

# No-SQL DBMS Property Graph Neo4J

Presented by: M. Usman

# Neo4J – Property Graph DBMS



## **Capabilities of Neo4J**

Why Neo4J



## **Neo4J Deployment**

Implementation Stack



## **Use Cases**

Application Areas

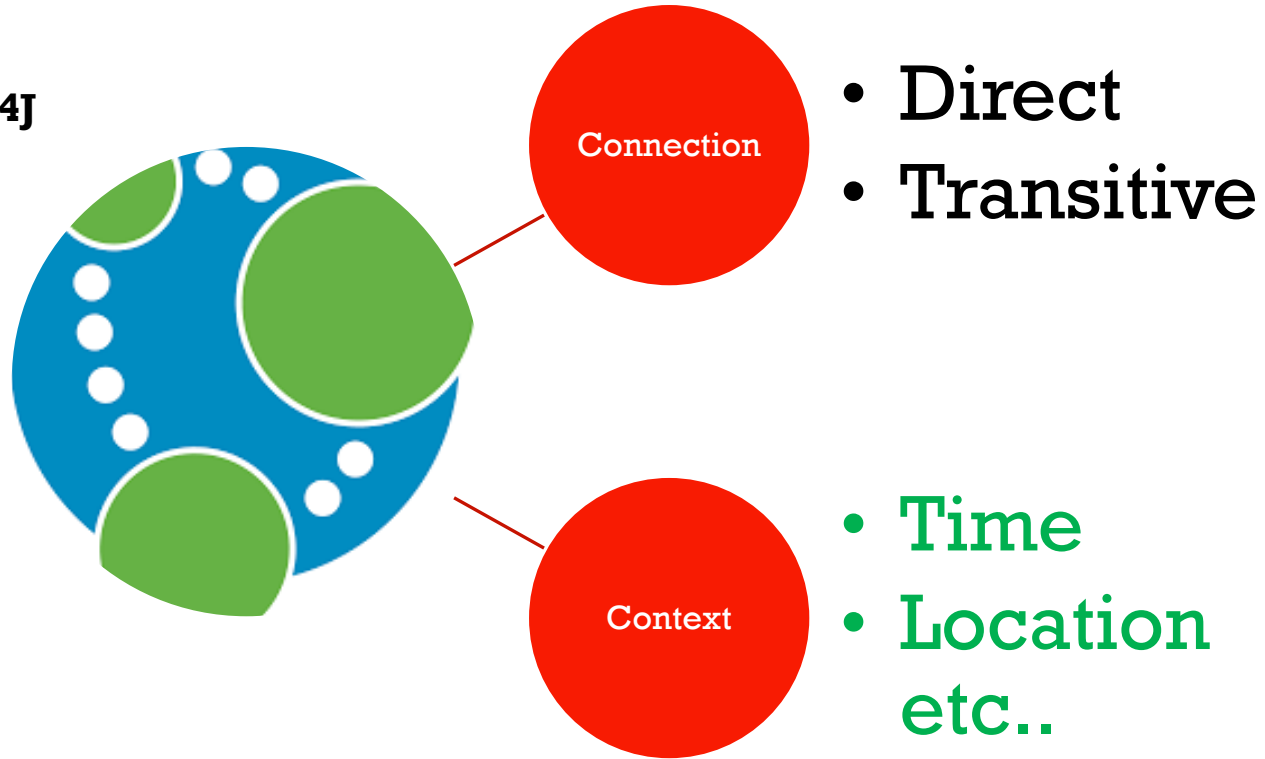


## **PLESI**

Professional, Legal, Ethical and  
Social Issues



## Capabilities of Neo4J



- Neo4J Database Core Principles



## Capabilities of Neo4J

### Pathfinding & Graph Search

- Optimal route between nodes
- Search engines

### Centrality

- Role of a node
- Social network analysis

### Community Detection

- Clusters of nodes
- Isolated groups
- Network structures

Edge-Based  
Community  
is not  
supported  
by Neo4J

- Neo4J Algorithms built on Neo4J platform



## Capabilities of Neo4J

Propagation  
Pathways



How do things spread?

Flow &  
Influence



What are the capacities,  
costs, and control points?

Interactions &  
Resiliency



How do things interact  
and will that change?

### ■ Neo4J Analytics

Needham, M., & Hodler, A. E. (2019). *Graph Algorithms: Practical Examples in Apache Spark and Neo4j*. O'Reilly Media Inc



## Capabilities of Neo4J

### Neo4j ETL Tool

Neo4j Labs



Import data from relational databases into Neo4j



Install

### Halin

Neo4j Labs



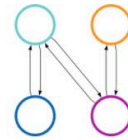
Halin helps you monitor and improve your Neo4j graph



Install

### Graph Data Science Playground

Neo4j Labs



Playground for Neo4j Graph Algorithms



Install

### GraphQL Architect

Neo4j Labs

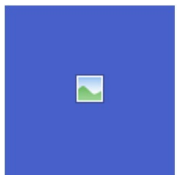


Build, query, and deploy GraphQL APIs backed by Neo4j.

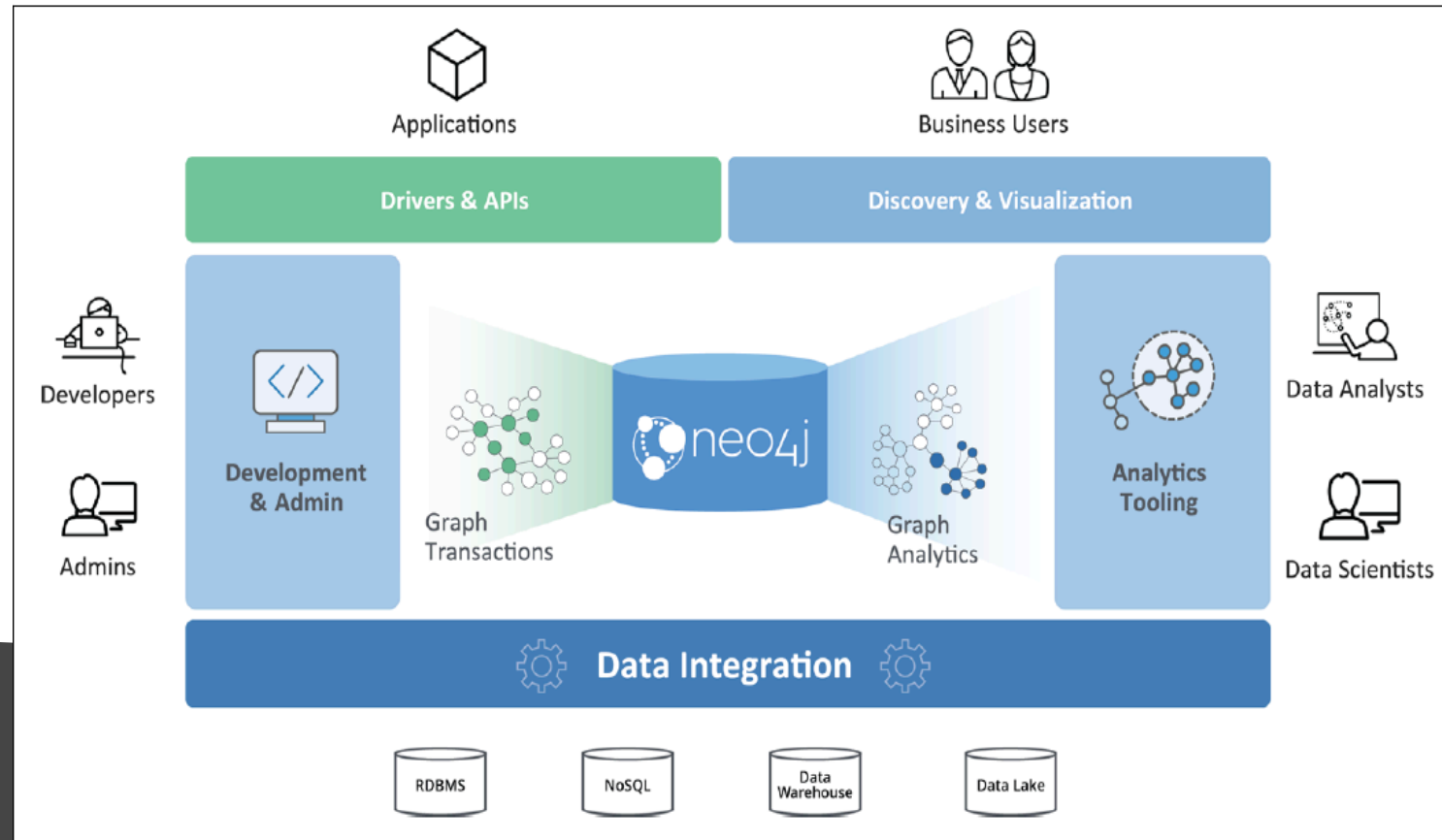


Install

- Native apps to improve functionality of Neo4J-DBMS



## Neo4J Deployment



### ■ Neo4J Deployment within Organization

Needham, M., & Hodler, A. E. (2019). *Graph Algorithms: Practical Examples in Apache Spark and Neo4j*. O'Reilly Media Inc



## Use Cases

### Classic

- Transportation systems
- Human interactions
- Telecommunication Networks

### Growing

- Marketing attribution
- Anti money laundering
- Literature based discovery

### AI & ML

- Feature extraction
- Prediction

- Neo4J – application areas





## Use Cases

### Classic

- Hastens implements 360 Customer view for product recommendations
- Gamesys creates users' social club

### Growing

- German Centre for Diabetes Research using Neo4J for clinical research

### AI & ML

- E-bay utilising shopping bot to interact with shoppers

## ■ Neo4J – Examples



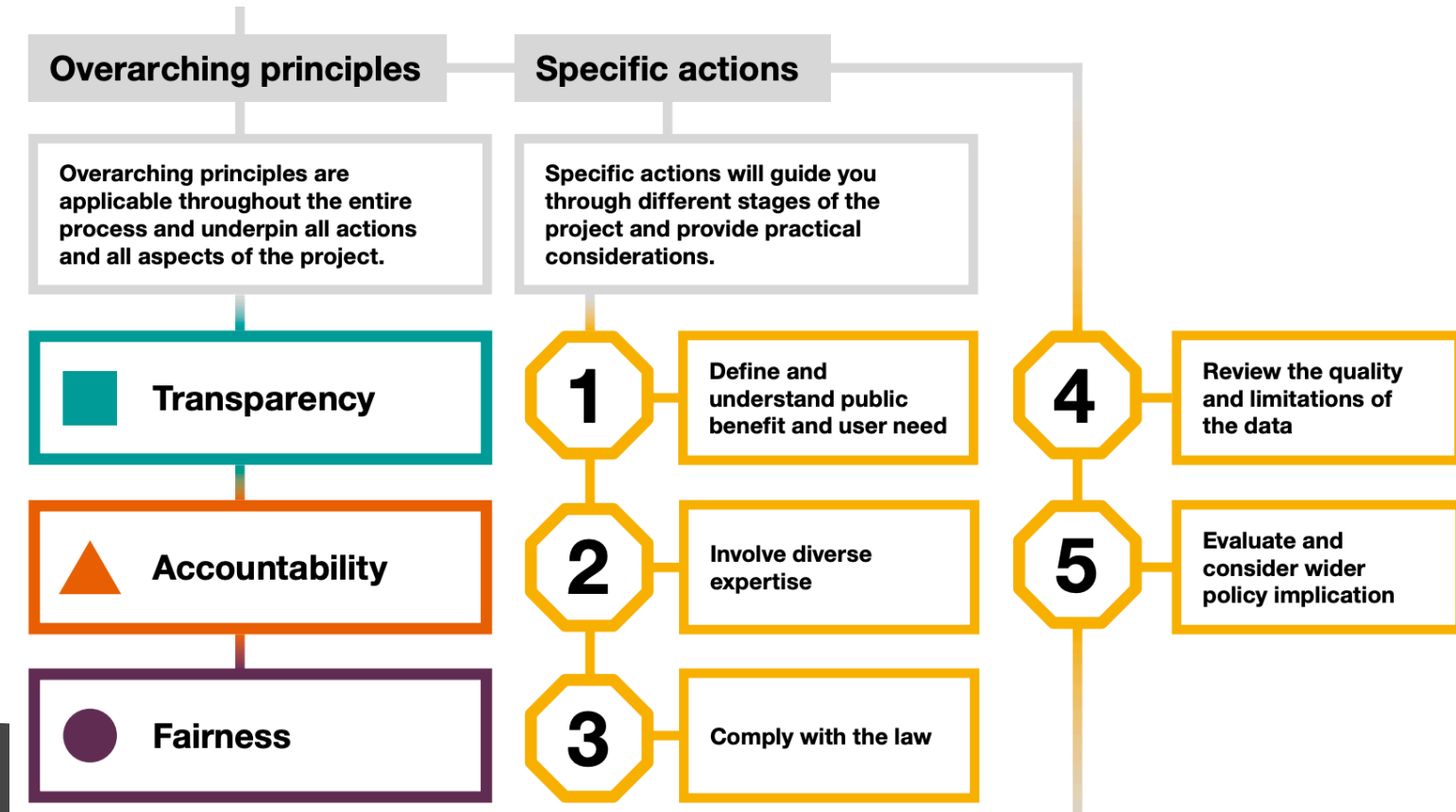
## **PLESI**

- Seven key principles:
  - Transparency
  - Limited to purpose
  - Minim data capturing - less is more
  - Data should be accurate
  - Data should be stored securely
  - Data confidentiality – privacy
  - Data ownership and accountability

- UK – GDPR under the act of DPA – 2018



**PLESI**



■ Government Digital Service – Data Ethics Framework – 2020



## **PLESI**

- BCS Code of Ethics
- Internet Governance Forum (IGF) 2019
- US ACM Public Policy Council, 2017
- EU Guidelines on Trustworthy AI
- Asilomar AI Principles –[FutureofLife.org](https://futureoflife.org/principles/)

■ Professional Code of Conduct for Computing Professionals

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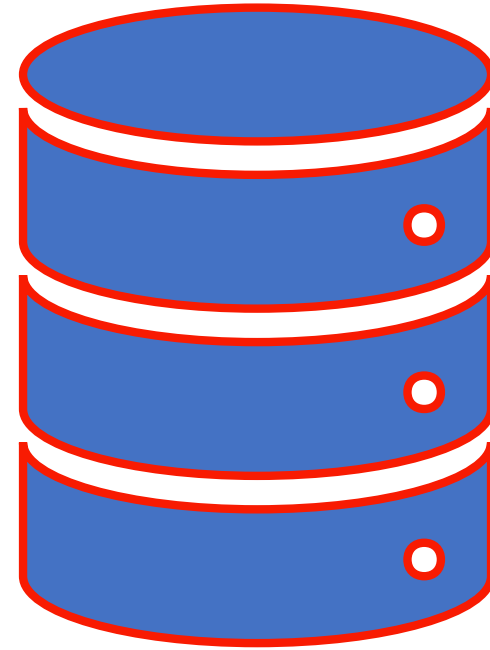
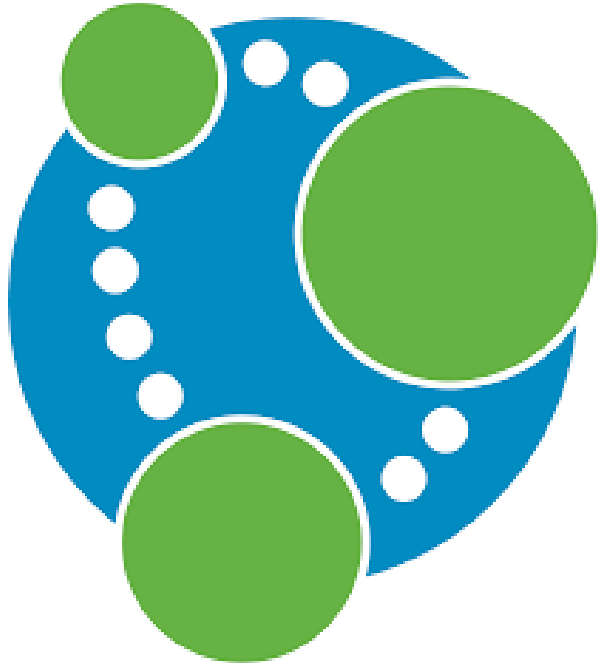
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# Thank you

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