Real Estate Market Solution

using Graph Database, neo4j

DSC3010

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System Description

- Why needed?
- What's different?

System Description

System Description

부동산 정보 앱 이용자 3명 중 1명 "허위·미끼 매물 경험"

조선일보 | 이준우 기자

청원종료

직방, 다방 어플을 없애주세요. 전부 허위매물입니다.

System Description

<Target Function>

1) Searching and Filtering

2) Master Management
   : Consumer-Product-Broker-Owner

3) Fraud Detection

4) Integrated Data Updating

Data Model Description

- Why Graph DB?
- System Design

Data Model Description - What Data?

Attribute	example
Name	Andy
Age	25
Email	andy@gmail.com
Area_interest	'Seoul, jongro'

<Consumer>

Attribute	example
Address	'Seoul, jongro 2gagil 3'
Floor	5
Size	36 (m^2)
Type	One room
Parking	Available
Elevator	inavailable
Duration	1 year
PriceMonth	50 (10000₩)

<Product>

Data Model Description - What Data?

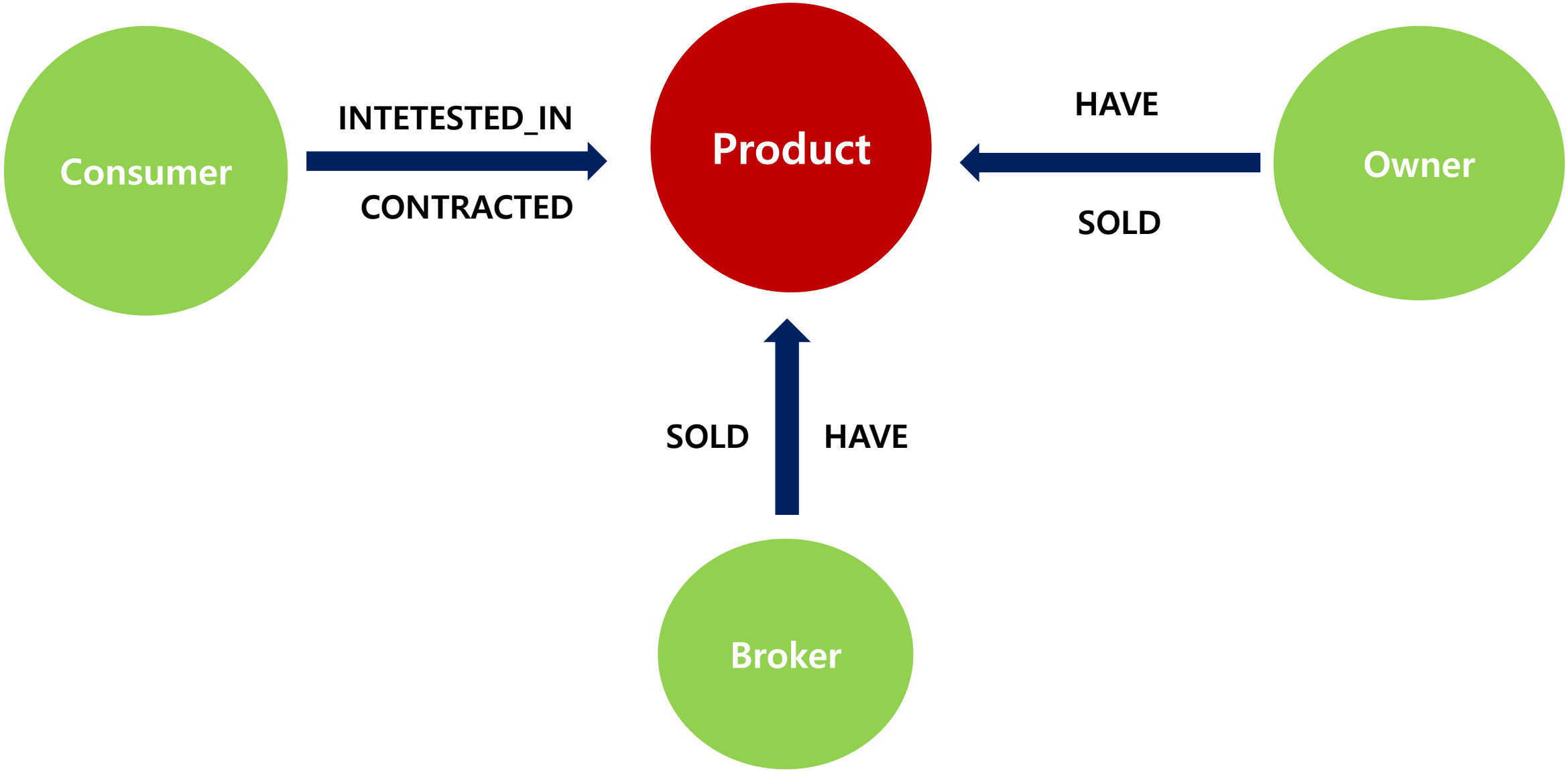
Attribute	example
Name	Andy
Credit	A+
email	andy@gmail.com

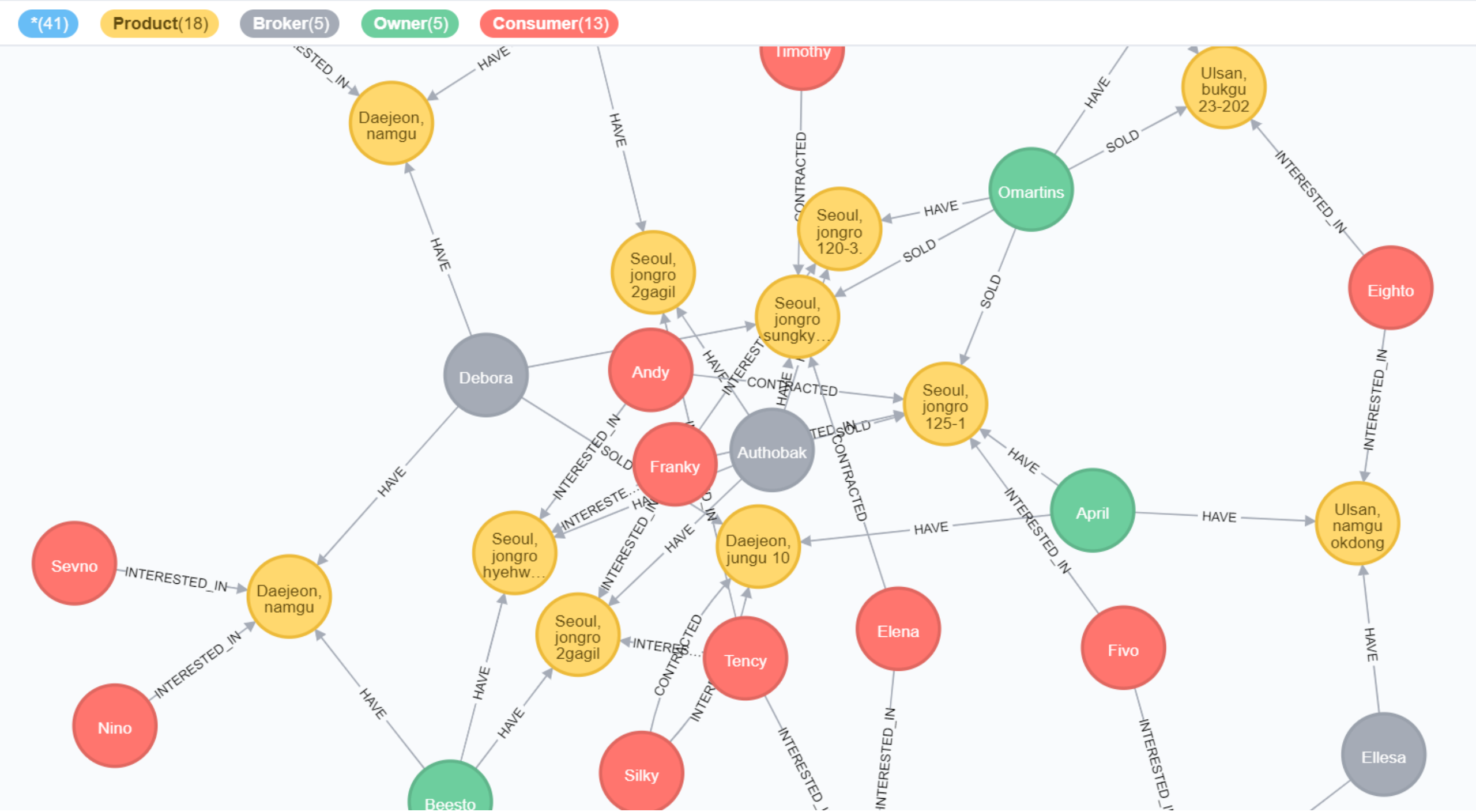
<Owner>

Attribute	example
Name	Beesa
Phone	010-8888-0001
Credit	B
email	beesa@gmail.com
Address	'Seoul, Gangnam 3-21'
Product_num	5
Established_year	2017

<Broker>

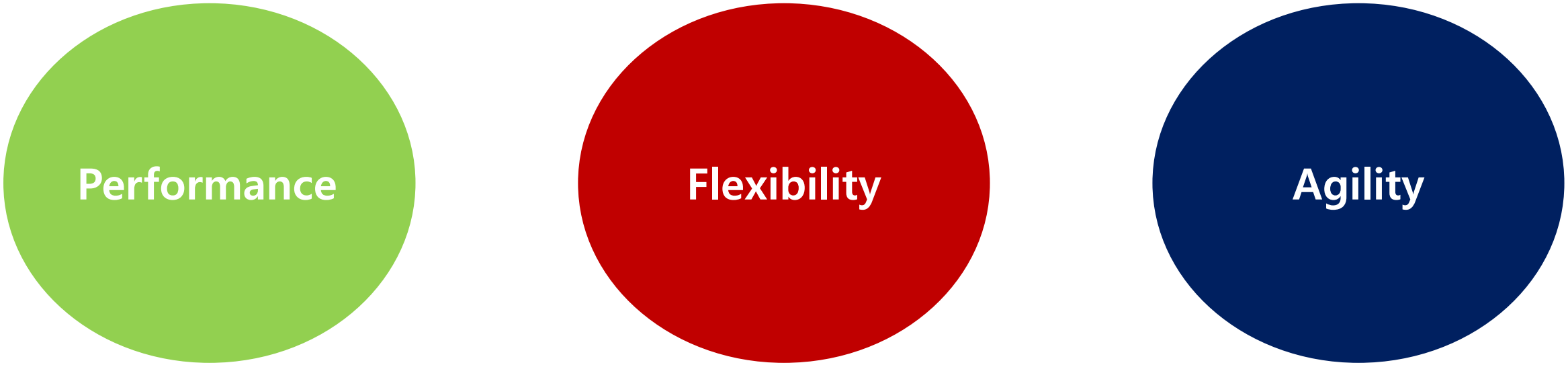
Data Model Description - What Data?




*(41)
Product(18)
Broker(5)
Owner(5)
Consumer(13)
Daejeon, namgu
Timothy
Ulsan, bukgu 23-202
Omartins
Seoul, jongro 120-3.
Seoul, jongro 2gagil
Seoul, jongro sungky…
Eighto
Debora
Andy
Seoul, jongro 125-1
Authobak
Franky
April
Ulsan, namgu okdong
Seoul, jongro hyehw…
Daejeon, jungu 10
Sevno
Daejeon, namgu
Seoul, jongro 2gagil
Elena
Fivo
Nino
Tency
Silky
Ellesa
Beesto
HAVE
SOLD
CONTRACTED
INTERESTED_IN

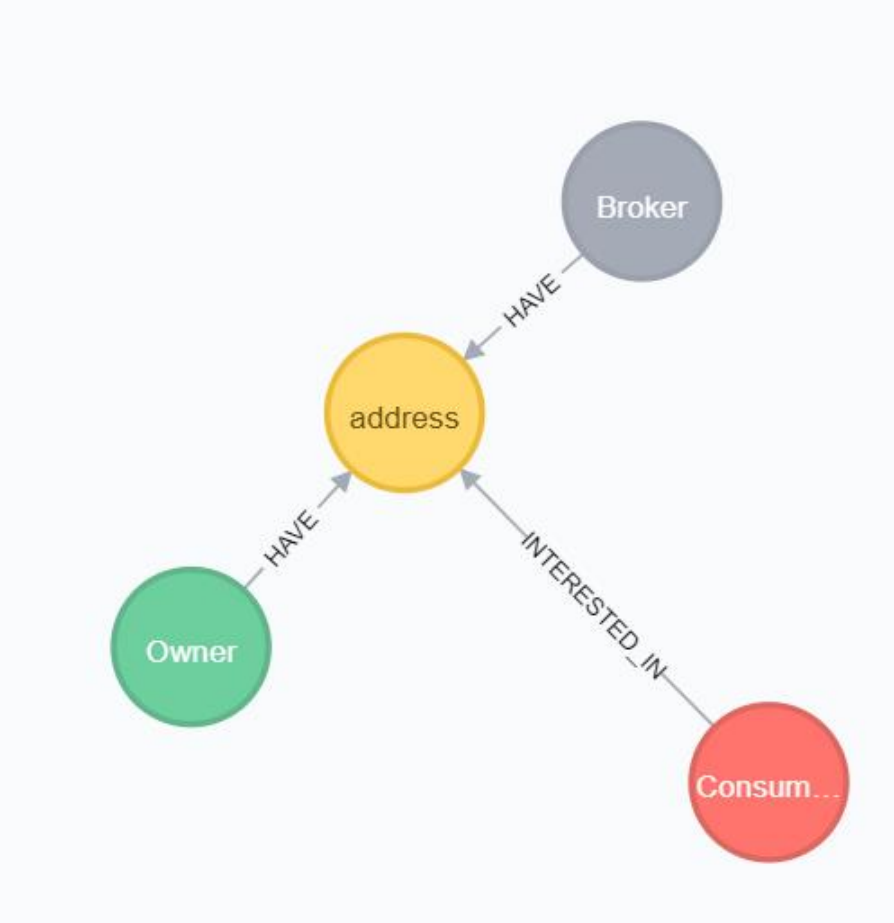
Data Model Description

Graph DB vs. RDBMs

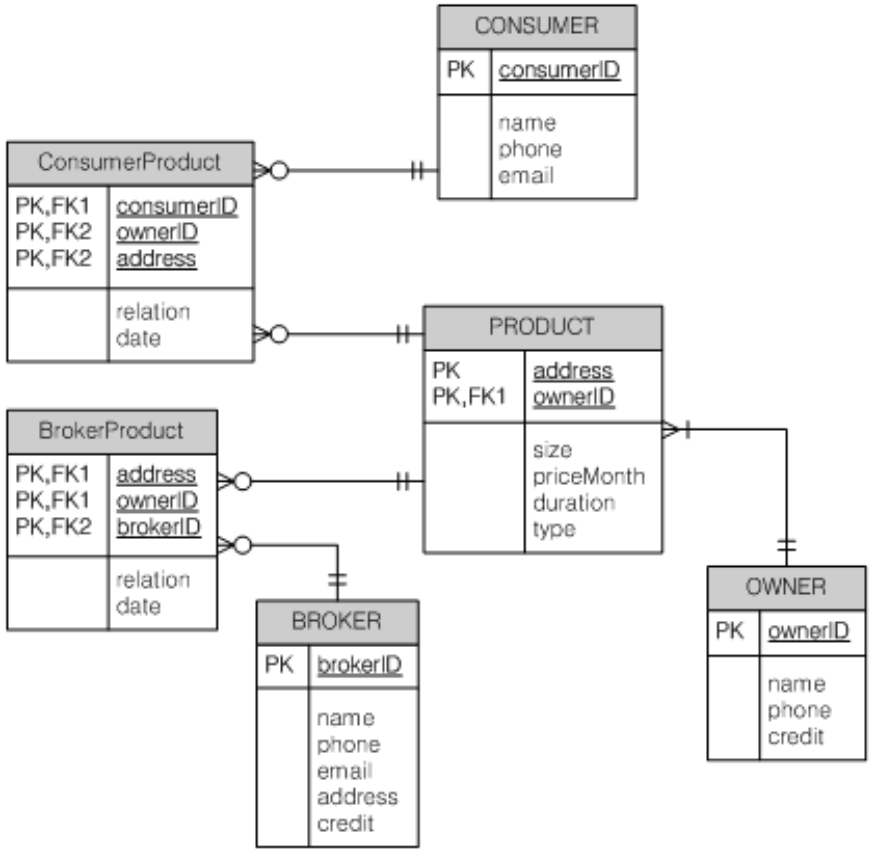


Data Model Description

Graph DB



RDBMs



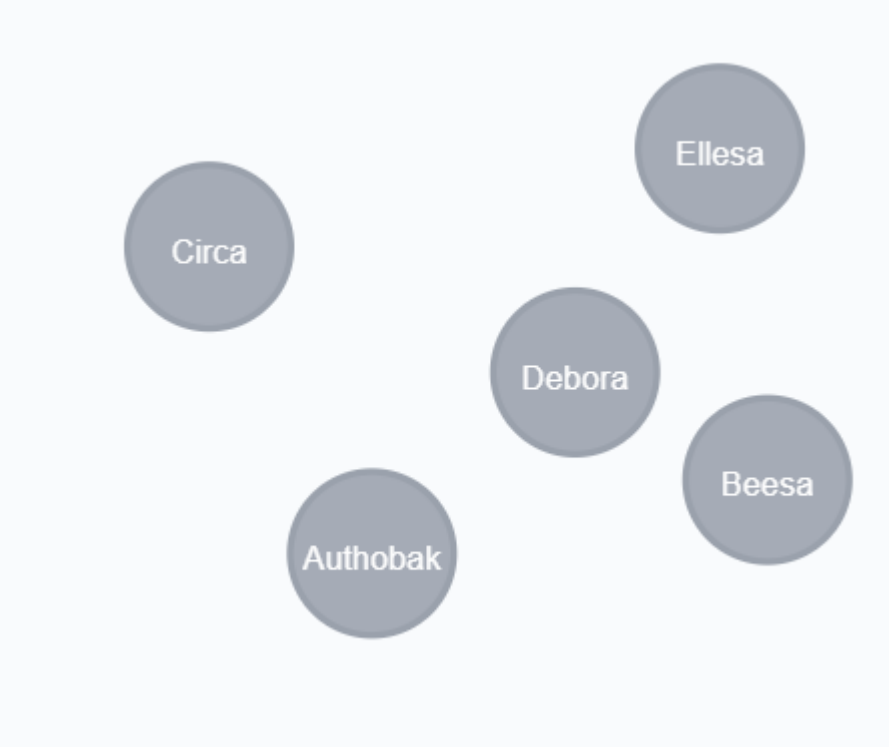
Real Usage

- Neo4j _Cypher
- Web application

Real Usage – 1) Searching

```
MATCH (product:Product)
WHERE product.address CONTAINS 'jongro'
RETURN DISTINCT product{.*}
```

```
MATCH (product:Product)<-[:HAVE]-(broker:Broker)
WHERE product.size> 30
RETURN DISTINCT product.address , broker
```



product.address	broker
"Seoul, jongro 120-3. 201"	{ "address": "Seoul, jongro 1-23", "phone": "010-9999-8989", "established_year": 2011, "name": "Authobak", "product_num": 23, "credit": "A", "email": "authobak@gmail.com" }
"Seoul, gangnam daebyeonro 22gil"	{ "address": "Seoul, gangnam 3-21", "phone": "010-8888-0001", "established_year": 2017, "name": "Beesa", "product_num": 5, "credit": "B", "email": "beesa@gmail.com" }

Real Usage – 2) Popularity

```
MATCH (consumer:Consumer)-[:INTERESTED_IN]->(product:Product)
WITH product, count(consumer) AS nrOfConsumers
RETURN product{.address, nrOfConsumers}
```


```
{
  "nrOfConsumers": 1,
  "address": "Ulsan, bukgu 23-202"
}
```

```
{
  "nrOfConsumers": 1,
  "address": "Seoul, gangnam 3 district"
}
```

```
{
  "nrOfConsumers": 2,
  "address": "Seoul, jongro 2gagil 3"
}
```

Real Usage – 3) Fraud Detection

```
MATCH (consumer:Consumer)-[:CONTRACTED]->(product:Product
WITH product, count(consumer) AS nrOfConsumers
RETURN DISTINCT product{.address, nrOfConsumers}
```

```
MATCH (owner:Owner)-[:HAVE]->(product:Product)
WITH product, count(owner) AS nrOfOwners
RETURN DISTINCT product{.address, nrOfOwners}
```

product

```
{
  "nrOfConsumers": 1,
  "address": "Daejeon, jungu 10"
}
```

```
{
  "nrOfConsumers": 1,
  "address": "Seoul, jongro 125-1"
}
```

```
{
  "nrOfConsumers": 2,
  "address": "Seoul, jongro sungkyunkwanro 10"
}
```

Real Usage – 4) Updating

```
MATCH (broker:Broker)-[r:HAVE]->(product:Product)
WHERE product.address = 'Seoul, jongro 125-1'
CREATE (broker)-[r2:SOLD]->(product)
SET r2=r
WITH r
DELETE r
```

```
MATCH (broker:Broker)--(:Product{address:"Seoul, jongro 125-1"}) RETURN DISTINCT broker.name
```

broker.name
"Authobak"

Real Usage – Web application 1

jongro Search

Neo4j Real Estate Market

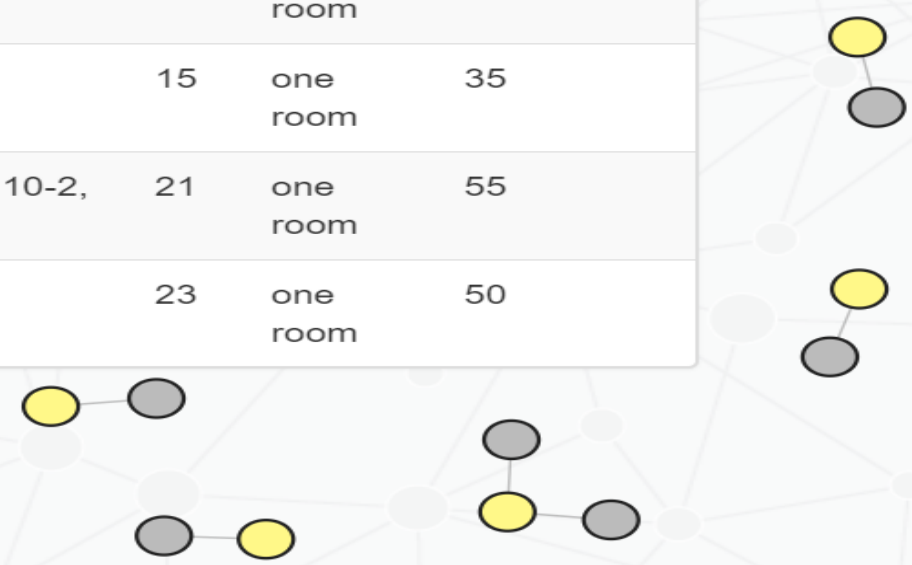
Search Results

address	size	type	PriceMonth
Seoul, jongro 120-3. 201	40	two room	80
Seoul, jongro 2gagil 3	15	one room	35
Seoul, jongro sungkyunkwanro 10	25	one room	55
Seoul, jongro 2gagil 3	15	one room	35
Seoul, jongro hyehwadong daehakro 10-2, 302	21	one room	55
Seoul, jongro 125-1	23	one room	50

Seoul, jongro 2gagil 3

Popularity

- Franky interested
- Tency interested
- Tency interested



Real Usage – Web application 2

ulsan | Search

Neo4j Real Estate Market

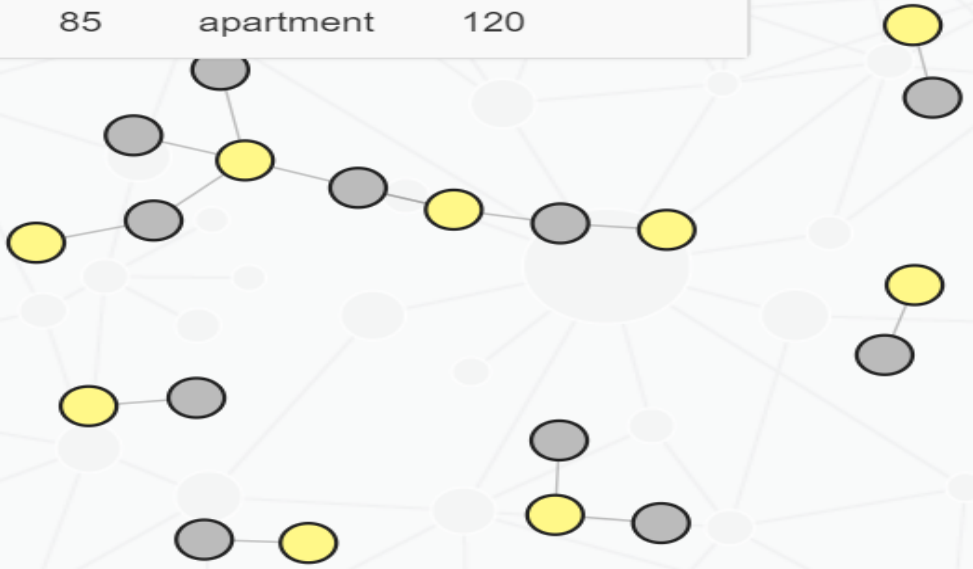
Search Results

address	size	type	PriceMonth
Ulsan, namgu okdong 2gagil	90	apartment	100
Ulsan, jungu munsuro 34	25	one room	50
Ulsan, bukgu 23-202	45	one room	40
Ulsan, uljugun ungchonri 10-9	120	two room	200
Ulsan, namgu 1	85	apartment	120

Ulsan, namgu okdong 2gagil

Popularity

- Eighto interested



Real Usage – Web application 3

jongro | Search

Neo4j Real Estate Market

Search Results

address	size	type	PriceMonth
Seoul, jongro 120-3. 201	40	two room	80
Seoul, jongro 2gagil 3	15	one room	35
Seoul, jongro sungkyunkwanro 10	25	one room	55
Seoul, jongro 2gagil 3	15	one room	35
Seoul, jongro hyehwadong daehakro 10-2, 302	21	one room	55
Seoul, jongro 125-1	23	one room	50

Seoul, jongro sungkyunkwanro 10

Popularity

- Elena contracted
- Timothy contracted

Q&A