

The Missing Link in Knowledge Graphs

Michel Biezunski

Infloom + The Data Chefs

Knowledge Graph Conference 2023, New York

May 11, 2023

What is the Missing Link?

The ability to easily connect anything to anything.

This is what users expect from knowledge graphs.

This is what knowledge graph technologies often fail to deliver.

Why is that, and is there a remedy?

Free Associations

- Our brain is capable of freely associate thoughts.
- Nobody can ever figure out what somebody else is thinking.

For me, the Brooklyn Bridge is associated with a lady wearing a green hat.

The Elephant in the Room

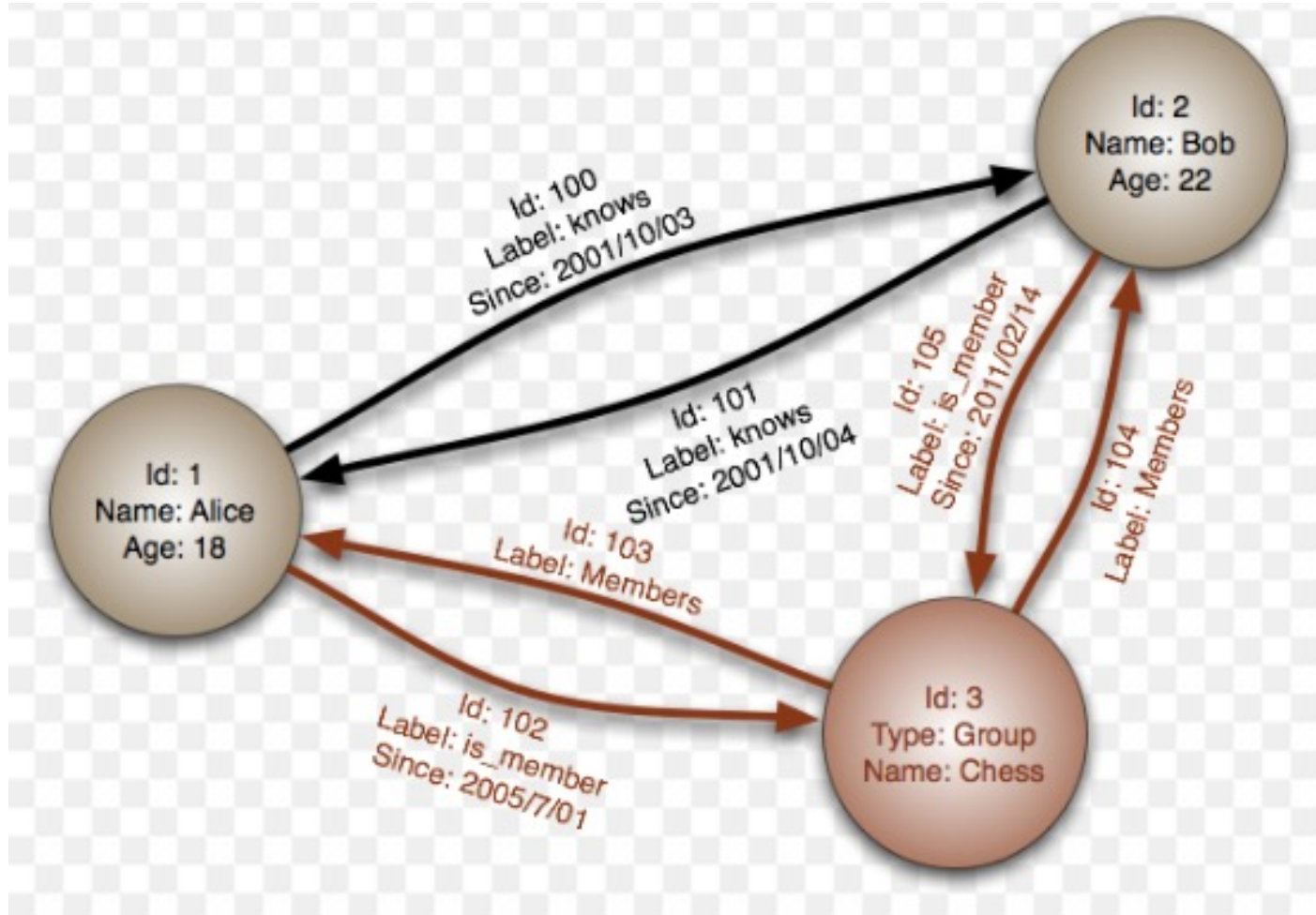
A works-In B



Properties: A Blessing or a Curse?

- Knowledge Graphs enable the representation of data as **nodes** connected through **edges**.
- Nodes and edges have **properties**. They are used to facilitate data **processing** and **retrieval**.
- An **ontology** further defines **constraints** on properties and strict processing **rules**.

Who Benefits the Most?



- Graph technologies represent a step forward for the programmer.
Alternative programming interface allowing the use of graph-based query languages
- The end user does not necessarily see the difference.

Knowledge Graph Standards

RDF

- Triples made of Statements: Subject – Predicate – Object
- Main Goal: Machine processing.

Topic Maps

- Interconnected abstract subjects of meanings
- Main Goal: Human description.

The End of an Era?

RDF applications require a steep learning curve.



Topic Maps applications are considered too labor intensive.



A Changing Tech Landscape

- Creating and maintaining ontologies is a daunting task.
- The sheer amount and pace of incoming data makes this task even worse.
- The rapid –and brutal– emergence of Generative AI is transforming the landscape.

Generative AI and Knowledge Graphs

- Data produced using Generative AI algorithms is used to populate knowledge graphs.
- Welcome as a cost-saving and time-saving solution.

But comes with a heavy price: the inability to stay fully in control of your own data

What to do?

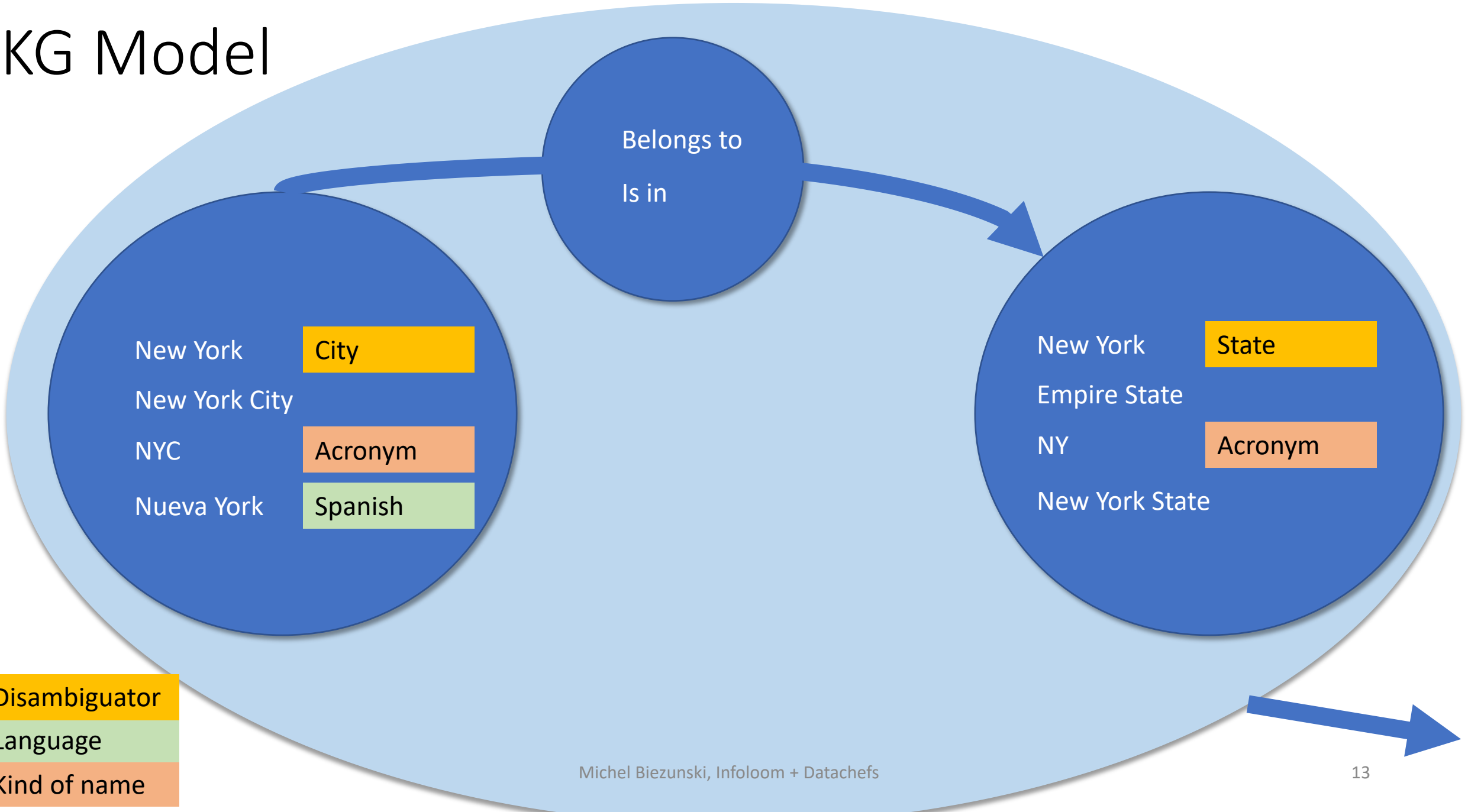


- Provide a hospitable environment for knowledge graphs
A certain amount of mess can coexist with organized information
- Structure as Afterthought, Validating as Refactoring

Proposed Solution: One Data Model for All

- Use a fixed model with built-in properties, generic enough to cover most use cases.
 - The data model is intuitive, immediately usable without training.
- It is implemented.
 - User-friendly curation interface
 - Common core + Custom plug-ins (import, export, refactor, query).

KG Model



Demo. Without Data Model



A	Works-In	X
B	Works-In	Y
F	Works in	X
G	Is-Employed-By	Z

A, B, F, G work or are employed. Therefore they are persons.

X, Y, Z are places where work is done or have employees. Therefore they are/include companies.

A and F are colleagues, because they work in the same place.

Use cases

- Government Customer Support Call Center
- Multipoint mapping of overlapping accounting standards
- Musical Archive
- Epub Navigation System
- Family Tree
- Customer Data
- Transportation Maps
- Auditing of Funding Allocations
- Research Materials
- Personal Notes
- Audit of Generative AI Output.

Another type of workflow

- Subject Matter Experts are immediately operational. They can create knowledge graphs “manually”, and can curate any existing data.
- Computer Science expertise still needed to help define complex queries, create or select algorithms for import/export/refactor/analyze.
- The Computer Science experts are at the service of Subject Matter Experts, instead of the reverse (usual situation).

To Know More

Features:

networker.infoloom.com/features-3/



Example:

Knowledge Graph Conference 2020

Proceedings:

kgc20-r.infoloom.com

read-only version



Let's Connect



mb@infoloom.com

LinkedIn:

[linkedin.com/in/michel-biezunski-1248271](https://www.linkedin.com/in/michel-biezunski-1248271)