The Promise to Partner

Lukas C. Bossert | Sama Majidian | Évariste Demandt

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1 The Promise to Partner

In this JupyterNotebook we show you how to visualize and analyze a network. We do this using the example of the consortia that are participating in or have applied to the National Research Data Infrastructure Initiative (NFDI).

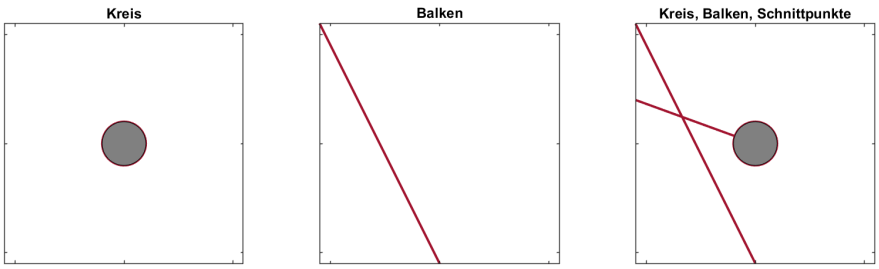
As a data basis, we take the *Letters of Intent* of the respective consortia, in which cooperation partners are named. These mentions are the starting point of our network[1].

We do the visualization in a JupyterNotebook or R Notebook[2], so no local installation of R is necessary. JupyterNotebooks are built in such a way that you have different cells in which you write code (in our case R code). To run the cell with the code, we can click on "*Cell*" and "*Run Cells*" in the menu. Or click with the cursor in the cell and then press *SHIFT*" and "*ENTER*" at the same time. You will then see the result of the code displayed directly below the cell.

Before we get started, let's clarify a few terms. A network consists of two components:

- Nodes (circle)
- Edges (line)

Nodes (*nodes* or *vertices*) are represented as circles and represent consortia. Edges (*edges*) are represented as more or less curved lines and emanate from the nodes. They indicate a connection between two nodes.



R is built in such a way that different libraries can be loaded for different functions. For the network analysis

*The automated conversion of the R notebook was created with LuaHBTeX, Version 1.13.2 (TeX Live 2021).

[1] See also the repository of Dorothea Strecker (https://github.com/dorothearrr/NFDI_Netzwerk), where she has already done a similar visualization and analysis.

[2] https://rnotebook.io cf. https://bookdown.org/yihui/rmarkdown/notebook.html

we will use the package `igraph`[3]. With `library('igraph')` we load the package.

With `if (!require("igraph")) install.packages("igraph")` we install the package in case it is not available on the current system.

```
if (!require("igraph")) install.packages("igraph")
library('igraph')
```

1.1 The Dataset

The data basis is a two-column listing of the consortia. The first column (`from`) contains the consortium whose *letter of intent* is evaluated. The second column (`to`) contains the consortium which is named as cooperation partner.

This data is read in by means of the function `read.table`. There are three parameters:

- `header=TRUE` (there is a header line in the dataset).
- `sep=","` (the values are separated by a comma)
- `text=""` (the values themselves are between the quotes)

We pass these values to the self-selected variable `NFDI_edges` , which is done with the arrow symbol pointing to the left.

```
=2=2
```

[3] https://igraph.org/r/