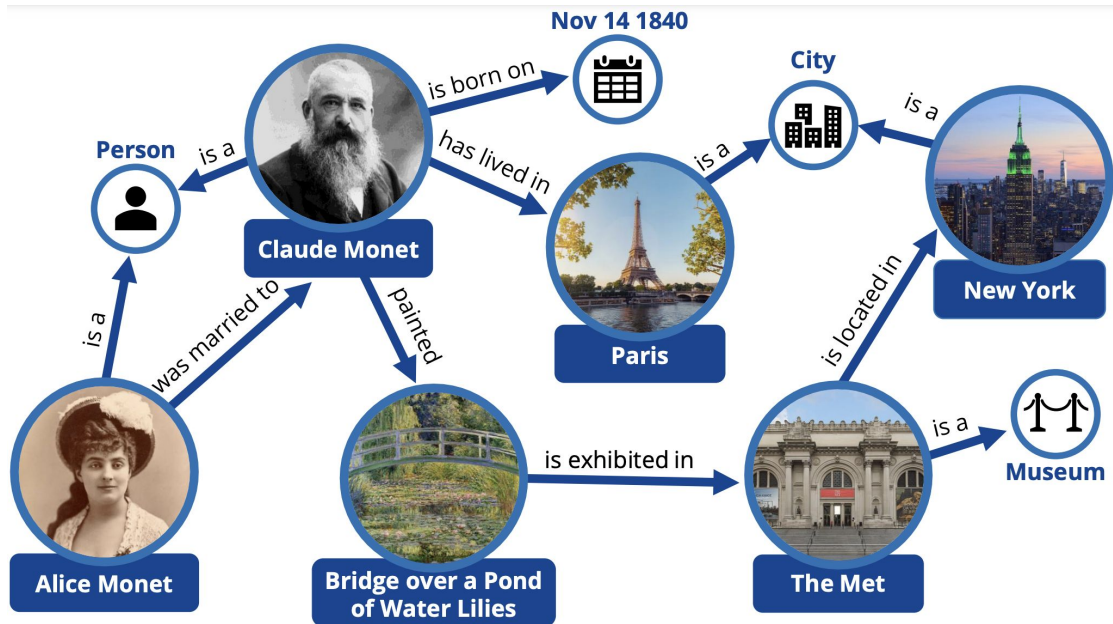


# Knowledge Graphs

A dark blue diagonal gradient bar that starts from the bottom left corner and extends towards the top right corner, covering the lower half of the slide.

# Definition

A Knowledge Graph (KG) is a graph in which entities are encoded as vertices with their relations encoded as edges to other vertices



# Your experience with KGs

Can you talk about your experience with KGs?

What do you use them for?

How were your KGs created?

Are there any challenges you face when using KGs?

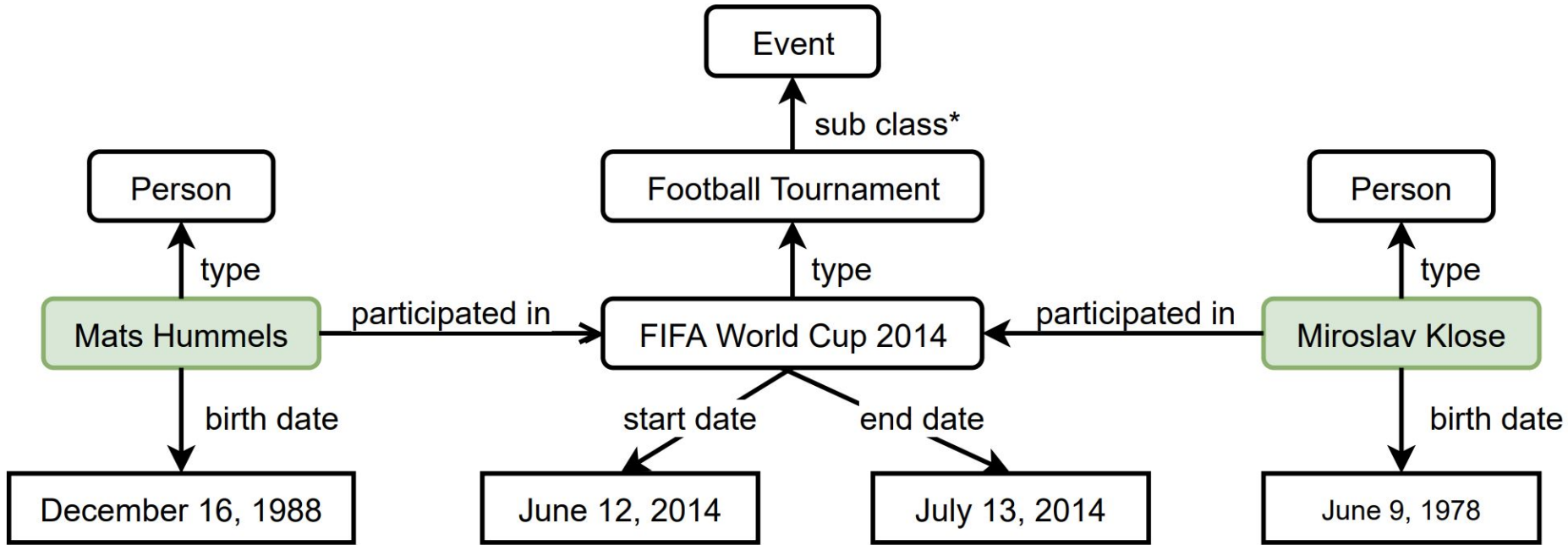
# What are your KGs like?

How were your KGs created?

How do you represent your KG? Do you use a graph database?

If so, can you talk about your experience with the graph DB? What about its query language?

How large are the KGs that you work with? Estimated # of nodes and edges?



Consider EventKG

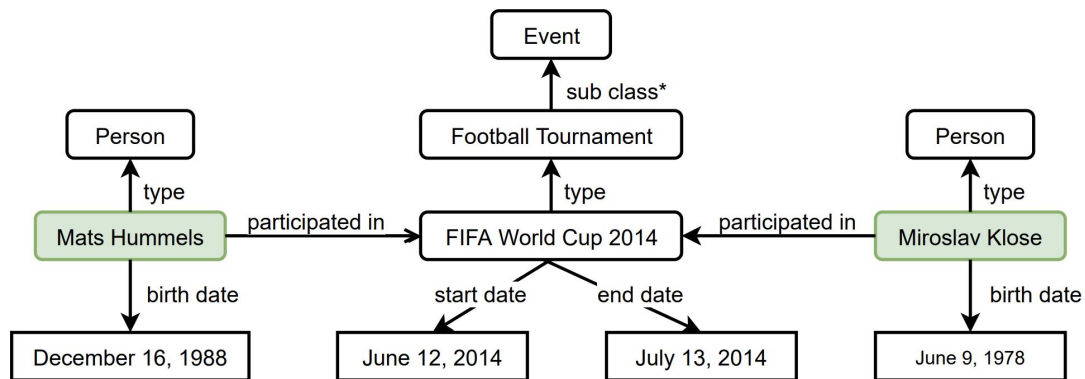
# What kinds of questions are you trying to answer with your KGs?

How would you go about determining answers to your questions?

What methods or tools would you use?

Why are you using a KG and not another data structure?

Are there any questions you would like to ask that are currently difficult to answer?



# What is the typical outcome of using your tools?

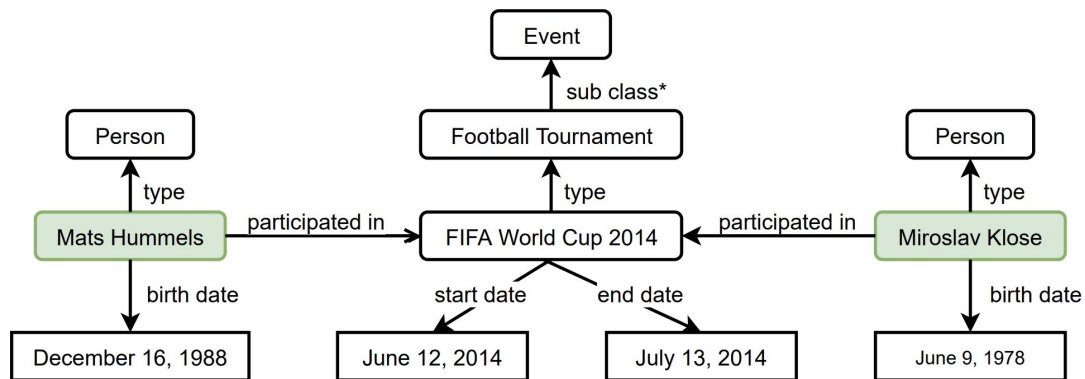
Generated reports?

New knowledge/insight?

New data?

Can you give an example of a successful use case, or talk about a hypothetical ideal KG use case?

What do the end users see / receive?

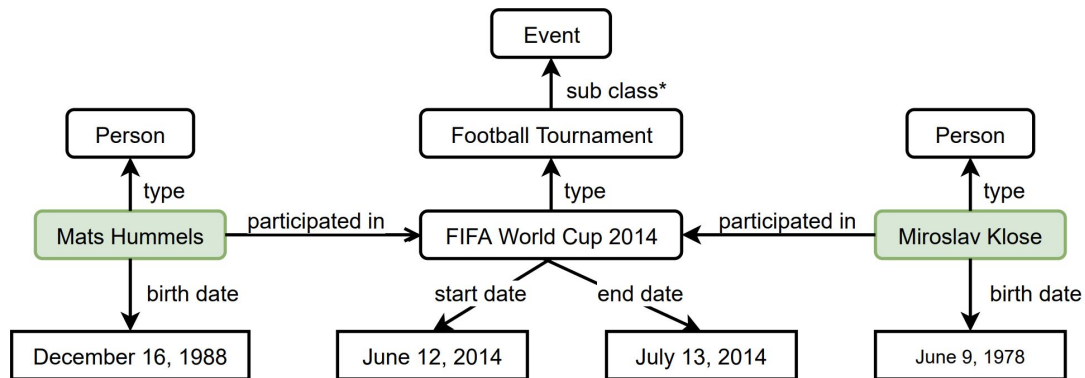


# Do you currently use any tools to visualize KGs?

If so, what do you look for in a KG using these tools?

Anything you like about using these tools? Anything you wish they could do?

If not, why not?



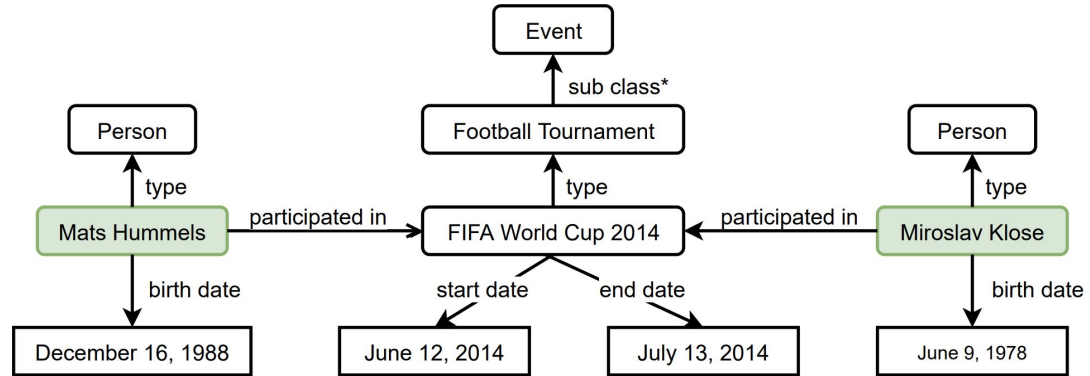


# Do you want to see the full KG?

Why/ why not? What (rough) size is your threshold?

What parts of the graph are most useful?

Give a baseline of typical node/edge count that can be visualized

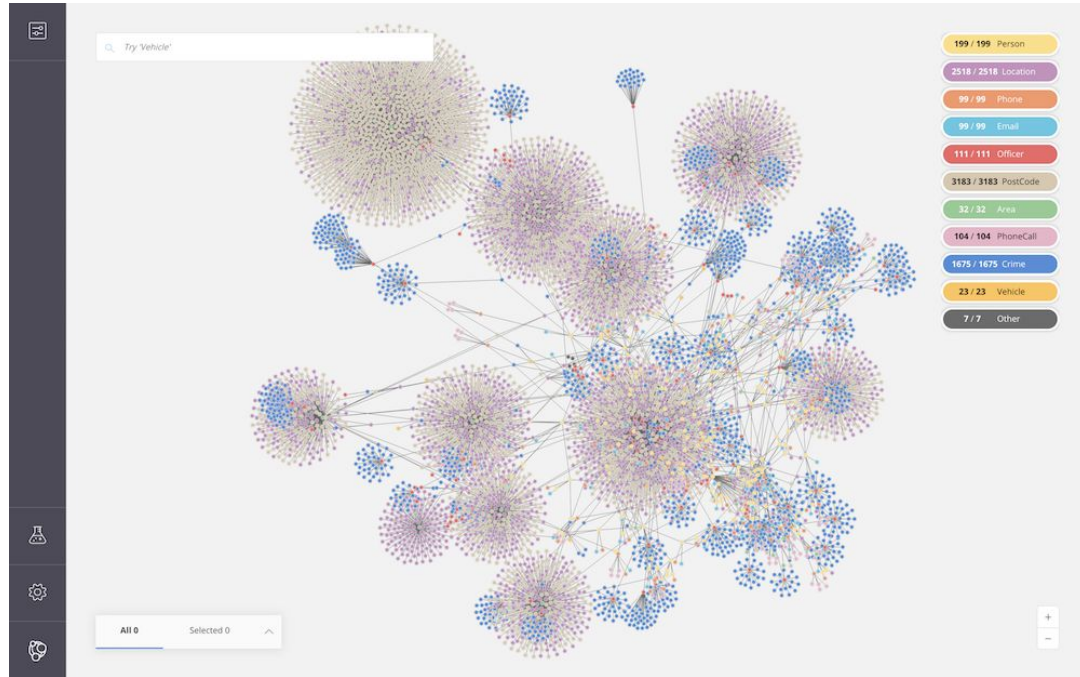


# When (if at all) has a node-link diagram been useful?

Why/ why not? What (rough) size is your threshold?

What parts of the graph are most useful?

Give a baseline of typical node/edge count that can be visualized



# Example Visual Tools from Literature

Edge DOI is 10.1016/j.phrs.2020.105073 &amp; 2 others x

Close Local View

tocilizumab → IL6 ✓

C

Type: Inhibition

Belief score: 1.00

## ▼ Evidence (39)

These include tocilizumab, which is widely used in rheumatoid arthritis and blocks Interleukin-6 (IL-6), a combination of emapalumab, anakinra and sarilumab (Clinical Trials Arena, 2020; Di Lorenzo and Di Troilo, 2020; Luo et al., 2020; Roumier et al., 2020; Toniati et al., 2020; Xu et al., 2020; Zhang C. et al., 2020), and interferons (Andreaskos and Tsiodras, 2020; Prokunina-Olsson et al., 2020; Shalhoub, 2020; Tu et al., 2020).

To date, various potential treatments for modulating cytokine storm in COVID-19 have been evaluated in many clinical studies, including IL-6 Inhibition by tocilizumab (TCZ), [ 8-10 ] glucocorticoid therapy by corticosteroids, [ 11, 12 ] hydroxychloroquine (HCQ), [ 13, 14 ] and intravenous immunoglobulin (IVIG).

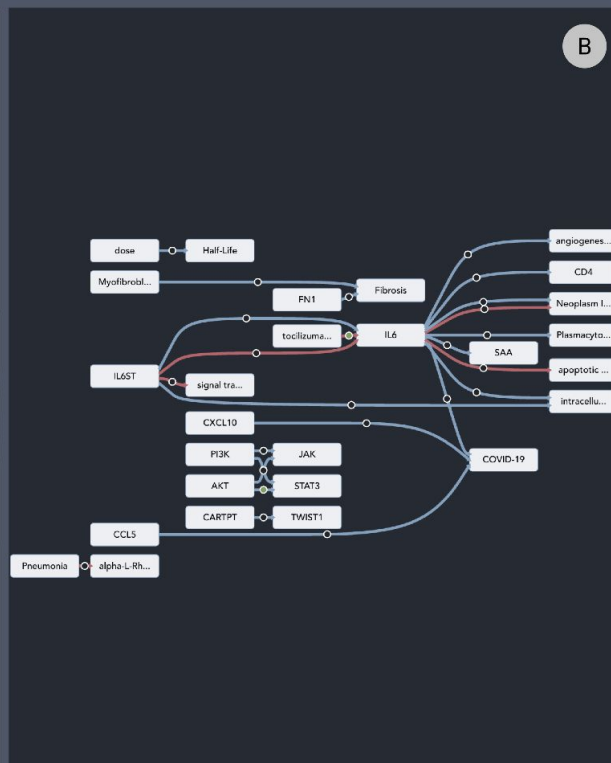
Sarilumab and tocilizumab, which block interleukin-6 effects, are being tested in randomized controlled trials for patients hospitalized with severe COVID-19 ( NC-T04317092 9 ).

The T CD4 +, T CD8 +, and NK cells reduced anti-viral cytokine production capabilities and cytotoxic potential, are also partially restored by inhibition of IL-6 by tocilizumab ( 53 ).

Immunosuppression therapies such as tocilizumab and glucocorticoids were recommended for patients with

Covid-19 | 41K Nodes | 363K Edges | 27 Nodes | 25 Edges

Subgraph | 27 Nodes | 25 Edges



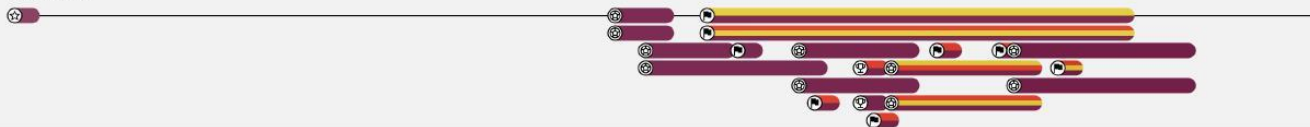
Mats Hummels



Philipp Lahm



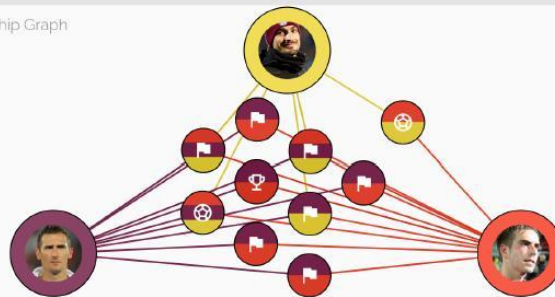
Miroslav Klose



Event Map



Relationship Graph



FC Bayern Munich

Fußball-Club Bayern München e.V. (German pronunciation: [ˈfuːsbalˌklʏp ˈbaʏɐn ˈmʏnçn̩]), commonly known as FC Bayern München (German pronunciation: [ˈfɛt̪ tʃeː ˈbaʏɐn ˈmʏnçn̩]), FCB, Bayern Munich, or FC Bayern, is a German professional sports club based in

Enter a query...



Did **Mats Hummels**,  
**Miroslav Klose** and  
**Philipp Lahm** meet?

Yes, all three of them were members of the German national soccer team at the same time. Furthermore, all of them played for FC Bayern. The common events between the persons are:

FC Bayern Munich

# Are there any aspects of these tools that would be useful for you?

What do you think of the multi-scale visualization?

What do you think about the EventKG dashboard with the supporting visualizations?

ASKE-E HMI Knowledge Graphs

Edge DOI is 10.1016/j.jrphs.2020.105073 & 2 others

Close Local View

tocilizumab → IL6

Type: Inhibition  
Belief score: 1.00

▼ Evidence (39)

These include tocilizumab, which is widely used in rheumatoid arthritis and blocks Interleukin-6 (IL-6), a combination of emapalumab, anakinra and sarilumab (Clinical Trials Arena, 2020; Di Lorenzo and Di Troilo, 2020; Luo et al., 2020; Roumier et al., 2020; Tanioti et al., 2020; Xu et al., 2020; Zhang C. et al., 2020), and interferons (Andreikos and Tsioltras, 2020; Prokuna-Olsson et al., 2020; Shalhoub, 2020; Tu et al., 2020).

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Sarilumab and tocilizumab, which block interleukin-6 effects, are being tested in randomized controlled trials for patients hospitalized with severe COVID-19 (NCT04317092.9).

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Immunosuppression therapies such as tocilizumab and glucocorticoids were recommended for patients with

Event History

Mats Hummels

Philipp Lahm

Miroslav Klose

Event Map

Relationship Graph

FC Bayern Munich

Fußball Club Bayern München e.V. (German pronunciation: [ˈfʊtsbʌklʌp ˈbʏɐn ˈmʏnçn]), commonly known as FC Bayern München (German pronunciation: [ˈfʊt ˈbʏɐn ˈmʏnçn]), FC Bayern München, or FC Bayern, is a German professional sports club, based in

Enter a query...

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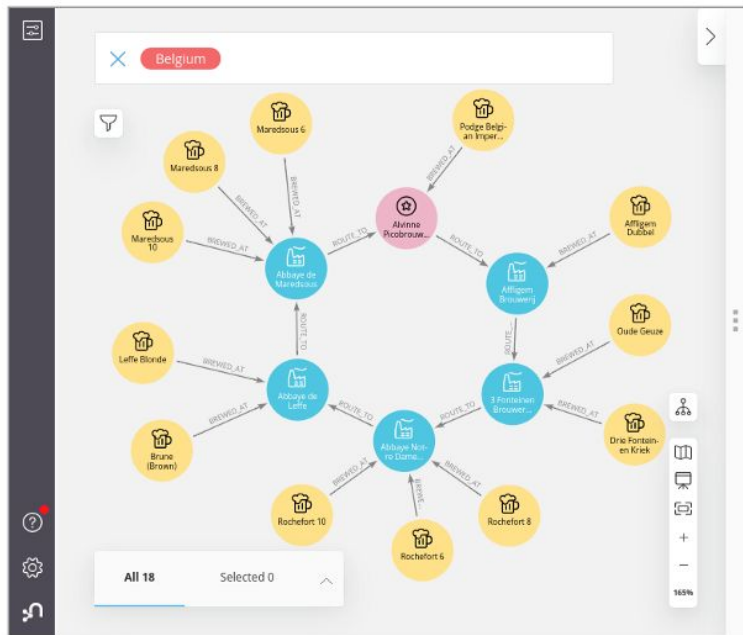
FC Bayern Munich

# Example Visuals from Neo4J Bloom

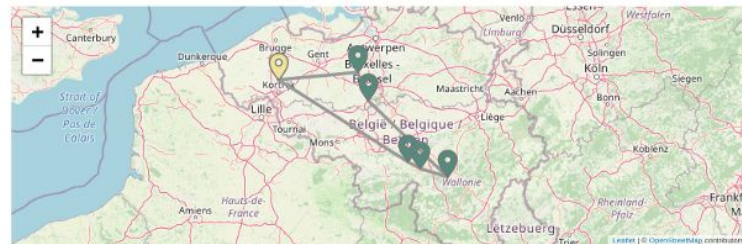




Graph View



Brewery Locations



Brewery Top Rated

Breweries and beers in selected country

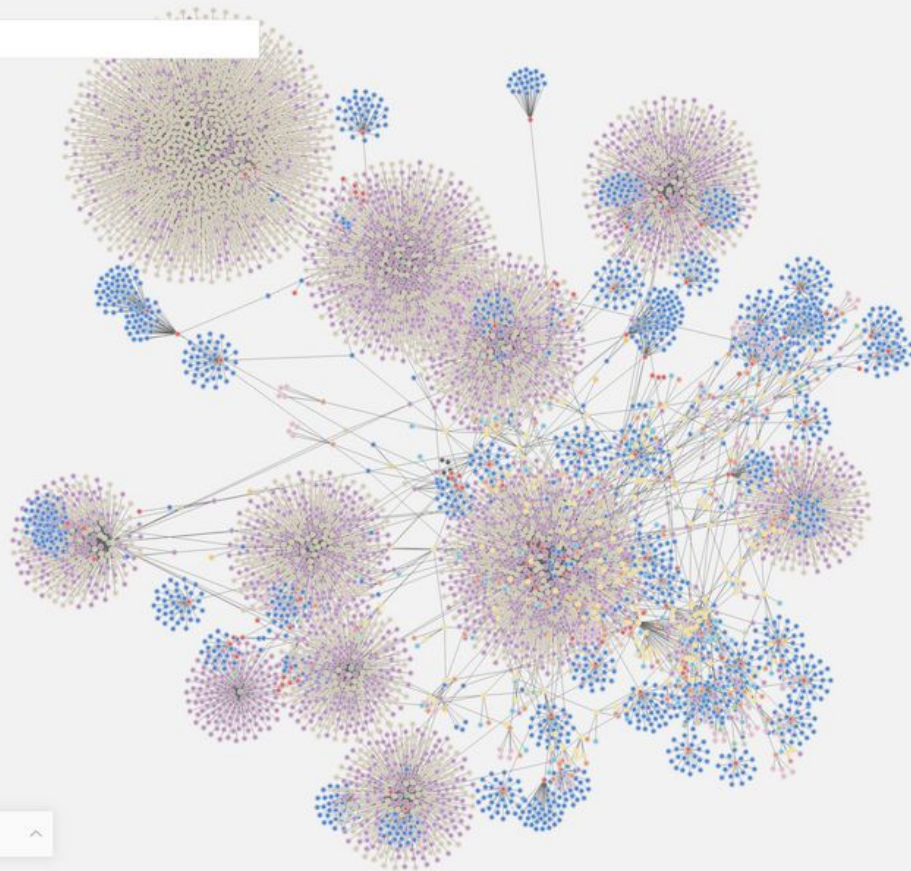
Brewery	Relationship	Beer
1 Abbaye de Maredsous	Beer BREWED_AT Brewery	Maredsous 10
2 Abbaye de Maredsous	Beer BREWED_AT Brewery	Maredsous 6
3 Abbaye de Maredsous	Beer BREWED_AT Brewery	Maredsous 8
4 Abbaye Notre Dame du St Remy	Beer BREWED_AT Brewery	Rochefort 10
5 Abbaye Notre Dame du St Remy	Beer BREWED_AT Brewery	Rochefort 8

< 1 2 3 4 5 >

Example Screenshot from Neo4J



Try 'Vehicle'



199 / 199 Person

2518 / 2518 Location

99 / 99 Phone

99 / 99 Email

111 / 111 Officer

3183 / 3183 PostCode

32 / 32 Area

104 / 104 PhoneCall

1675 / 1675 Crime

23 / 23 Vehicle

7 / 7 Other



All 0 Selected 0



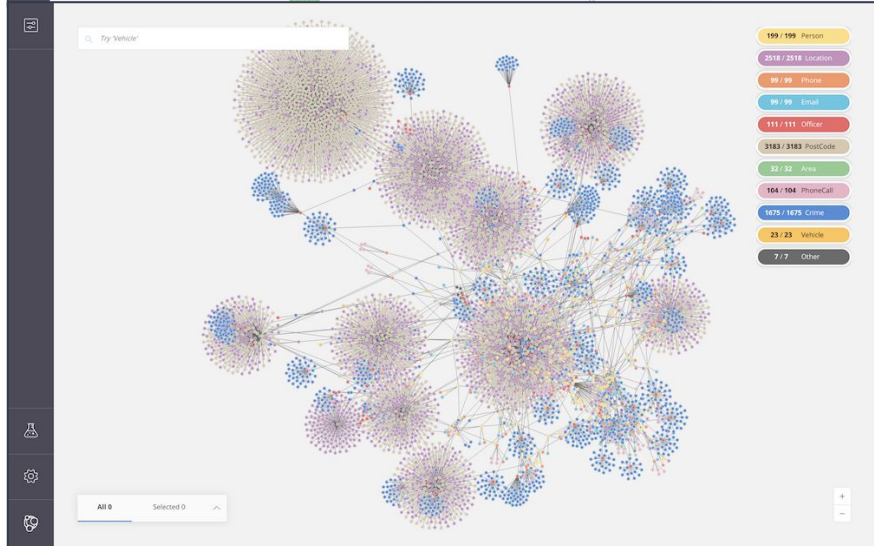
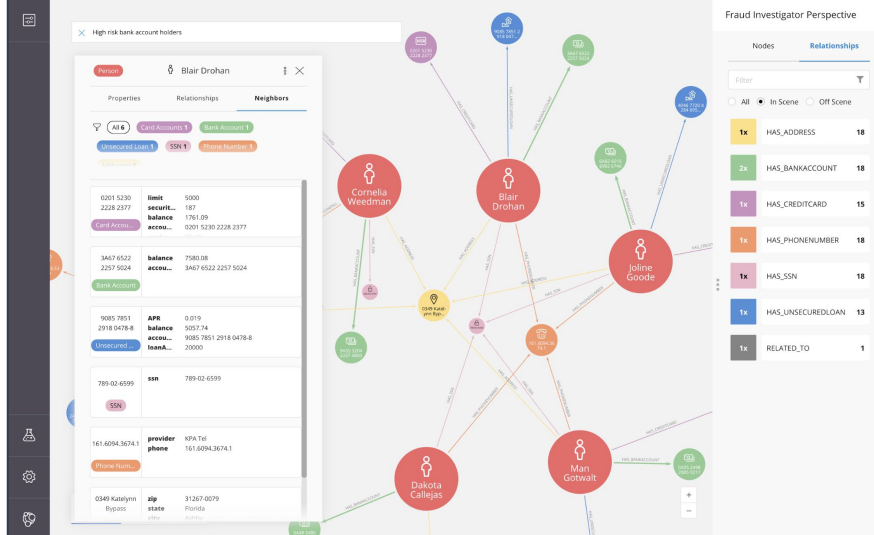
Example Screenshot from Neo4J

# Have you used Neo4J Bloom before?

What are your thoughts and opinions about it?

Anything about it that you like?

Anything you wish it could do better?



*Any final thoughts?*