

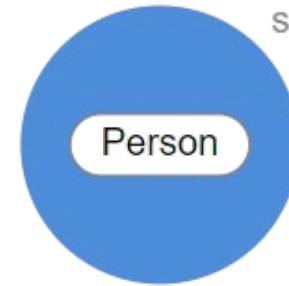
# Modeling for graph databases

# My favorite pair

name: Brad Pitt  
born: 1963



name: Angelina Jolie  
born: 1975  
shoesize: 9



# Well, trio really ...

name: Lassie  
born: 1938

Dog

name: Brad Pitt  
born: 1963

Person

name: Angelina Jolie  
born: 1975  
shoesize: 9

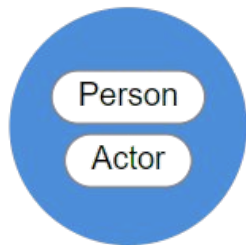
Person

# All three have a job

name: Lassie  
born: 1938



name: Brad Pitt  
born: 1963



name: Angelina Jolie  
born: 1975  
shoesize: 9



# Two got married



# But not for long



# Inconsistency crops up ...

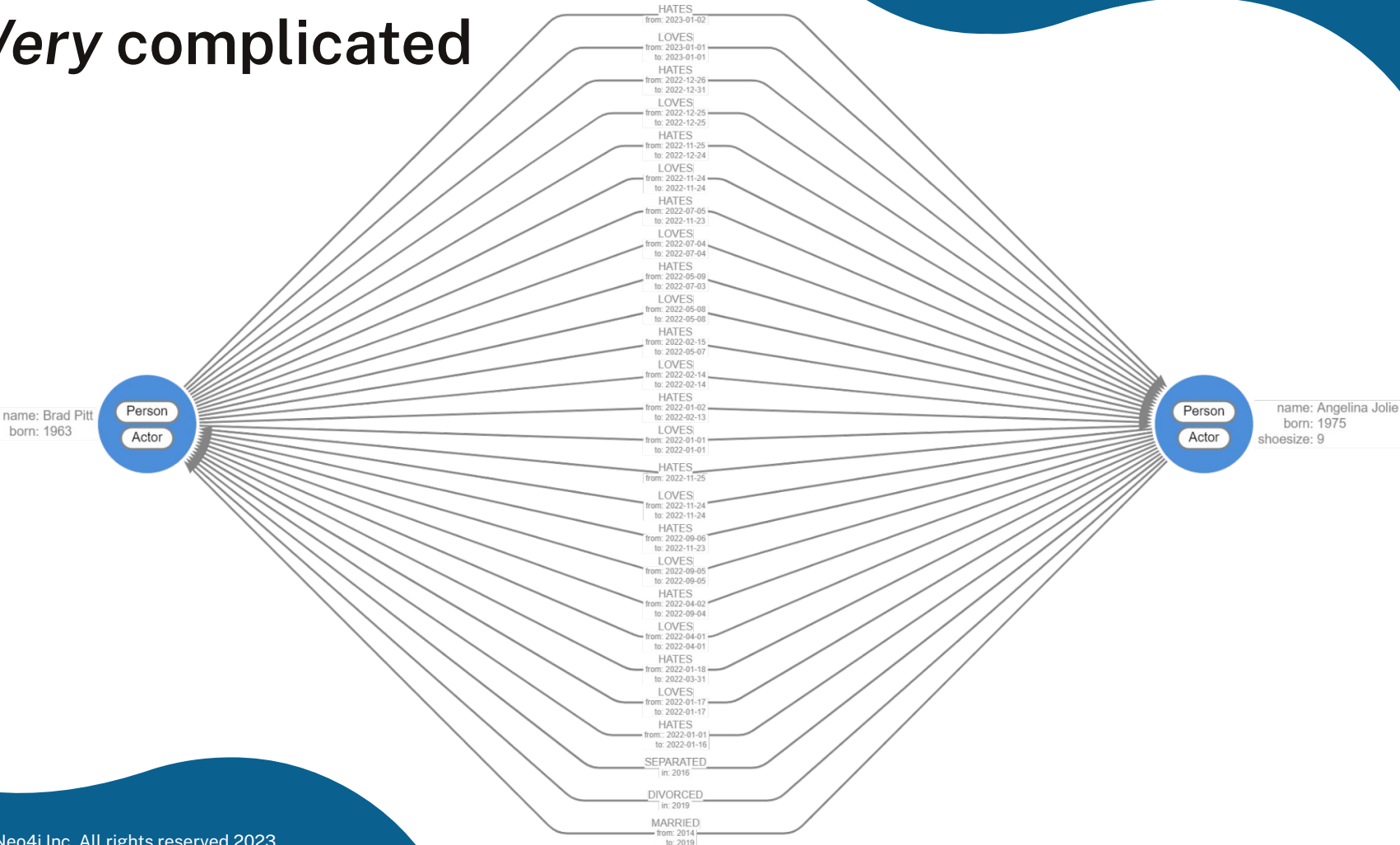


# It is complicated

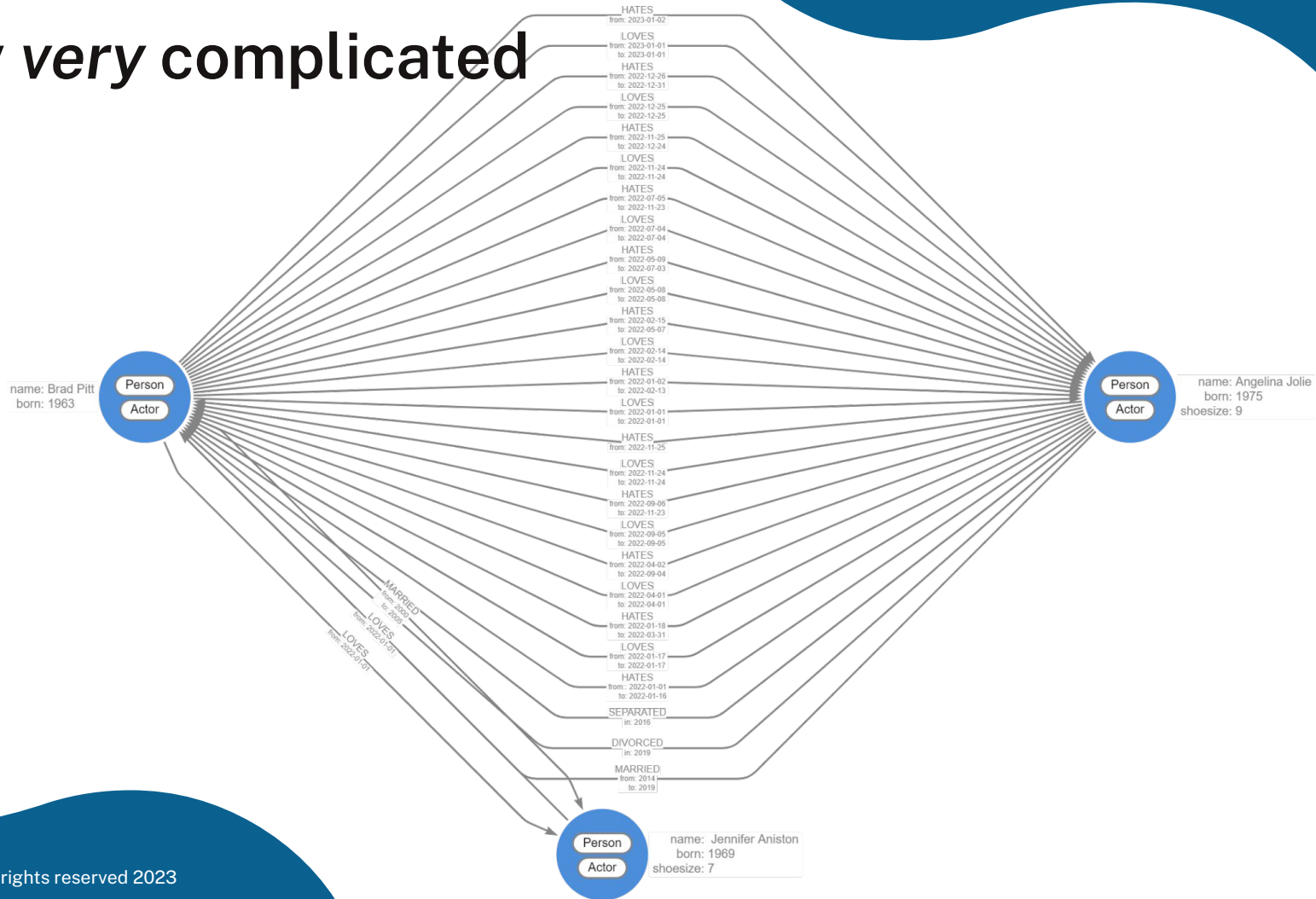




# Very complicated



# Very very complicated



# Remodeling

A marriage is between  
two persons, but more  
people are involved  
(witnesses, officers, ...)!  
How to include them?

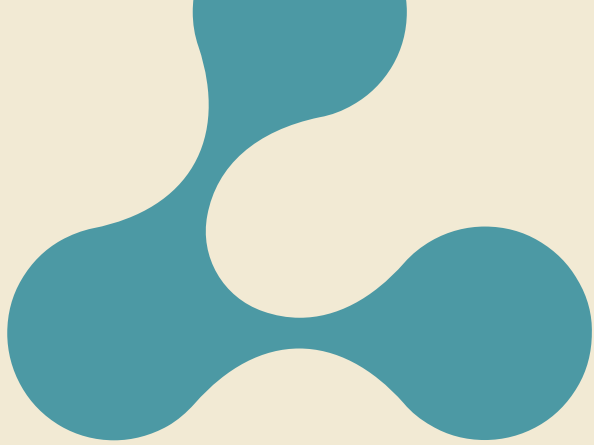


# Help the demon remodel!



No amount of remodeling can fix this...





# Graph modeling workflow

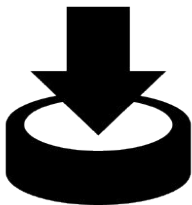




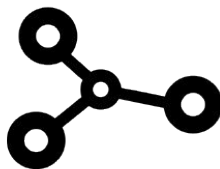
# Ch-ch-changes



1. Derive the question



2. Obtain the data



3. Develop a model



4. Ingest the data



5. Query/Prove our model

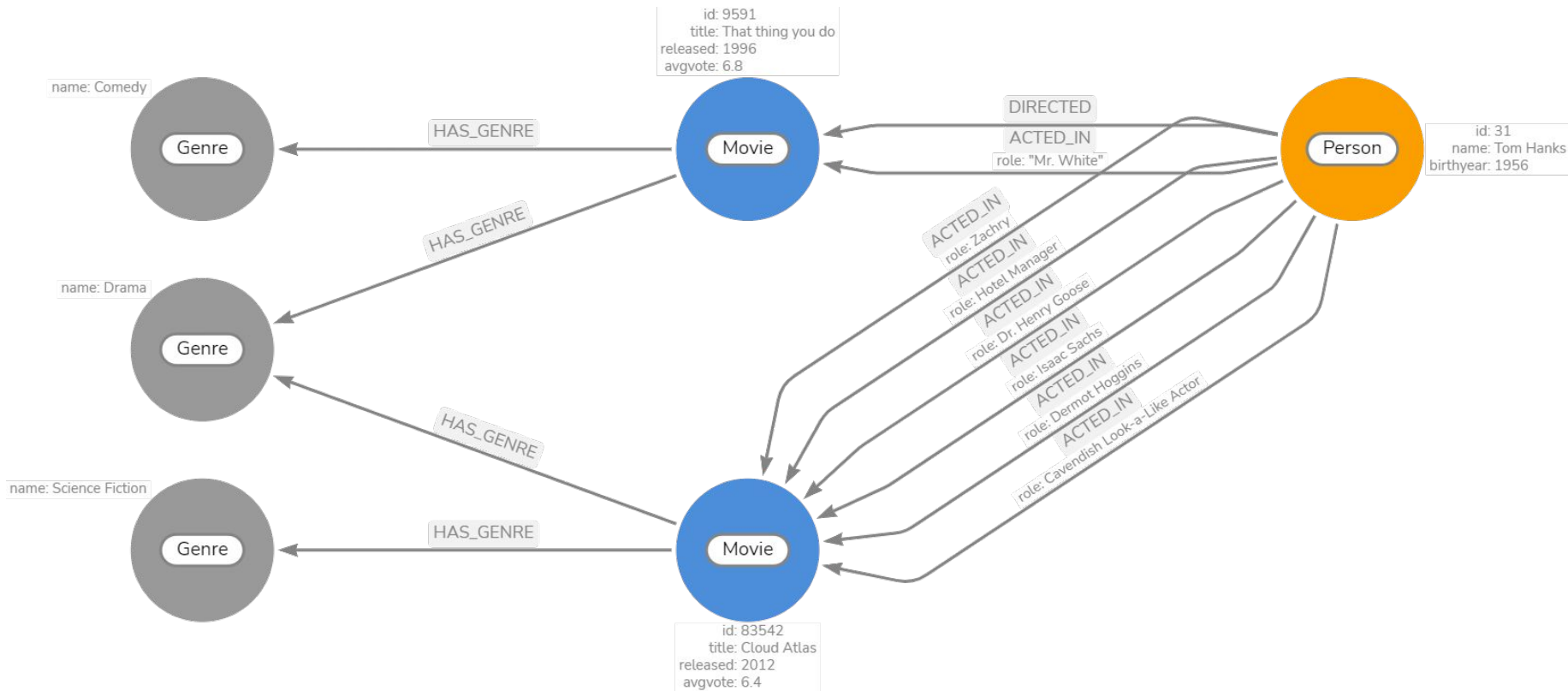
# Demo(n)



[bit.ly/neo4junige](https://bit.ly/neo4junige)



# Model change



# In conclusion - Intermediate nodes

Nothing wrong with

- Getting more intermediate nodes over time
- Seeing the model evolve towards what looks like a model that would also fit an RDBMS. There are only so many ways to model a problem domain, that's fine.

But! Allow the model to evolve based on the questions.

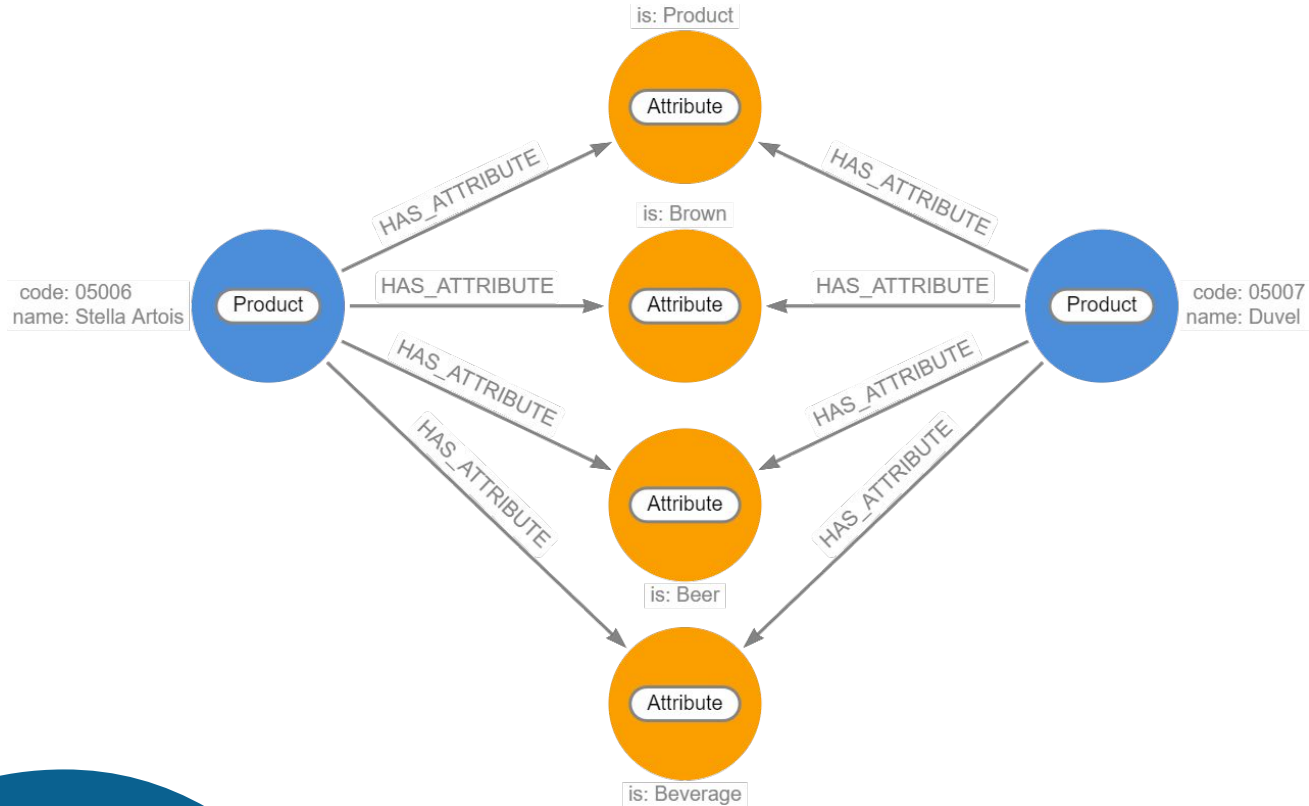
Business evolves ever faster. A graph helps you keep up with that!

# The Justin Bieber problem

Nothing funny  
to say about  
this guy ...



# Discussing the problem



# Cost of change II - Demo(n)





# Questions?

I may have answers.

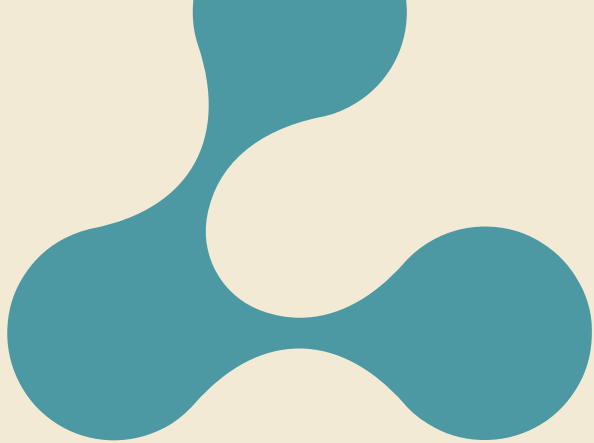


# Practice - Modeling

*Create a graph model for an application that manages and coordinates a university campus.*

You get 10 minutes to do it.  
I will then pick two random people to present their solutions.





# Everybody that answered is wrong!

There is no question in the statement!





# Practice - Modeling

*Create a graph model for an application to manage and coordinate a university campus and allows to answer/model the following:*

1. What courses does a department offer?
2. What courses has/is a student completed/attending?
3. Get in touch with students who completed a course to receive feedback.
4. What courses have the lowest average exam score?
5. Which professors are performing worst, when looking at exam scores across all courses they teach?
6. What (new) research topics could be recommended to professors?



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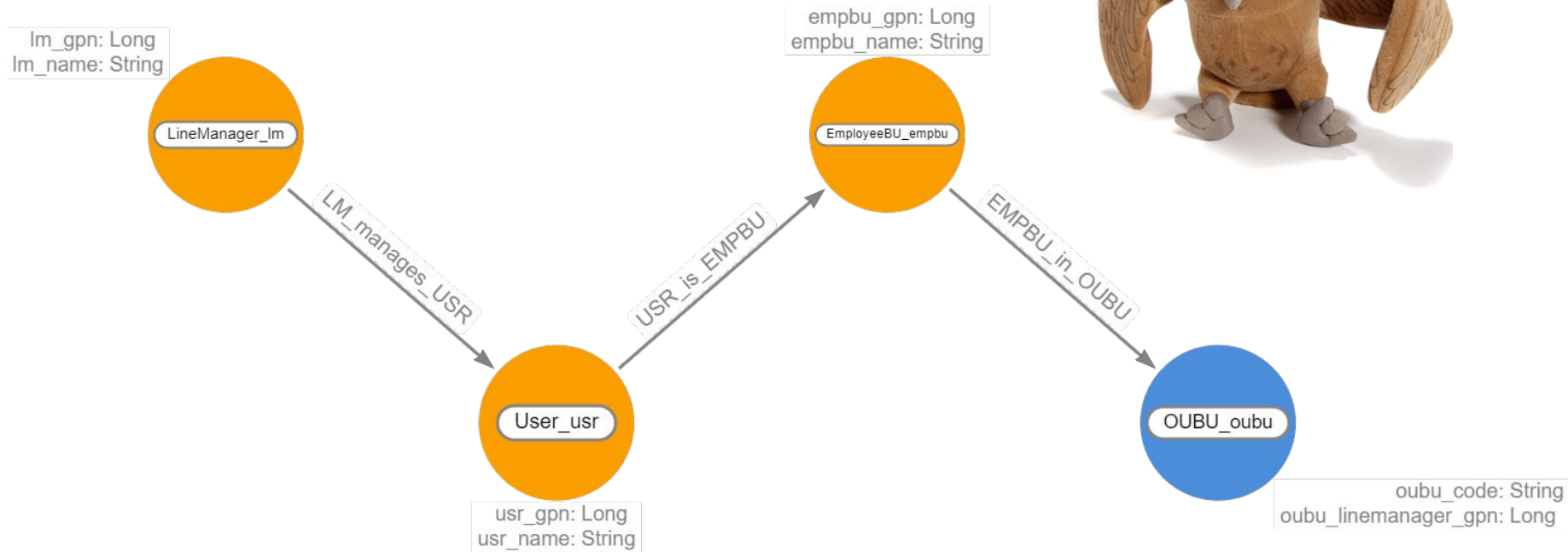
If you could be the best in the world in one skill, what would it be?

① Click **Present with Slido** or install our [Chrome extension](#) to activate this poll while presenting.

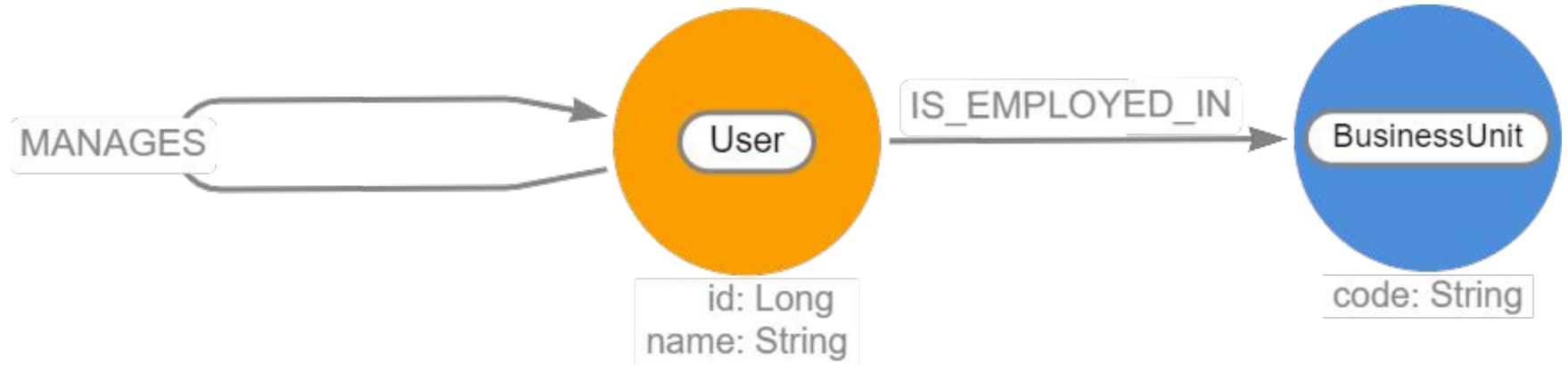
# Modeling in practice

aka Stefano's Rants

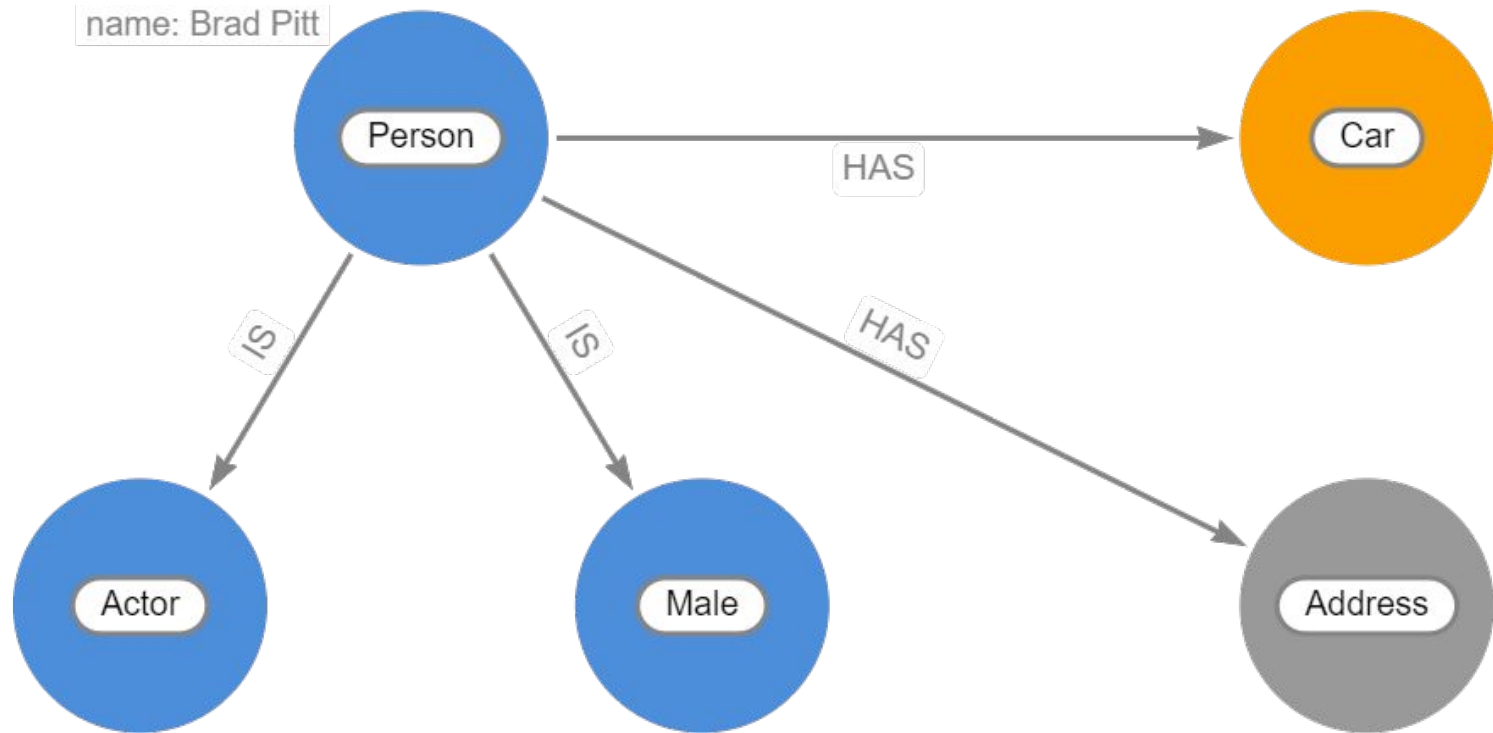
# Let's discuss this



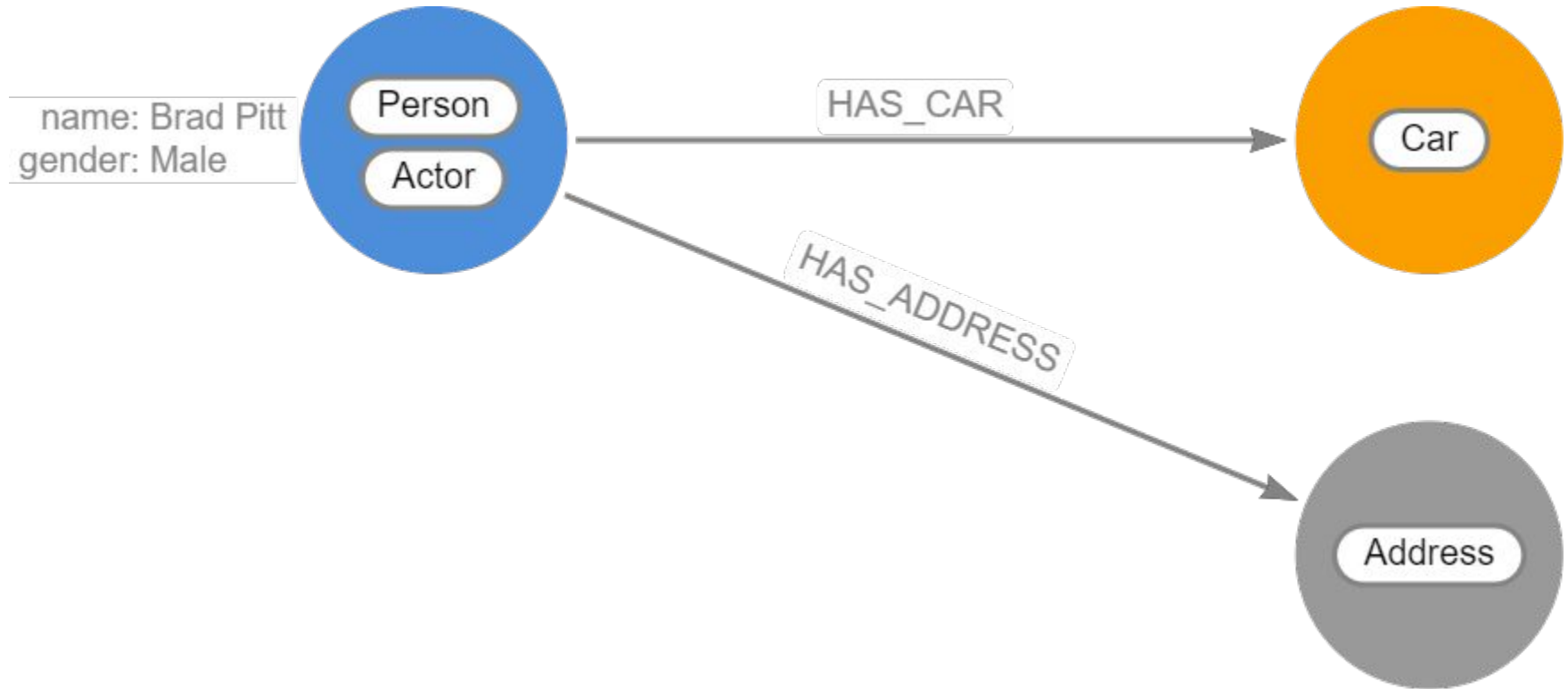
# Let's discuss this



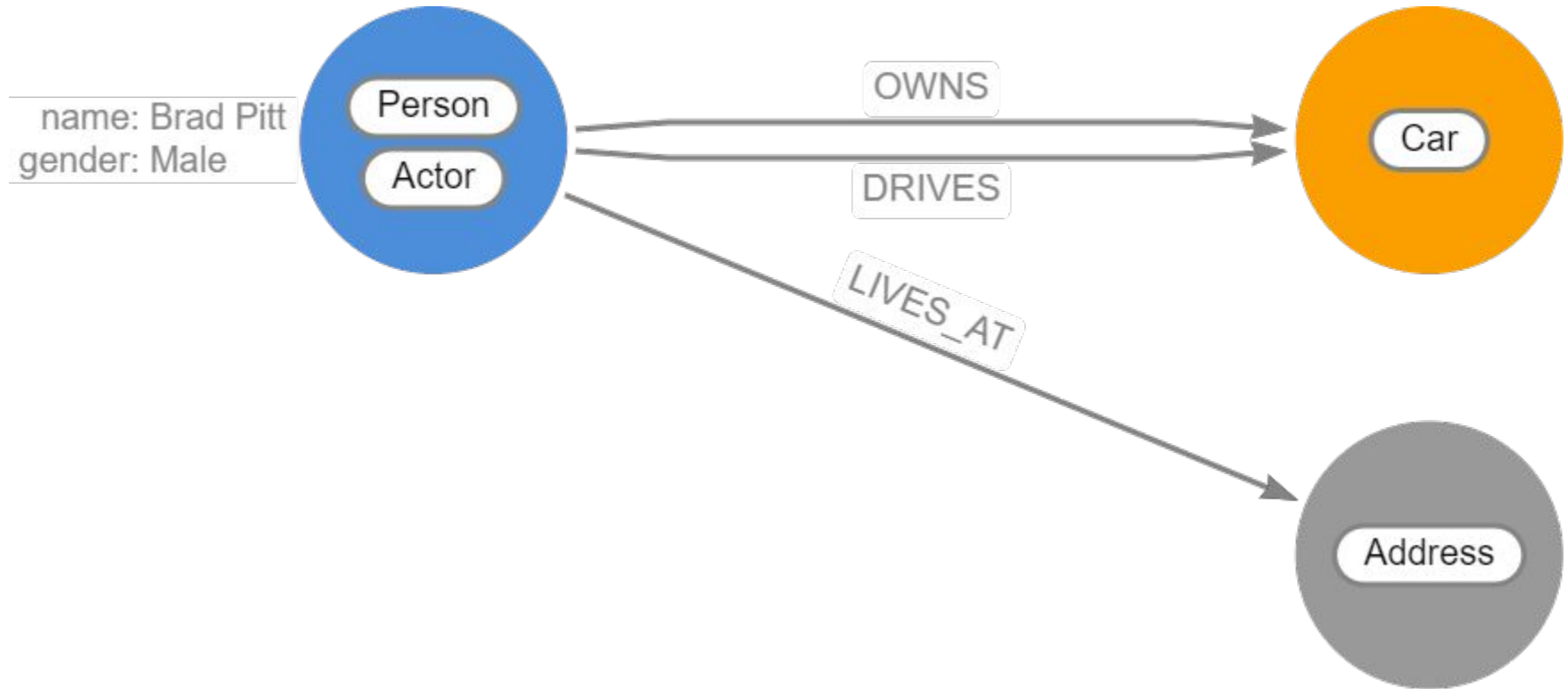
# IS'ms and HAS'ms



# IS'ms and HAS'ms

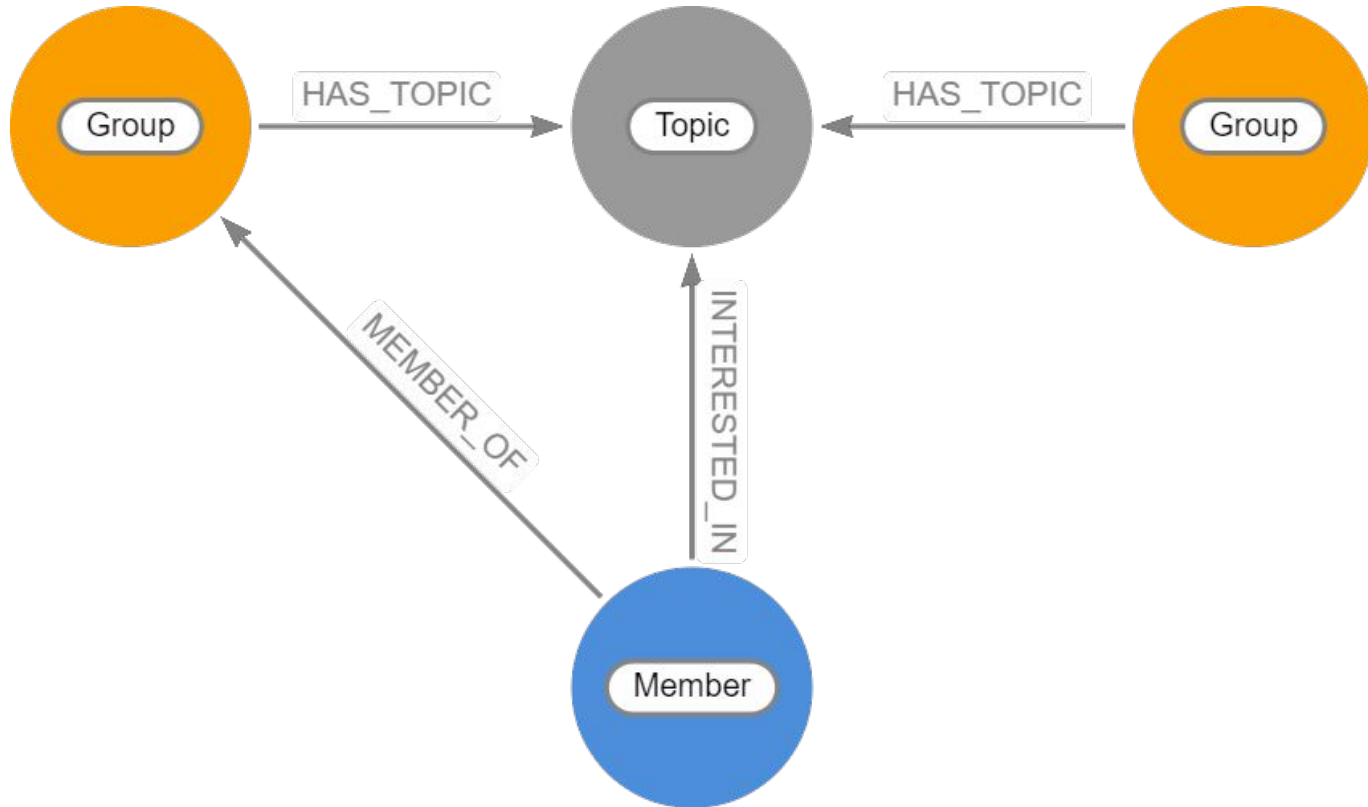


# IS'ms and HAS'ms

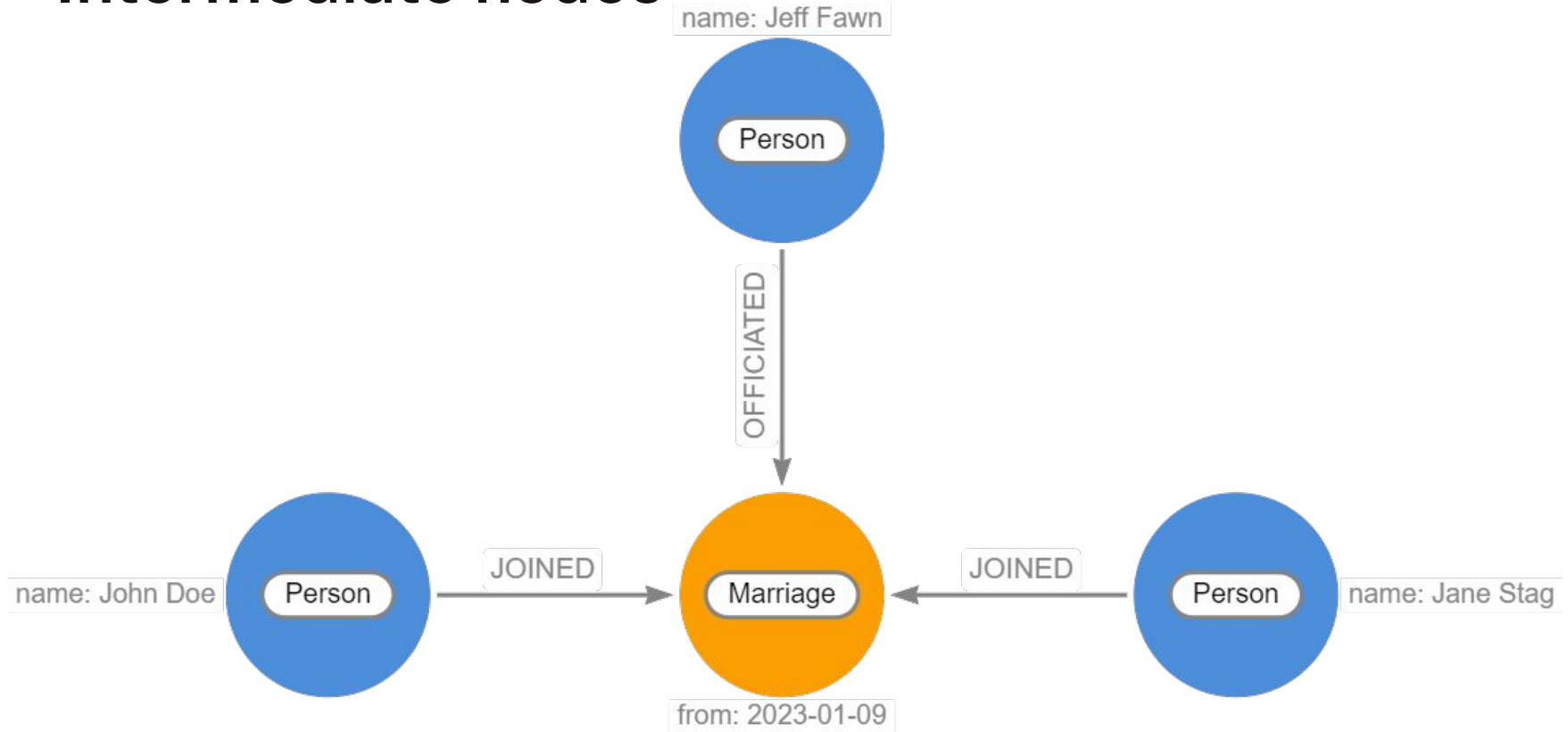




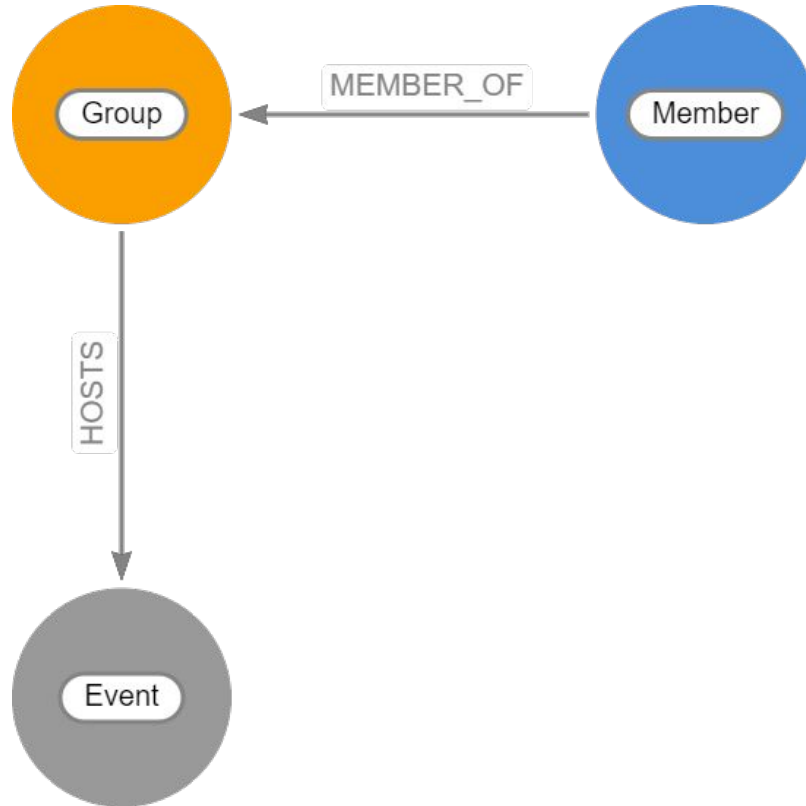
# Inferring a relationship



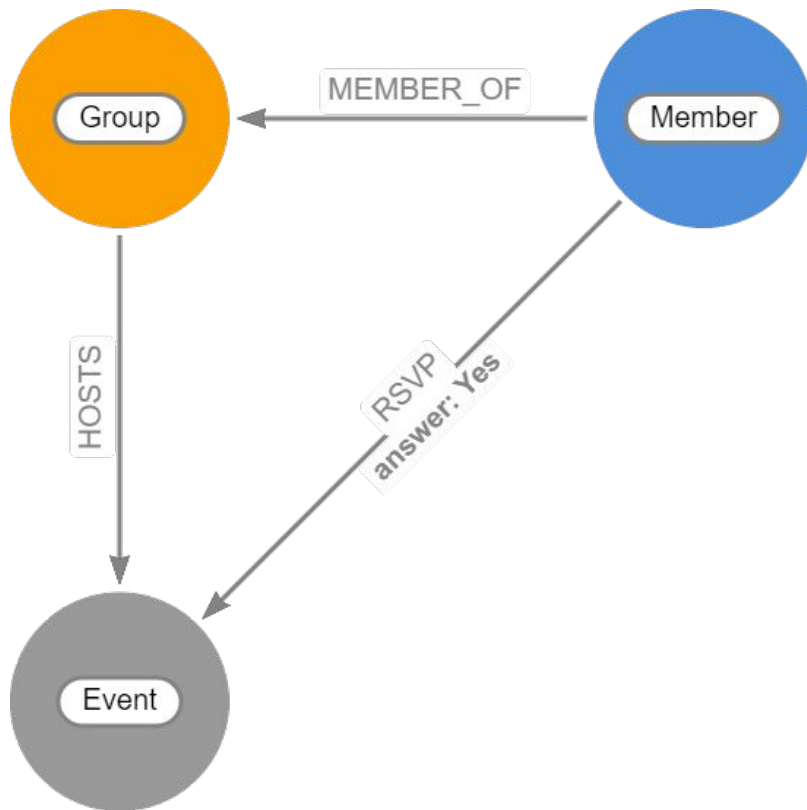
# Intermediate nodes



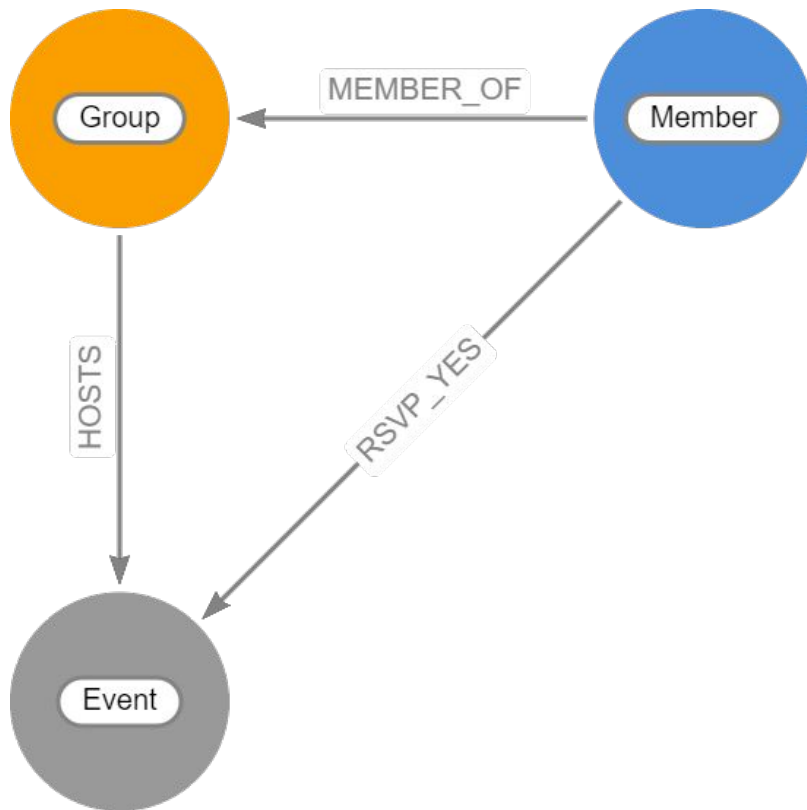
# Leveraging relationship types



# Leveraging relationship types



# Leveraging relationship types



# Relational to graph

# Translation

- Rows in tables -> nodes
- Foreign keys -> relationships
- Link tables -> relationships (possibly with properties)
- Remove artificial constructs (extra primary and foreign keys, for example)

Nothing is lost in this translation.

However, do verify if there is something that can be **gained** in the translation!

# A word on primary/foreign keys

Unique/Primary keys



Secondary/Foreign keys





# Feedback

This 'logo' is  
just letters. I  
could have  
done that.

My wife likes it  
in this other  
font I found.

*“Can we make  
the pig sexier?”*



**stefano.ottolenghi@neo4j.com**  
**stejey@gmail.com**

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Overall, how would you rate your experience today?

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# What has the largest friction point with using Neo4j been?

① Click **Present with Slido** or install our [Chrome extension](#) to activate this poll while presenting.

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One thing you particularly liked/appreciated in today's session?

① Click **Present with Slido** or install our [Chrome extension](#) to activate this poll while presenting.

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One thing you'd have liked  
done differently in today's  
session?

① Click **Present with Slido** or install our [Chrome extension](#) to activate this poll while presenting.