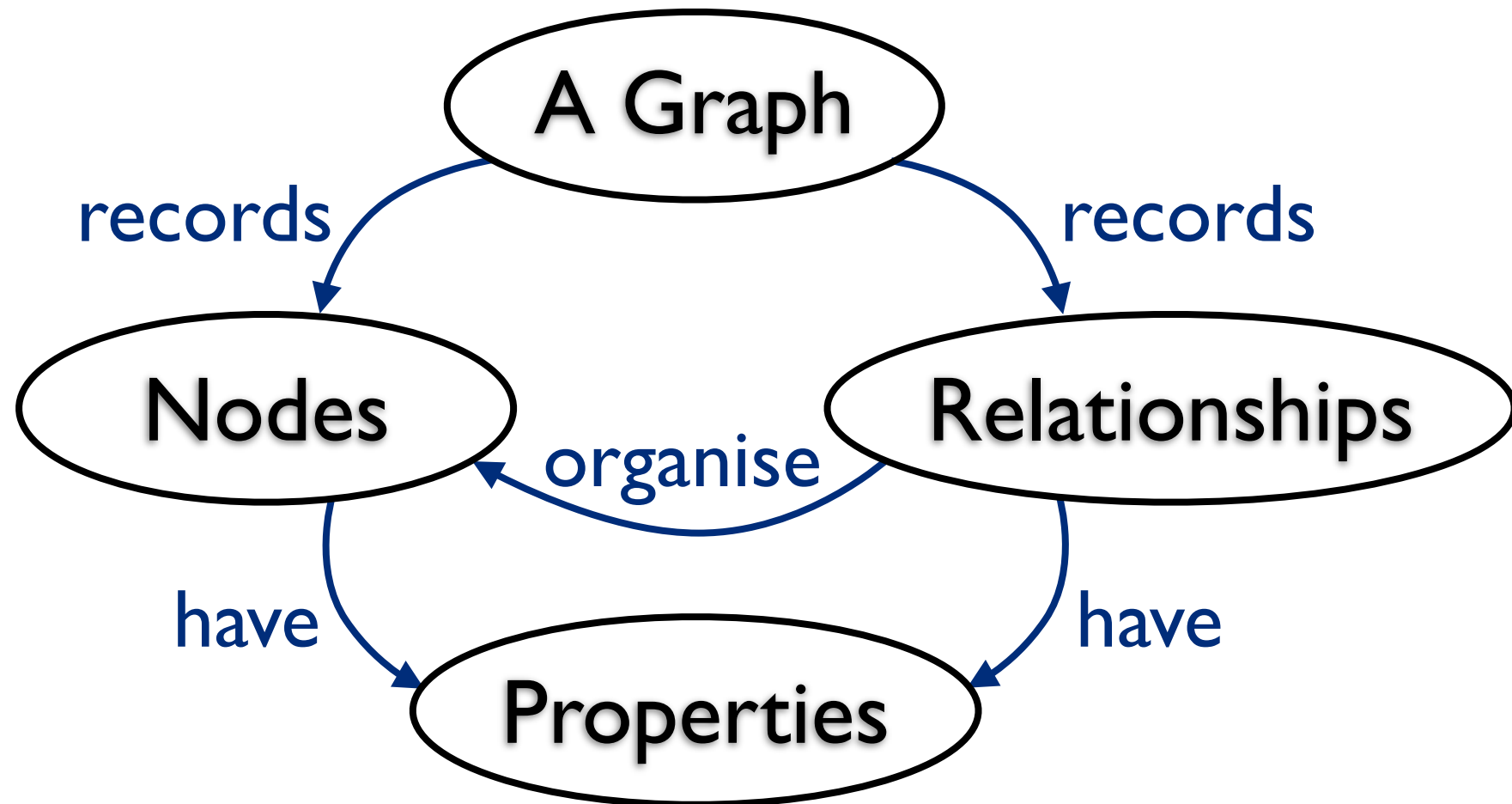
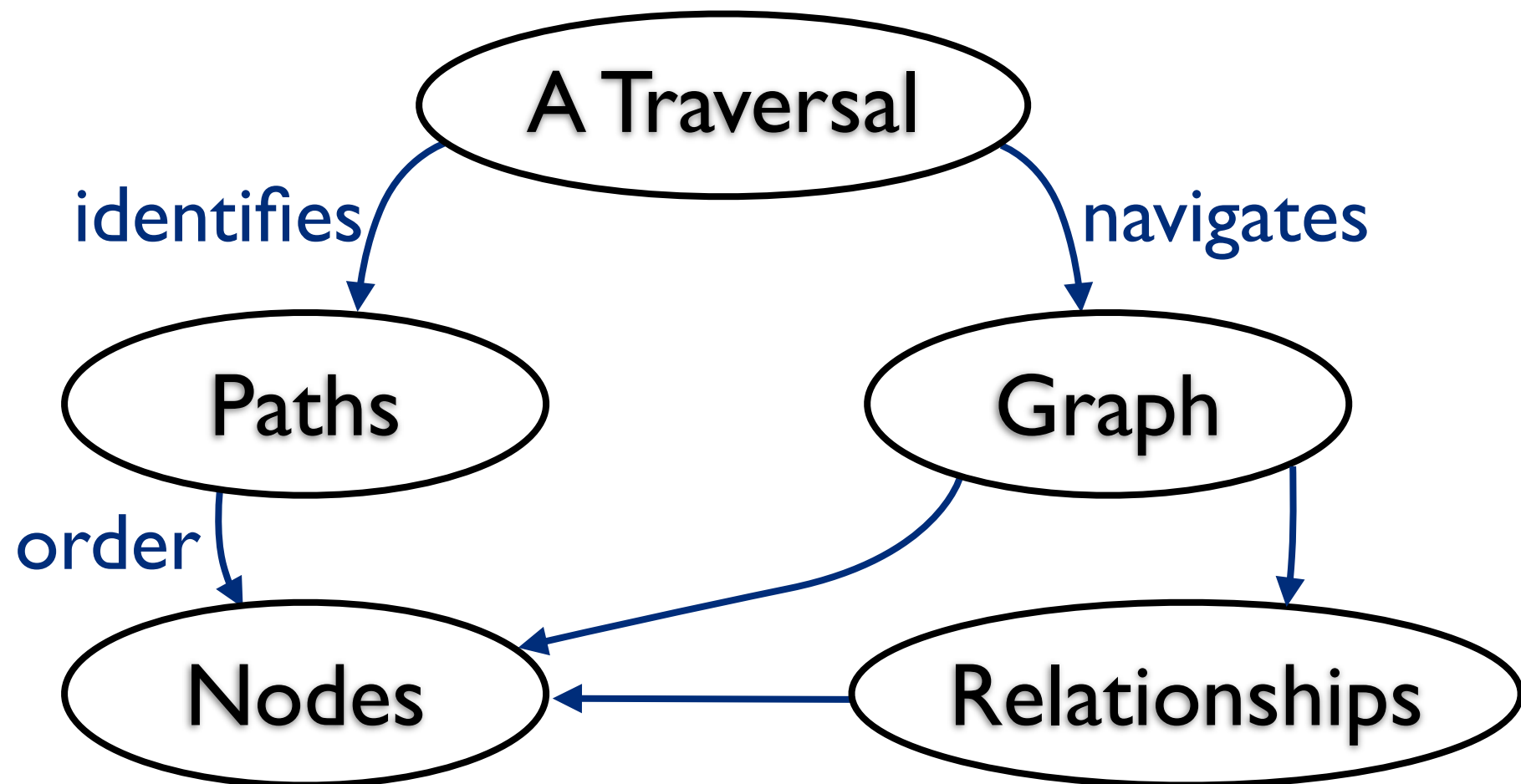


# Graph Databases

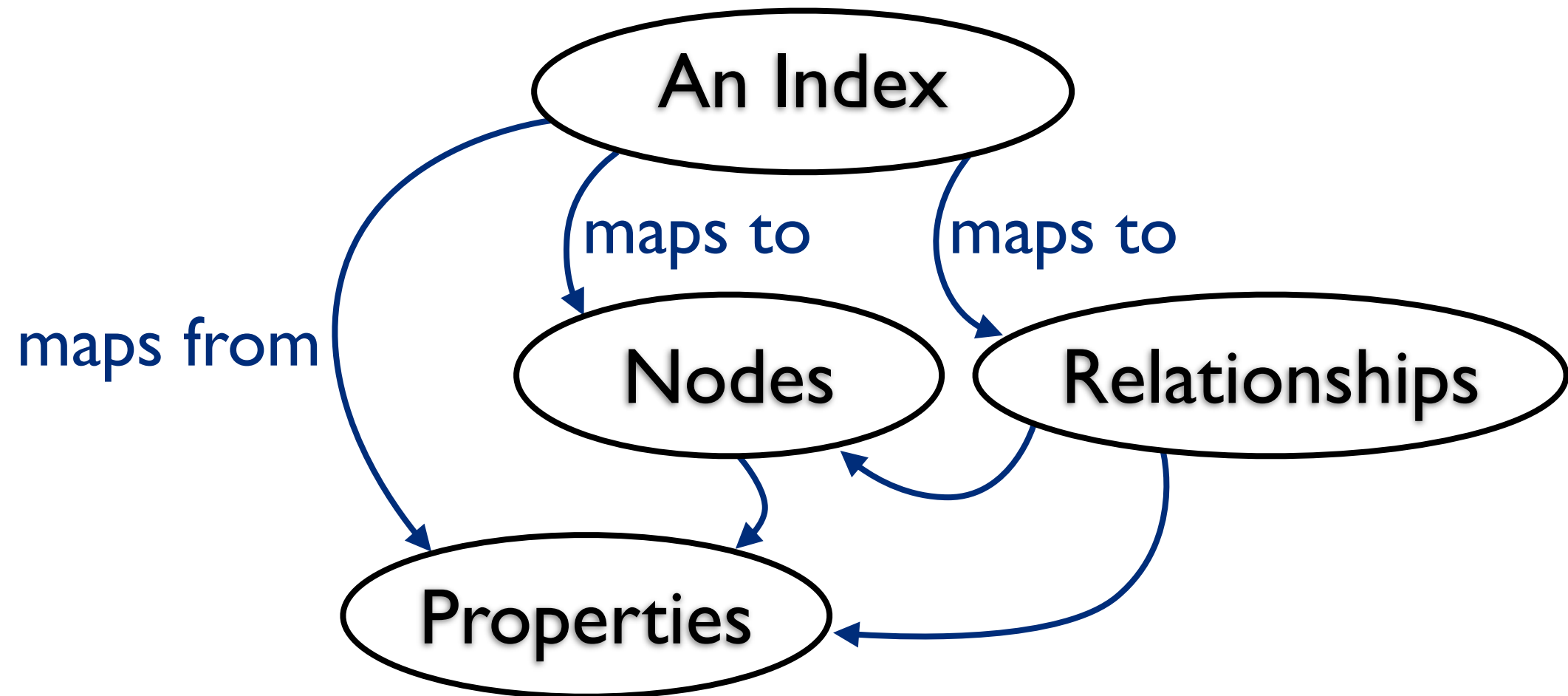
# Graph Concepts



# Traversal



# Indexes



Path Search

Failure  
Impact  
Analysis

Recommendation  
Engine

Network  
Management

Master Data  
Management

Use Cases

Geospatial

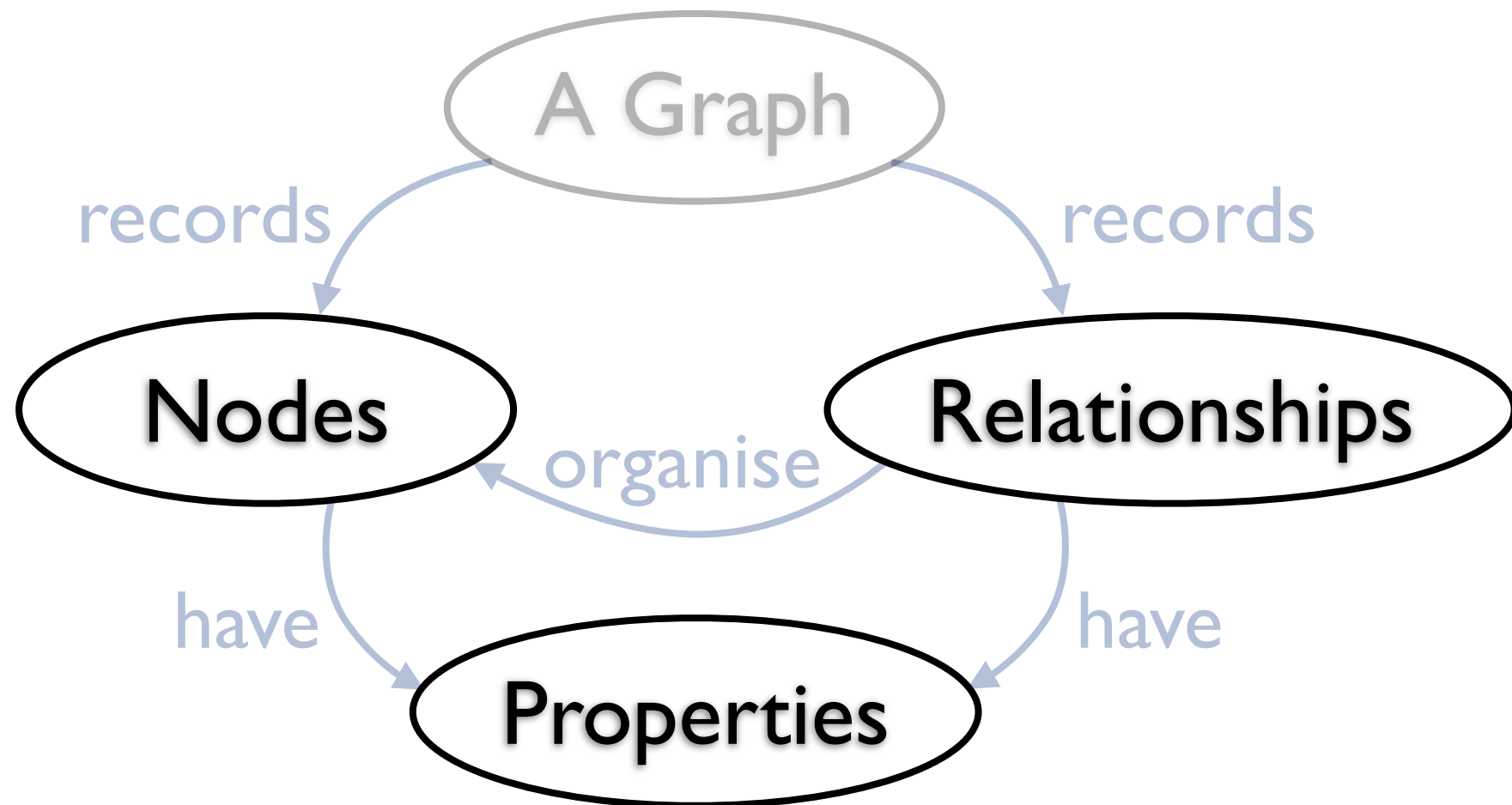
Highly Connected

Modelling Reality

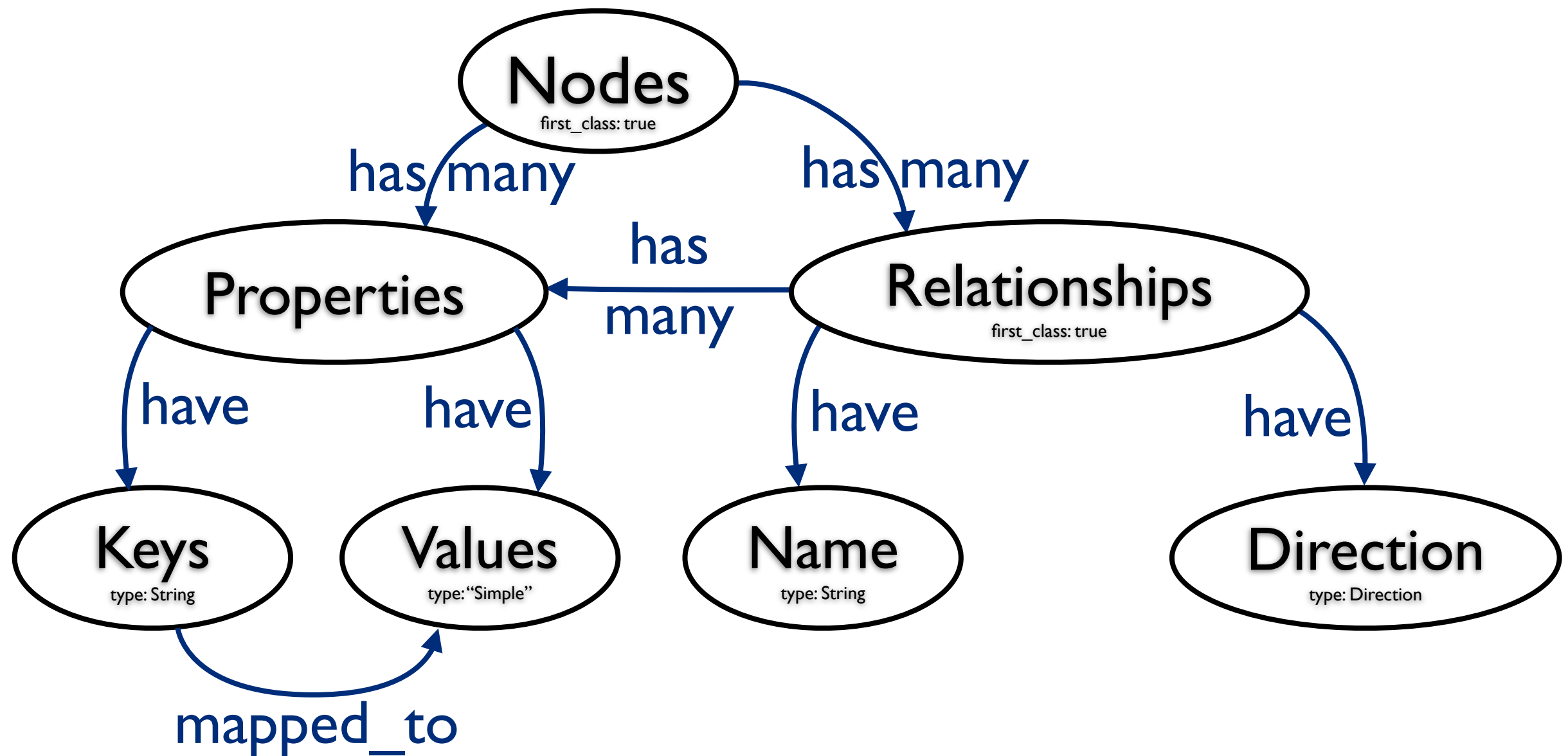
Social  
Networks

Access Control  
& Authorisation

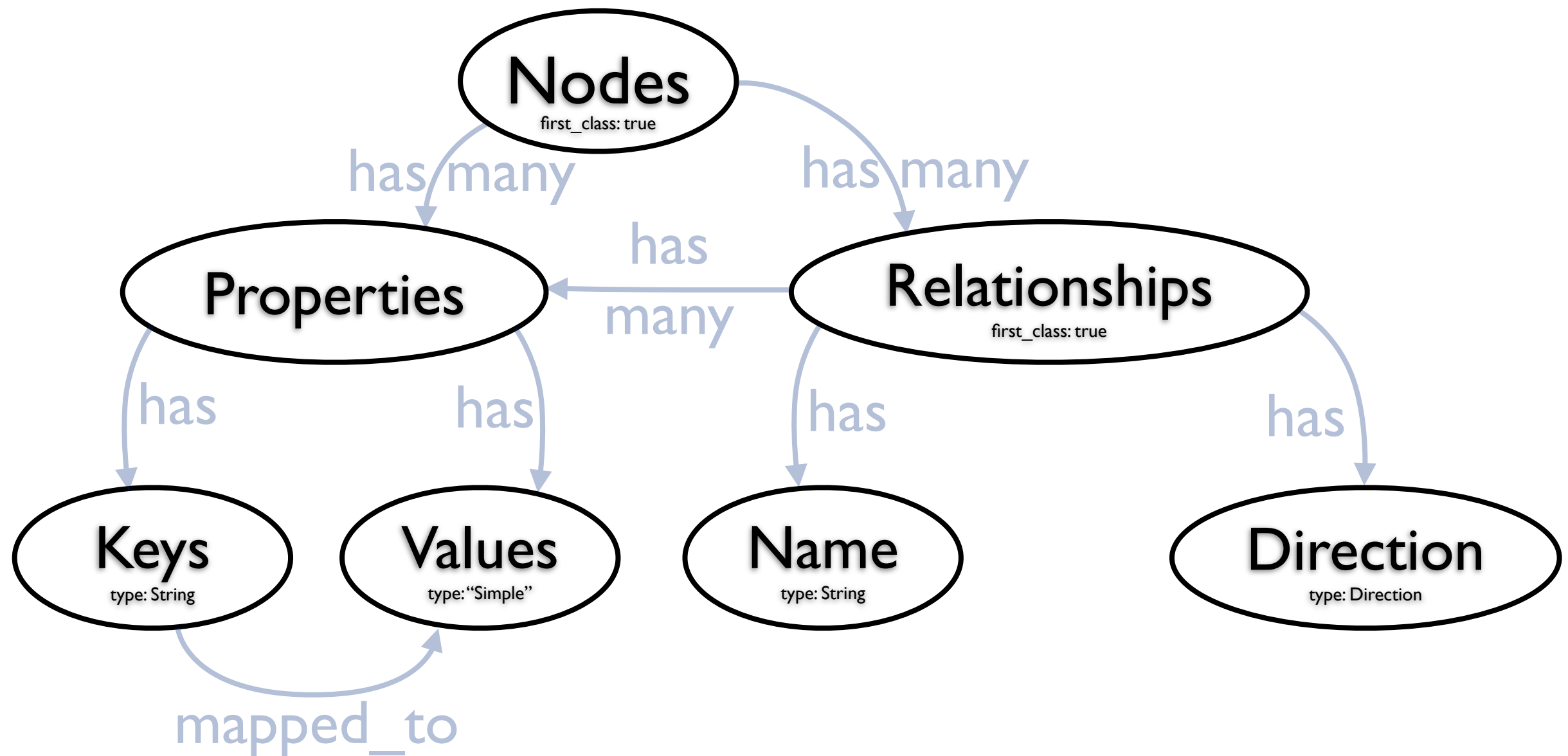
# Digging into...



# ...in more detail

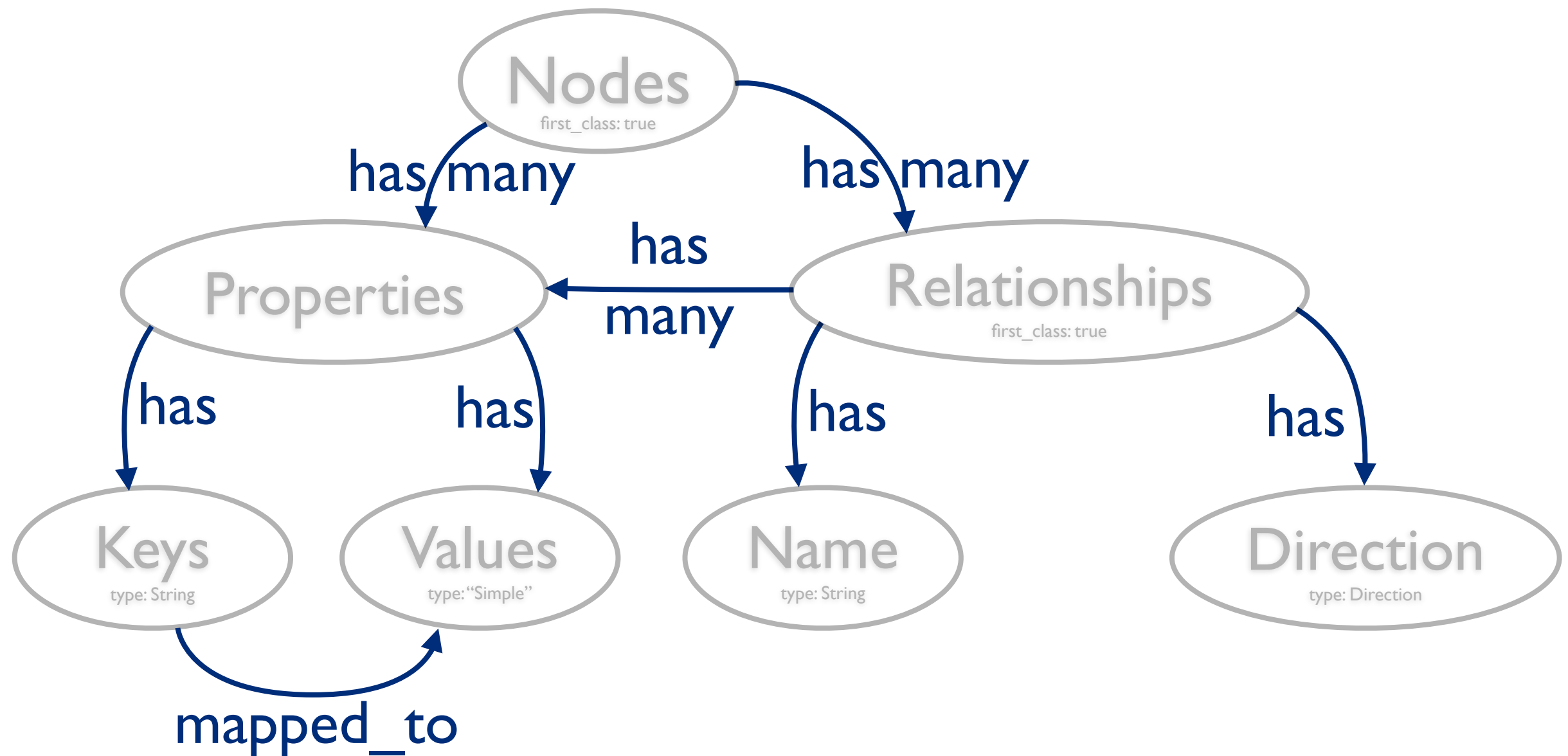


# Nodes

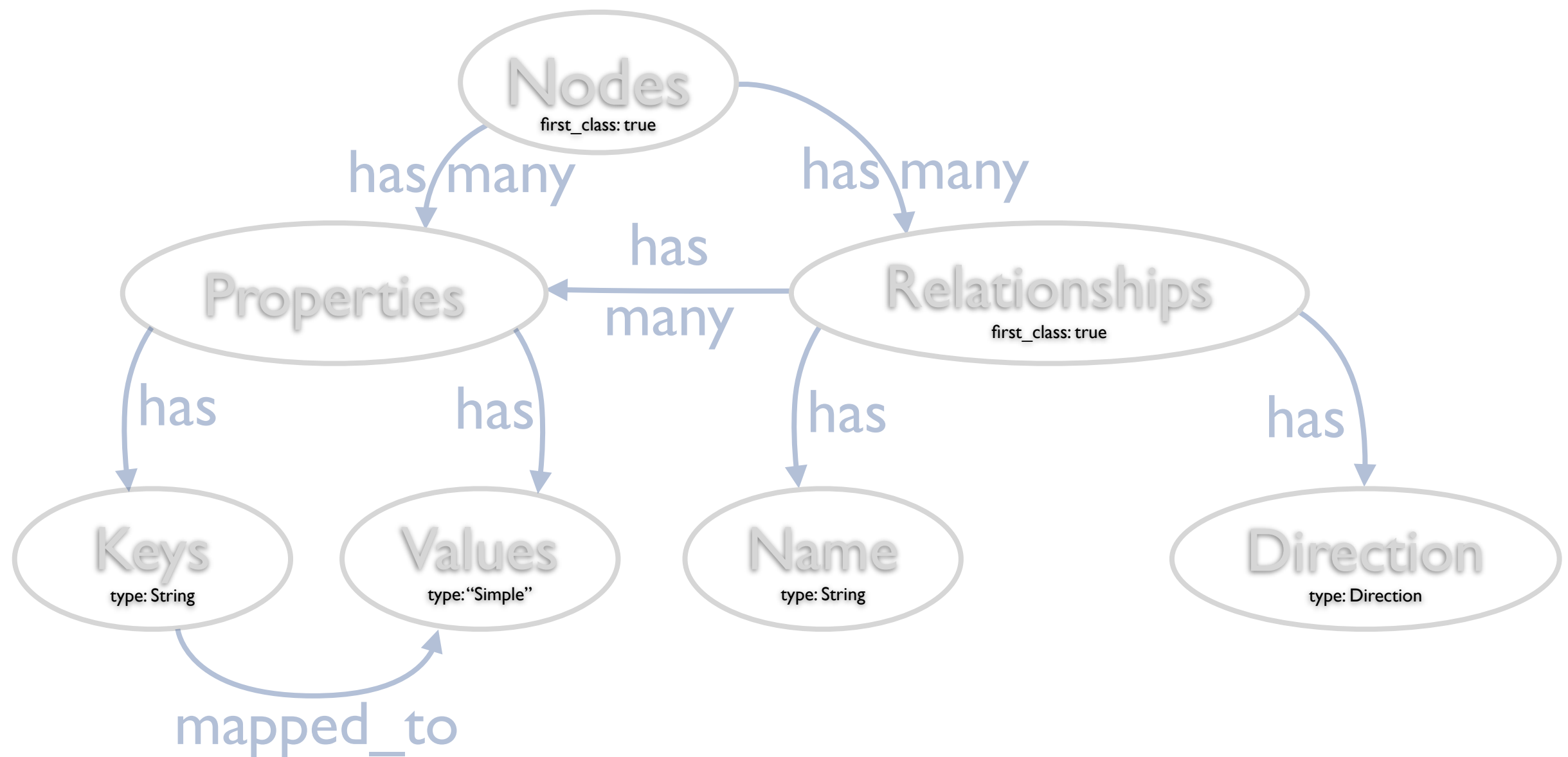




# Relationships



# Properties



# Domain Modelling

- Visualise the Domain
  - Things to Nodes
  - Structure & context to Relationships
- Consider Query-ability
  - What do you want to ask your data?
  - What structure could answer?

# Domain Modelling

- As a film lover
- I want to write reviews of films I've seen
- So that I can ~~feel an inflated sense of self-realisation and worth~~ discuss them with friends

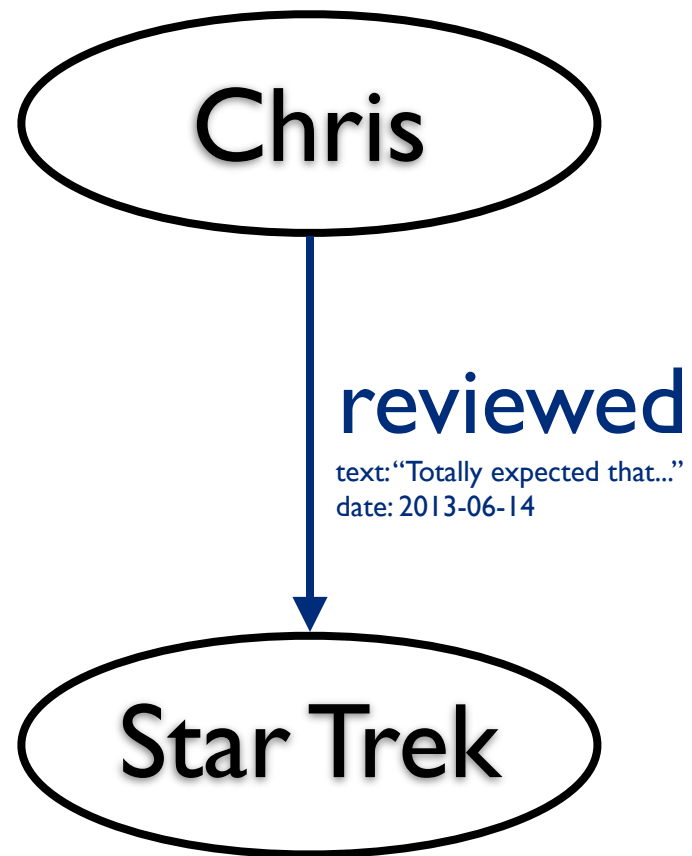
# Domain Modelling

- As a **film lover**
- I want to write **reviews** of **films** I've seen
- So that I can ~~feel an inflated sense of self-realisation and worth~~ discuss them with **friends**

# Domain Modelling

- As a film lover
- I want to write reviews of films I've seen
- So that I can ~~feel an inflated sense of self-realisation and worth~~ discuss them with friends

# Things hiding in Actions

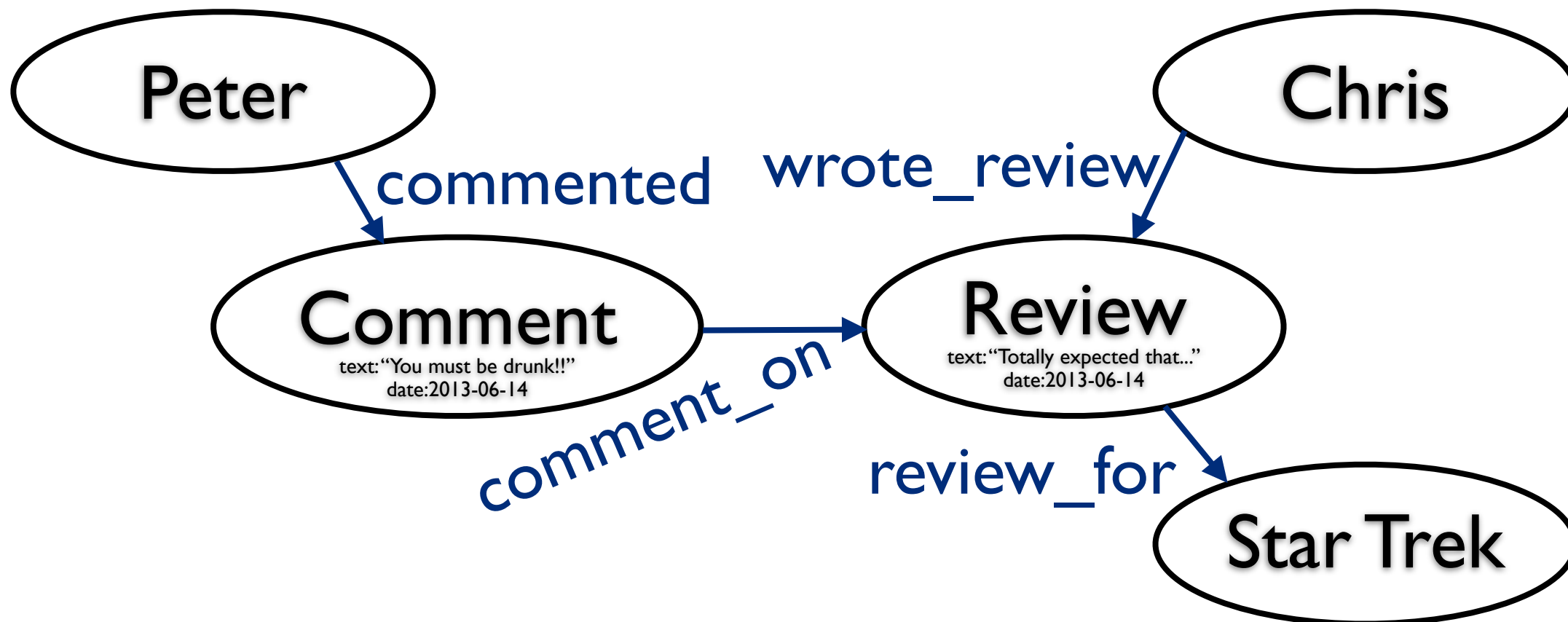


# Things hiding in Actions

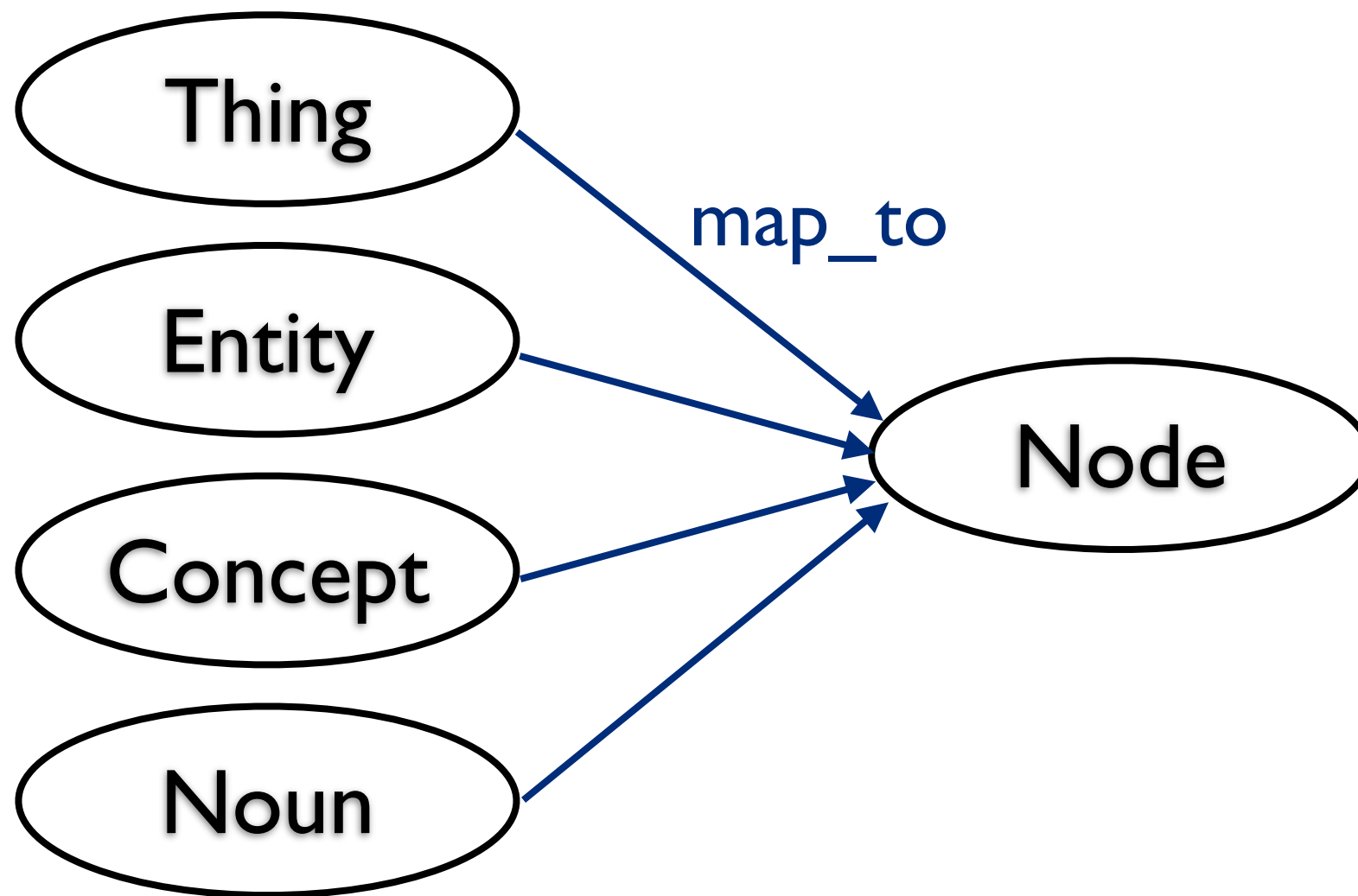




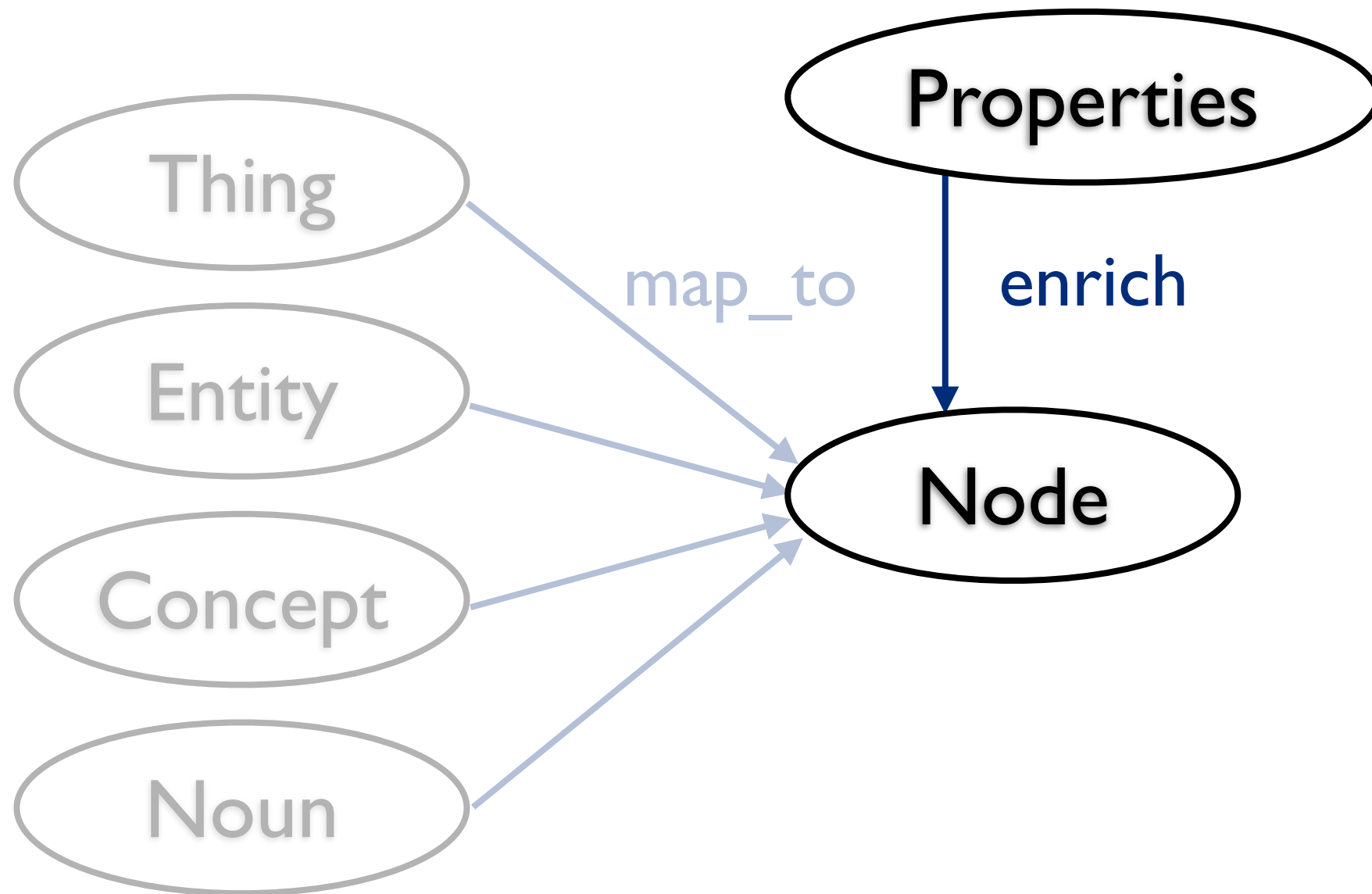
# Things hiding in Actions



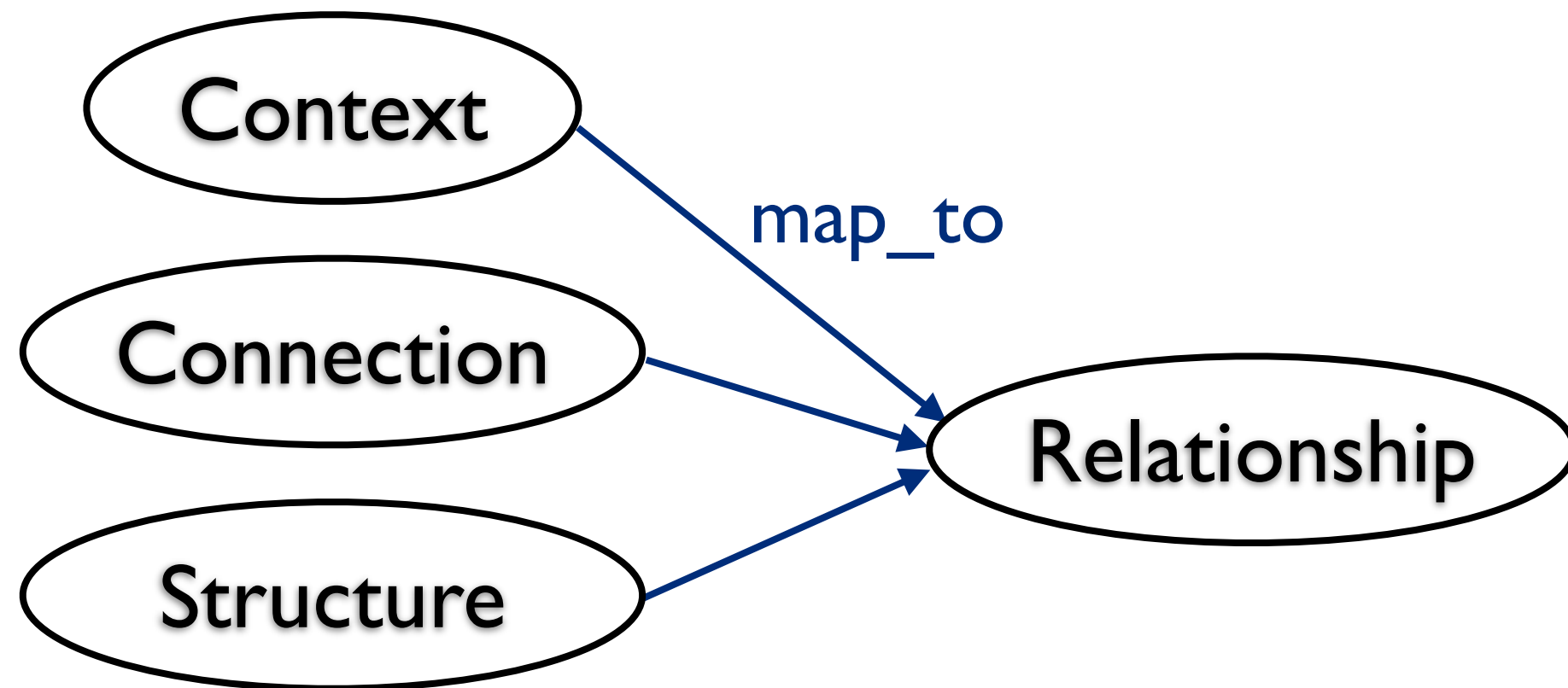
# Data Modelling



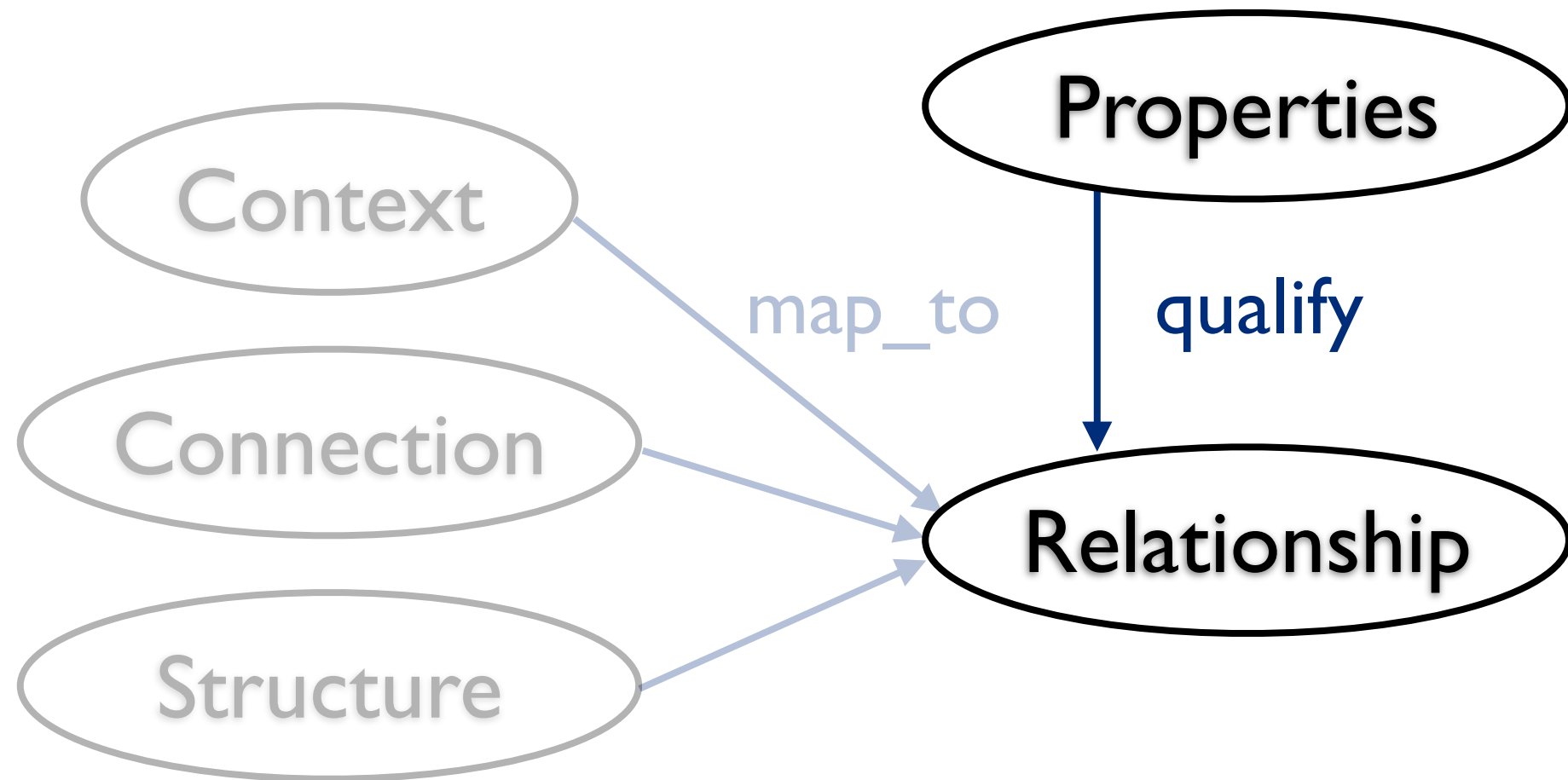
# Data Modelling



# Data Modelling



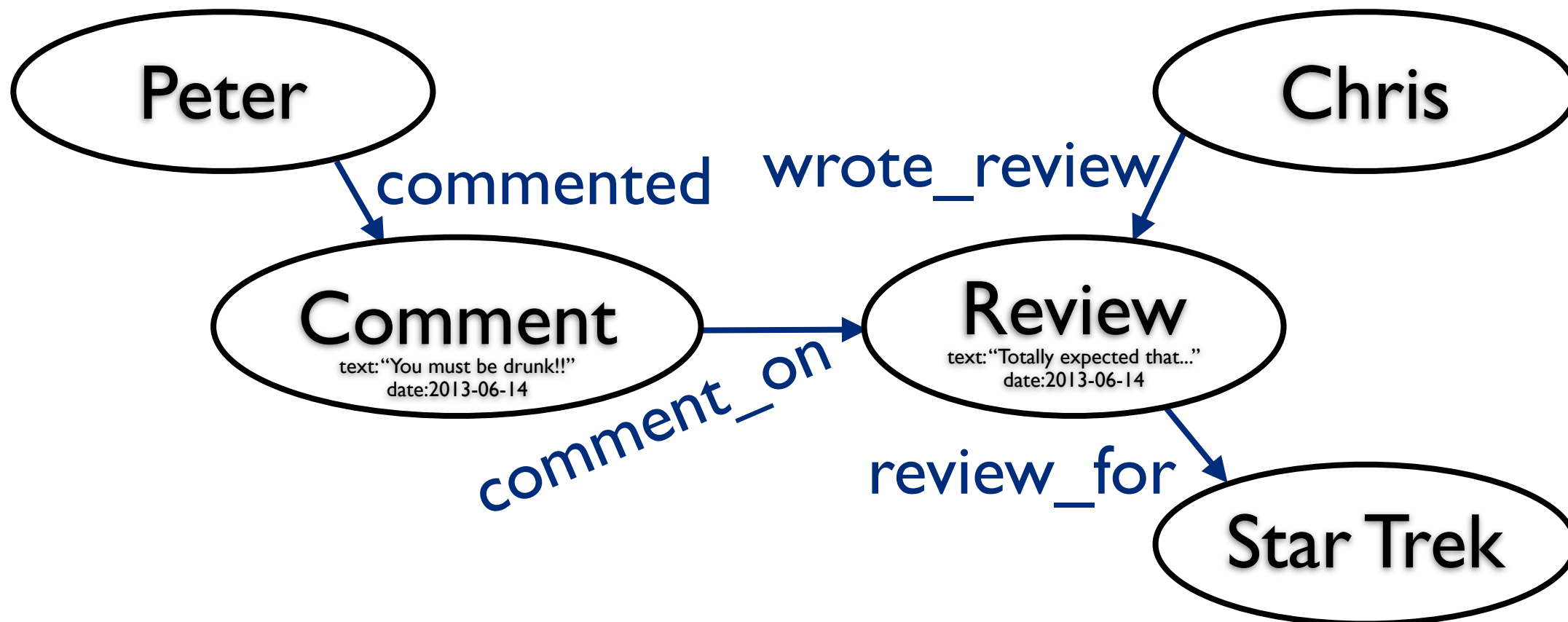
# Data Modelling



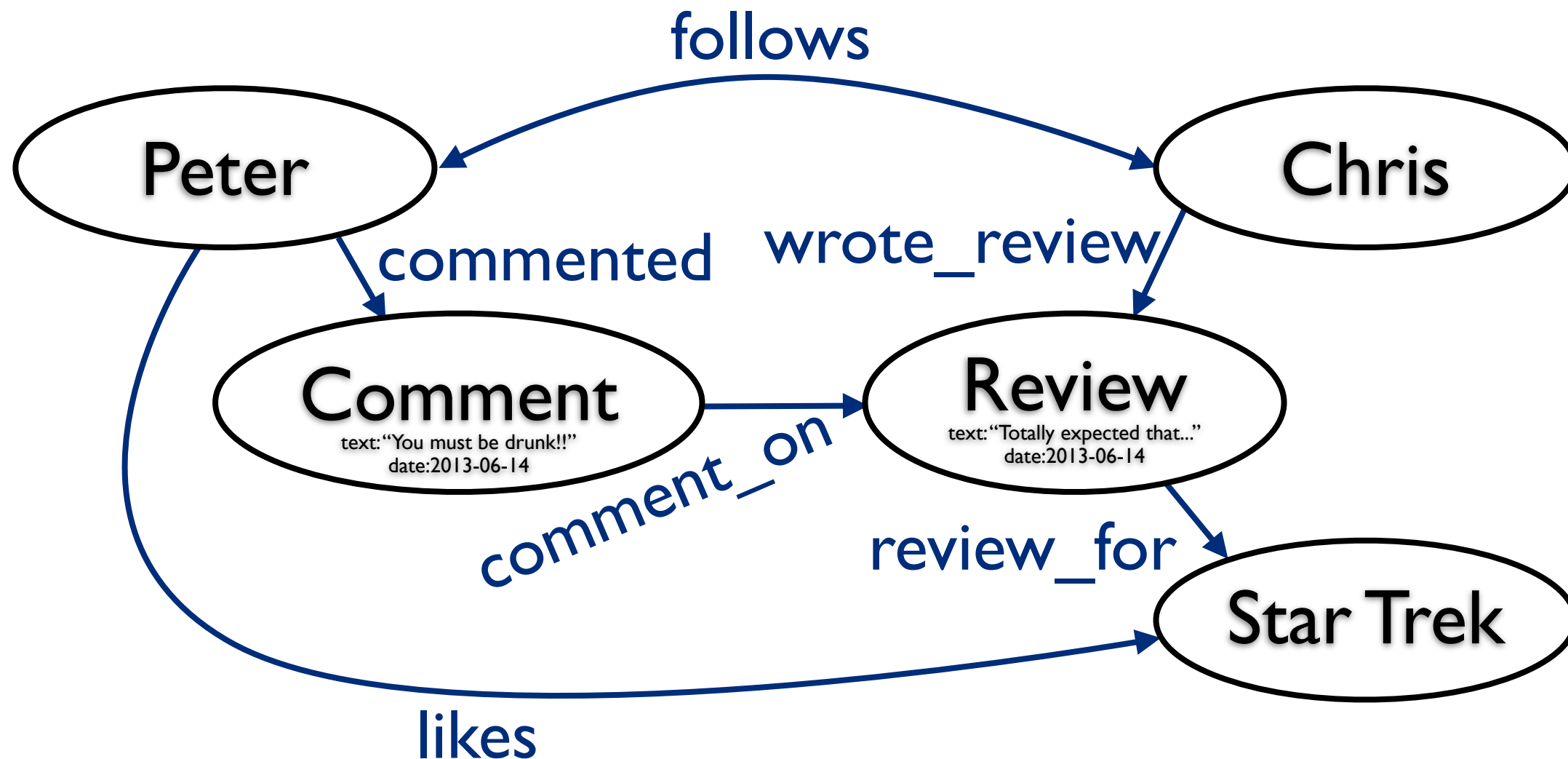
# Graph Evolution

- Automated tests for queries
- Iterative & Incremental Development
- Evolve by adding (nodes, relationships)
- Mostly migration-free
- Need for downtime is rare

# Evolving...

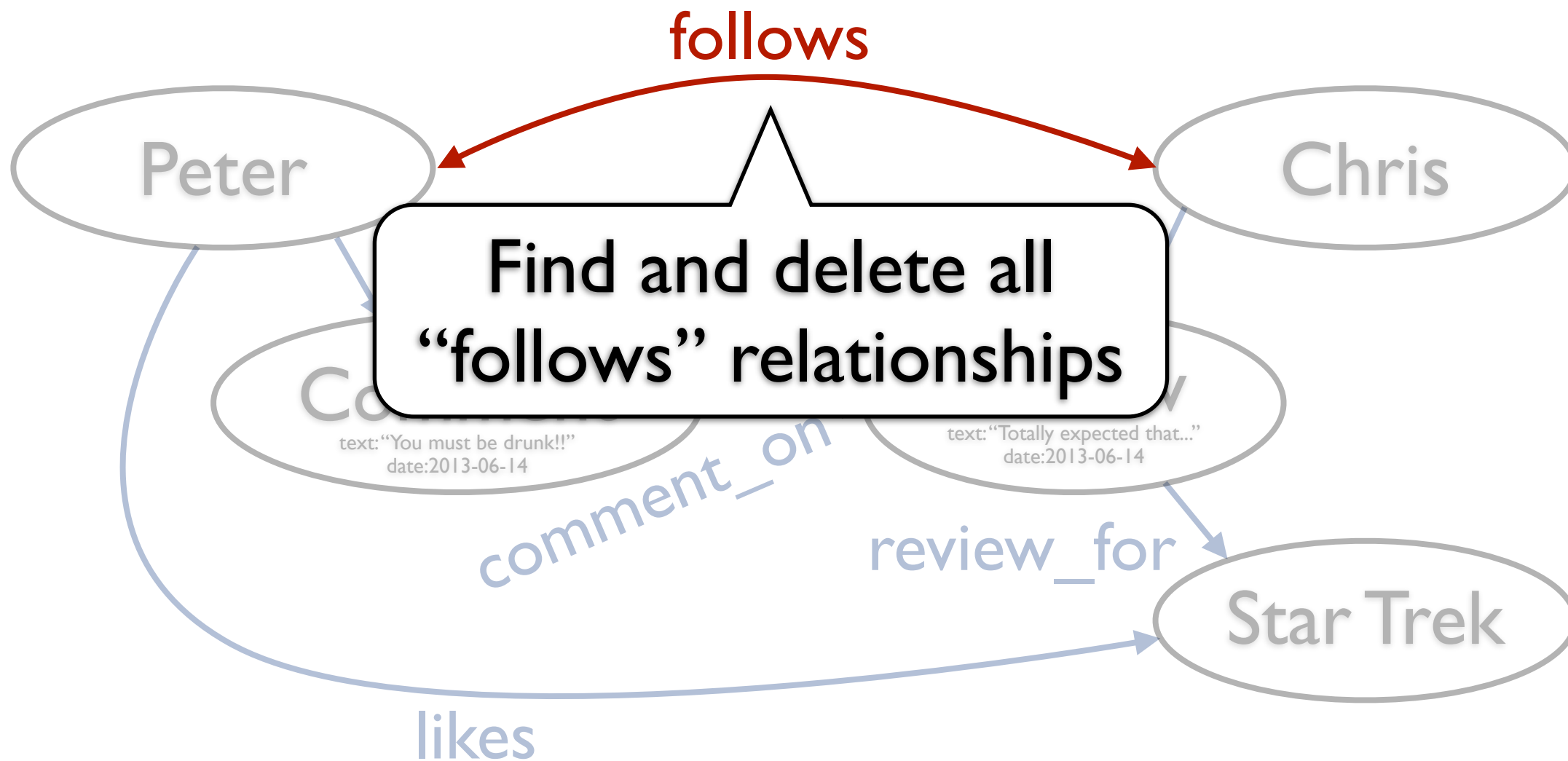


# ... by adding





# Delete: Hard



# Restructure: Harder

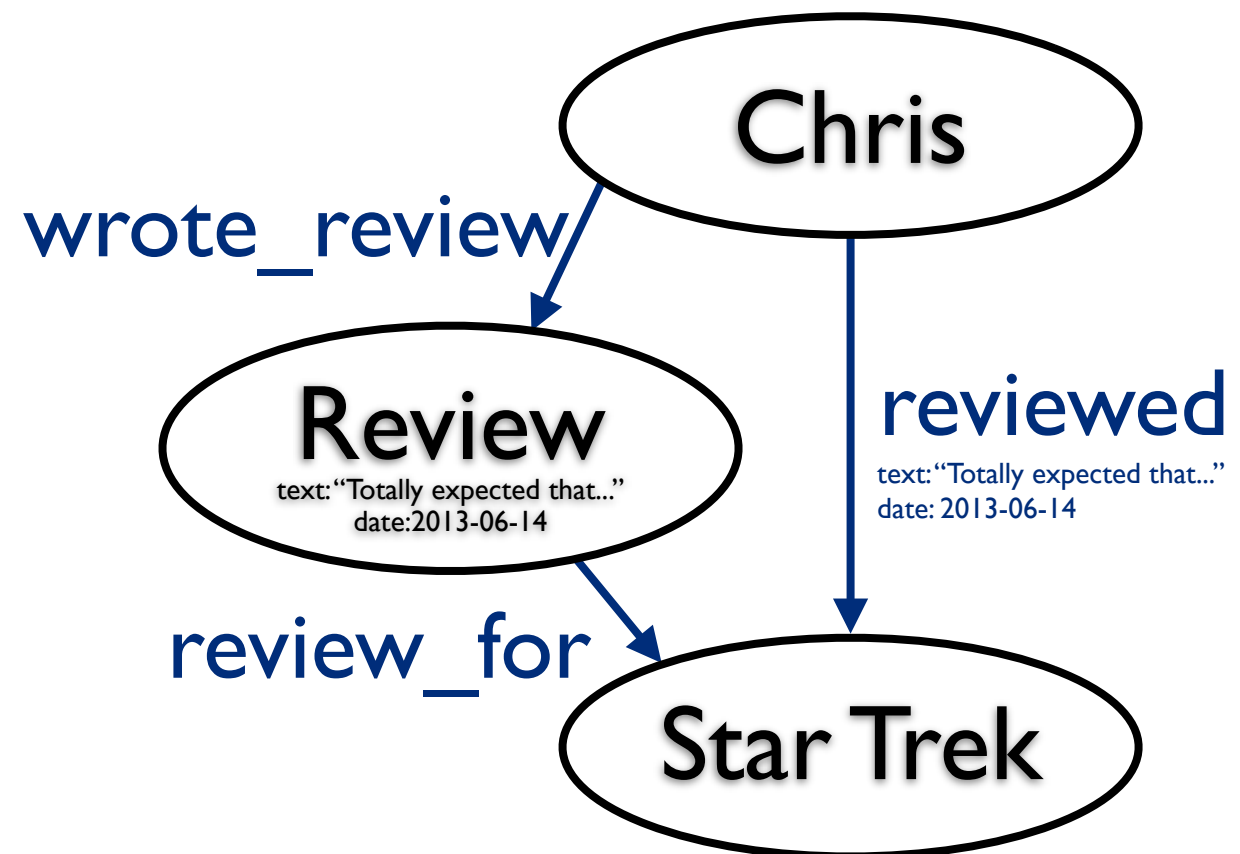


# ... but can be additive



# ... however

- Introduces redundancy
- Complicates queries
- Verify changes with tests
- ... on representative graphs



# Querying Data

- Demo