Introduction to R (+)

...because (you) R not alone

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Know your neighbour!

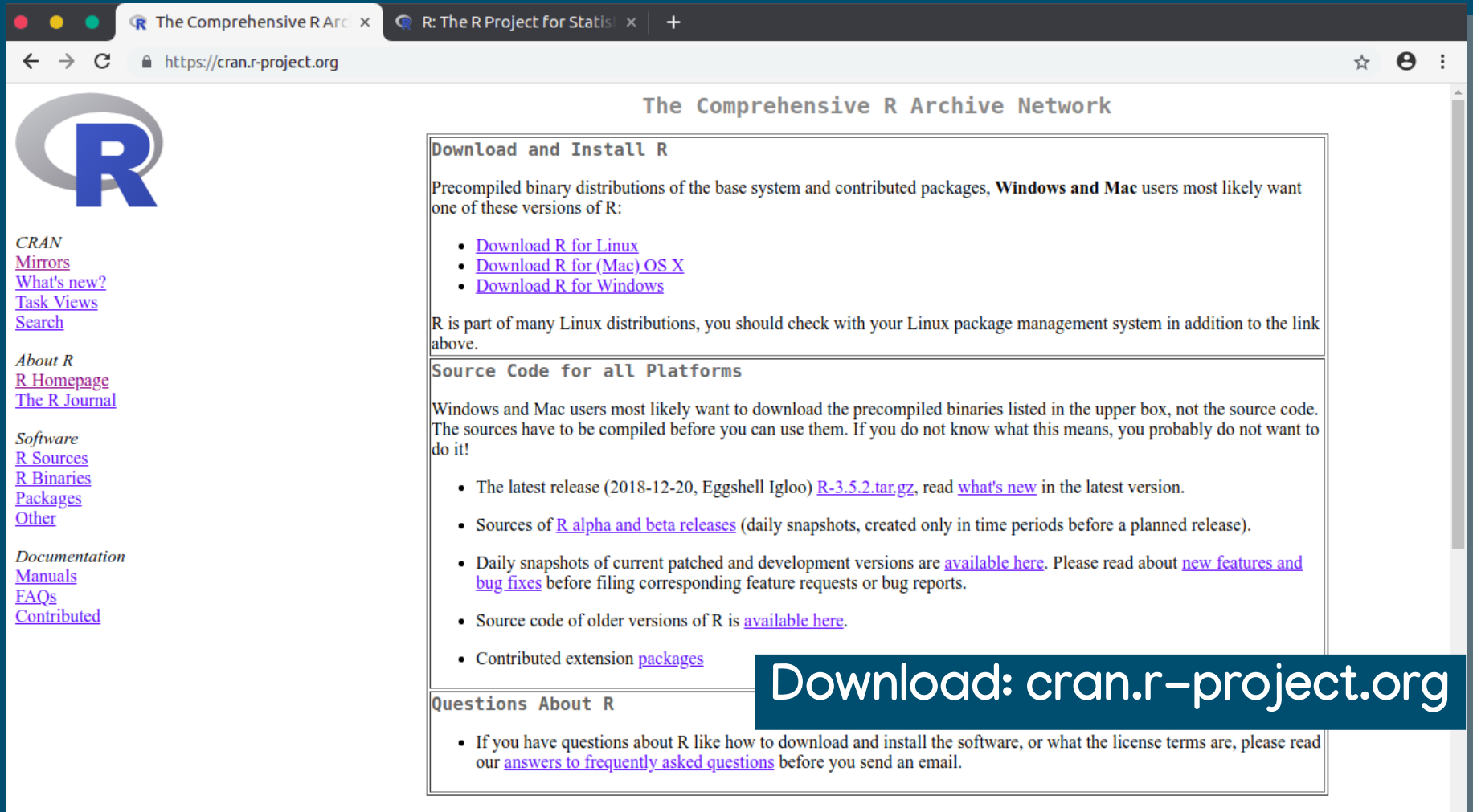
...because (you) R not alone

Founded by **R**oss Ihaka &
Robert Gentleman

High level language

Inter**active** &
Programming

A *swiss army knife* for
statistical tests and
models**, out-of-the box!**


The Comprehensive R Arc
R: The R Project for Statis
https://cran.r-project.org
The Comprehensive R Archive Network
CRAN
Mirrors
What's new?
Task Views
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R Homepage
The R Journal
Software
R Sources
R Binaries
Packages
Other
Documentation
Manuals
FAQs
Contributed
Download and Install R
Precompiled binary distributions of the base system and contributed packages, Windows and Mac users most likely want one of these versions of R:
Download R for Linux
Download R for (Mac) OS X
Download R for Windows
R is part of many Linux distributions, you should check with your Linux package management system in addition to the link above.
Source Code for all Platforms
Windows and Mac users most likely want to download the precompiled binaries listed in the upper box, not the source code. The sources have to be compiled before you can use them. If you do not know what this means, you probably do not want to do it!
The latest release (2018-12-20, Eggshell Igloo) R-3.5.2.tar.gz, read what's new in the latest version.
Sources of R alpha and beta releases (daily snapshots, created only in time periods before a planned release).
Daily snapshots of current patched and development versions are available here. Please read about new features and bug fixes before filing corresponding feature requests or bug reports.
Source code of older versions of R is available here.
Contributed extension packages
Questions About R
If you have questions about R like how to download and install the software, or what the license terms are, please read our answers to frequently asked questions before you send an email.
Download: cran.r-project.org

“The closer you are to statistics, research, and data science, the more you might prefer R”

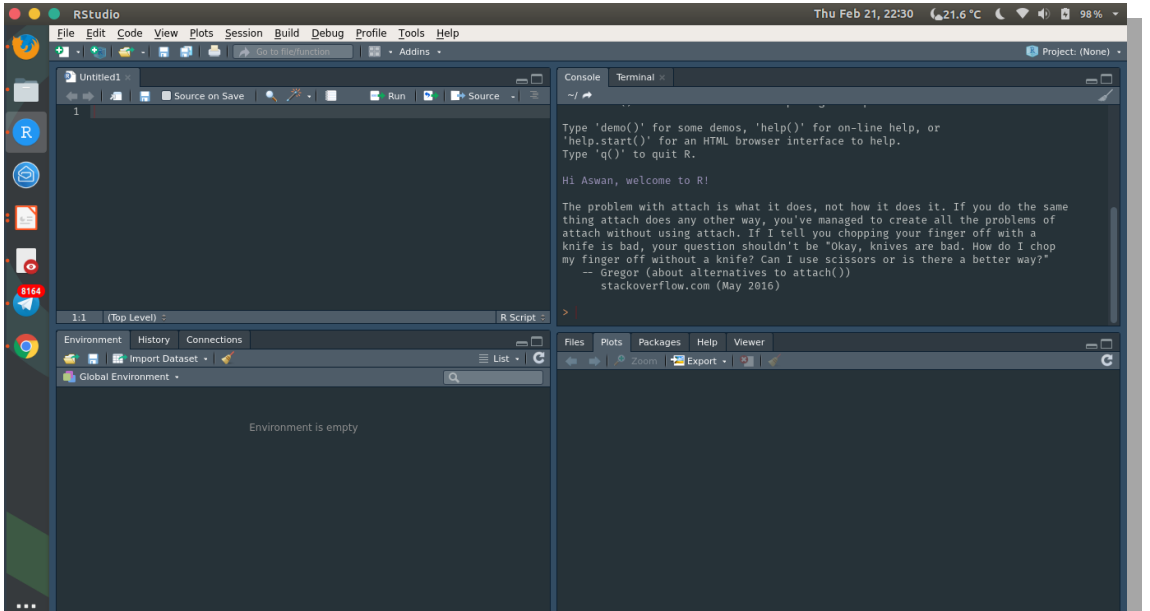
R (+)

RStudio®

RStudio®

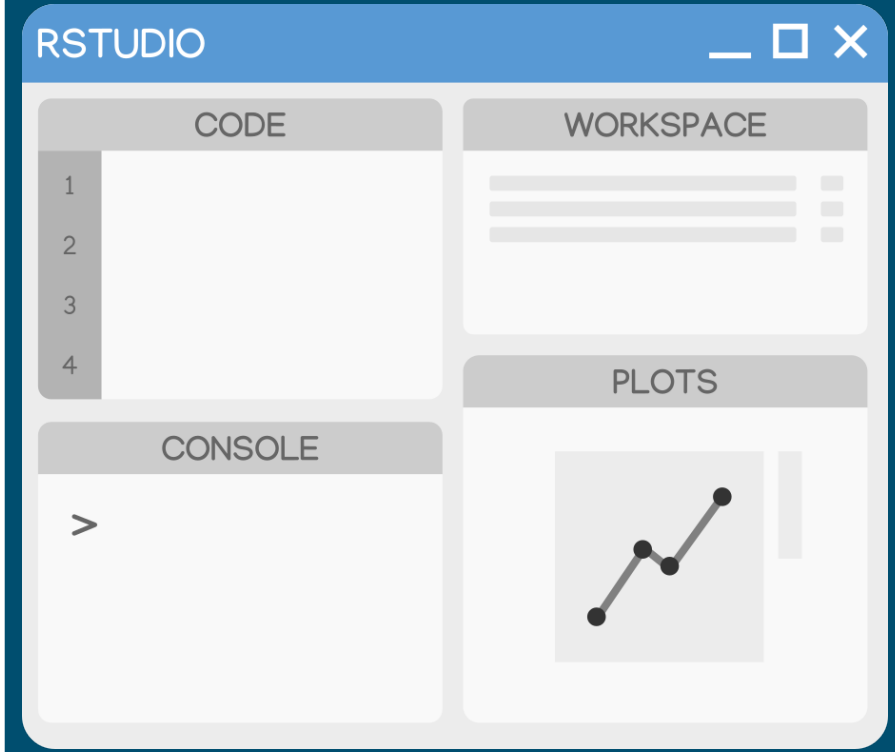
Main features:

- Console
- Syntax-highlighting editor
- Tools for plotting, history, debugging and workspace management



Lets try it out!

play with and set RStudio



- use Projects, not `setwd( ... )`
- use script, try to avoid console
- Ctrl+Shift+F10 and Ctrl+Alt+B, not `rm(list=ls())`
- Tab is your friend!
- learn the handy shortcuts
- do not save and load .Rdata
- set up the .Rprofile
- use git!

Reading: happygitwithr.com

git

Download: git-scm.com/

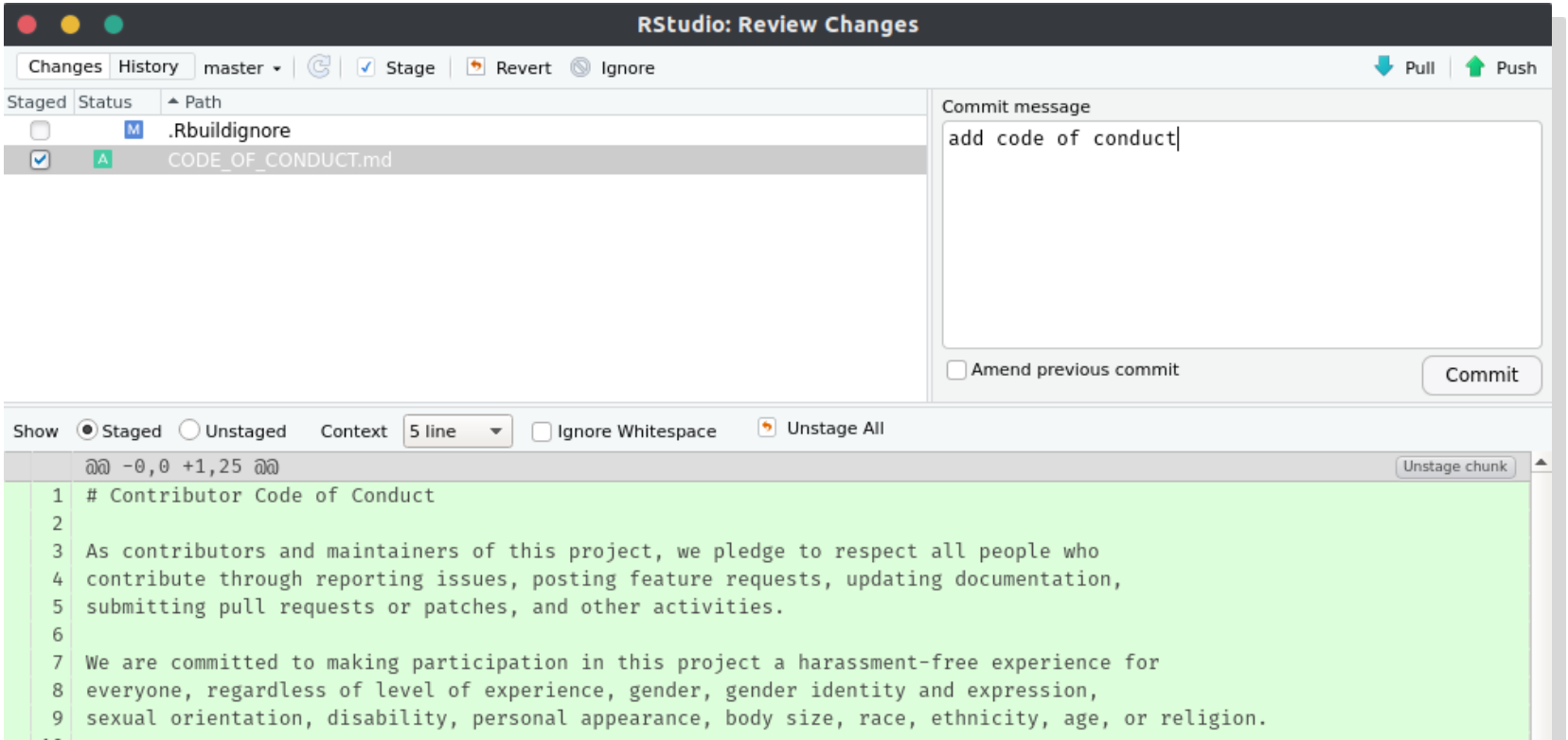
With great codes,
comes great bugs!

– (not) Uncle Ben

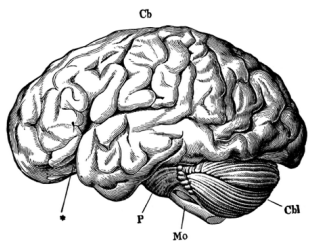
store and share: github.com

Keep track of your code with Version Control System

It is available in RStudio!



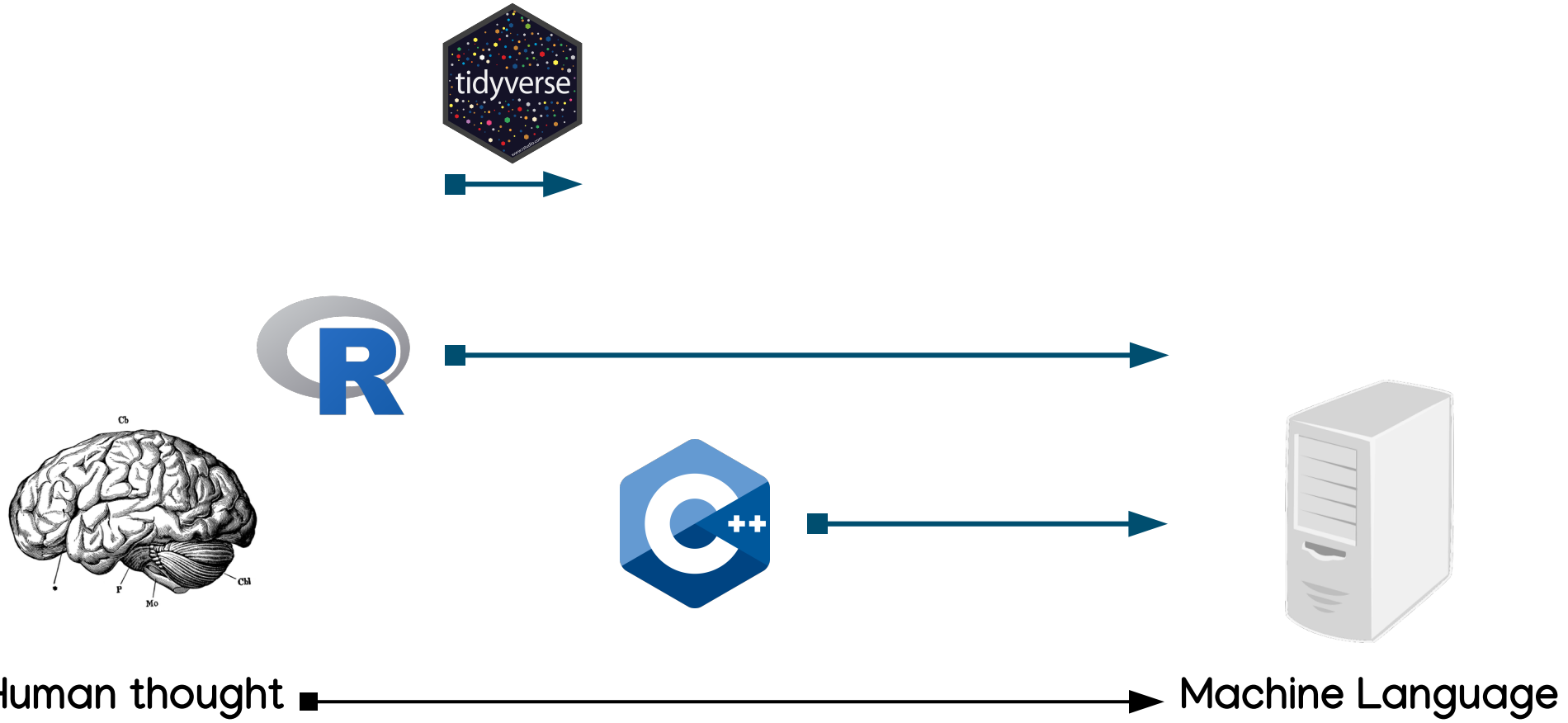
Tidyverse?



Human thought

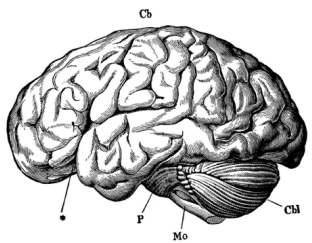
Machine Language

Source: https://github.com/rstudio-education/arm-workshop-rsc2019



Source: https://github.com/rstudio-education/arm-workshop-rsc2019

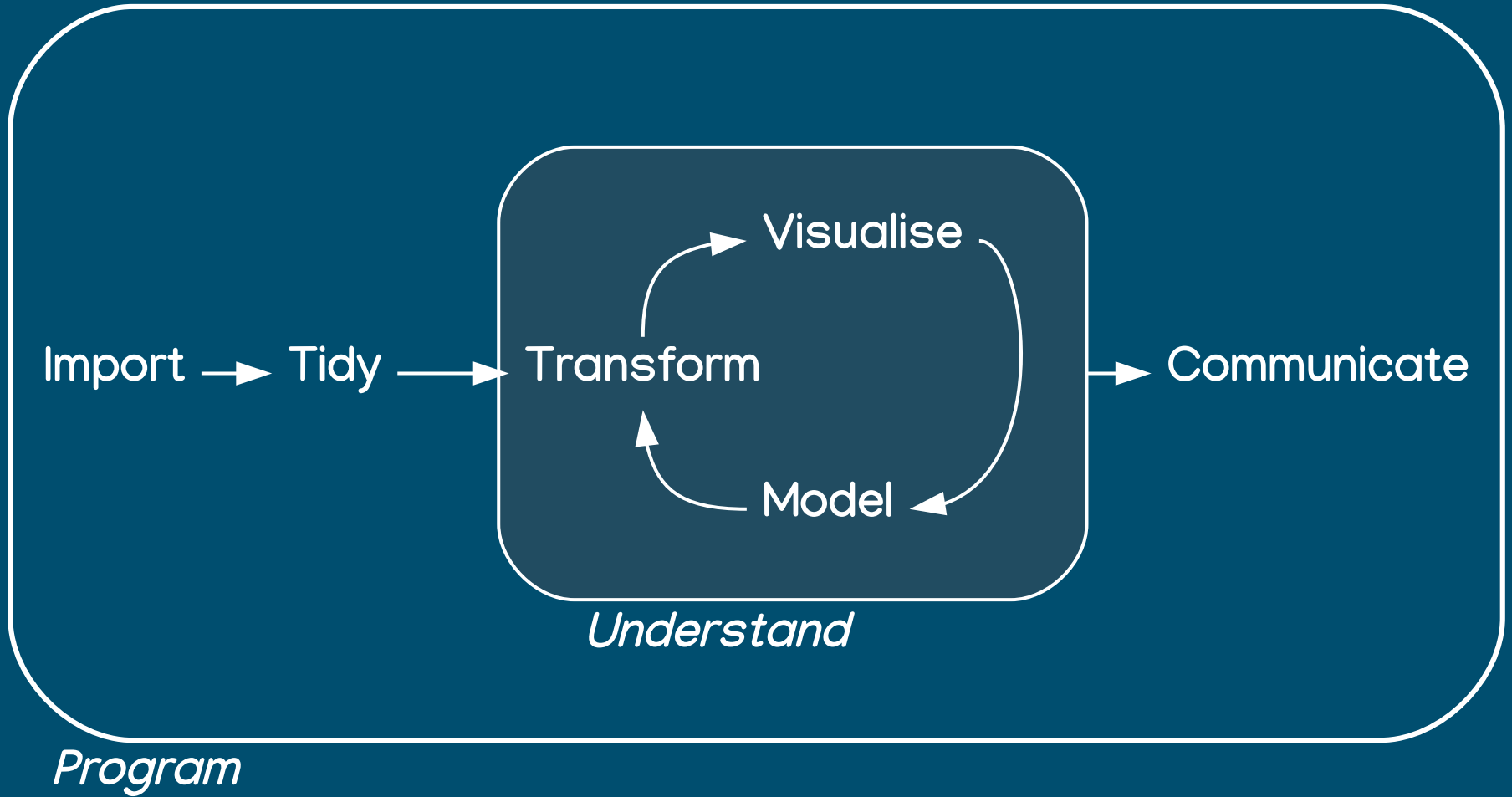
The tidyverse is an opinionated collection of R packages designed for data science.



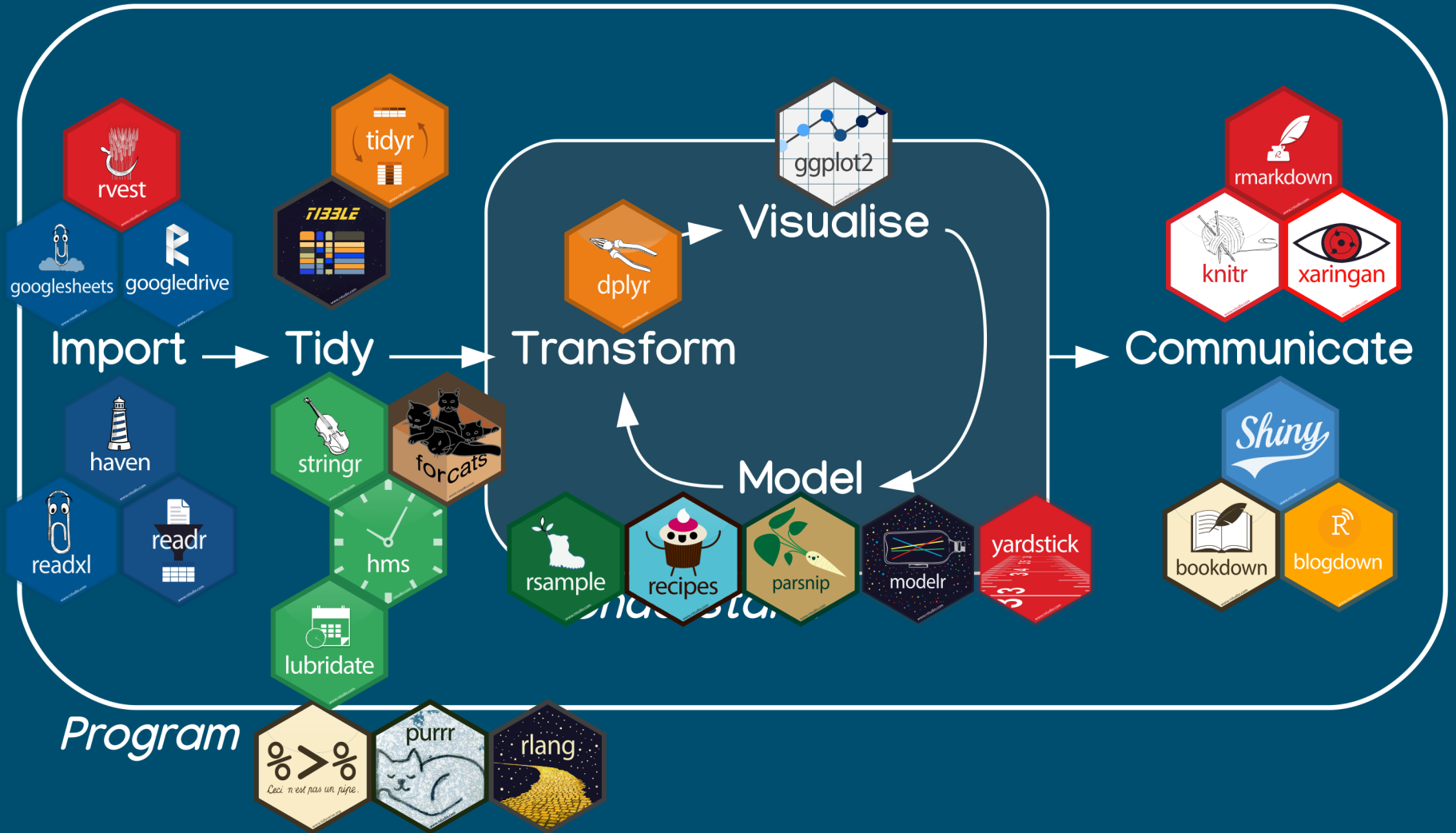
Human thought → Machine Language

Source: https://github.com/rstudio-education/arm-workshop-rsc2019

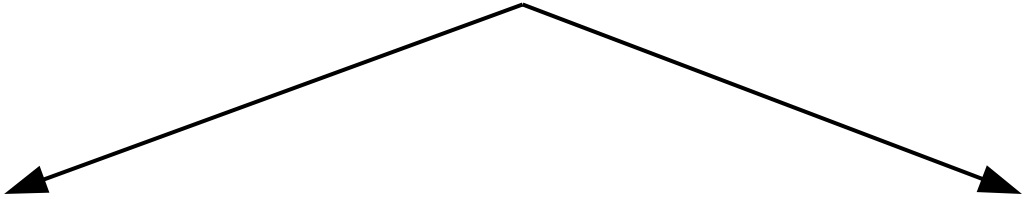
Data science activity



Data science activity using Tidyverse



```
any_function(arg1, arg2, arg3,  ... )
```



```
change_the_world( ... )
```

```
calculate_value( ... )
```

assign. <- , =, ->

- arguments are the contexts of a function
- arguments are matched by name, or
- arguments are matched by position, **be careful!**

How to chain?

...because (functions) R not alone


1. diputar
2. dijilat
3. dicelupin
4. dimakan :D


1. putar(apa)
2. jilat(apa, berapa_kali)
3. celup(apa, ke)
4. makan(apa, output)

```
> oreo_putar ← putar(apa = “oreo”)
> oreo_jilat ← jilat(apa = oreo_putar,
                     berapa_kali = 2)
> oreo_celup ← celup(apa = oreo_jilat,
                     ke = “susu”)
> makan(apa = oreo_celup,
        output = “kenyang.perut”)
```

```
> oreo_putar ← putar(apa = “oreo”)
> oreo_jilat ← jilat(apa = oreo_putar,
                     berapa_kali = 2)
> oreo_celup ← celup(apa = oreo_jilat,
                     ke = “susu”)
> makan(apa = oreo_celup,
        output = “kenyang.perut”)
```

```
> makan(
    celup(
      jilat(
        putar(apa = “oreo”),
        berapa_kali = 2
        ),
      ke = “susu”
    ),
    output = “kenyang.perut”
  )
```

```
function(arg1, arg2, arg3, ... )
```

```
arg1 %>%
  function(arg2, arg3, ... )
```

```
function(arg1, arg2, arg3, ... )
```

```
arg2 %>%
  function(arg1, arg2=.,arg3, ... )
```

pipe

```
> putar(apa = “oreo”) %>%
    jilat(berapa_kali = 2) %>%
    celup(ke = “susu”) %>%
    makan(output = “kenyang.perut”)
```

How to plot?

...because (plotting systems) R not alone

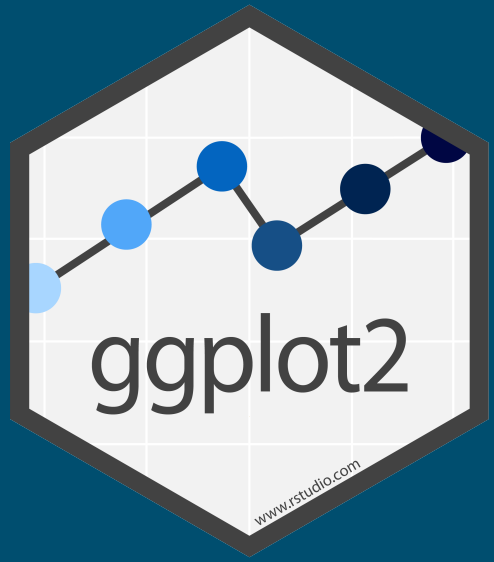

base
lattice
ggplot

```
ggplot(data) +
   geom_X(mapping=aes(…)) +
    …

ggplot(data, mapping=aes( … )) +
   geom_X( ) +
    …
```

```
data %>%
   ggplot(mapping=aes( … )) +
   geom_X( ) +
    …
```

ggplot2

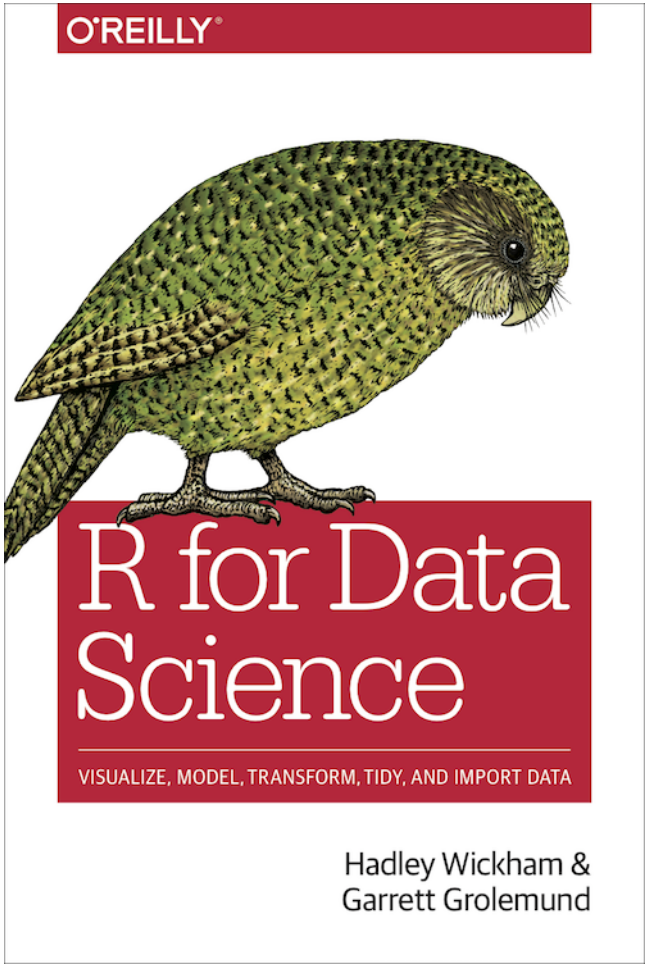


Let’s hand on!

...and have a lot of ~~stress~~ fun!

Next? Have fun!

Need help?



R for Data Science
(r4ds.had.co.nz)

Introduction to Statistical Learning
(www-bcf.usc.edu/~gareth/ISL/)

Online books
(bookdown.org)

Online course
(2 m.o access at DataCamp >> my.visualstudio.com)

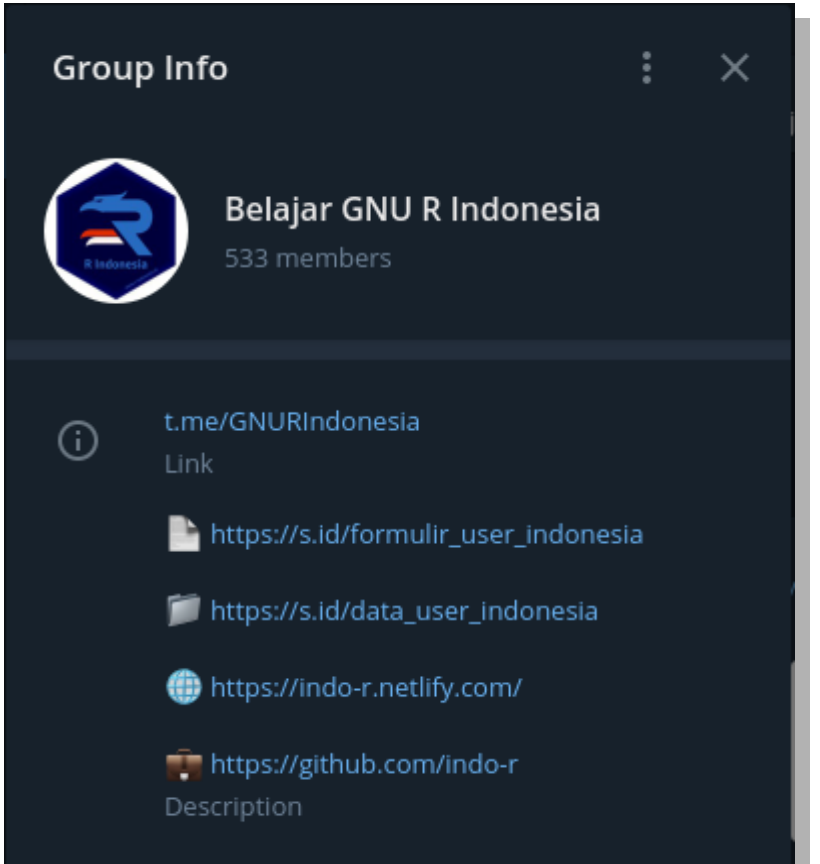
```
install.packages("swirl")
```

R Indonesia

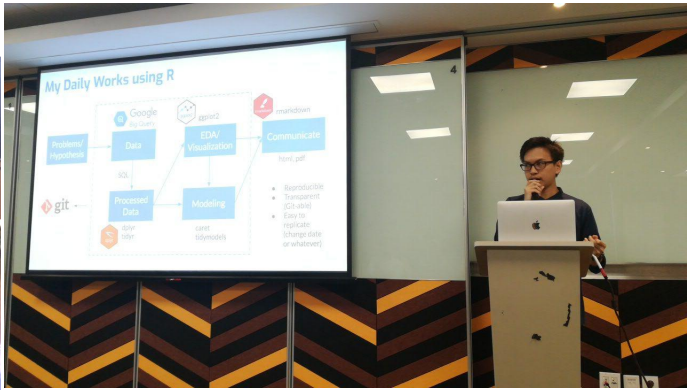
Telegram:
@GNURIndonesia (t.me/GNURIndonesia)

Web:
www.r-indonesia.id

GitHub:
www.github.com/indo-r



R Indonesia


My Daily Works using R
Problem/ Hypothesis
Data
EDA/ Visualization
Communicate
Processed Data
Modeling
git


REAL SYSTEM
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Thanks!

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