Semantic Web Technologies and Wikidata from R

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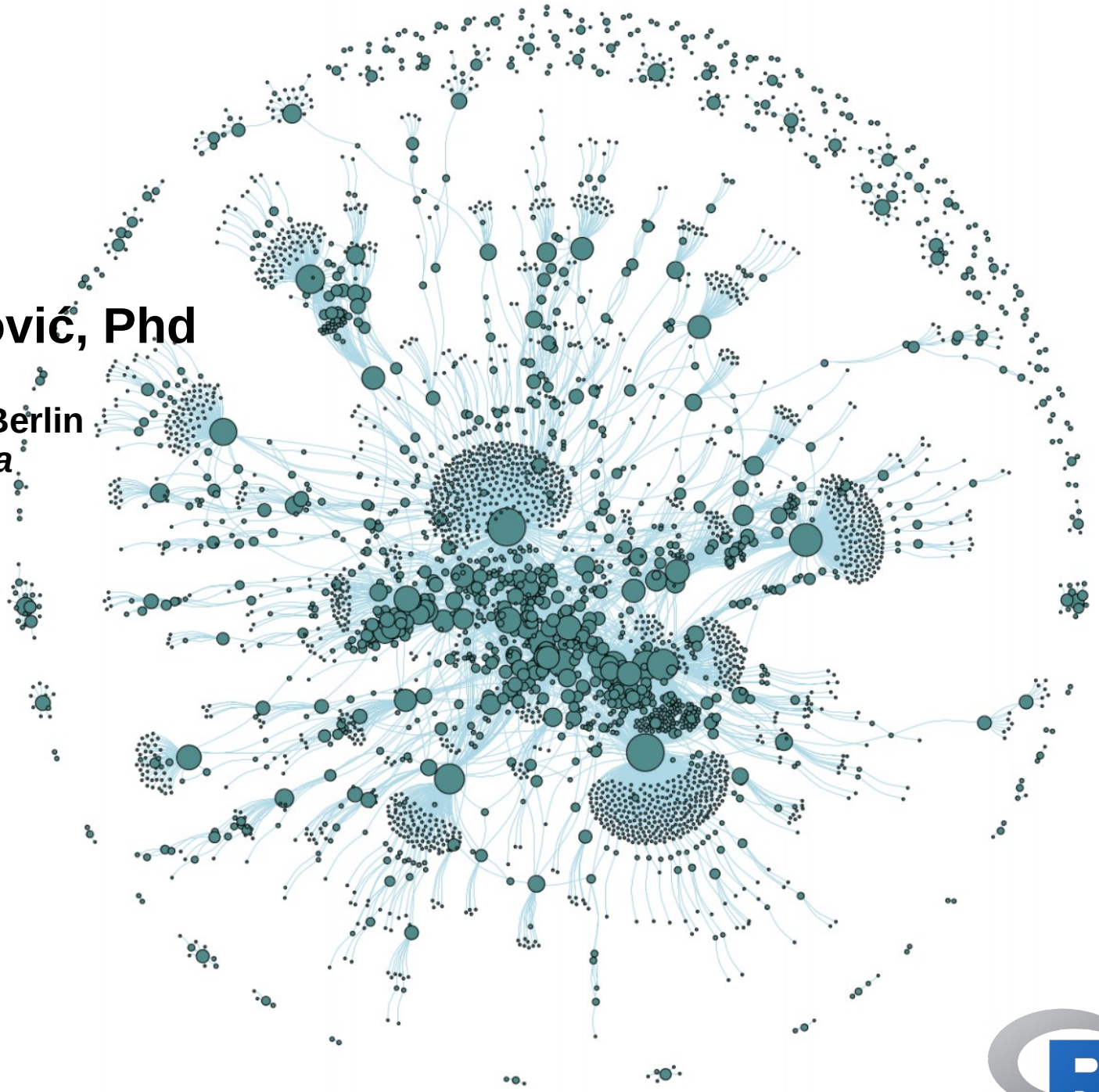
DataKolektiv, Belgrade
Owner



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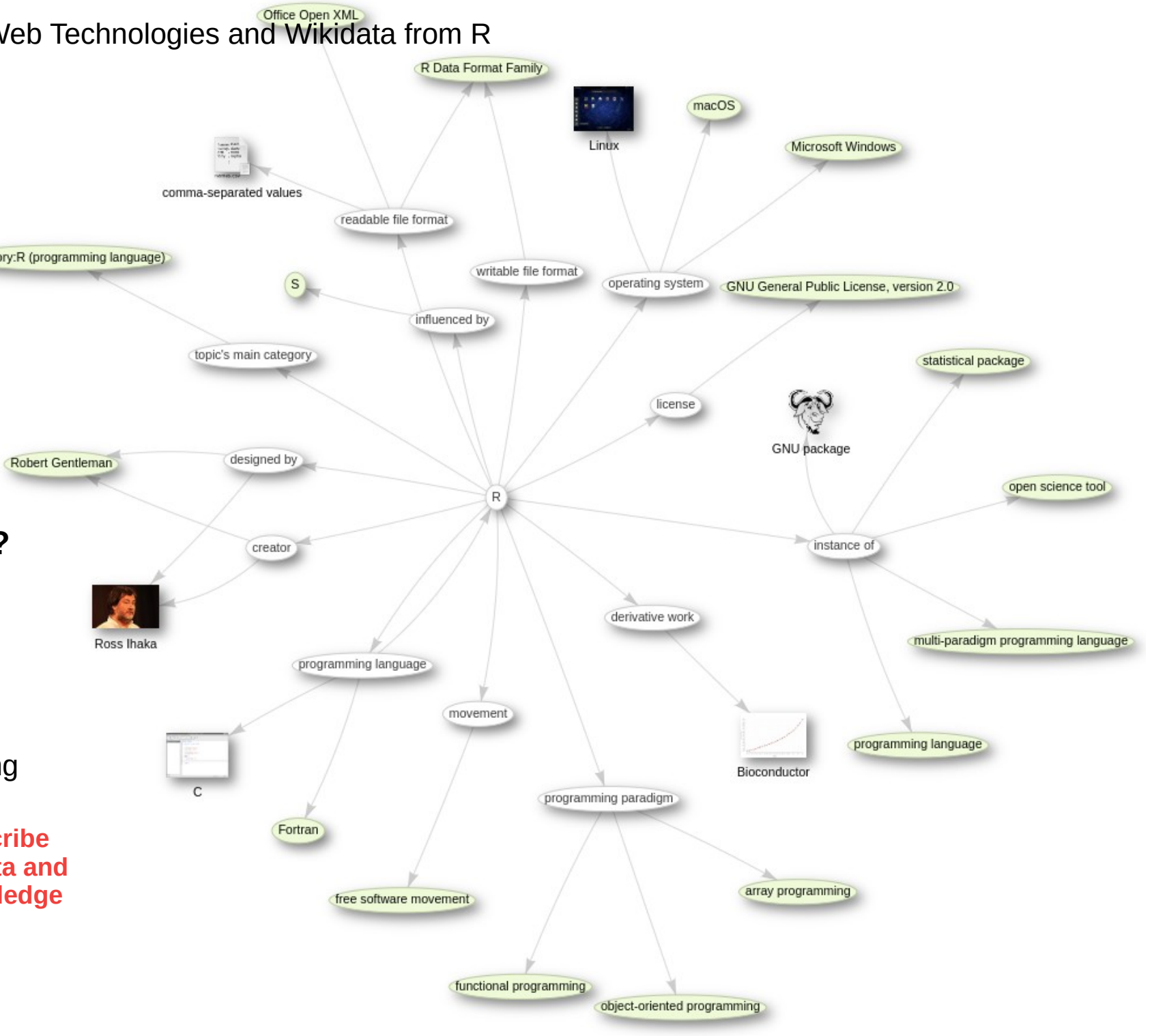
WIKIDATA

R (**Q206904**)

Q206904 (R) is
P31 (instance of)**?**

Q206904 (R) is
P31 (instance of)
Q9143 (programming language).

(triplet: a unit to describe knowledge in Wikidata and other semantic knowledge bases)



How to access

Method 1: SPARQL query against the Wikidata Query Service (WDQS)
https://query.wikidata.org/

Examples

All programming languages:

```
SELECT ?item WHERE {
  ?item wdt:P31 wd:Q9143 .
}
```

1418 results

All functional programming languages:

```
SELECT ?item WHERE {
  ?item wdt:P31 wd:Q9143 .
  ?item wdt:P3966 wd:Q193076 .
 }
```

73 results

R Notebook to learn from:

RWikidata_RLadies20190911.Rmd

GitHub: DataKolektiv's R-Ladies_Belgrade_20190911 repo:
https://github.com/datakolektiv/R-Ladies_Belgrade_20190911

How to access

Method 2: Wikidata MediaWiki API
https://www.mediawiki.org/wiki/API:Presenting_Wikidata_knowledge

Examples

```
https://www.wikidata.org/w/api.php?action=wbgetentities
&ids=Q180736&props=labels&languages=en&sitefilter=wikidataw
iki&format=json
```

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Method 3: {WikidataR} R Package

https://cran.r-project.org/web/packages/WikidataR/vignettes/Introduction.html

Examples

```
# - Retrieve the Wikidata item: Milano (Q490)
item <- get_item(id = 490)

# - retrieve all claims for Q490
claims <- names(item[[1]]$claims)
head(claims, 20)

"P2924" "P373"  "P1225" "P1082" "P1667" "P625"  "P910"
"P3365" "P349"  "P268"  "P1791" "P242"  "P1036" "P1334"
"P227"  "P2046" "P6"
"P1792" "P1448" "P395"

# What is P2924?
# UseWikidataR::get_property()

prop <- get_property(id = 'P2924')
prop[[1]]$labels$en$value

[1] "Great Russian Encyclopedia Online ID"
```

R Notebook to learn from:

A_WikidataFromR.nb.html

GitHub: DataKolektiv's MilanoR2019 Repository
https://github.com/datakolektiv

How to access

Method 4: processing the Wikidata JSON dump in R

https://github.com/datakolektiv/R-Ladies_Belgrade_20190911

```
# - read one line from the dump
  f <- readLines(con = con,
                 n = 1,
                 ok = FALSE,
                 warn = TRUE,
                 encoding = "unknown",
                 skipNul = FALSE)
  # - if the line is empty: break (EOF)
  if (length(f) == 0) {
    break
    # - else: parse JSON
  } else {
    # - parse w. rjson::fromJSON, remove "," at the end of the line;
    # - defensive:
    fjson <- tryCatch({
      rjson::fromJSON(gsub(",$", "", f),
                      method = "C",
                      unexpected.escape = "skip",
                      simplify = FALSE)
      },
      error = function(condition) {
        FALSE
      })
    # - check if the JSON was parsed correctly
    if (class(fjson) == "logical") {
      next
    }
    # - if fjson$labels$en$value is not null: process and write data
    if (!is.null(fjson$labels$en$value)) {
      writeLines(paste0('"', fjson$id, '"', ",", '"',fjson$labels$en$value, '"'), conOut)
    }
```

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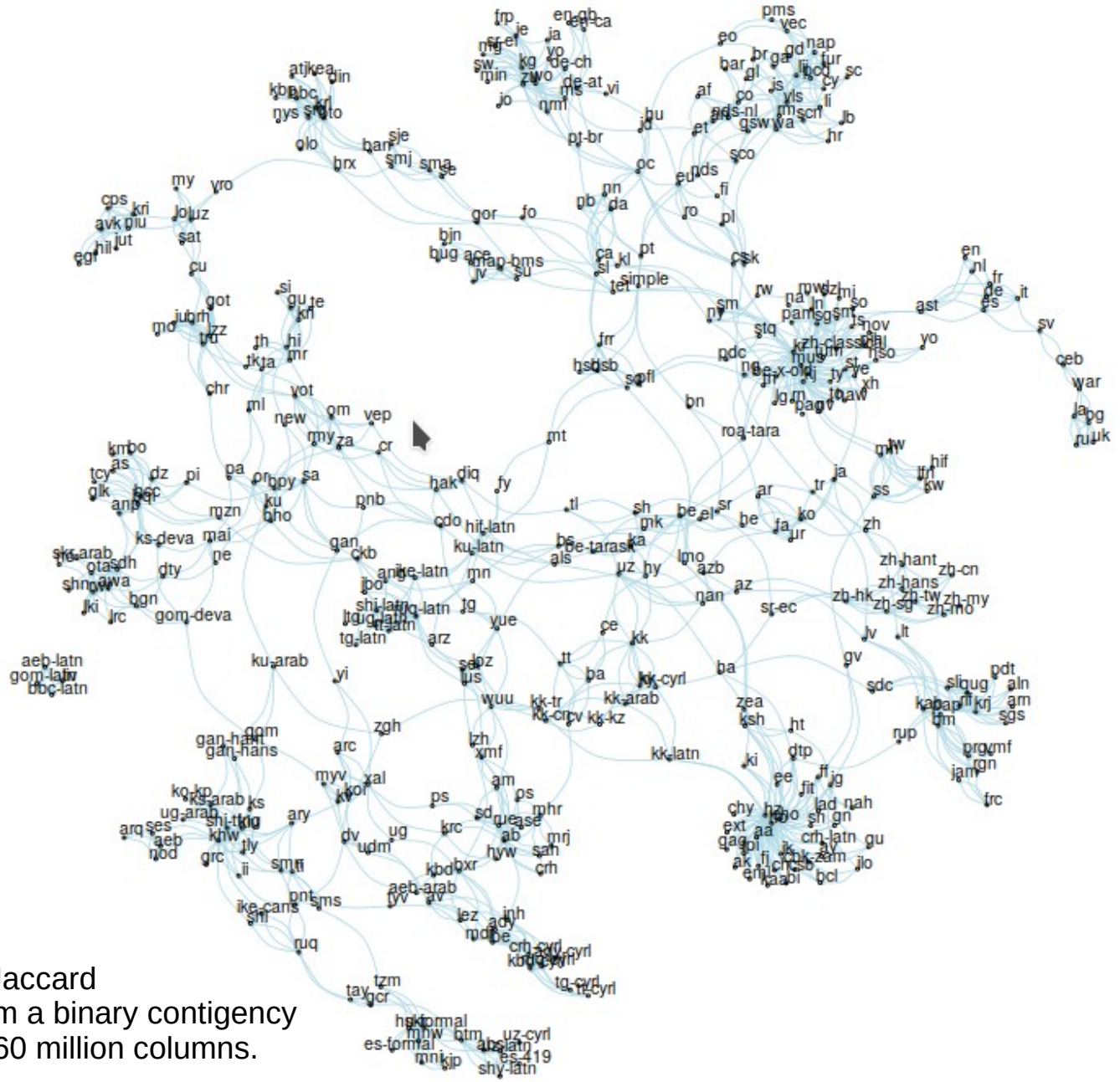
How to access



This graph is derived from a Jaccard distance metric computed from a binary contigency matrix of approx. 440 rows x 60 million columns.

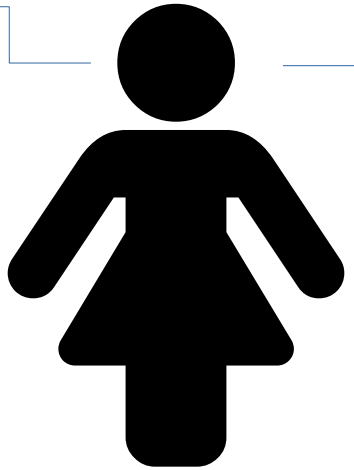
In base R + {Matrix}

Direct market value of open data in EU from 2016 to 2020: estimated EUR 325 billion
Predicted number of Open Data jobs in Europe by 2020: 100,000 (35% increase)

[Source: GovLab, http://thegovlab.org/open-data-index-2018-edition/]

… “they” have acess to expensive Big Data technologies, I can’t afford such an investment.

… “they” know Big Data, I will never make it.



I still need to take a tons of courses and I already barely have any time for myself, I will not make it.

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I wanted to show you that it can be done on your laptop.

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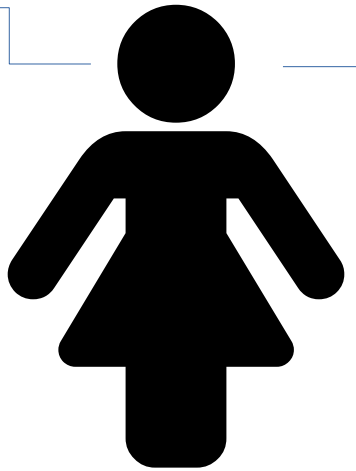

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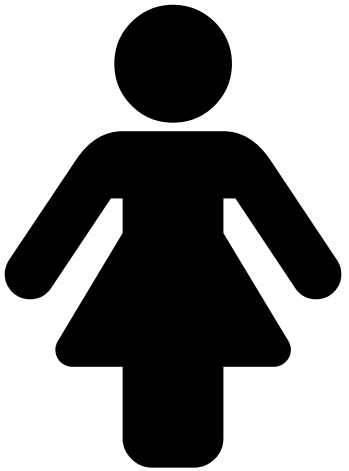
I wanted to show you that it can be done on your laptop.

I run one i7, 4 physical/8 logical cores + 32Gb RAM and .5Tb SSD remotely.

It costs me EUR 50 monthly.

Imagine what a good R developer can do there.

… Where will I find the money to invest in the infrastructure..?



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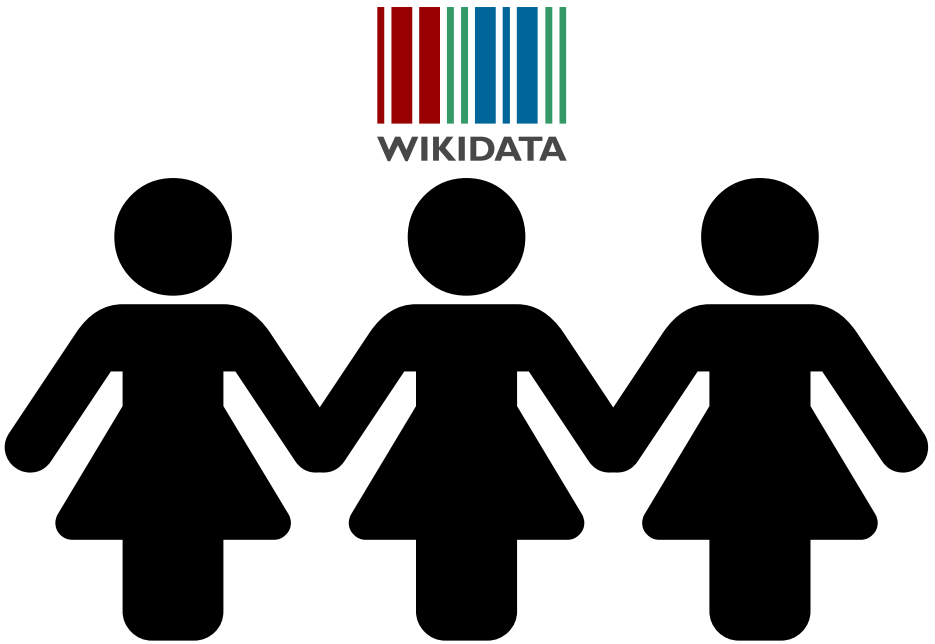
I wanted to show you that it can be done on your laptop.

Start prototyping now.

For approx. EUR 150 monthly (and probably less) you will find a remote server w. 40 cores, 128Gb of RAM, and some 2Tb of SSD or more, and then there's no end to what you can do.



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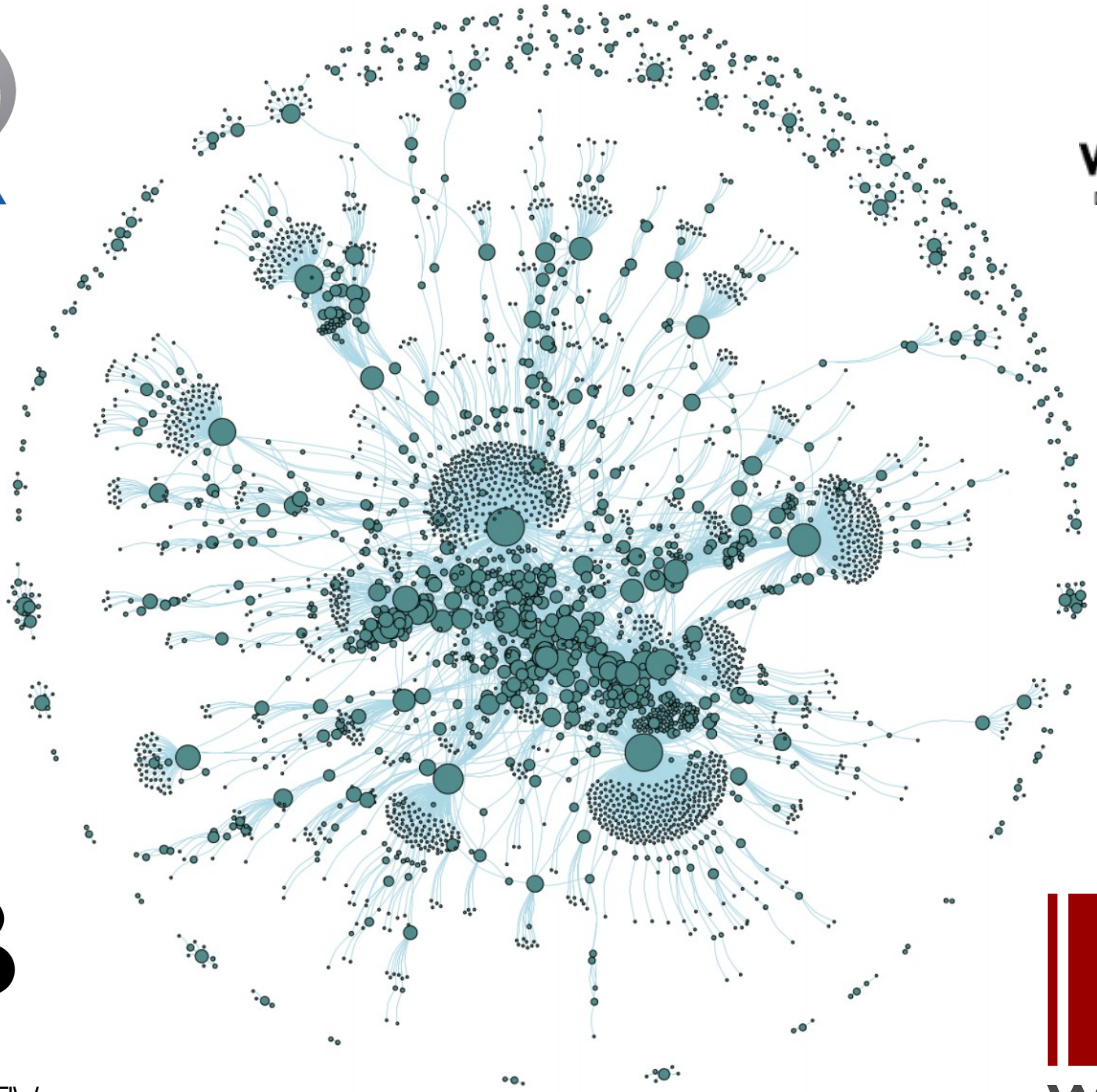

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