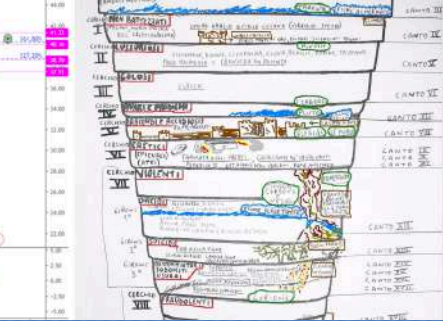


For details, see <https://review.docs.microsoft.com/en-us/visualstudio/rvs/sql-server>

```
# Test code
library(R008C)
channel <- odbcDriverConnect(dbConnection)
InputDataSet <- sqlQuery(channel, iconv(paste(readLines(
  'c:/proj/rproject1/rproject1/storedprocedure.query.sql',
  encoding = 'UTF-8', warn = FALSE), collapse = '\n'), from = 'UTF-8',
  to = 'ASCII', sub = ''))
odbcClose(channel)

OutputDataSet <- InputDataSet
```



Gephi

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<https://ucc-ie.academia.edu/GiovanniPietroVitali>



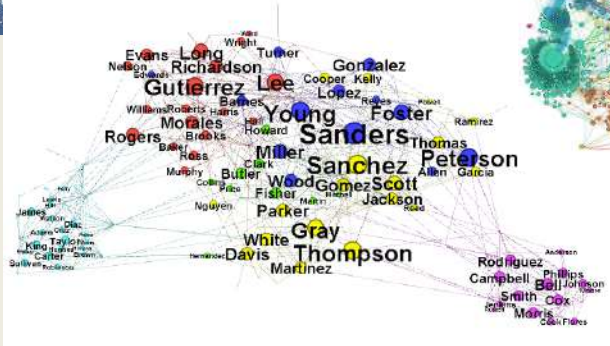
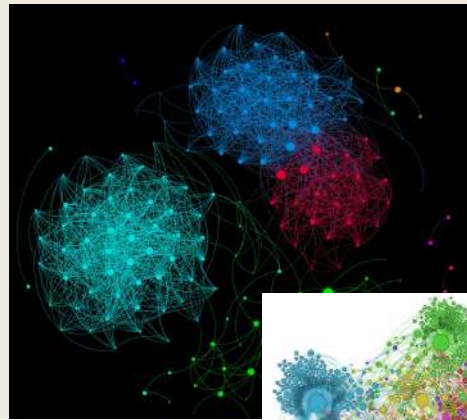
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Gephi

<https://gephi.org/>



Gephi is an open-source network analysis and visualization software package written in Java on the NetBeans platform.

Gephi has been used in a number of research projects in academia, journalism and elsewhere, for instance in visualizing the global connectivity of New York Times content and examining Twitter network traffic during social unrest along with more traditional network analysis topics. Gephi is widely used within the digital humanities (in history, literature, political sciences, etc.), a community where many of its developers are involved.

Source: <https://en.wikipedia.org/wiki/Gephi>

Formats

- As input → All the tabular formats (csv is always the better one) included json or gdf,
- As outcome → Gephi can save and export in several formats such as png, pdf, svg, kml, shp, js.

Datasets

Edges

Red columns are mandatory. The standard variable may be direct (univocal relation) or indirect (bi-univocal relation) depending on the relation.

	A	B	C
1	Source	Target	Type
2	Giovanni	Nancy	Direct
3	Giovanni	Poitiers	Direct
4	Isabelle	Paris	Direct
5	Isabelle	Nancy	Direct
6	Laura	Nancy	Direct
7	Silvia	Paris	Direct
8	Silvia	Nancy	Direct

	A	B	C	D	E	F
1	ID	Label	attribute	role	lat	lng
2	Nancy	Nancy	4	city	48.692034	6.182367
3	Poitiers	Poitiers	1	city	46.580123	0.338505
4	Giovanni	Giovanni	2	teacher	44.074621	10.479448
5	Laura	Laura	1	professeur	45.537141	12.642686
6	Silvia	Silvia	2	teacher	45.064231	7.677655
7	Paris	Paris	2	city	48.859268	2.347747
8	Isabelle	Isabelle	2	professeur	45.837876	1.253814

Nodes

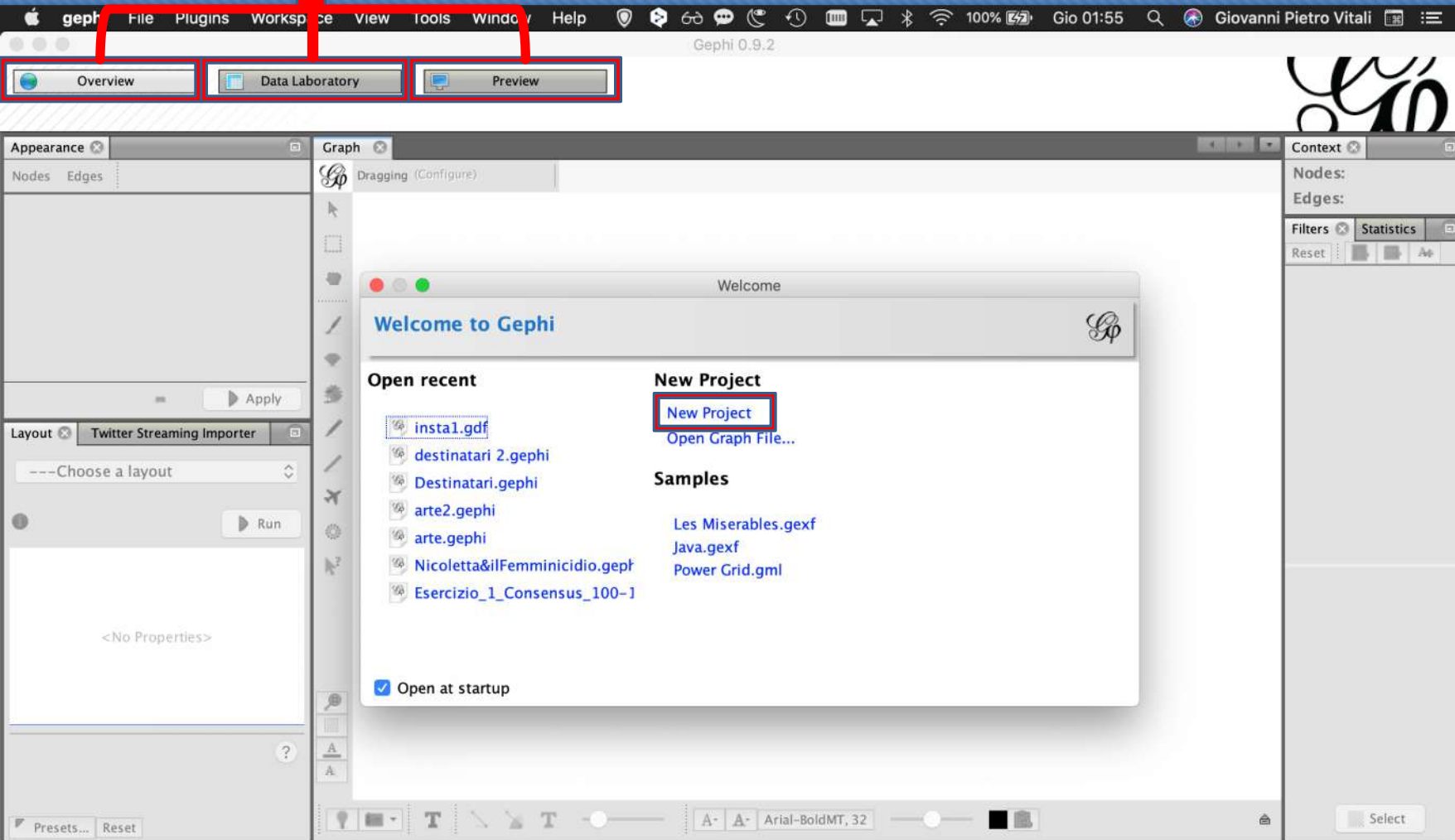
Nodes:

ID is the unique identification value of each element. Label is the label that Gephi will display for that element.

Edges:

Source and Target must express the ID values (table nodes).

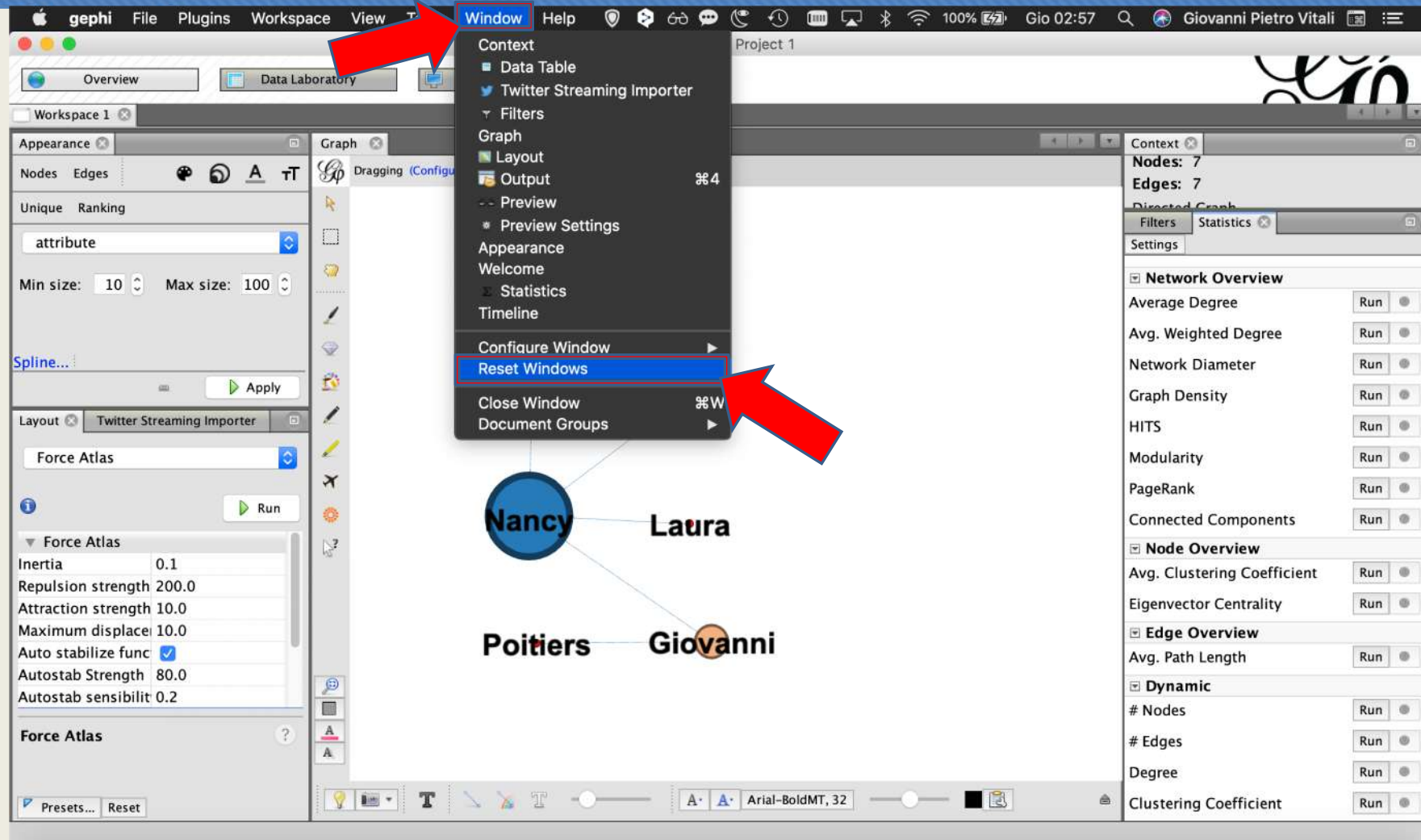
Software



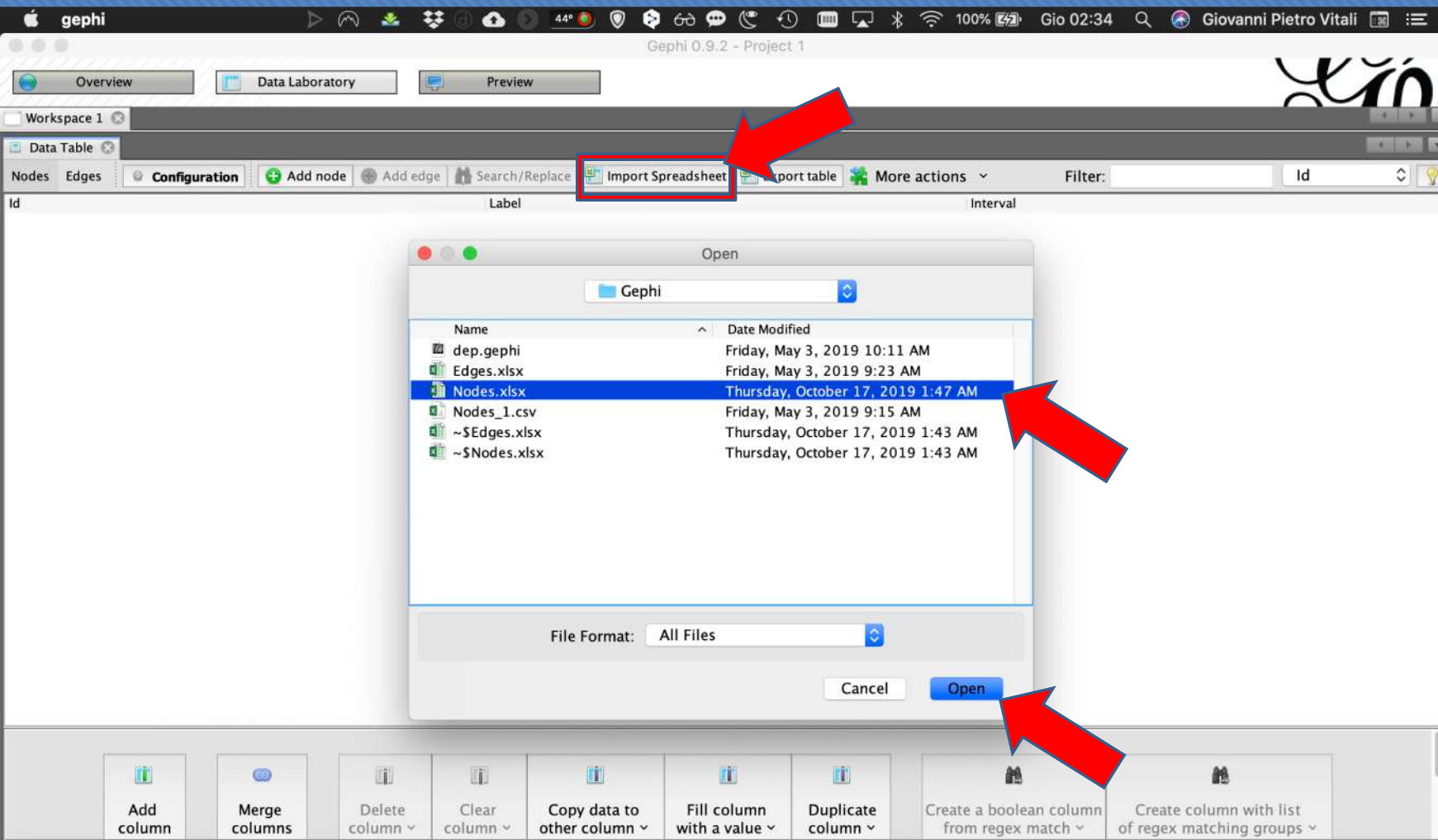
These three options must be used at the same time. For a good use of Gephi it is necessary to pass constantly between the **overview**, the **data laboratory** and the **preview**.

- The **data laboratory** contains the tables with data
- The **Overview** is a draft of the final graph where you can customize options such as colors, spatializations or sizes of nodes and edges.
- The **preview** is the graphical section where you can draw the last details of the graph and save or export.

Too messy windows? Restart them!



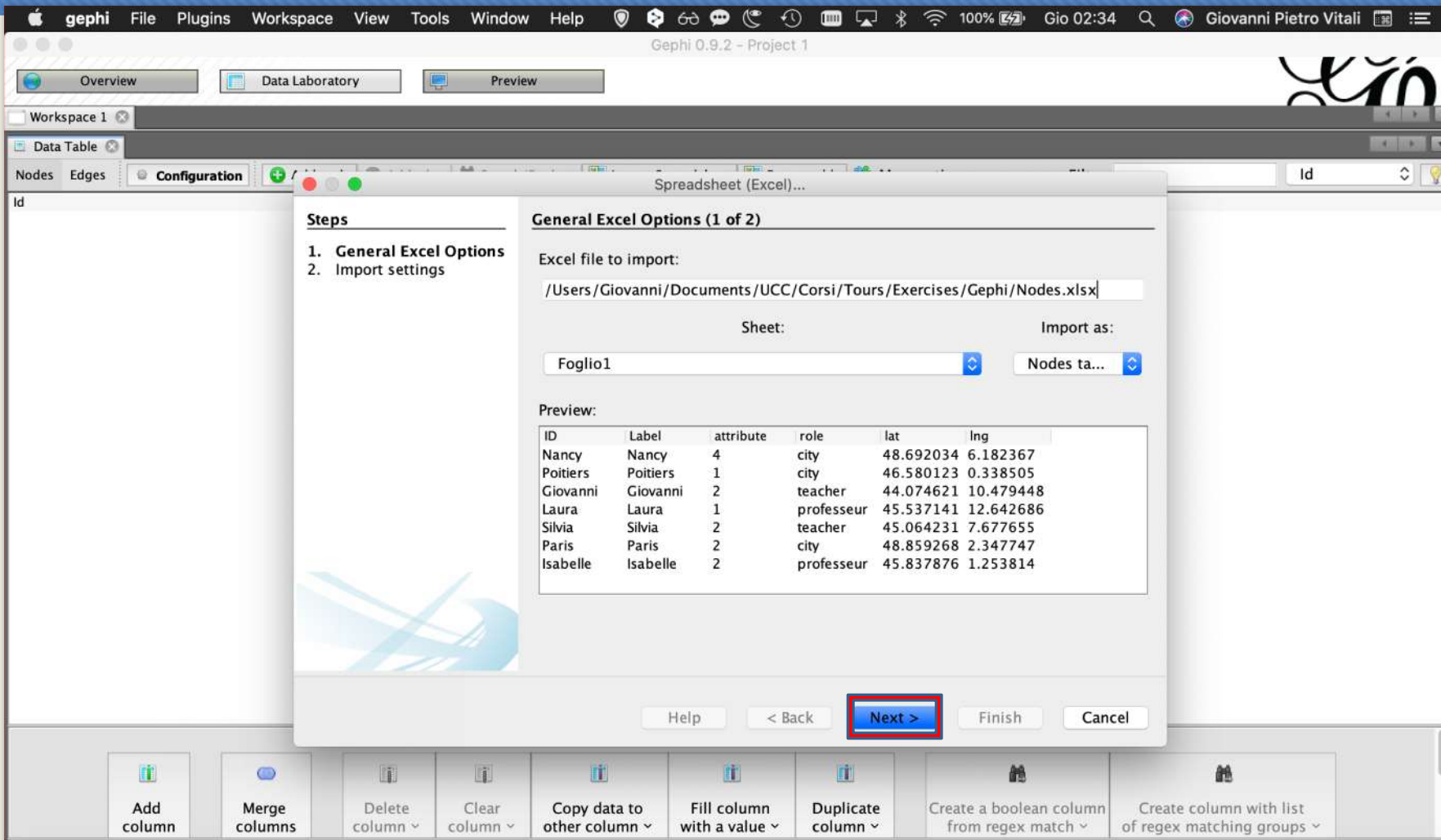
Data Laboratory



You always start at the data laboratory after you create a new project.

It is always good practice to import nodes first.

Check import preview



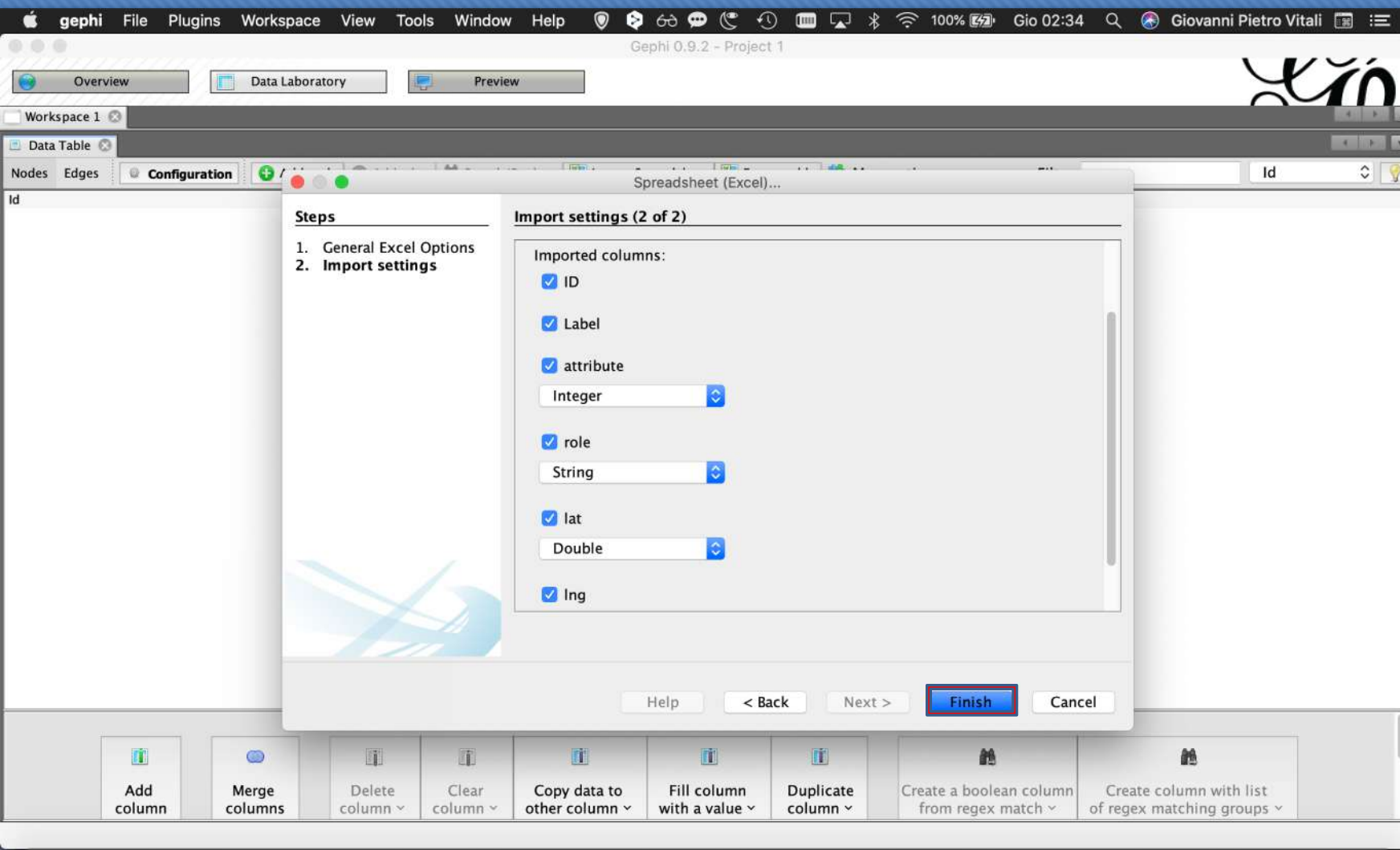
The screenshot shows the Gephi 0.9.2 interface with the 'General Excel Options (1 of 2)' dialog box open. The dialog box is titled 'Spreadsheet (Excel)...' and contains the following information:

- Steps:**
 1. General Excel Options
 2. Import settings
- General Excel Options (1 of 2):**
 - Excel file to import: `/Users/Giovanni/Documents/UCC/Corsi/Tours/Exercices/Gephi/Nodes.xlsx`
 - Sheet: `Foglio1`
 - Import as: `Nodes ta...`
 - Preview:

ID	Label	attribute	role	lat	lng
Nancy	Nancy	4	city	48.692034	6.182367
Poitiers	Poitiers	1	city	46.580123	0.338505
Giovanni	Giovanni	2	teacher	44.074621	10.479448
Laura	Laura	1	professeur	45.537141	12.642686
Silvia	Silvia	2	teacher	45.064231	7.677655
Paris	Paris	2	city	48.859268	2.347747
Isabelle	Isabelle	2	professeur	45.837876	1.253814

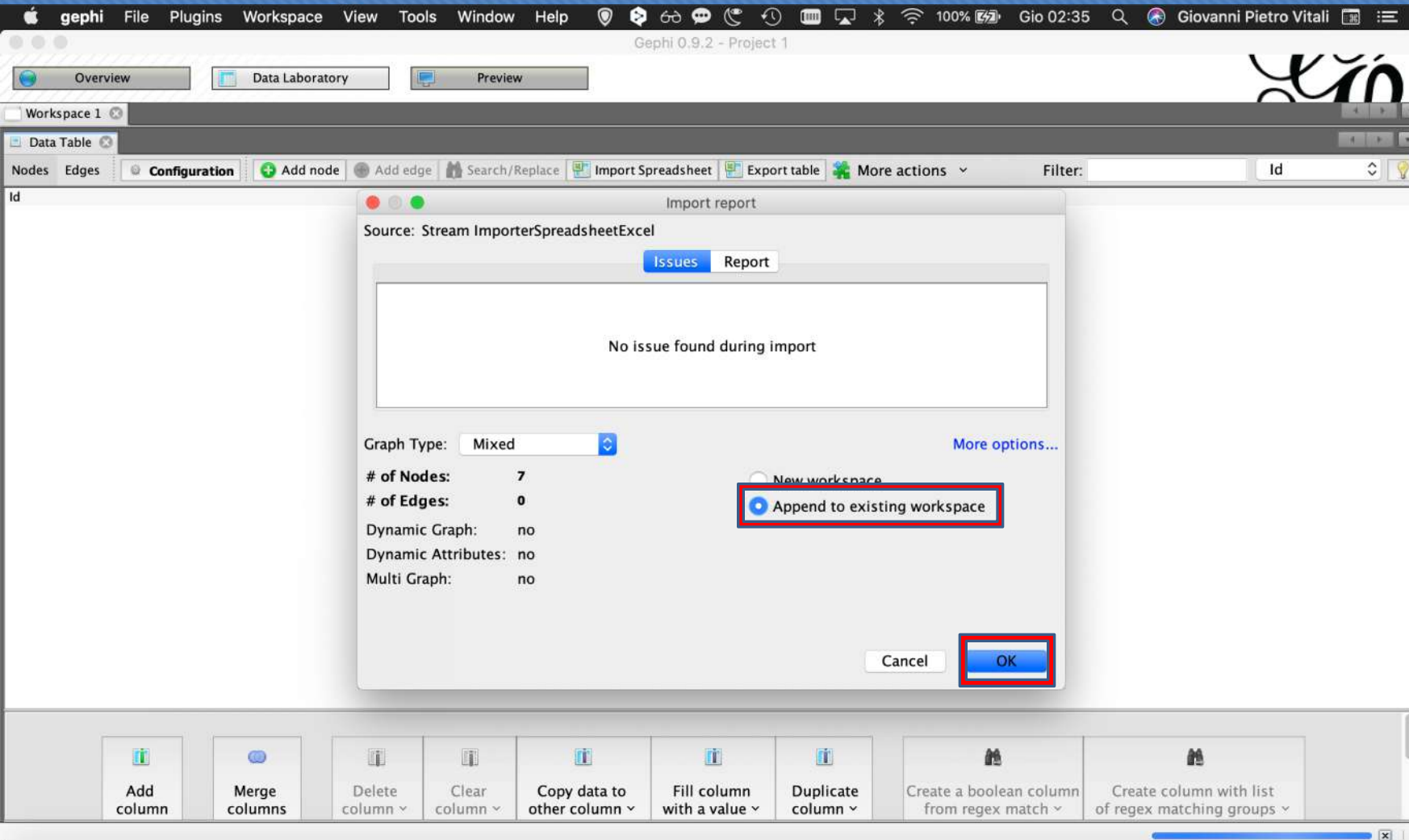
The 'Next >' button is highlighted with a red box. The background shows the Gephi workspace with a 'Data Table' panel and a 'Configuration' panel.

Gephi matches each variable (column) with a typology.

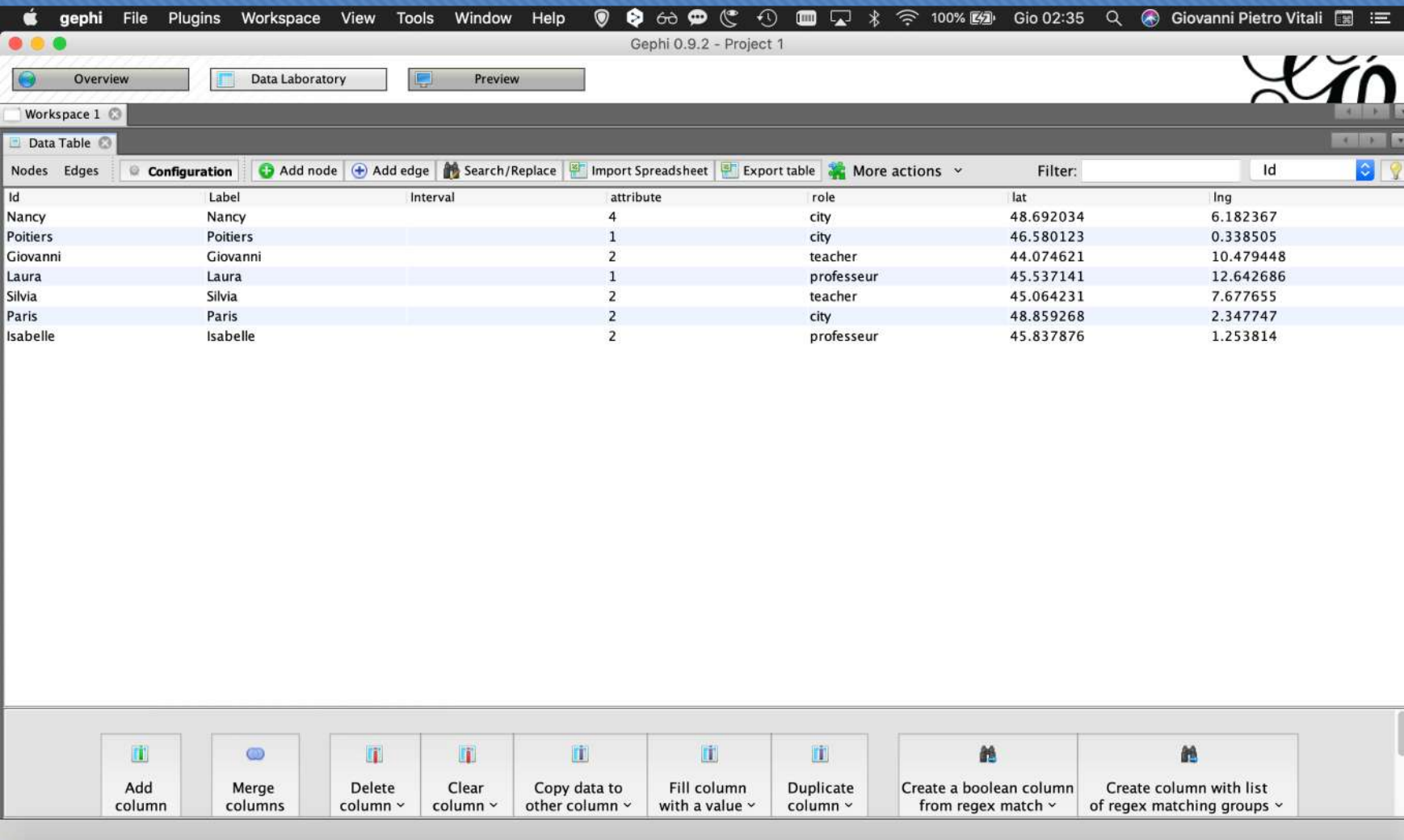


The latitude and longitude variables must always be double.

Append to existing workspace!



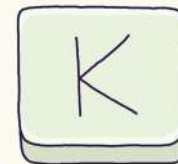
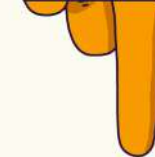
The data laboratory has been updated.



The screenshot shows the Gephi 0.9.2 Data Laboratory interface. The top menu bar includes File, Plugins, Workspace, View, Tools, Window, and Help. The main window has tabs for Overview, Data Laboratory, and Preview. The Data Laboratory tab is active, showing a table of data. The table has columns: Id, Label, Interval, attribute, role, lat, and lng. The data is as follows:

Id	Label	Interval	attribute	role	lat	lng
Nancy	Nancy		4	city	48.692034	6.182367
Poitiers	Poitiers		1	city	46.580123	0.338505
Giovanni	Giovanni		2	teacher	44.074621	10.479448
Laura	Laura		1	professeur	45.537141	12.642686
Silvia	Silvia		2	teacher	45.064231	7.677655
Paris	Paris		2	city	48.859268	2.347747
Isabelle	Isabelle		2	professeur	45.837876	1.253814

Below the table, there is a toolbar with various actions: Add column, Merge columns, Delete column, Clear column, Copy data to other column, Fill column with a value, Duplicate column, Create a boolean column from regex match, and Create column with list of regex matching groups.



Repeat the same operation with the edges.

The screenshot shows the Gephi 0.9.2 interface. The 'Data Table' window is open, displaying a table with columns: Id, Label, Interval, attribute, role, lat, and lng. The 'Import Spreadsheet' button is highlighted with a red box and a red arrow. The 'Open' dialog box is open, showing the 'Gephi' folder. The file 'Edges.xlsx' is selected, highlighted with a red box and a red arrow. The 'Open' button at the bottom of the dialog is also highlighted with a red box and a red arrow.

Id	Label	Interval	attribute	role	lat	lng
Nancy	Nancy				48.692034	6.182367
Poitiers	Poitiers				46.580123	0.338505
Giovanni	Giovanni				44.074621	10.479448
Laura	Laura				45.537141	12.642686
Silvia	Silvia				45.064231	7.677655
Paris	Paris				48.859268	2.347747
Isabelle	Isabelle				48.857876	1.253814

Check import preview

The screenshot shows the Gephi 0.9.2 interface with the 'Spreadsheet (Excel)...' dialog box open. The dialog is titled 'General Excel Options (1 of 2)'. It shows the file path '/Users/Giovanni/Documents/UCC/Corsi/Tours/Exercises/Gephi/Edges.xlsx'. The 'Sheet' is 'Foglio1' and the 'Import as' is 'Edges table'. A preview table shows the data structure with columns Source, Target, and Type. The 'Next >' button is highlighted with a red box.

Steps

1. General Excel Options
2. Import settings

General Excel Options (1 of 2)

Excel file to import:
/Users/Giovanni/Documents/UCC/Corsi/Tours/Exercises/Gephi/Edges.xlsx

Sheet: Foglio1 Import as: Edges table

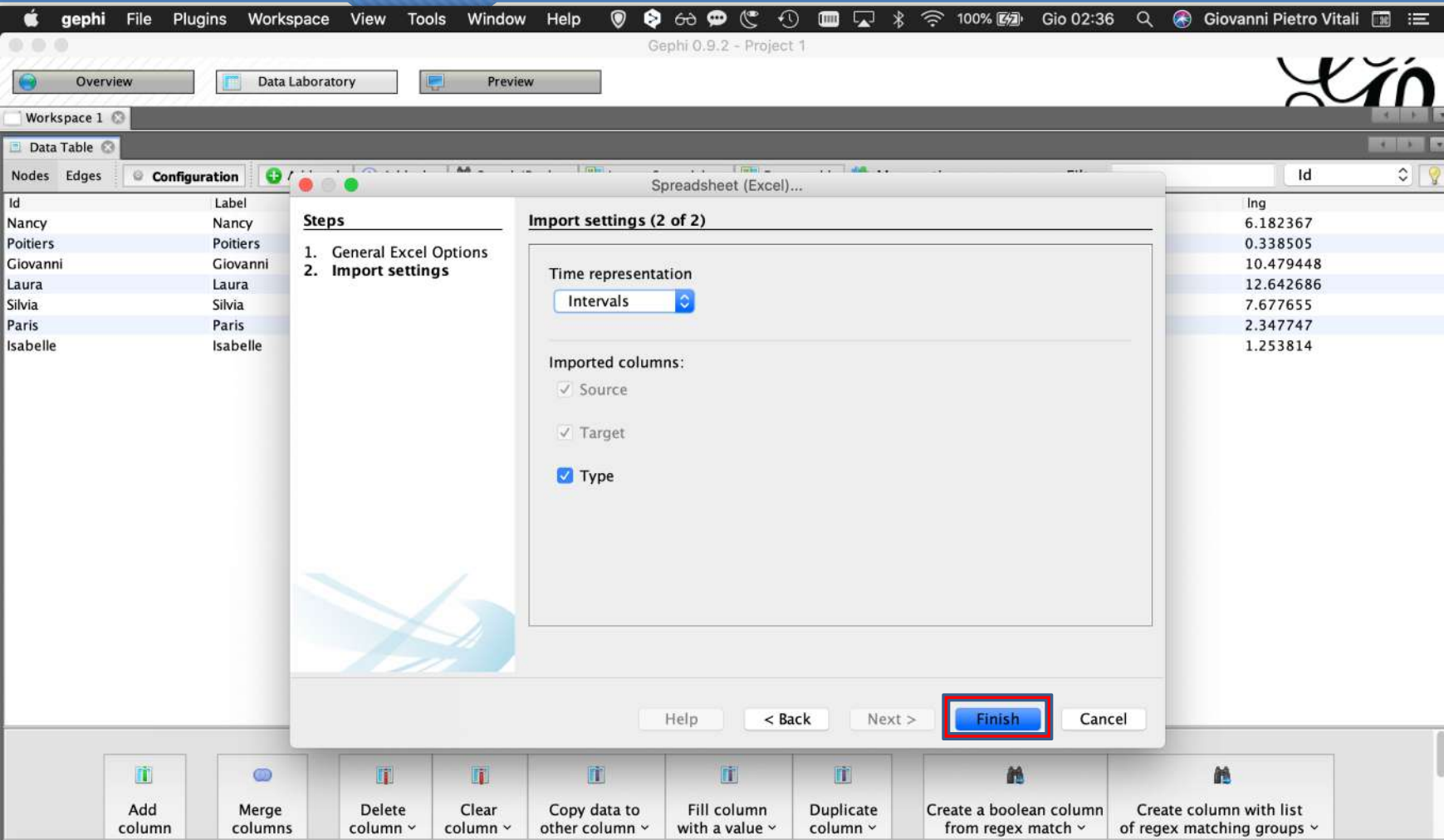
Preview:

Source	Target	Type
Giovanni	Nancy	Direct
Giovanni	Poitiers	Direct
Isabelle	Paris	Direct
Isabelle	Nancy	Direct
Laura	Nancy	Direct
Silvia	Paris	Direct
Silvia	Nancy	Direct

Buttons: Help, < Back, **Next >**, Finish, Cancel

Bottom toolbar: Add column, Merge columns, Delete column, Clear column, Copy data to other column, Fill column with a value, Duplicate column, Create a boolean column from regex match, Create column with list of regex matching groups

Gephi matches each variable (column) with a typology.



Append to existing workspace!

Gephi 0.9.2 - Project 1

Overview Data Laboratory Preview

Workspace 1

Data Table

Nodes Edges Configuration Add node Add edge Search/Replace Import Spreadsheet Export table More actions Filter: Id

Id	Label	Ing
Nancy	Nancy	034
Poitiers	Poitiers	123
Giovanni	Giovanni	621
Laura	Laura	141
Silvia	Silvia	231
Paris	Paris	268
Isabelle	Isabelle	876

Import report

Source: Stream ImporterSpreadsheetExcel

Issues Report

No issue found during import

Graph Type: Directed More options...

of Nodes: 7

of Edges: 7

Dynamic Graph: no

Dynamic Attributes: no

Multi Graph: no

☒ Append to existing workspace

Cancel OK



The data laboratory has been updated.

Gephi 0.9.2 - Project 1

Overview Data Laboratory Preview

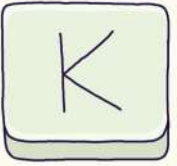
Workspace 1

Data Table

Nodes Edges Configuration Add node Add edge Search/Replace Import Spreadsheet Export table More actions Filter: Source

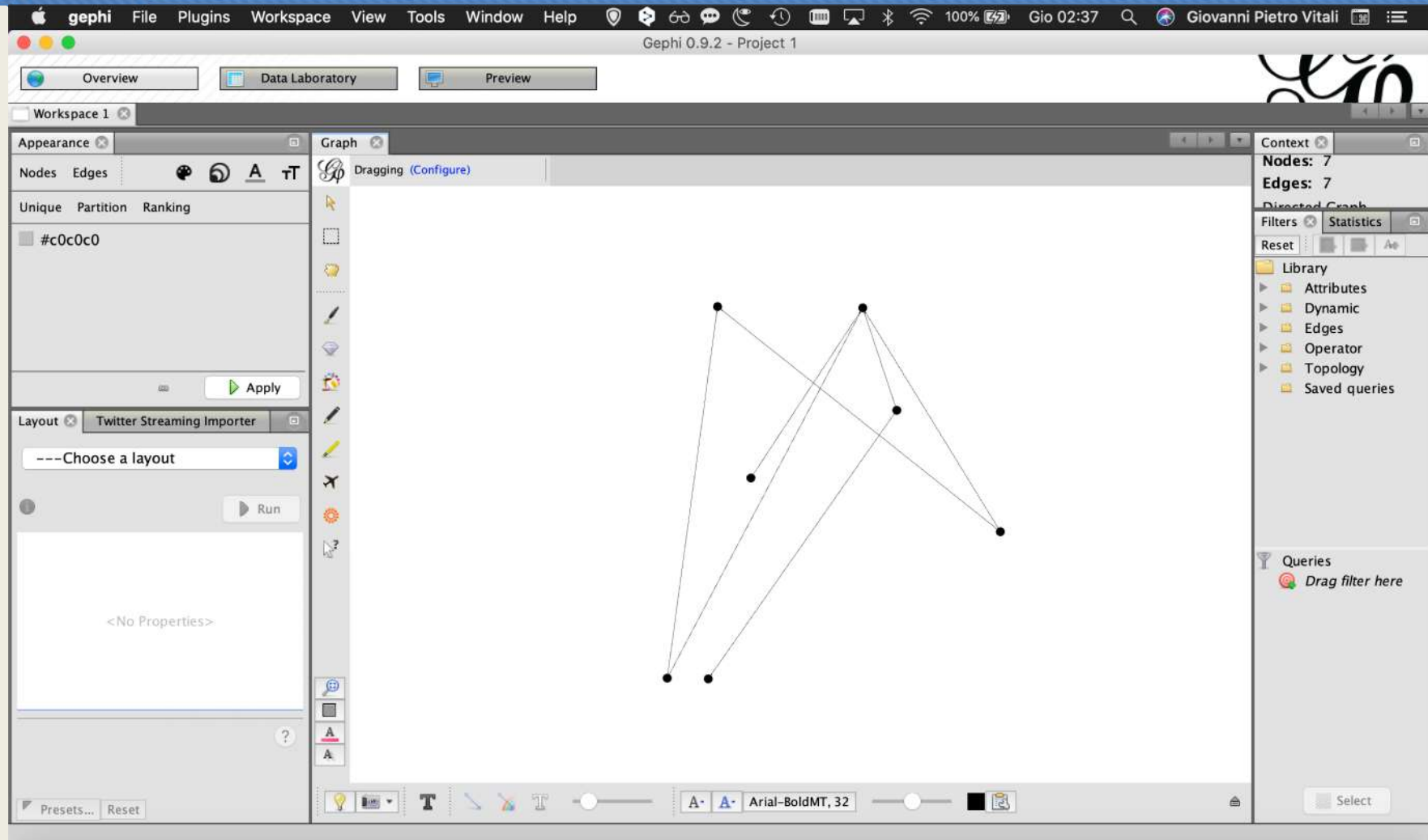
Source	Target	Type	Id	Label	Interval	Weight
Giovanni	Nancy	Directed	0			1.0
Giovanni	Poitiers	Directed	1			1.0
Isabelle	Paris	Directed	2			1.0
Isabelle	Nancy	Directed	3			1.0
Laura	Nancy	Directed	4			1.0
Silvia	Paris	Directed	5			1.0
Silvia	Nancy	Directed	6			1.0

Add column Merge columns Delete column Clear column Copy data to other column Fill column with a value Duplicate column Create a boolean column from regex match Create column with list of regex matching groups



PORUCZ

Overview



The parts of the Overview

The screenshot displays the Gephi software interface. On the left, the 'Force Atlas' layout settings are visible, including parameters like Inertia, Repulsion strength, and Attraction strength. The central area shows the 'Overview' panel with tabs for 'Nodes', 'Edges', 'Appearance', and 'Statistics'. Red arrows point from the 'Nodes' and 'Edges' tabs to the 'Nodes' and 'Edges' sections of the 'Overview' panel. On the right, the 'Statistics' panel is open, showing various network metrics such as Average Degree, Network Diameter, and Modularity. The interface is annotated with red text and arrows indicating the parts of the Overview:

- Nodes**: Points to the 'Nodes' tab in the Overview panel.
- Edges**: Points to the 'Edges' tab in the Overview panel.
- Element colours**: Points to the 'Appearance' tab in the Overview panel.
- Element dimension**: Points to the 'Nodes' tab in the Overview panel.
- Font colours**: Points to the 'Statistics' tab in the Overview panel.
- Font dimension**: Points to the 'Statistics' tab in the Overview panel.

Vertical text on the left side reads 'Spatialisation' and on the right side reads 'Statistical analysis'.

Customising the overview

The screenshot displays the Gephi 0.9.2 application window. The main workspace shows a network graph with seven nodes: Paris, Silvia, Isabelle, Nancy, Laura, Poitiers, and Giovanni. Nancy is the central node, connected to Paris, Silvia, Isabelle, Laura, and Poitiers. Poitiers is connected to Giovanni. The nodes are colored in shades of blue and orange. The interface includes a menu bar at the top with options like File, Plugins, Workspace, View, Tools, Window, and Help. Below the menu bar are tabs for Overview, Data Laboratory, and Preview. The left sidebar contains the Appearance panel with settings for Nodes and Edges, and the Layout panel with the Twitter Streaming Importer. The right sidebar shows the Context panel with statistics and filters, and a Library panel with various query types. The bottom status bar displays the font and size settings.

Graph Structure:

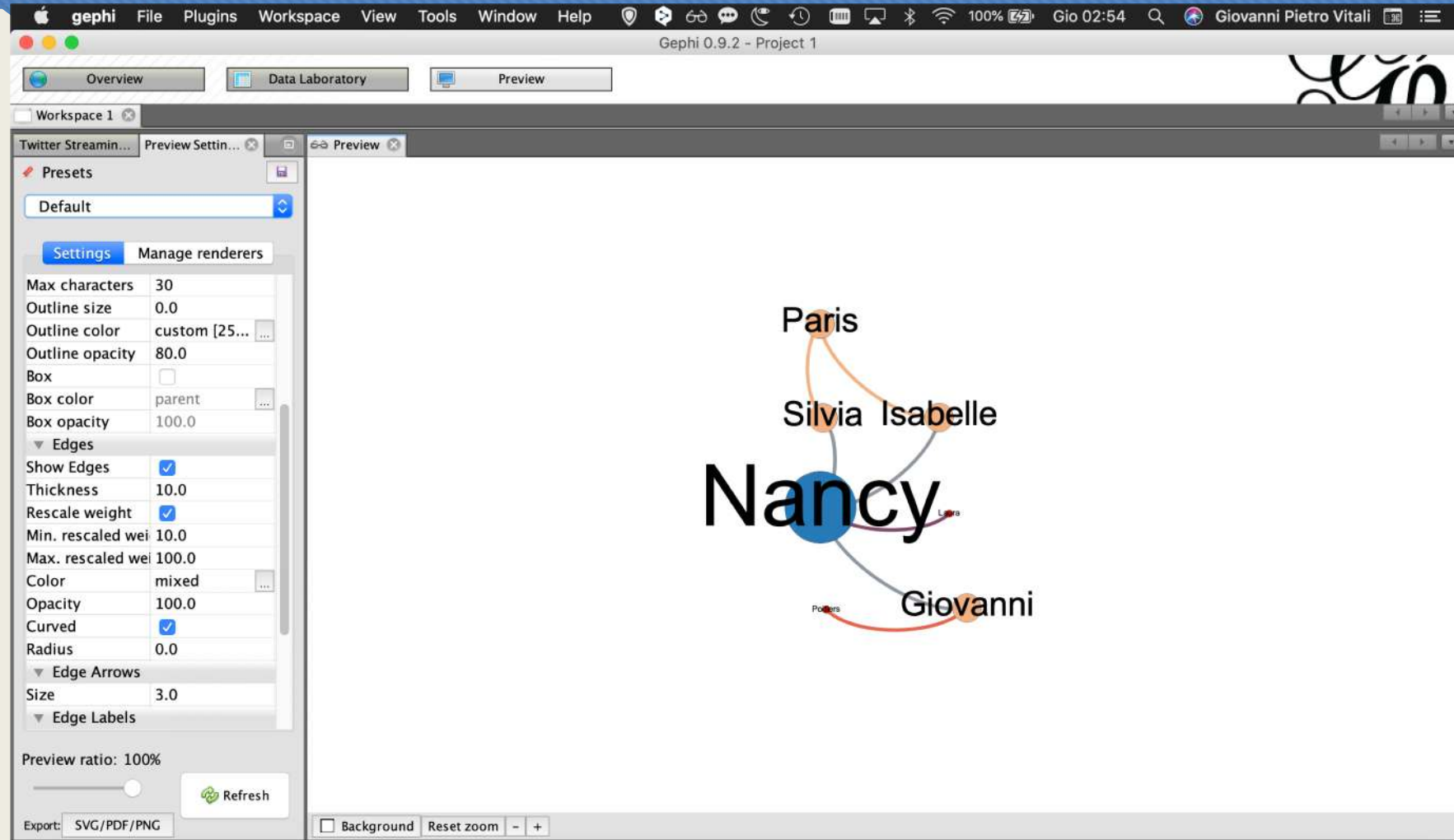
- Nodes: Paris, Silvia, Isabelle, Nancy, Laura, Poitiers, Giovanni
- Edges: Paris-Silvia, Paris-Isabelle, Silvia-Nancy, Isabelle-Nancy, Nancy-Laura, Nancy-Poitiers, Poitiers-Giovanni

Interface Elements:

- Menu Bar:** File, Plugins, Workspace, View, Tools, Window, Help
- Toolbar:** Overview, Data Laboratory, Preview
- Appearance Panel:** Nodes, Edges, Unique, Partition, Ranking, Weight, Color, Spline...
- Layout Panel:** Twitter Streaming Importer, Expansion, Run
- Context Panel:** Nodes: 7, Edges: 7, Filters, Statistics, Reset
- Library Panel:** Attributes, Dynamic, Edges, Operator, Topology, Saved queries
- Status Bar:** Arial-BoldMT, 32

Preview

At this point clicking on the preview the result of the overview has this aspect.



Preview's menus

Nodes

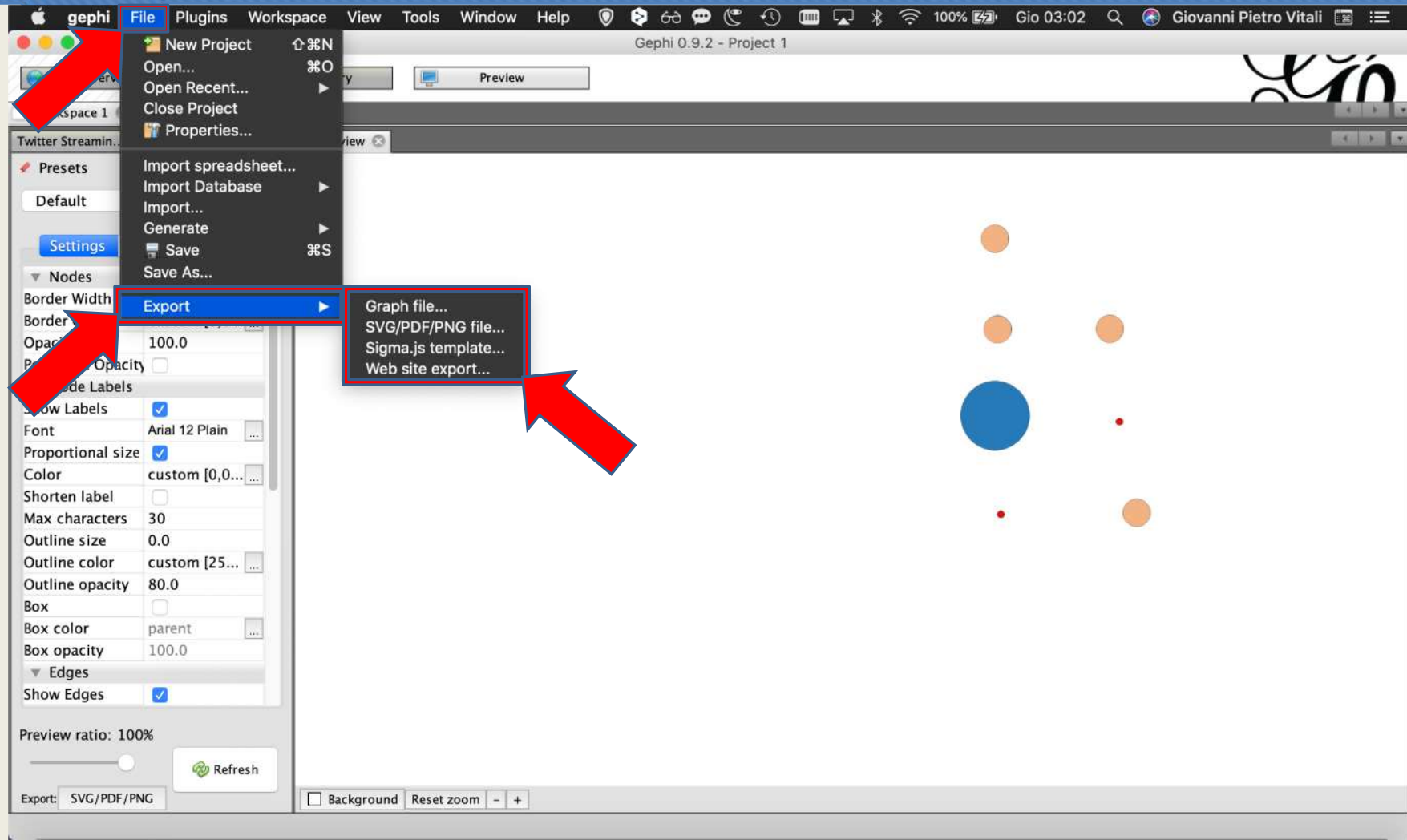
▼ Nodes	
Border Width	1.0
Border Color	custom [0,0... ...]
Opacity	100.0
Per-Node Opacity	<input type="checkbox"/>
▼ Node Labels	
Show Labels	<input checked="" type="checkbox"/>
Font	Arial 12 Plain ...
Proportional size	<input checked="" type="checkbox"/>
Color	custom [0,0... ...]
Shorten label	<input type="checkbox"/>
Max characters	30
Outline size	0.0
Outline color	custom [25... ...]
Outline opacity	80.0
Box	<input type="checkbox"/>
Box color	parent ...
Box opacity	100.0

▼ Edges	
Show Edges	<input checked="" type="checkbox"/>
Thickness	10.0
Rescale weight	<input checked="" type="checkbox"/>
Min. rescaled wei	10.0
Max. rescaled wei	100.0
Color	mixed ...
Opacity	100.0
Curved	<input checked="" type="checkbox"/>
Radius	0.0
▼ Edge Arrows	
Size	3.0

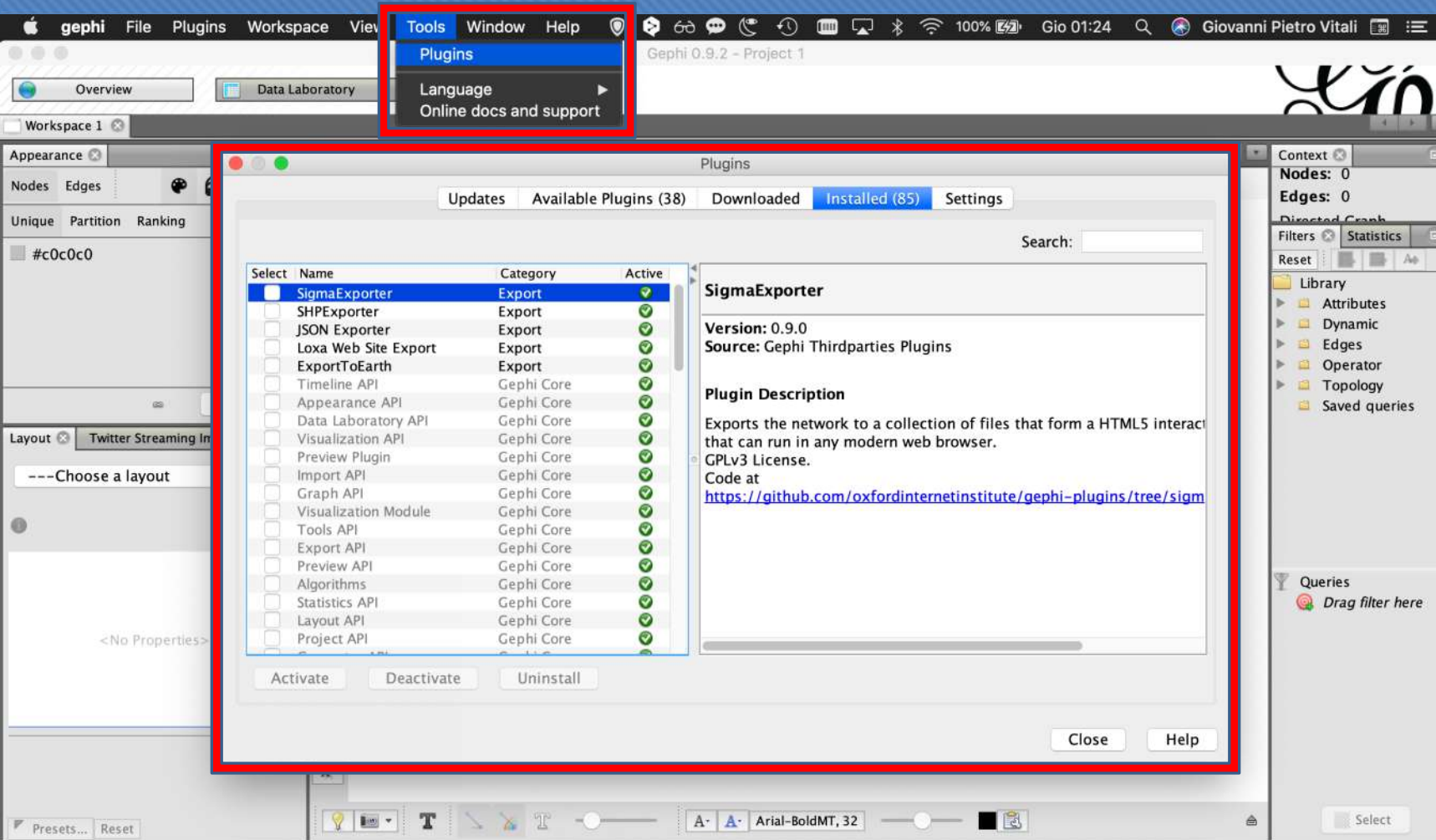
Edges

▼ Edge Labels	
Show Labels	<input type="checkbox"/>
Font	Arial 10 Plain ...
Color	original ...
Shorten label	<input type="checkbox"/>
Max characters	30
Outline size	0.0
Outline color	custom [25... ...]
Outline opacity	80.0

Export



Plugins



- TwitterStreamingExporter
- Map of Countries
- Circular Layout
- MultiGravity Force Atlas 2
- GeoLayout

Layouts

Exporters

- SigmaExporter
- SHPEXporter
- JSON Exporter
- Loxa Web Site Export
- Export to Earth

Let's practice



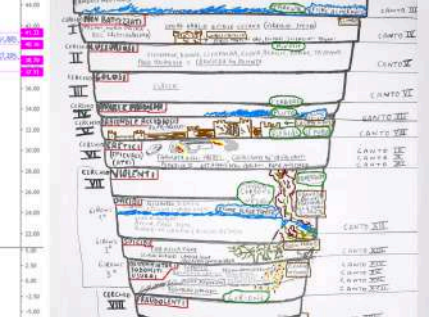
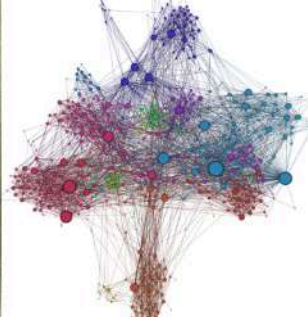
Nodes: <http://bit.ly/2MjTUd8>

Edges: <http://bit.ly/2VKPLCi>


```
# For details, see https://review.docs.microsoft.com/en-us/visualstudio/rtvs/sql-server

# Test code
library(R008C)
channel <- odbcDriverConnect(dbConnection)
InputDataSet <- sqlQuery(channel, iconv(paste(readLines(
  'c:/proj/rproject1/rproject1/storedprocedure.query.sql',
  encoding = 'UTF-8', warn = FALSE), collapse = '\n'), from = 'UTF-8',
  to = 'ASCII', sub = ''))
odbcClose(channel)

OutputDataSet <- InputDataSet
```



Gephi

_end

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