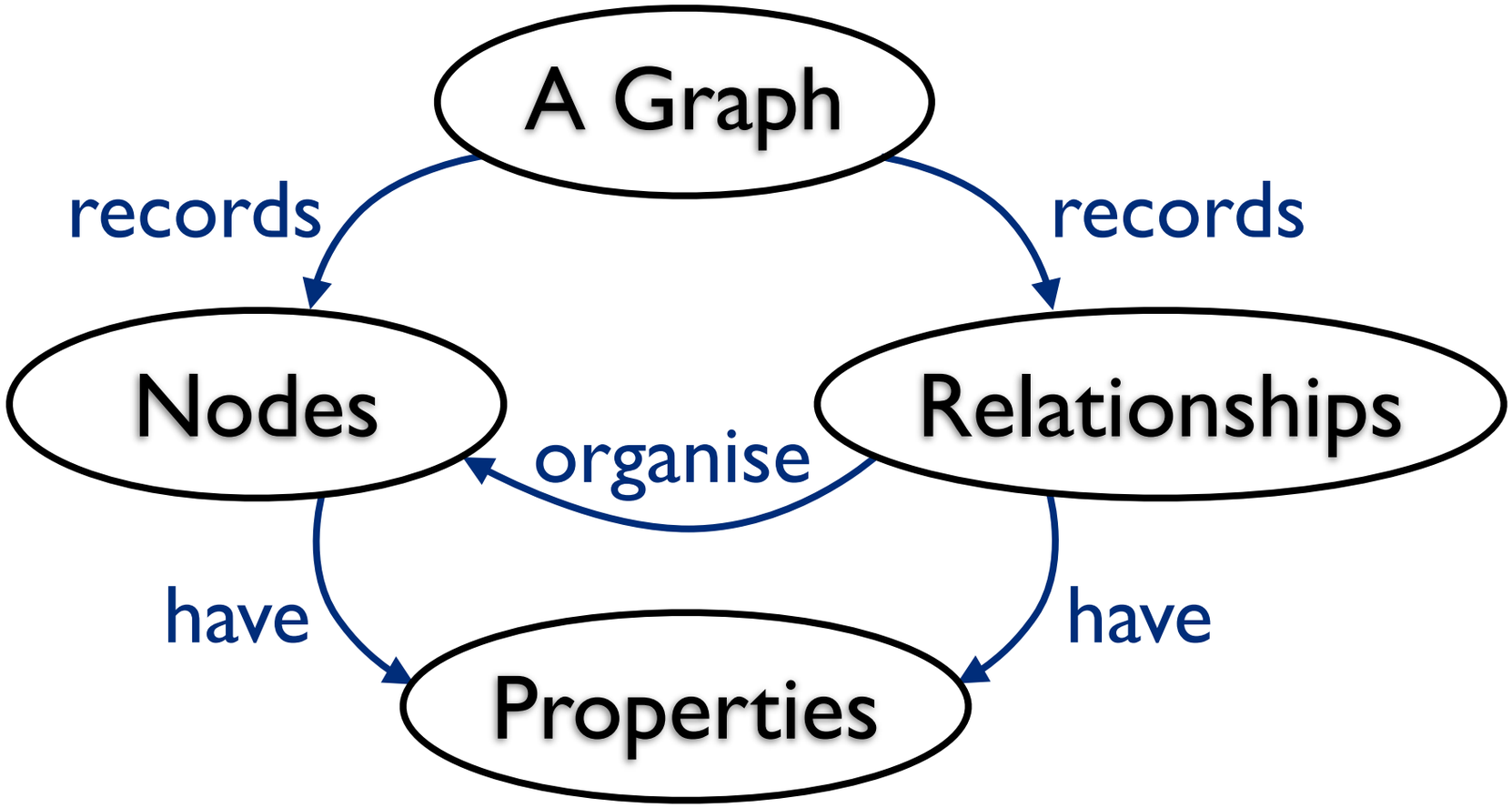
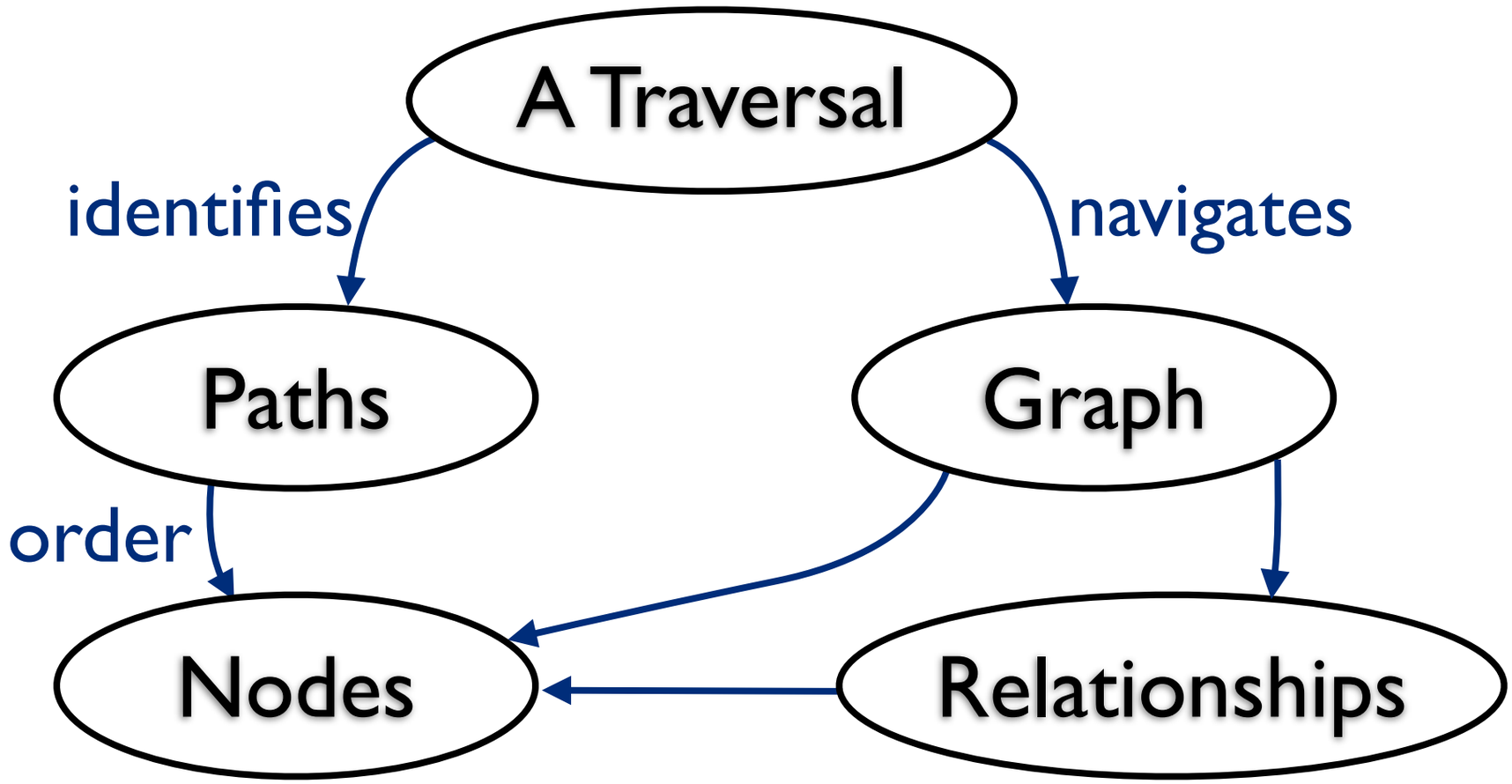
Graph Databases

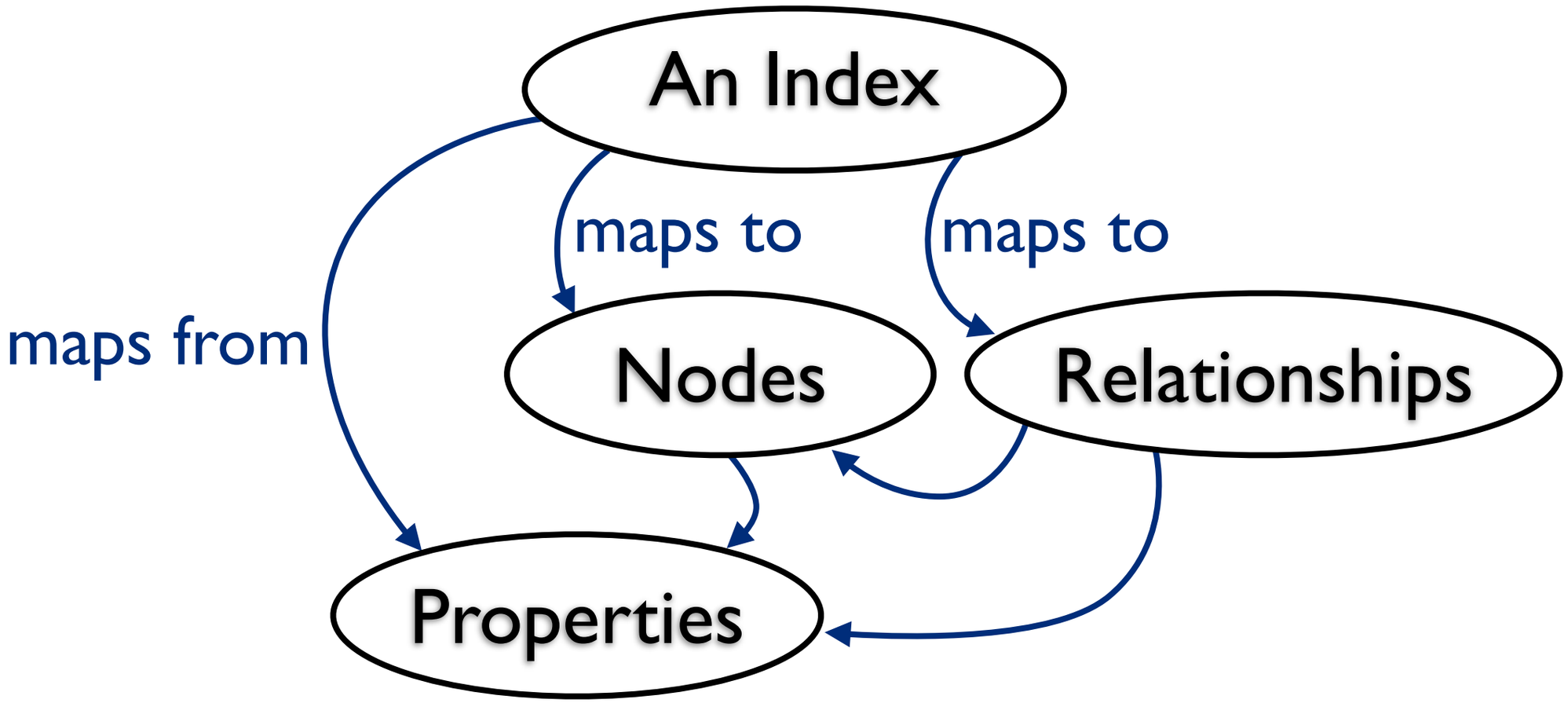
Graph Concepts



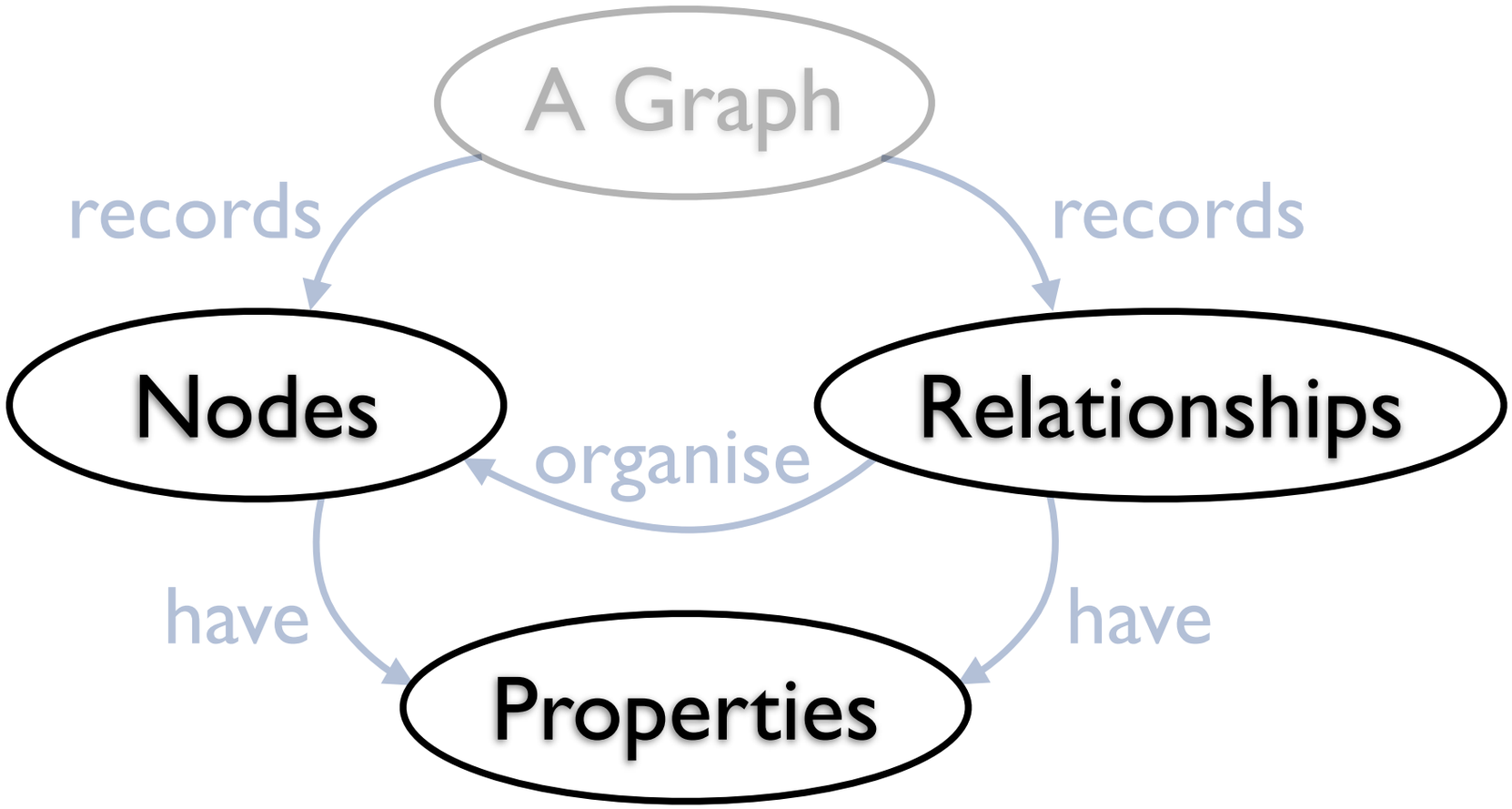
Traversal


A Traversal
identifies
navigates
Paths
Graph
order
Nodes
Relationships

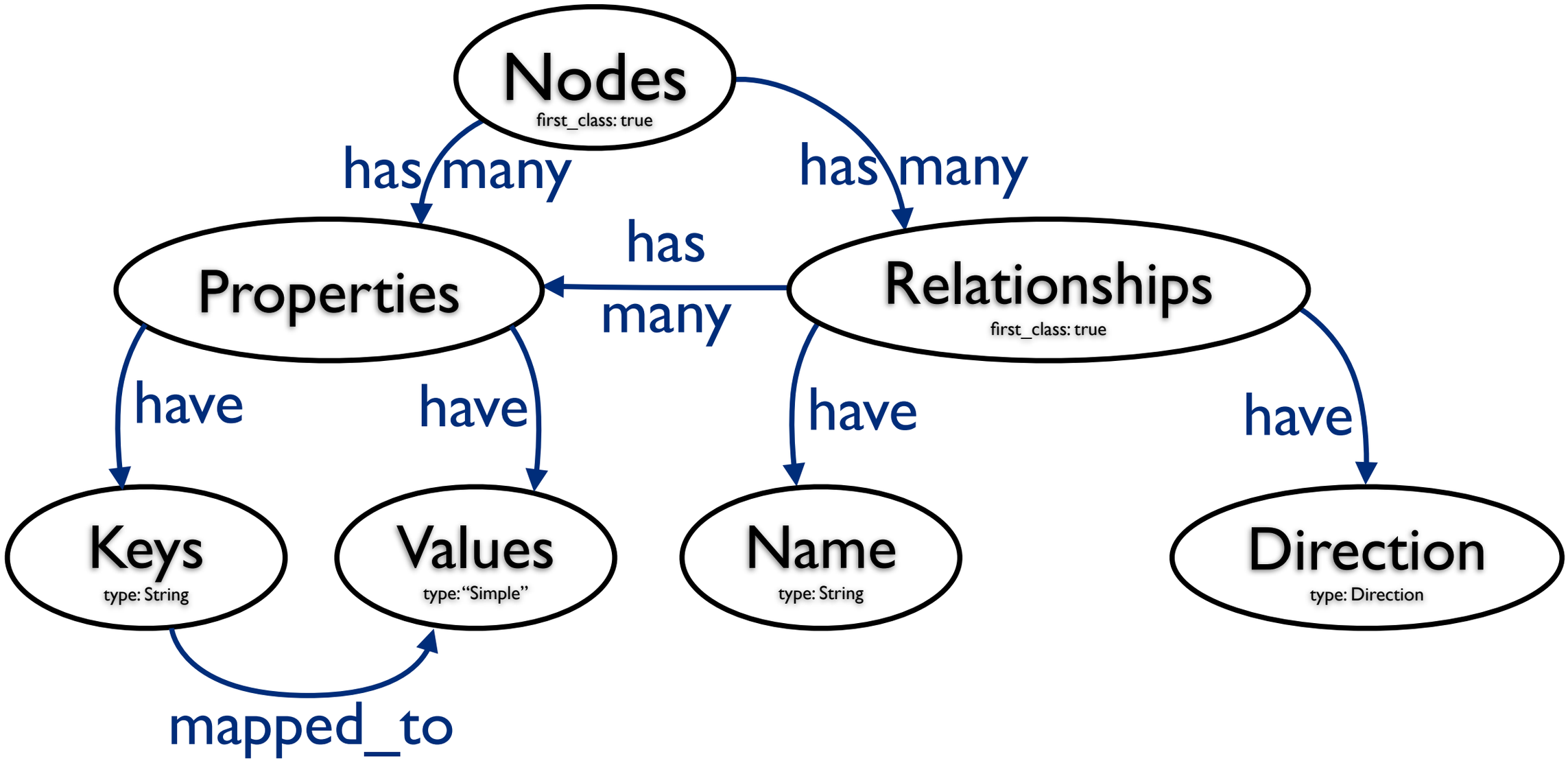
Indexes


An Index
maps to
maps to
maps from
Nodes
Relationships
Properties

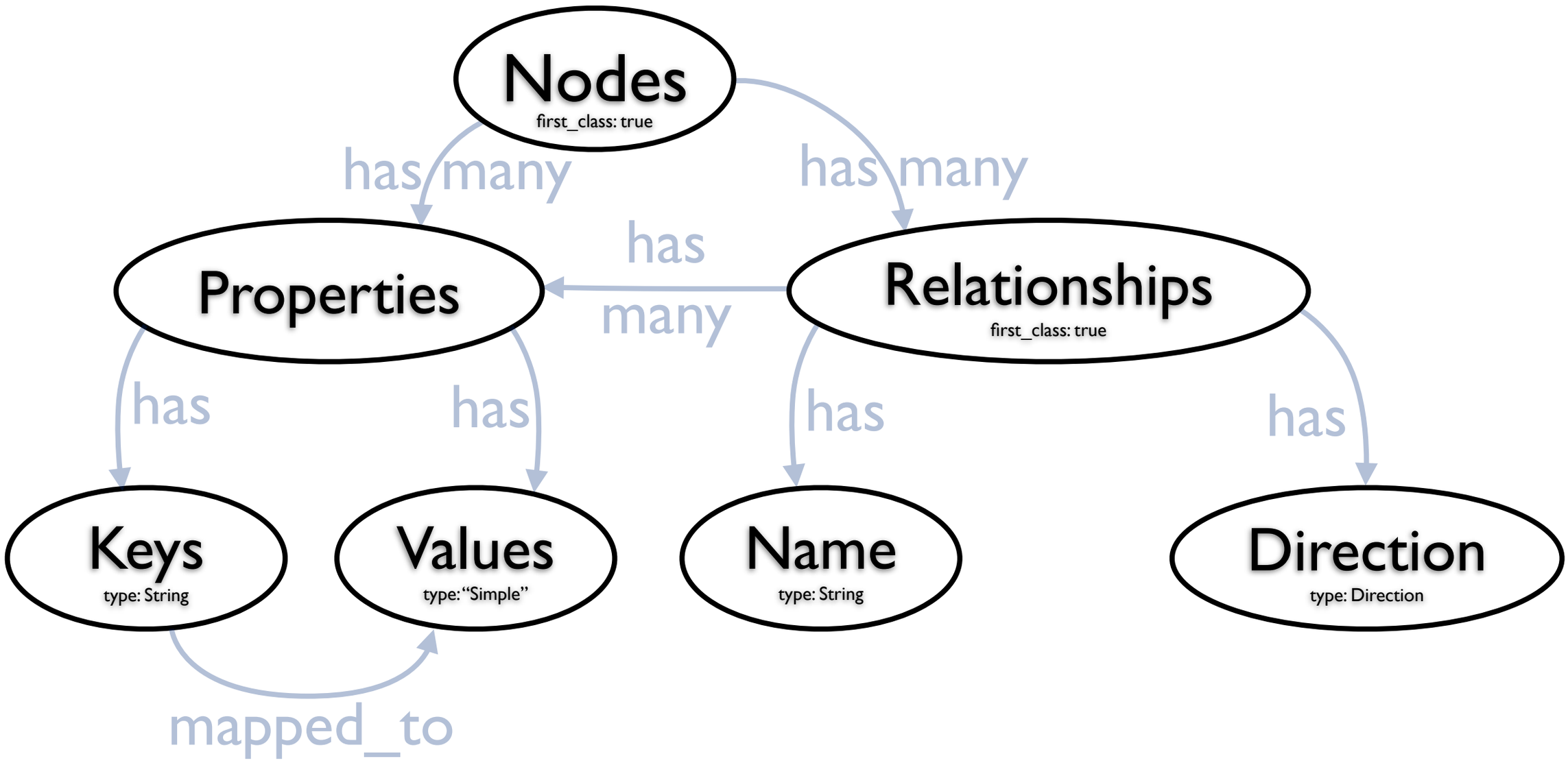
Digging into...



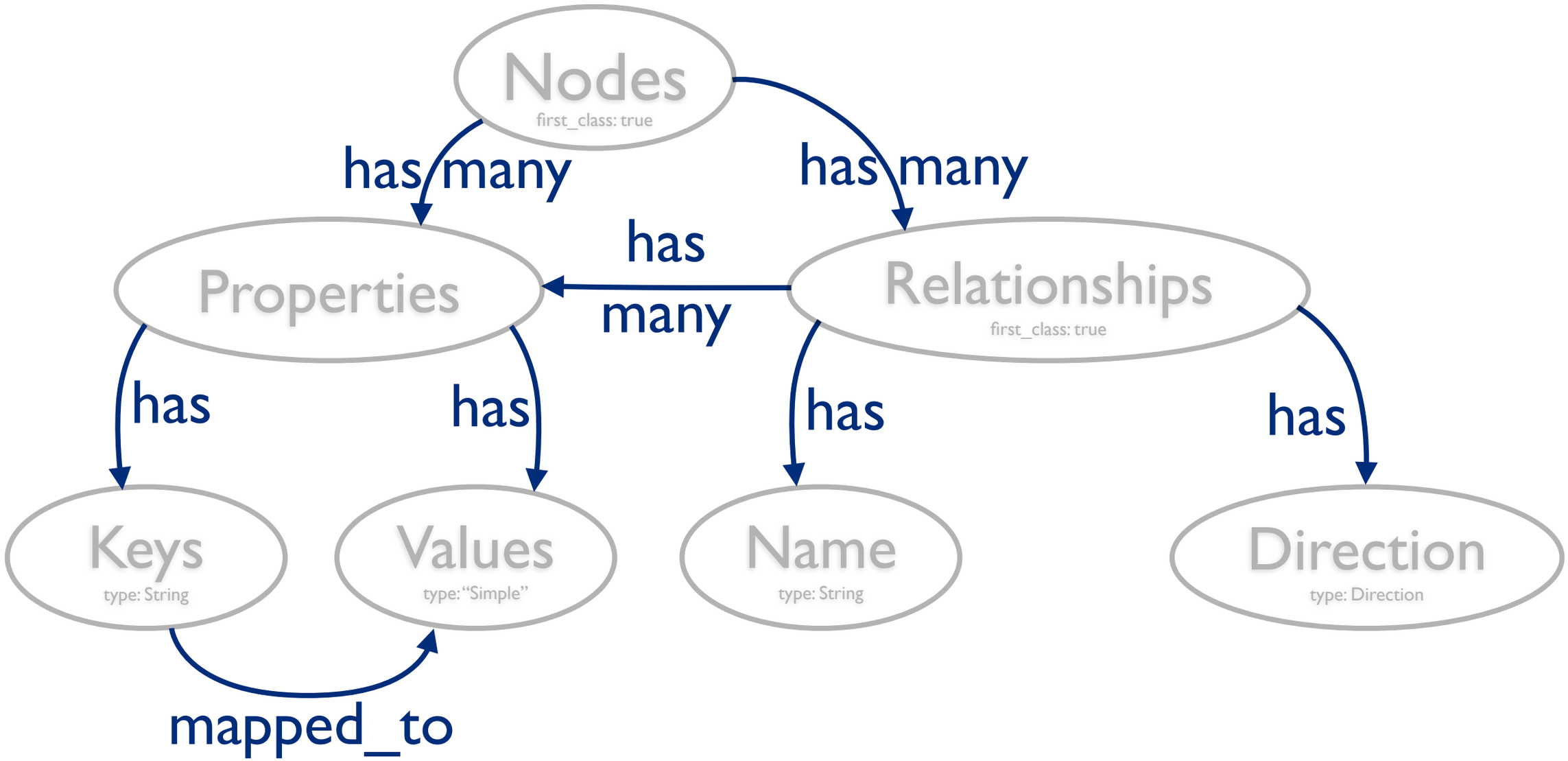
... in more detail



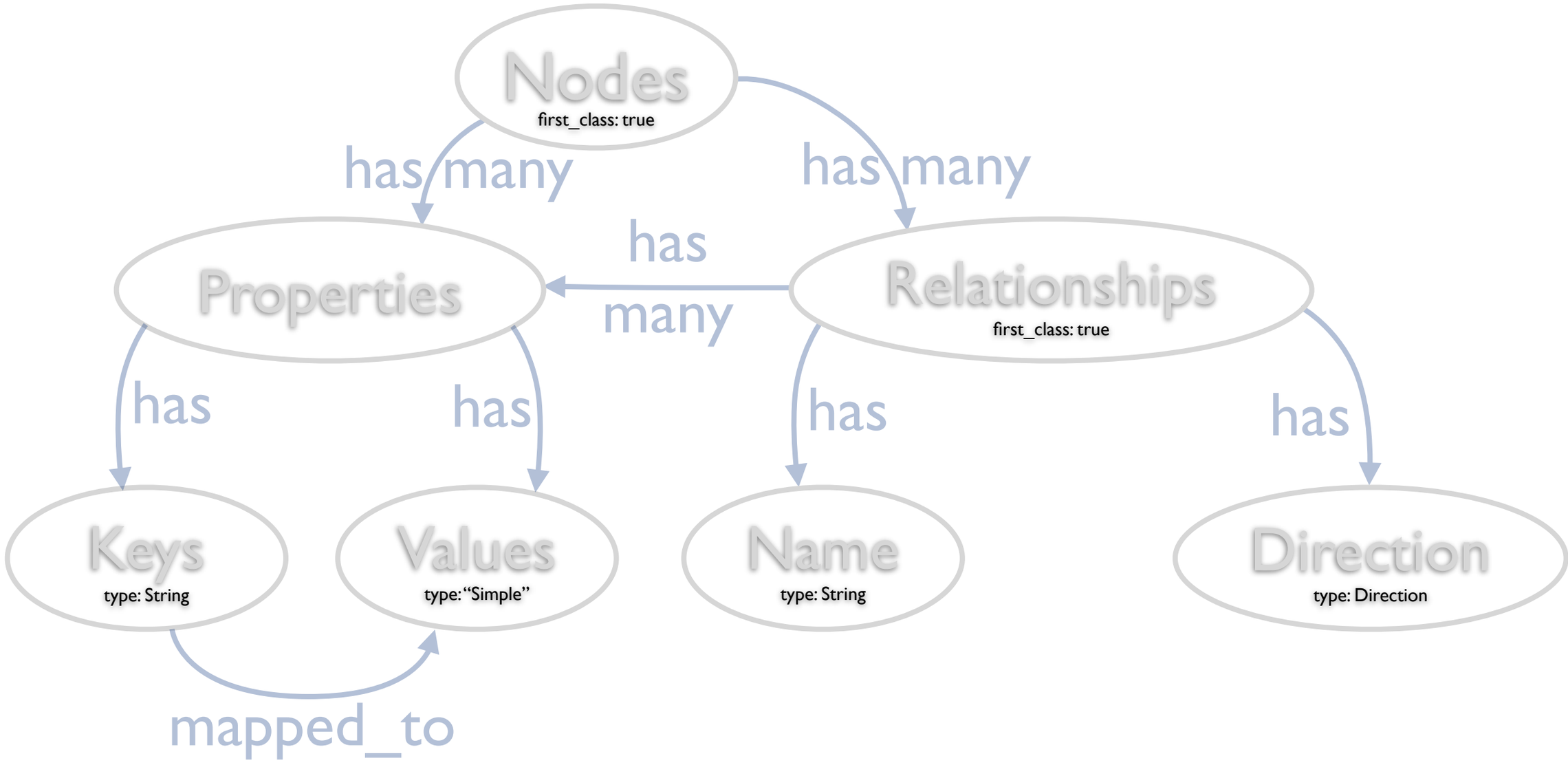
Nodes


Nodes
first_class: true
has many
has many
Properties
has
many
Relationships
first_class: true
has
has
has
has
Keys
type: String
Values
type: "Simple"
Name
type: String
Direction
type: Direction
mapped_to

Relationships



Properties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type: String
Values
type: "Simple"
Name
type: String
Direction
type: Direction
mapped_to

Recommendation Engine

Path Search

Failure Impact Analysis

Master Data Management

Use Cases

Network Management

Geospatial

Highly Connected

Modelling Reality

Social Networks

Access Control & Authorisation

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

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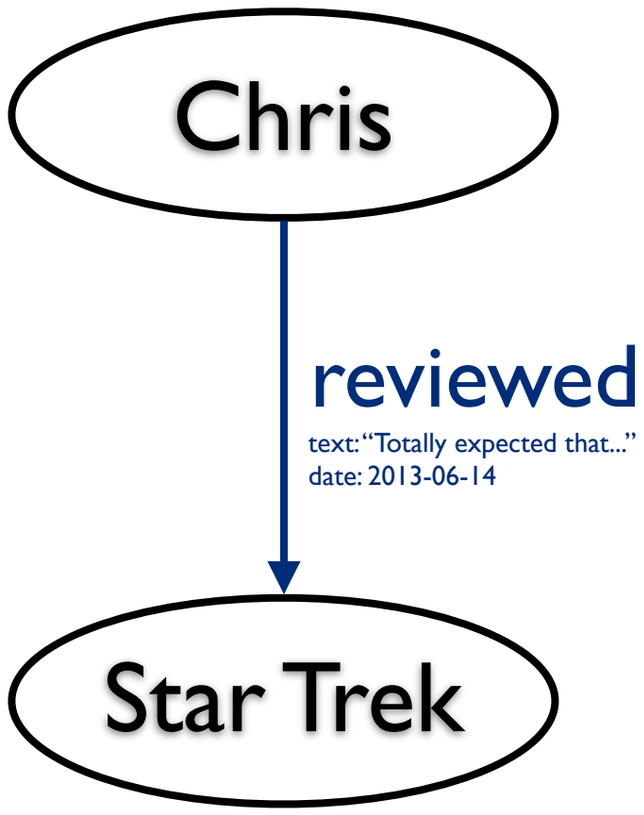
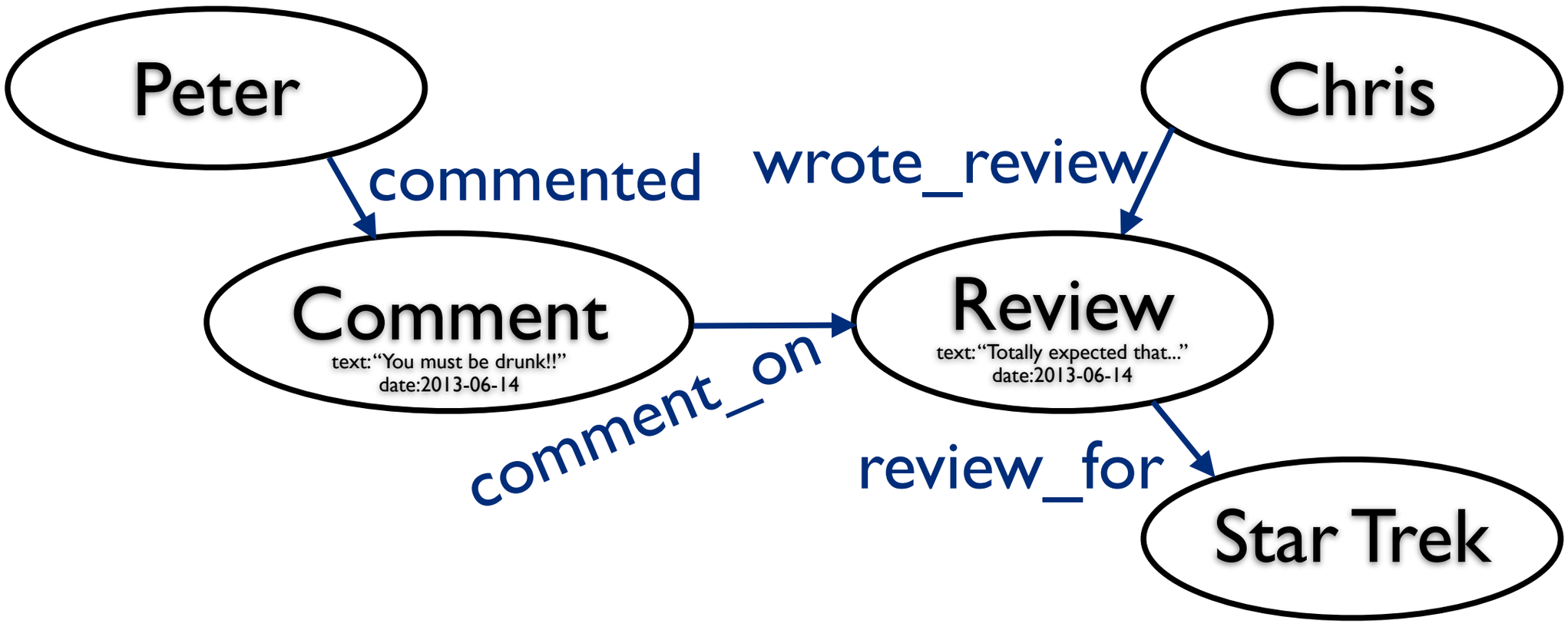
Things hiding in Actions

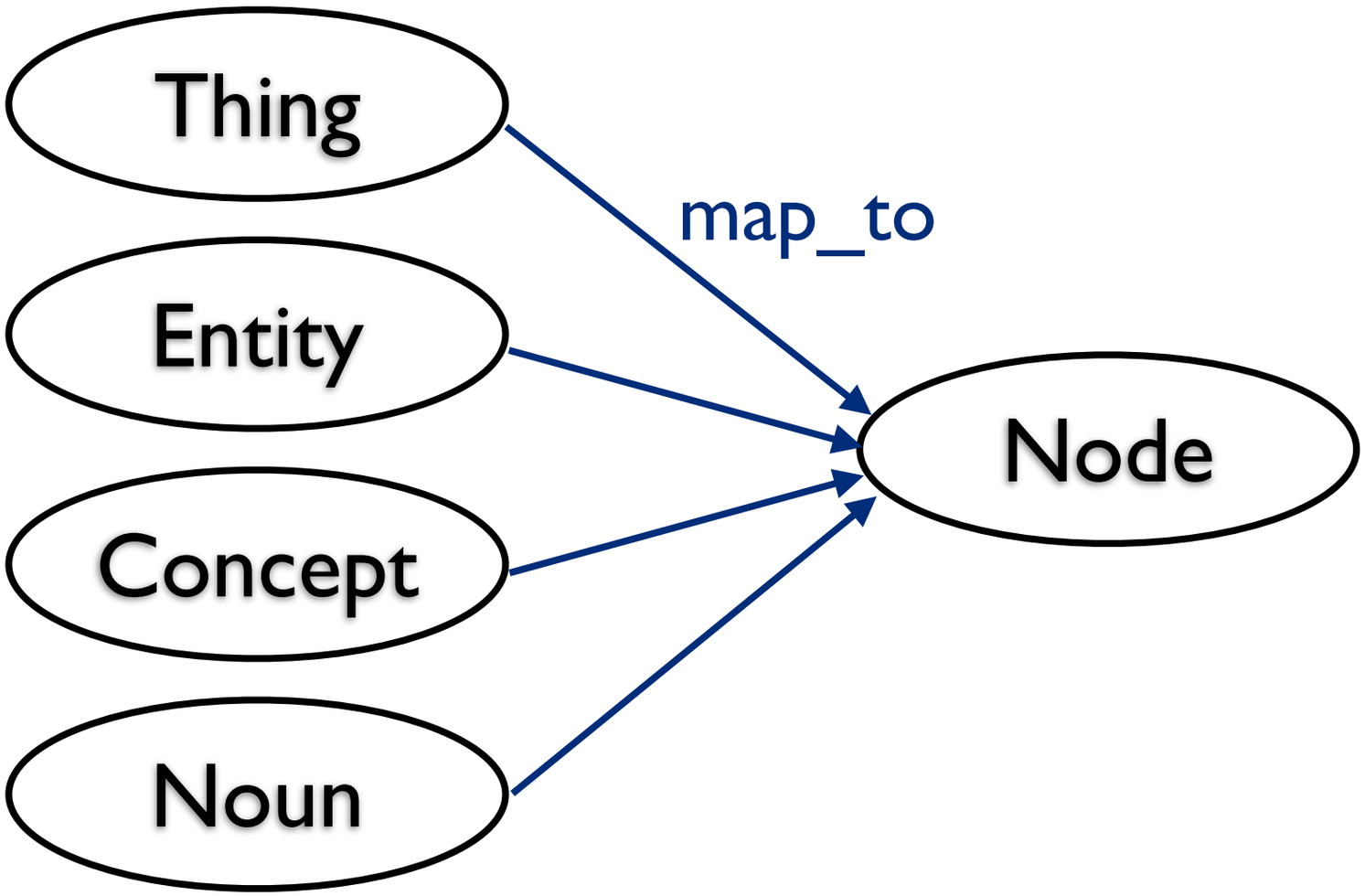


Things hiding in Actions

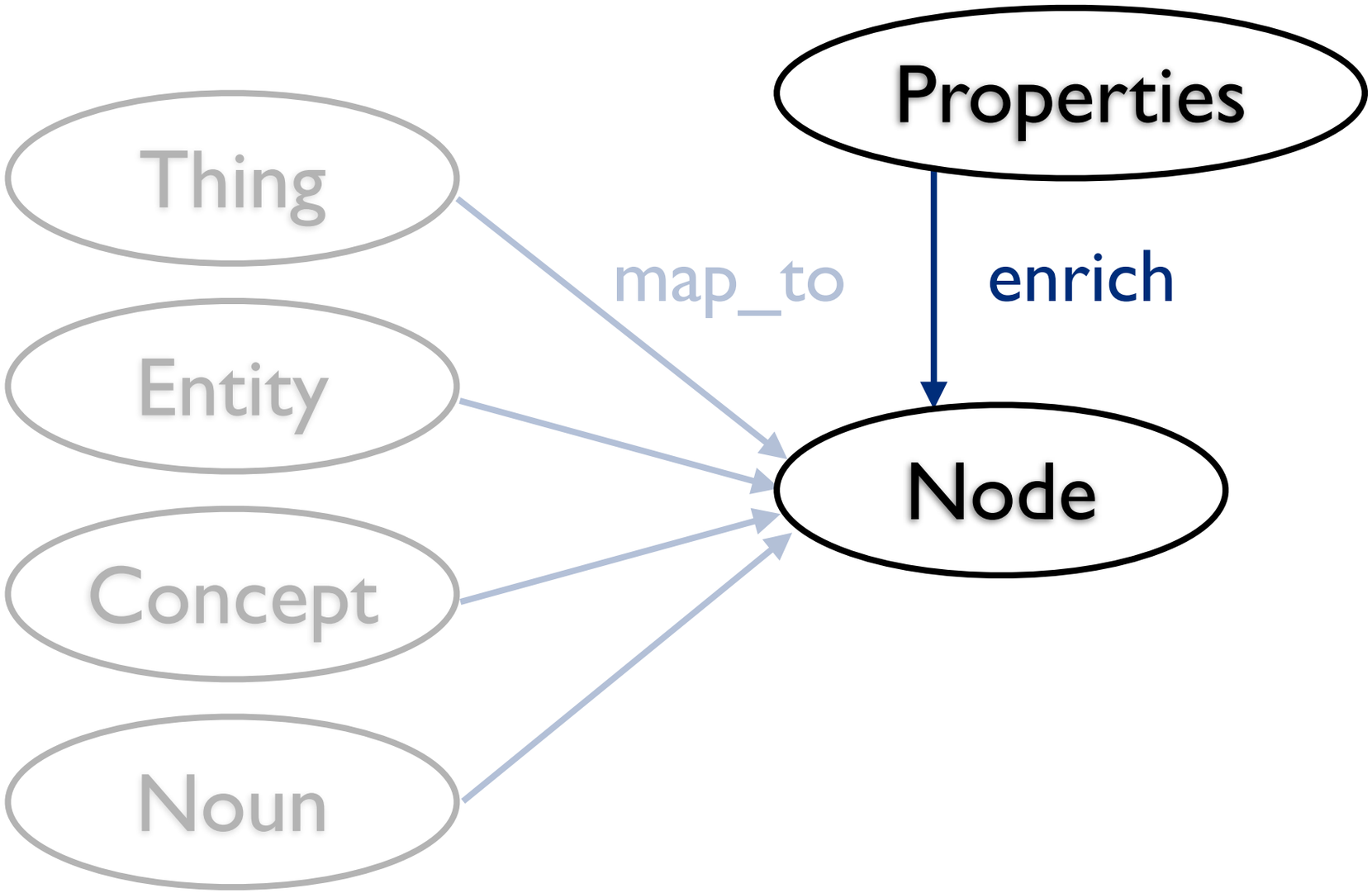
Things hiding in Actions



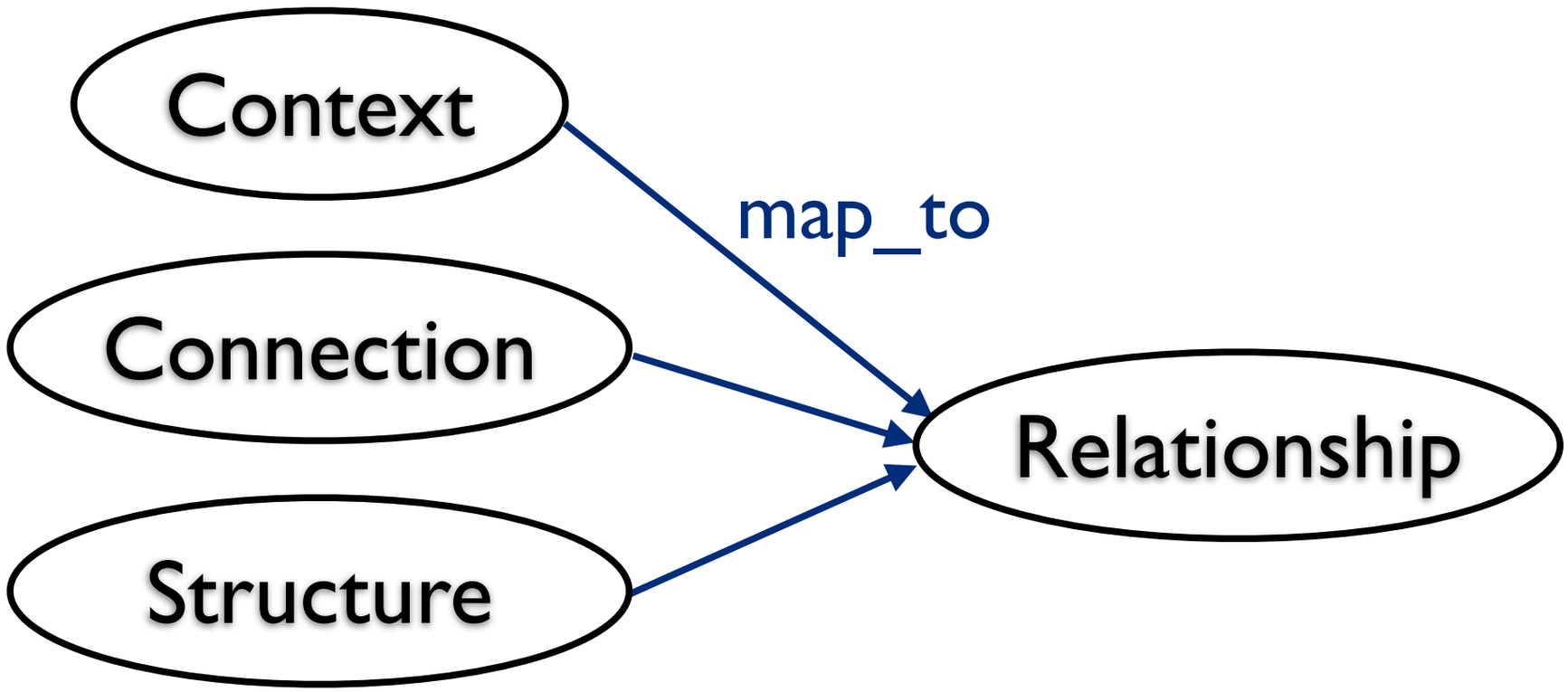
Data Modelling



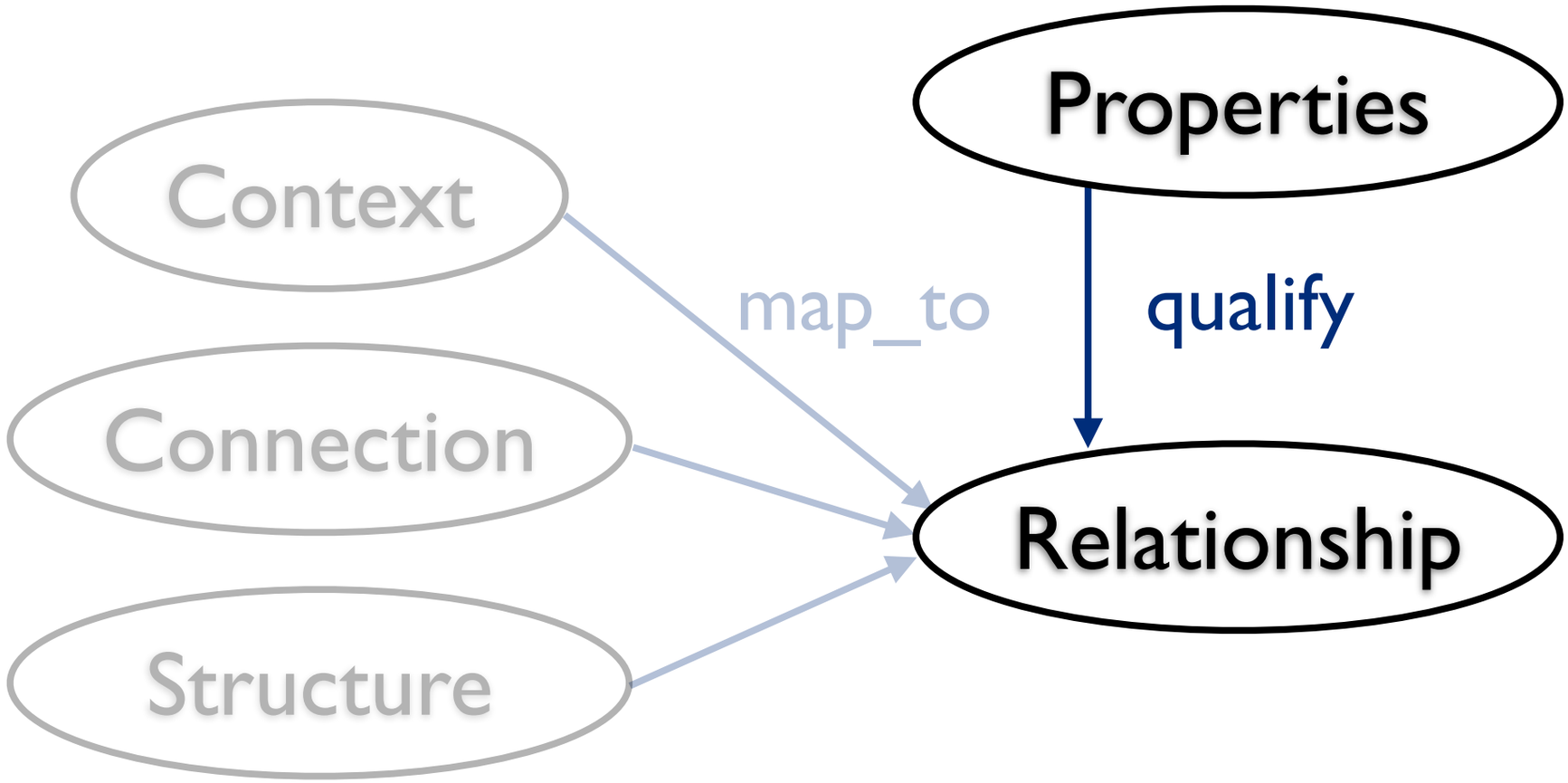
Data Modelling



Data Modelling



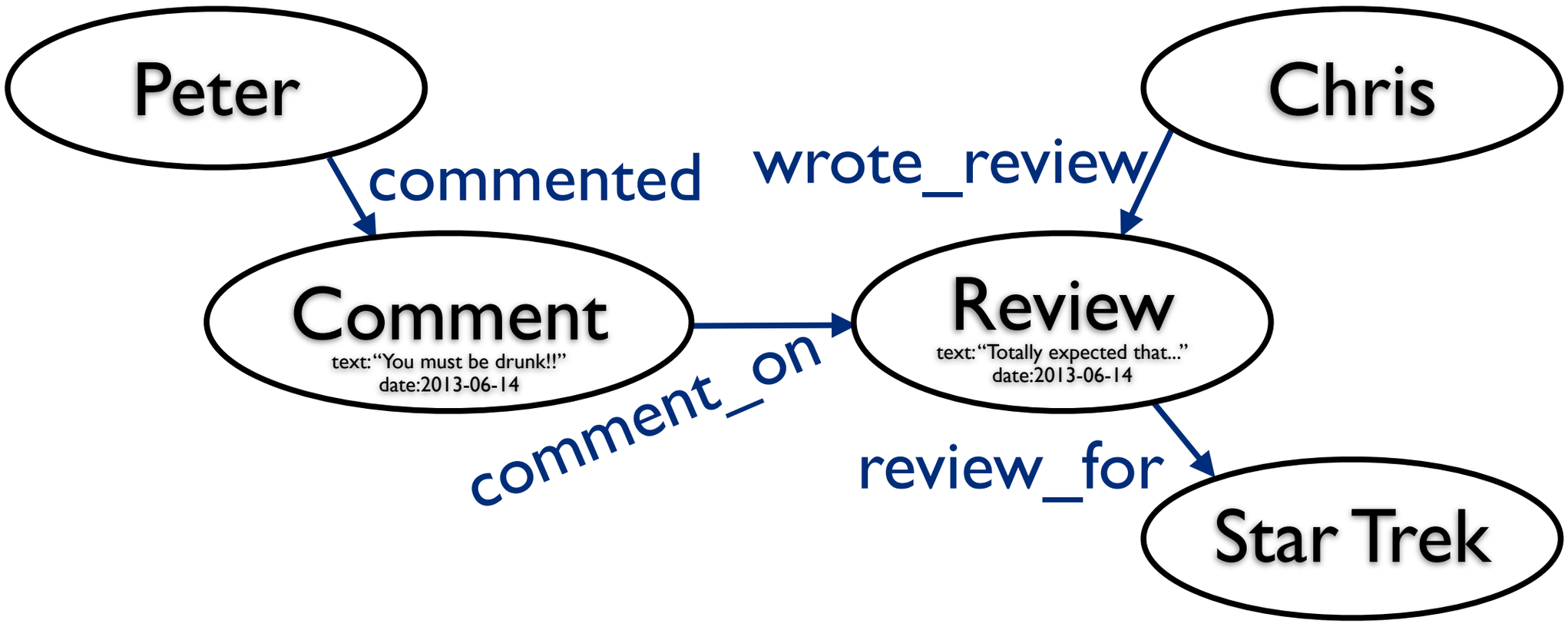
Data Modelling



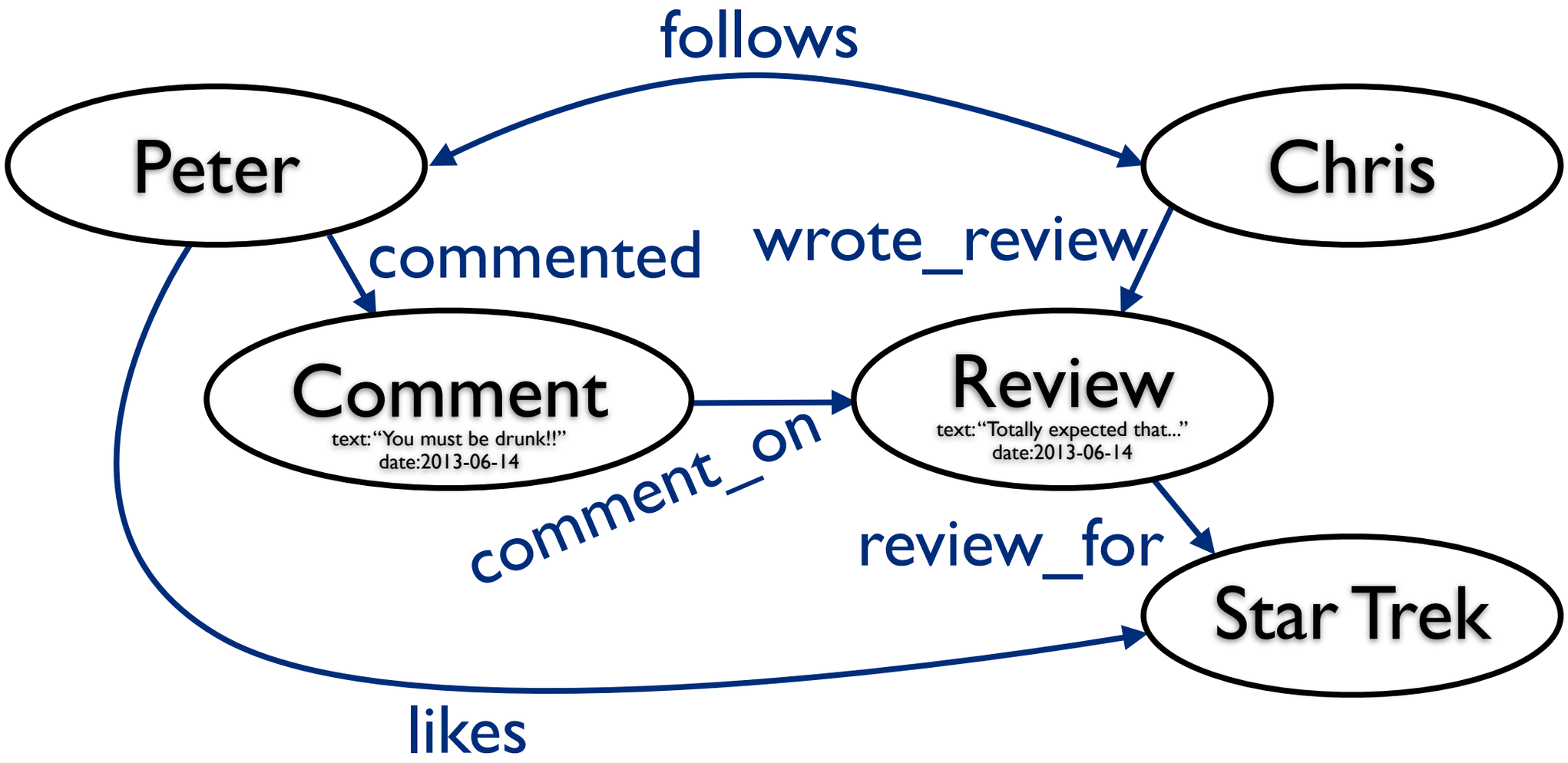
Graph Evolution

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

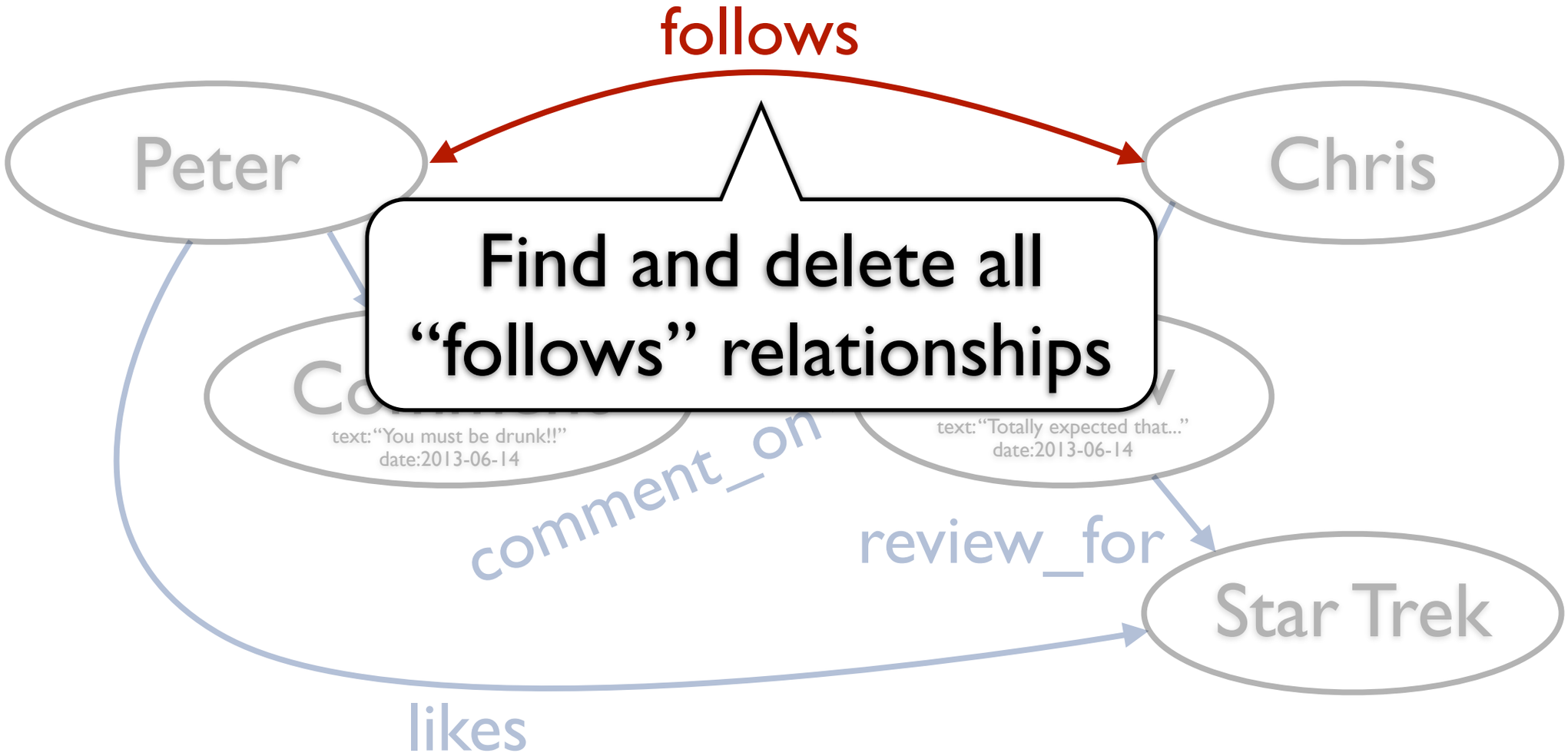
Evolving...


Peter
commented
Chris
wrote_review
Comment
text:"You must be drunk!!"
date:2013-06-14
comment_on
Review
text:"Totally expected that..."
date:2013-06-14
review_for
Star Trek

... by adding


follows
Peter
Chris
commented
wrote_review
Comment
text:"You must be drunk!!"
date:2013-06-14
Review
text:"Totally expected that..."
date:2013-06-14
comment_on
review_for
Star Trek
likes

Delete: Hard

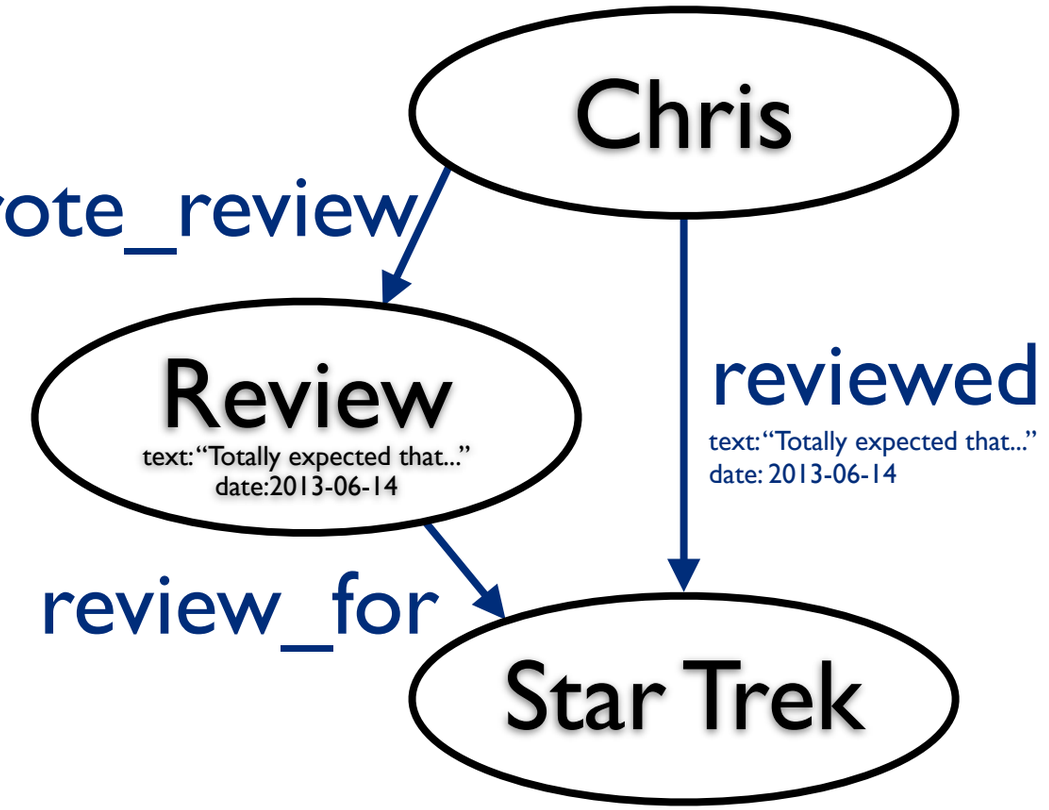

follows
Peter
Chris
Find and delete all "follows" relationships
text:"You must be drunk!!"
date:2013-06-14
text:"Totally expected that..."
date:2013-06-14
comment_on
review_for
Star Trek
likes

Restructure: Harder

... but can be additive

... however

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



Querying Data

- Demo