

Introduction to R

R Foundations for Life Scientists

Marcin Kierczak | 06-Nov-2020

NBIS, SciLifeLab

Contents

- [About R](#)
- [Timeline](#)
- [Ideas behind R](#)
- [Pros and cons of R](#)
- [Ecosystem of packages](#)

Breifly about R

R definitely is:

- a programming language
- a programming platform (= environment + interpreter)
- a software project driven by the core team and the community
- a very powerful tool for statistical computing
- a very powerful computational tool in general
- a catalyst between an idea and its realization

But NOT!

- a tool to replace a statistician
- the very best programming language
- the most elegant programming solution
- the most efficient programming language

Yet...

- it is very elegant
- it becomes more and more efficient



Timeline

- ca. 1992 — conceived by [Robert Gentleman](#) and [Ross Ihaka](#) (R&R) at the University of Auckland, NZ as a tool for **teaching statistics**



- 1994 — initial version
- 2000 — stable version
- 2011 — [RStudio](#), first release by J.J. Allaire



- ca. 2017 — Tidyverse by [Hadley Wickham](#)



Ideas behind R

- open-source solution — fast development
- based on the [S language](#) created at the Bell Labs by [John Mc Kinley Chambers](#) to

turn ideas into software, quickly and faithfully

- [lexical scope](#) inspired by [Lisp](#) syntax
- since 1997 developed by the R Development Core Team (ca. 20 experts, with Chambers onboard; 6 are active)
- overviewed by [The R Foundation for Statistical Computing](#)

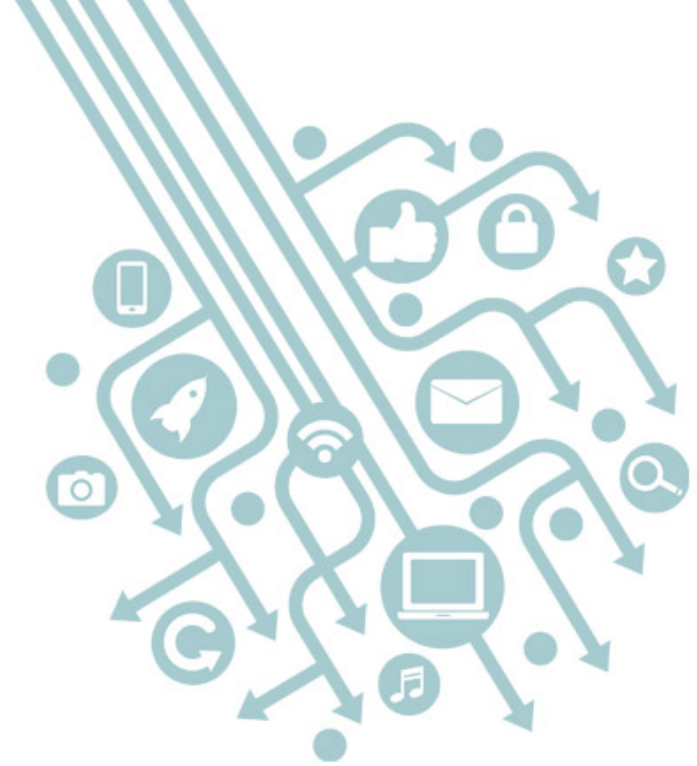
Packages

- developed by the community
- cover several very diverse areas of science/life
- uniformly structured and documented
- organised in repositories:
 - [CRAN](#) - The Comprehensive R Archive Network
 - [R-Forge](#)
 - [Bioconductor](#)



Pros and cons

- ▣ steep learning curve
- ⊕ uniform, clear and clean system of documentation and help
- ▣ difficulties due to a limited object-oriented programming capabilities, e.g. an agent-based simulation is a challenge
- ⊕ good interconnectivity with compiled languages like Java or C
- ▣ cannot order a pizza for you (?)
- ⊕ a very powerful ecosystem of packages
- ⊕ free and open source, GNU GPL and GNU GPL 2.0
- ⊕ easy to generate high quality graphics



Now you know a bit more about R!

R version 4.0.3 (2020-10-10)

Platform: x86_64-pc-linux-gnu (64-bit)

OS: Ubuntu 18.04.5 LTS

Built on: 📅 06-Nov-2020 at 🕒 22:20:57

2020 • SciLifeLab • NBIS