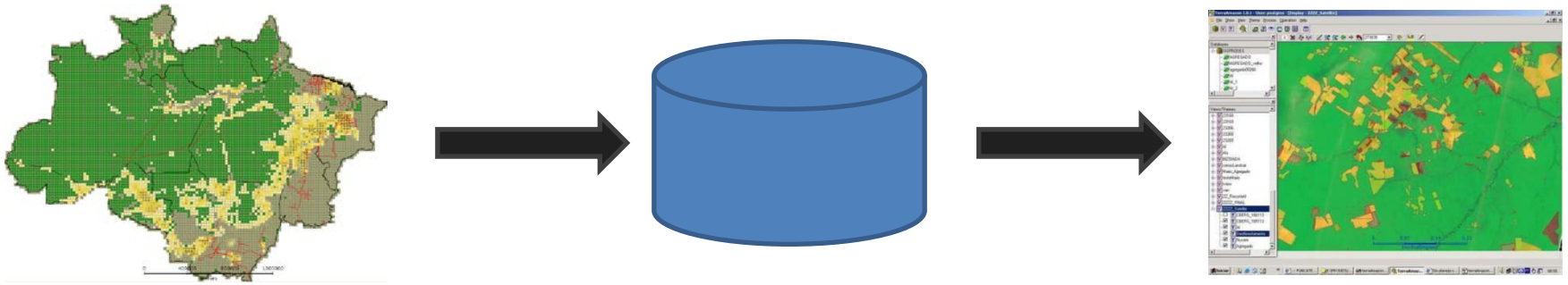
Spatial Databases: Lecture 11

Institute for Geoinformatics

Winter Semester 2014



Malumbo Chipofya: room 109

SPATIAL INTELLIGENCE LABORATORY

Topic Overview

1. Prelude: Data and problem solving in science and applications
2. The Relational Database model
3. Interacting with relational databases
4. Spatial Relational Database Management Systems
5. Enlightenment: what is special about spatial - Prof. Dr. Gilberto Camara
6. **A sample of Nosql Databases: brief introductions + example applications**
   a. Array databases: SciDB
   b. Document databases: MongoDB
   c. Graph databases: Neo4J
7. Summary of all lectures given.

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Neo4j: An introduction

- Cypher PATTERNS
  - A node: (n)

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Identifiers: n, m, a, b, r

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  - Properties
    - On nodes: (p {name: “Malu", hobby: “Eating" })
    - On relationships: (a)-[{blocked: false}]->(b)

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  - Properties
    - On nodes: (p {name: “Malu", hobby: “Eating" })
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  - Paths: (a)-[*2]->(b)-[*2..3]->(n)-[*]->(b)-[*..3]->

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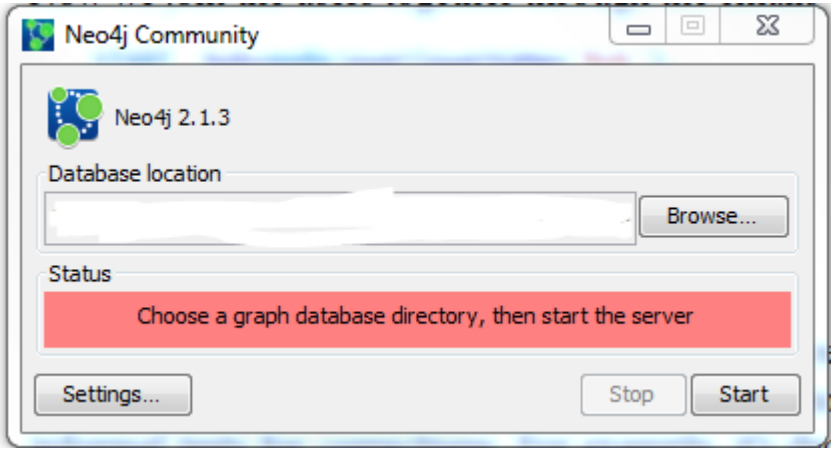
Neo4j: An introduction

- Go to

Start menu > Programs > Neo4j Community > Neo4j Community

- You'll see something like this



- Click start

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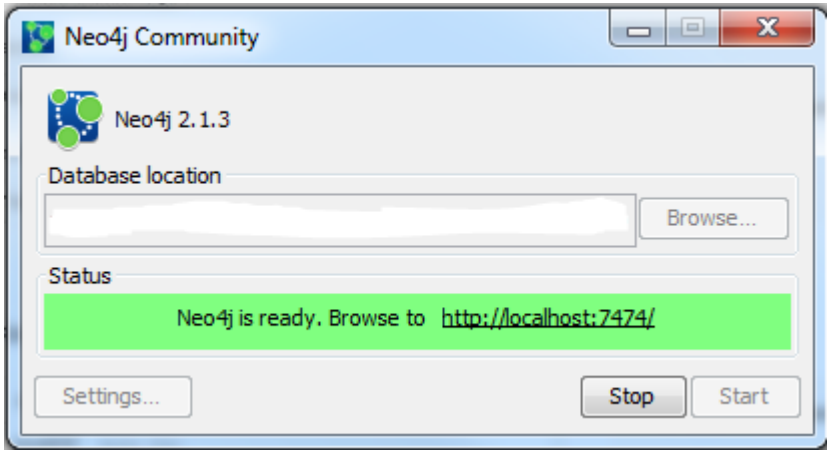

- Follow the link and play around

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Neo4j: An introduction

- Some Cypher keywords
  - CREATE
  - MATCH
  - RETURN
  - WITH
  - LIMIT, SKIP
  - MERGE
  - Etc…

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Neo4j: An introduction

- A Cypher query has a structure similar to an SQL one – We'll see how to
  - Create nodes and relationships with CREATE
  - Query with MATCH
  - Update the graph
  - Traverse (find a path in) the graph

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neo4j spatial

- A Spatial extension of neo4j
- Allows
  - Spatial indexing (Rtree:default, others:possible)
  - Spatial querying (using multiple methods)
  - Formatting and conversion (e.g. OSM-to-WKT)

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neo4j spatial

- Installation
  - Download the extensions zip file and extract it to the plugins folder $NEO_HOME\plugins
  - Other options available at https://github.com/neo4j-contrib/spatial

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neo4j spatial

- REST API enables http request/response interaction
  - POST for queries
  - GET for configuration/global information
  - Try it with commands in file neoscripts
  - We'll discuss the results while following the examples which are taken from https://github.com/neo4j-contrib/spatial

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neo4j spatial

- JDBC connection: trouble

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References

- **Rik Van Bruggen.** Learning Neo4j. Packt Publishing, Birmingham, UK, 2014.
- **Ian Robinson, Jim Webber, and Emil Eifrem.** Graph Databases. O'Reilly Media, Sebastopol, USA, 2013.
- http://neo4j.com/docs/2.1.6/
- https://github.com/neo4j-contrib/spatial

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That’s all for today

Thank you!

Questions?

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