



**SeMI Technologies**

# **Weaviate OSS Smart Graph**

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**FOSDEM 2020**



# About

What is Weaviate?

# 2019 → 2020

How Weaviate evolved

# Tech

Contextionary - GraphQL

# Demo

From the docs to the interface



**About**

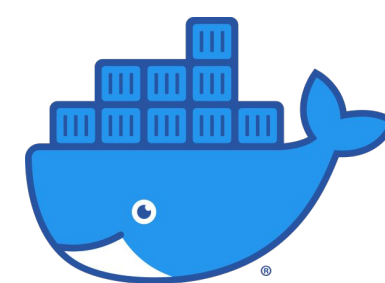
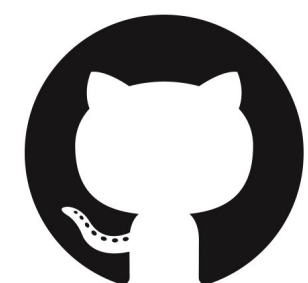


Weaviate is an open source smart graph

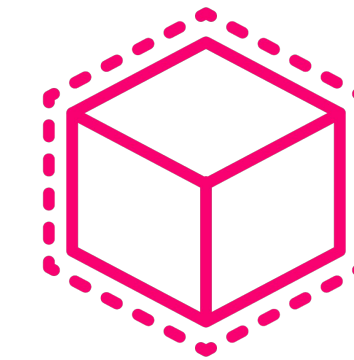




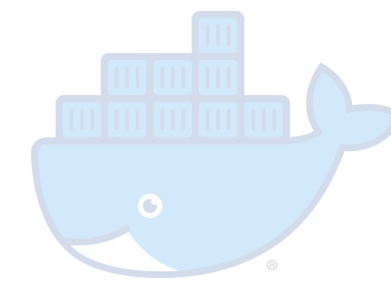
# Weaviate is an open source smart graph

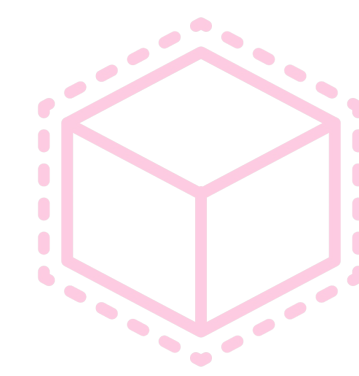


*“AI first architecture”*

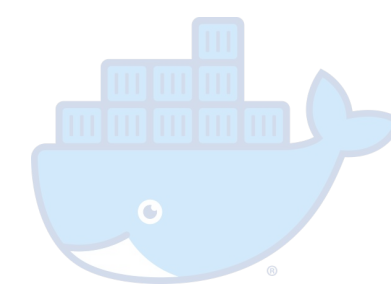
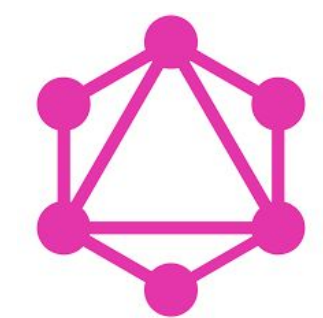


Weaviate is an open source smart graph





# Weaviate is an open source smart graph



{ REST:API }



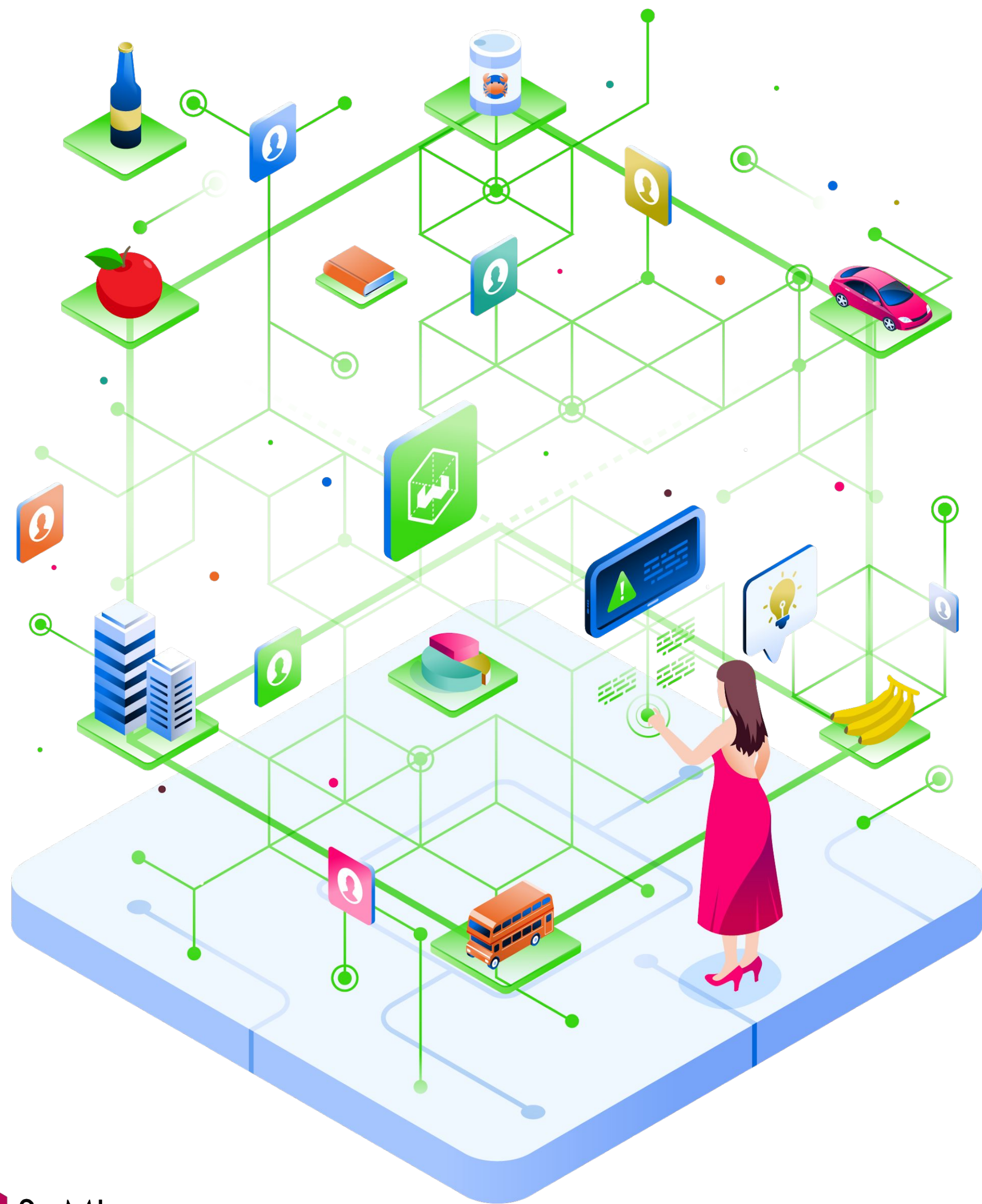
# Semantic Search



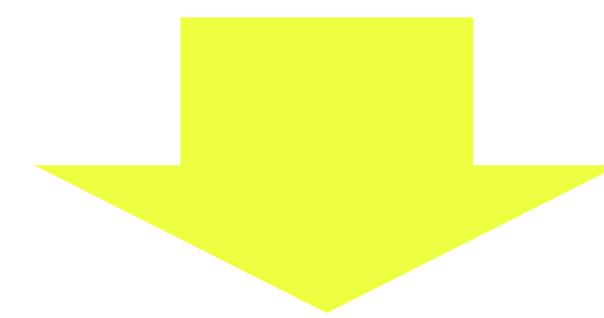


# Automatic Classification





# Knowledge Representation



Including, but not limited to, knowledge graphs



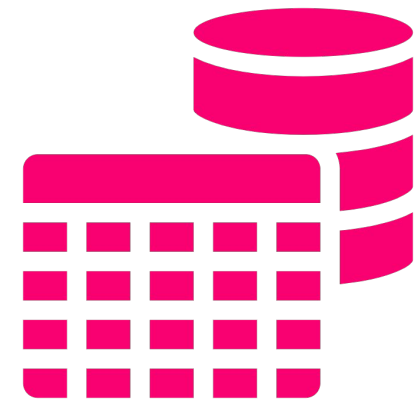
**2019 → 2020**





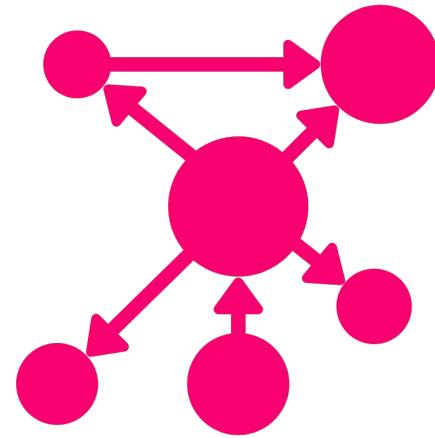
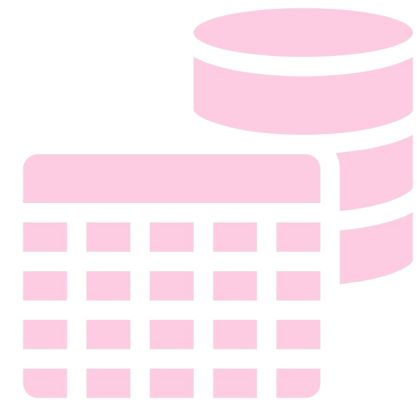
*time*





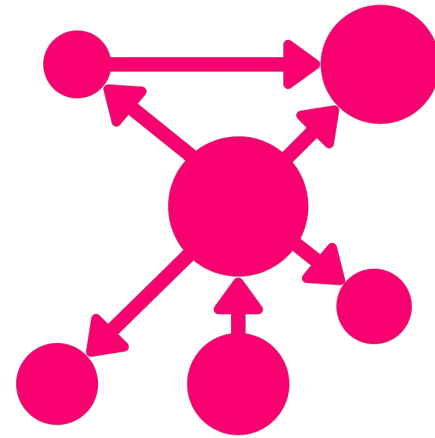
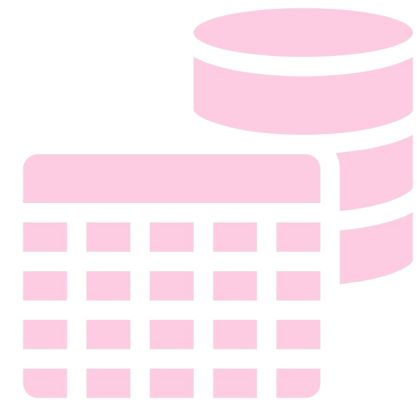
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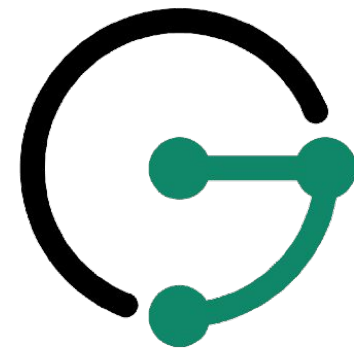


*time*

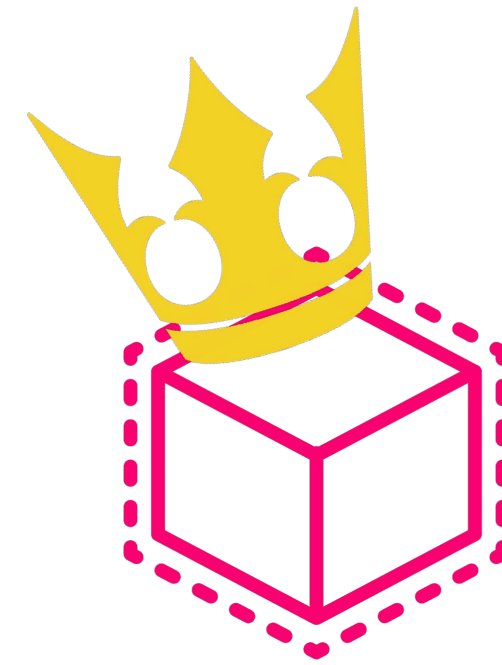
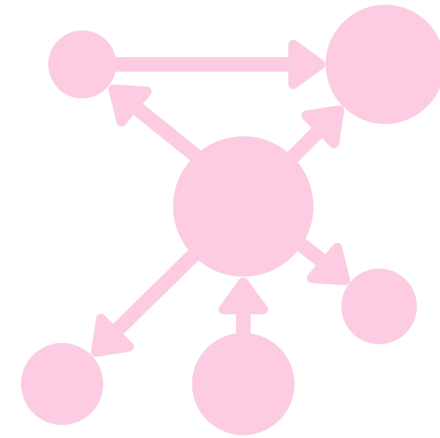
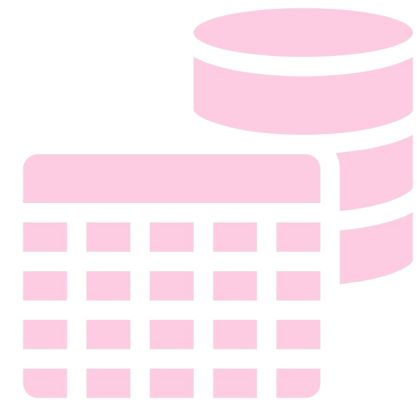




*time*







*time*







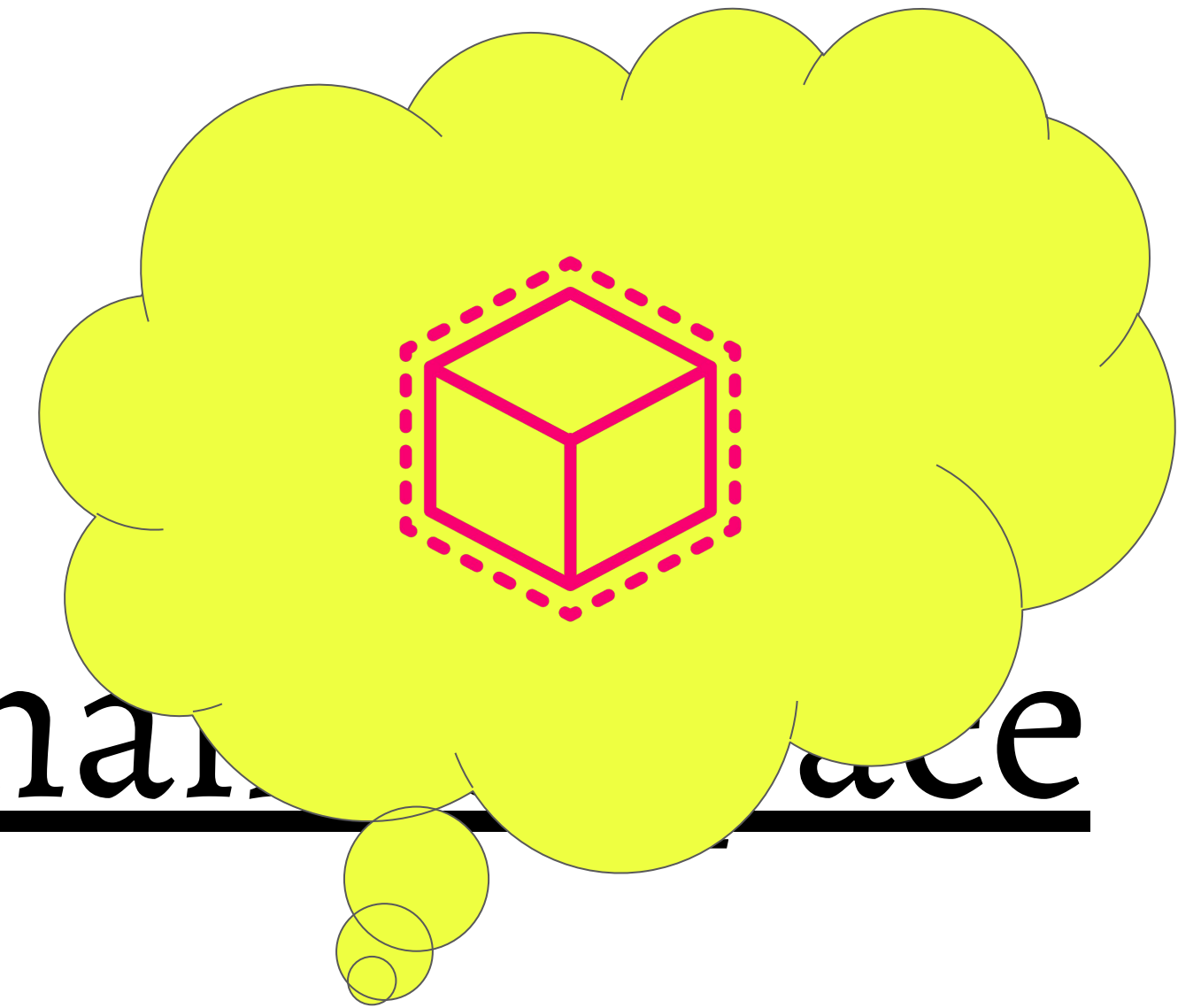
*Weaviate stores all data in a semantic space*





Weaviate stores all data in a semantic space

Weaviate stores all data in a semantic space













# Technology

Contextionary - GraphQL

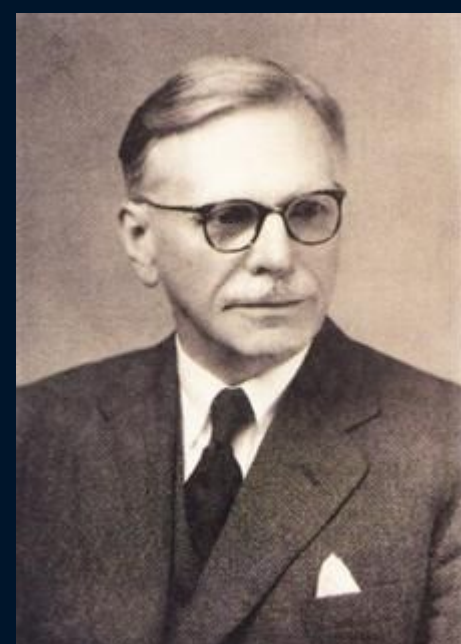


*time*

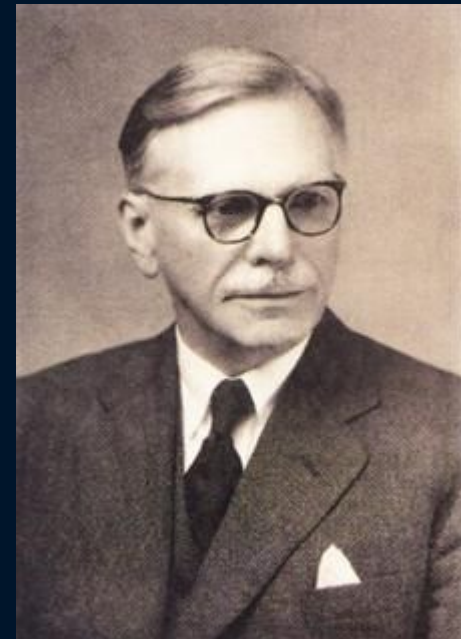


A word is characterized by the company it keeps.

- John R. Firth - 1957



*time*

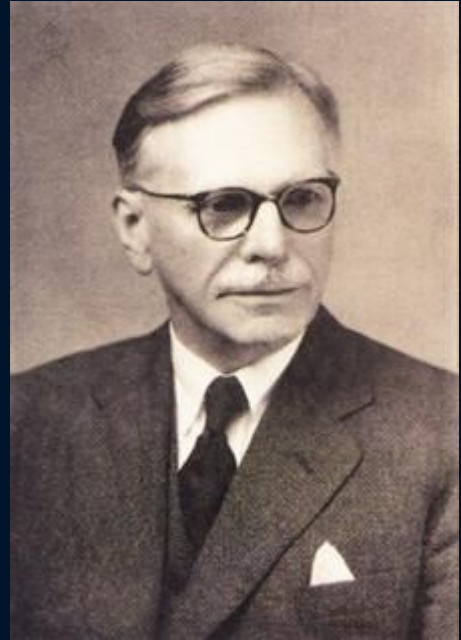


**Word2vec**  
2013



*time*



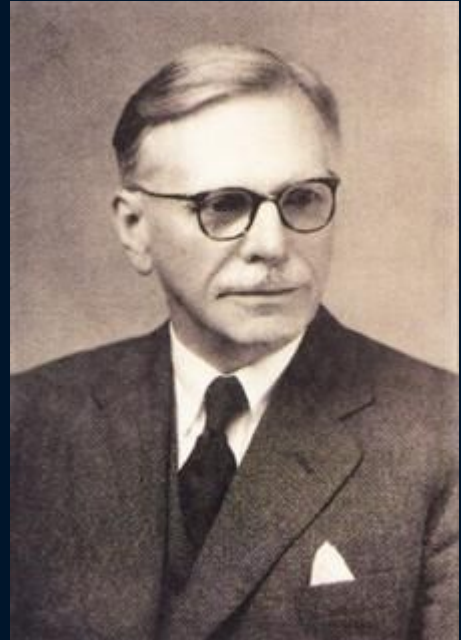


**Word2vec**  
2013

**GloVE**  
2014

*time*





*time*

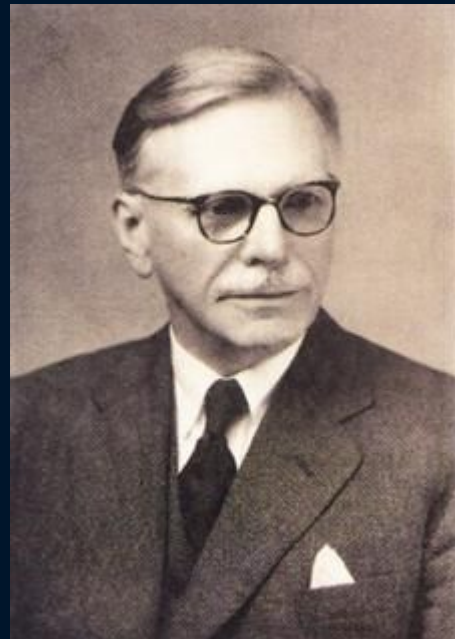


**Word2vec**  
2013

**BERT**  
2018

**GloVE**  
2014





**Word2vec**  
2013

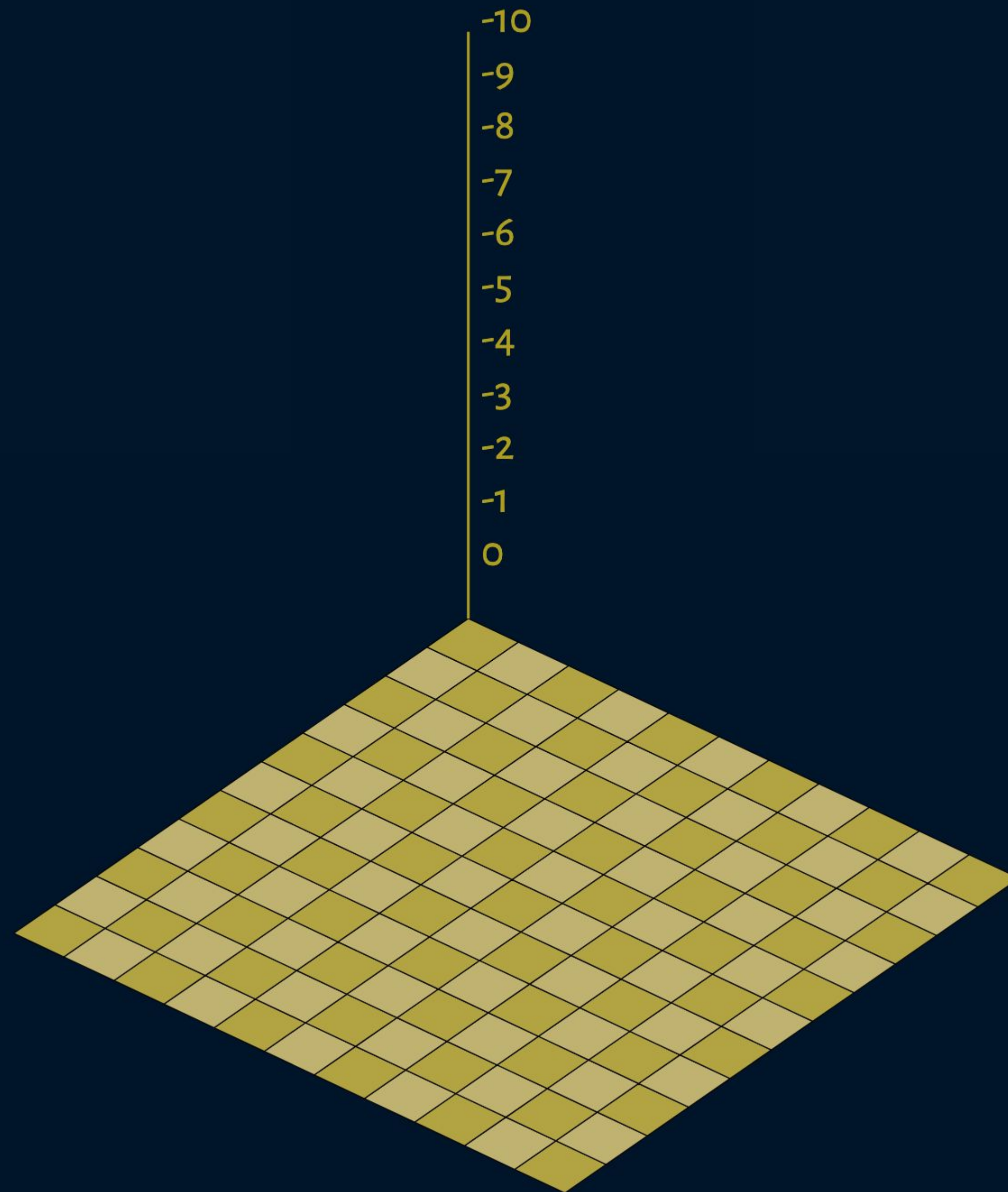
**BERT**  
2018

**GloVe**  
2014

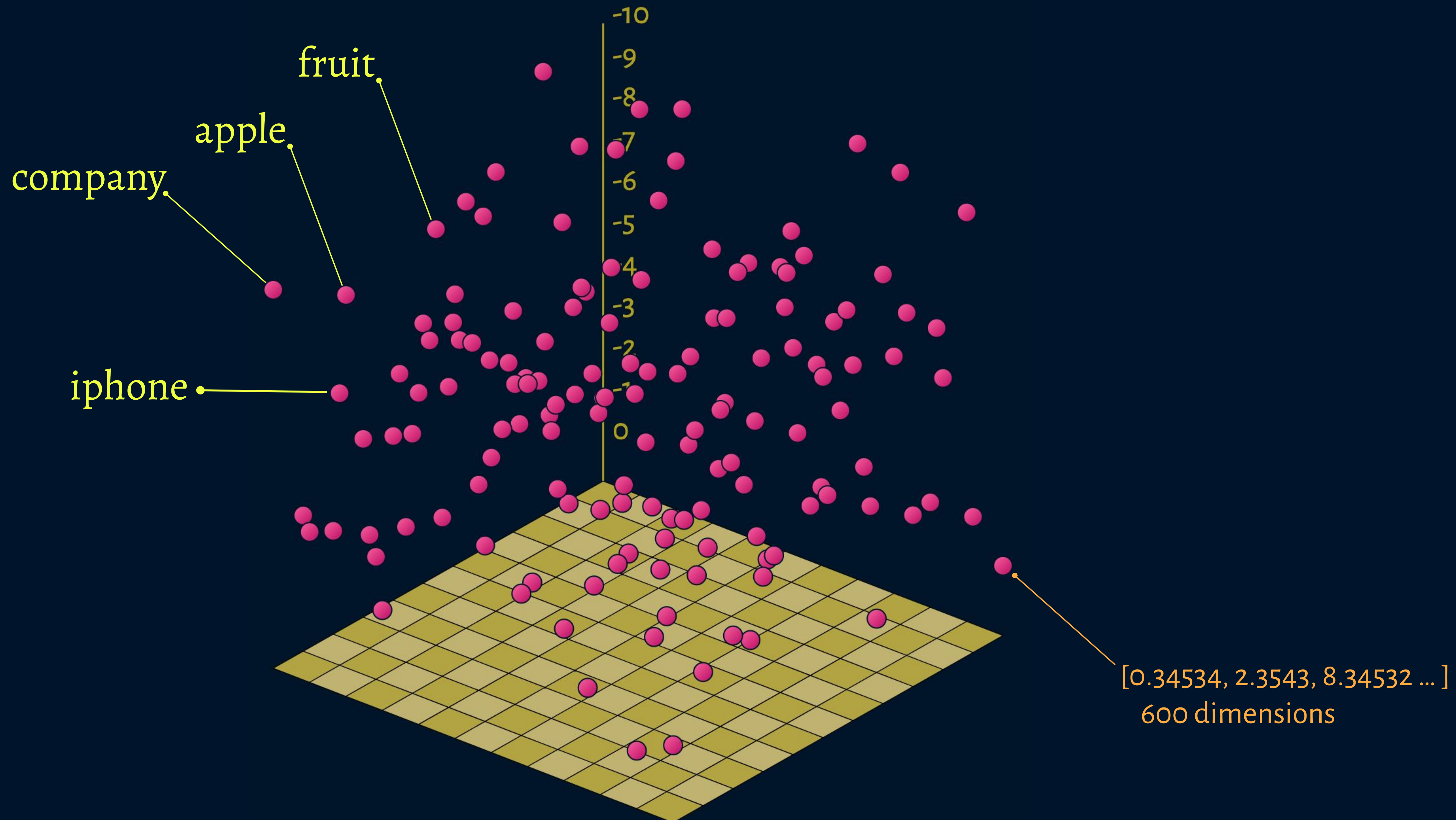


*time*









**Company:**

**name:** Apple

**foundedIn:** 1976

**inCountry:**

**"\$cref":** ...

**hasCeo:**

**Person:**

**name:** Tim Cook

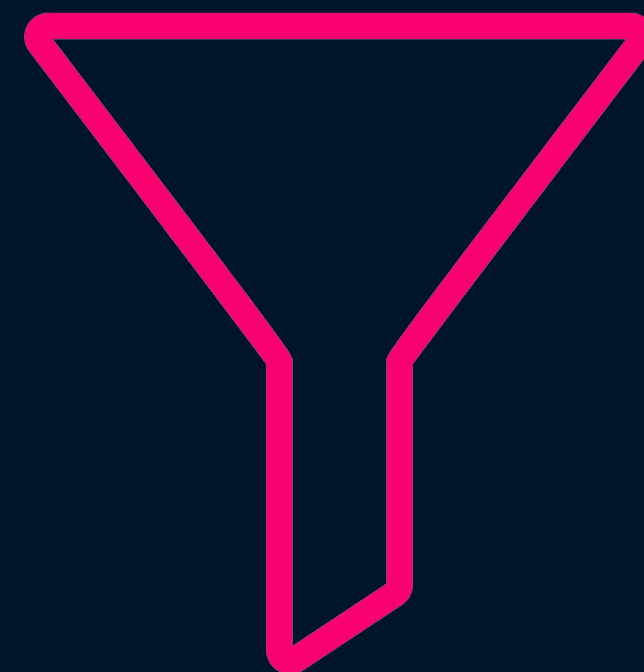


Company, name, Apple,  
founded, in, 1976, in,  
country, with, the, name,  
United, States

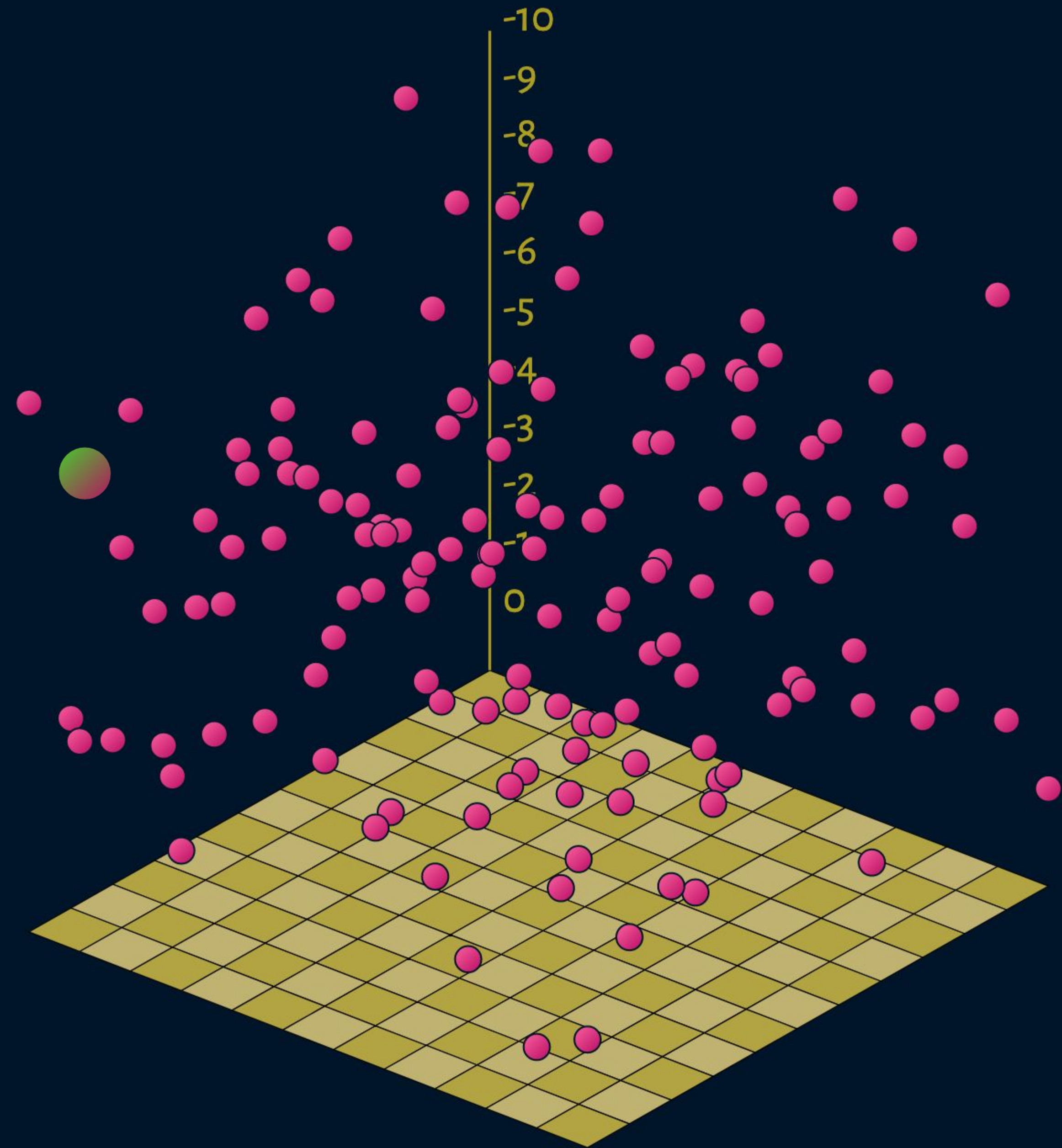


Company, name, Apple,  
founded, in, 1976, in,  
country, with, the, name,  
United, States

- Euclidean distance.
- Logarithmic function based on  
-among others- the occurrence.
- Optional “word boosting”.



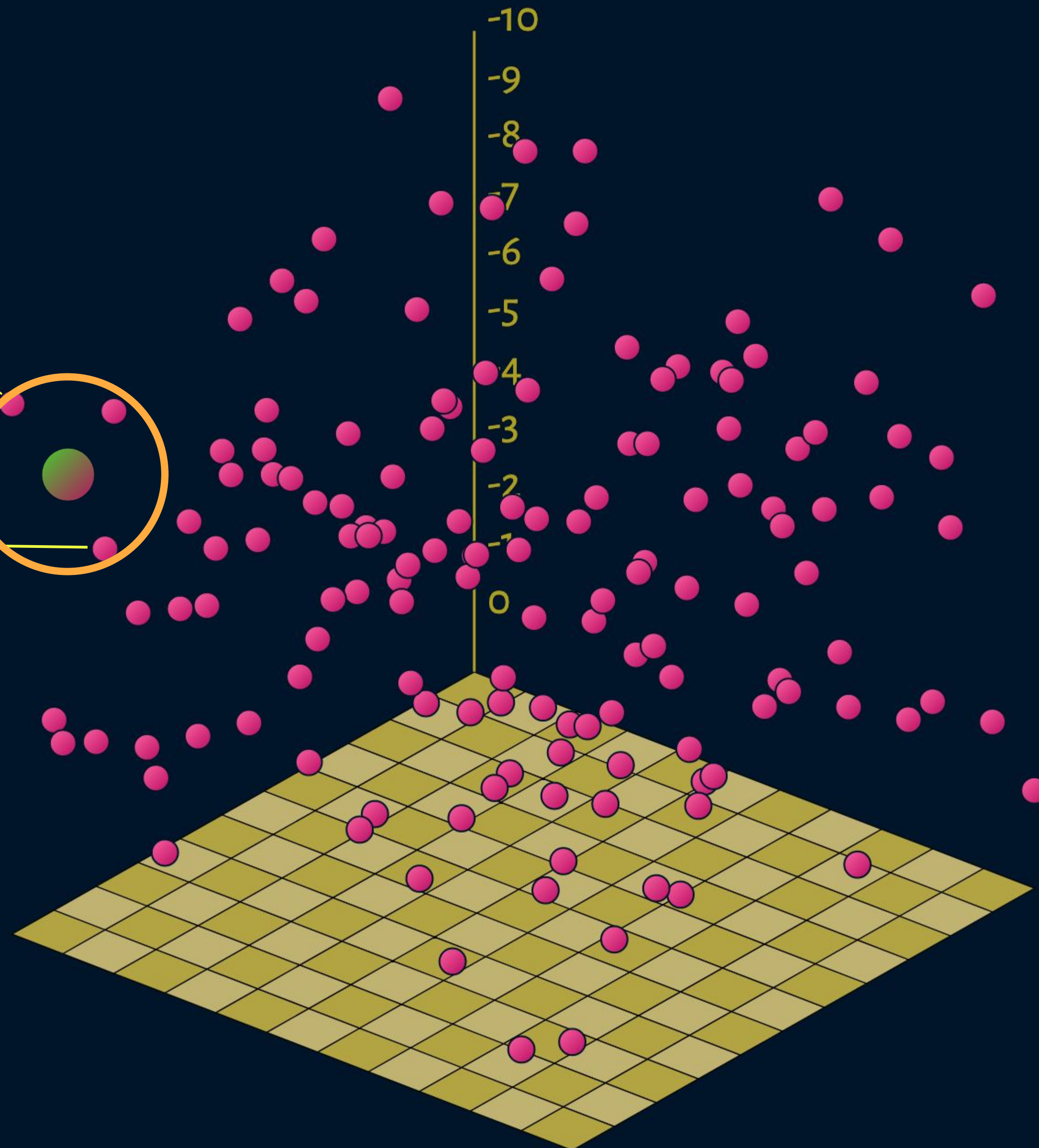
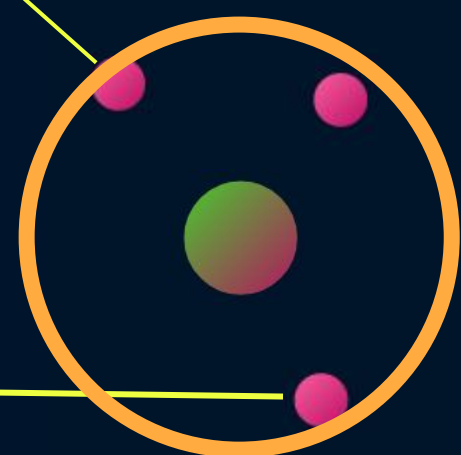
[0.34534, 2.3543, 8.34532 ... ]





company.

iphone



```
{
  Get{
    Things{
      Company(explore:{
        concepts: ["iphone"]
      }){
        name
      }
    }
  }
}
```





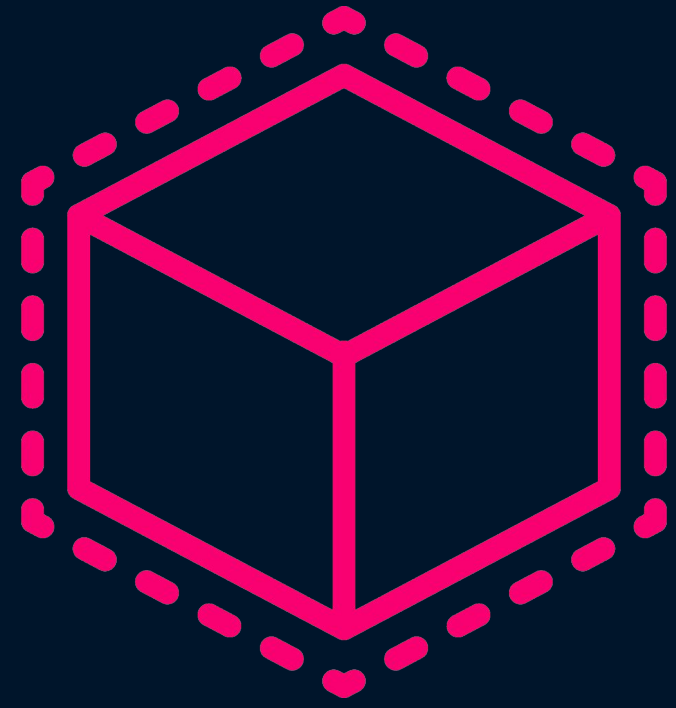
```
{
  "data": {
    "Local": {
      "Get": {
        "Things": {
          "Company": [
            {
              "name": "Apple Inc"
            }
          ]
        }
      }
    }
  },
  "errors": null
}
```

```
{
  Get{
    Things{
      Company(explore:{
        concepts: ["Redmond"]
      }){
        name
      }
    }
  }
}
```

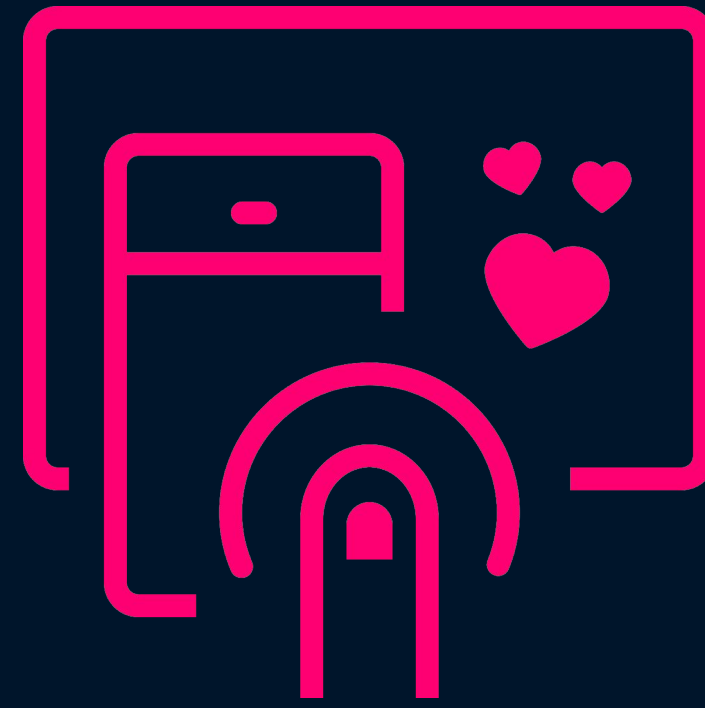




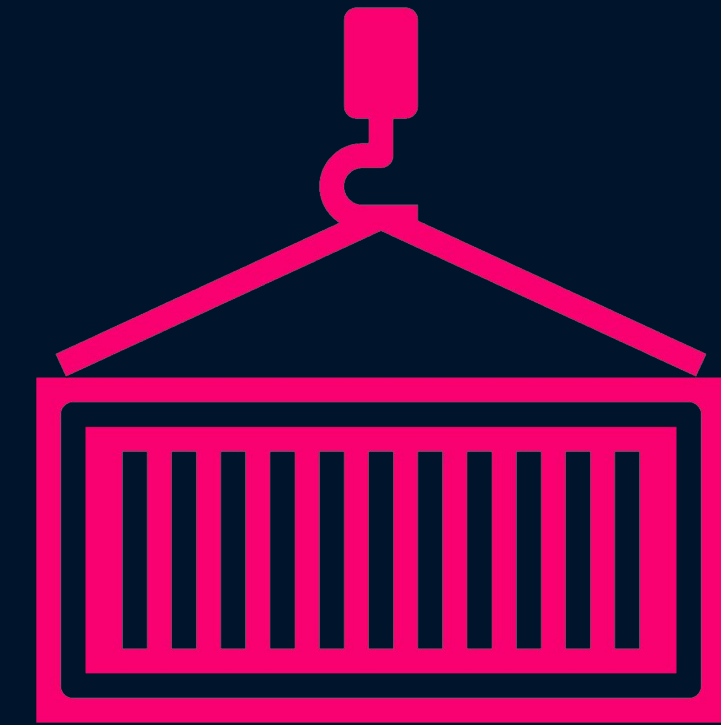
```
{
  "data": {
    "Get": {
      "Things": {
        "Company": [
          {
            "name": "Microsoft Corp."
          }
        ]
      }
    }
  },
  "errors": null
}
```



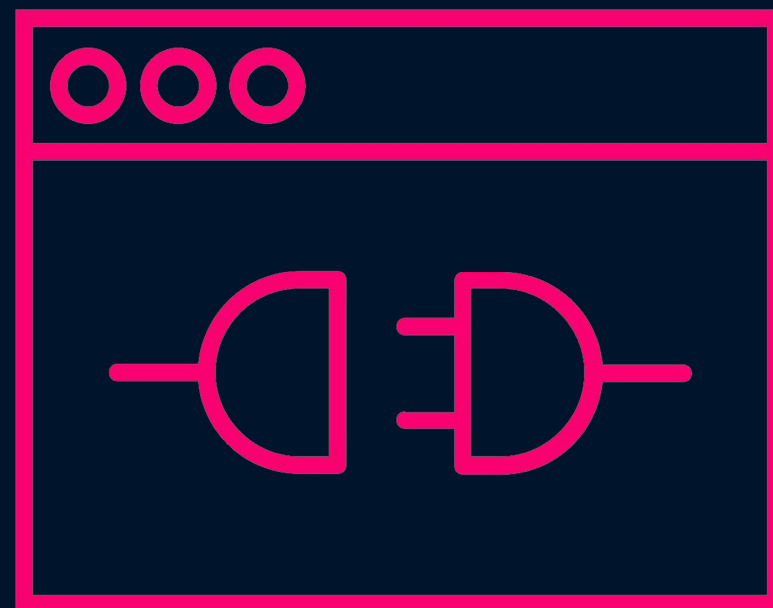
**Contextionary**



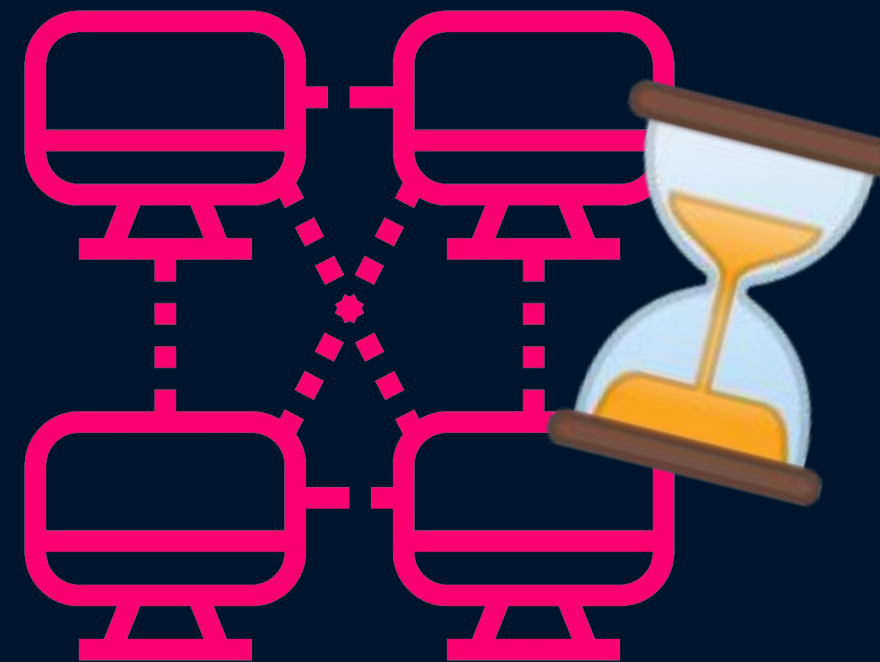
**GraphQL**



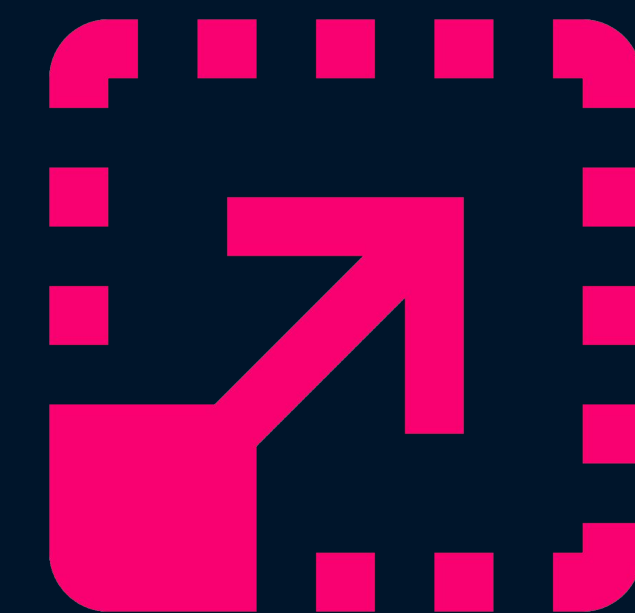
**Containerized**



**HTTP API**



**P2P Network**



**Scalable**



# Technology

Contextionary - [GraphQL](#)

```
{
  Get {
    <SematicKind> {
      <Class> {
        <property>
        <PropertyWithReference>
          ... on <ClassOfBeacon> {
            <property>
          }
        }
      }
    }
  }
}
```





```
{
  Get{
    <SematicKind>{
      <Class>(
        explore: {
          concepts: [<String>]!
          moveAwayFrom: {
            concepts: [<String>]!
            force: <Float>!
          },
          moveTo: {
            concepts: [<String>]!
            force: <Float>!
          }
        }
      )
    }
  }
}
```



**Demo**



**Get started with Weaviate  
on [www.semi.technology](http://www.semi.technology)**