# rbtl - Data communication

Lars Schöbitz

Global Health Engineering - ETH Zurich

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# Today

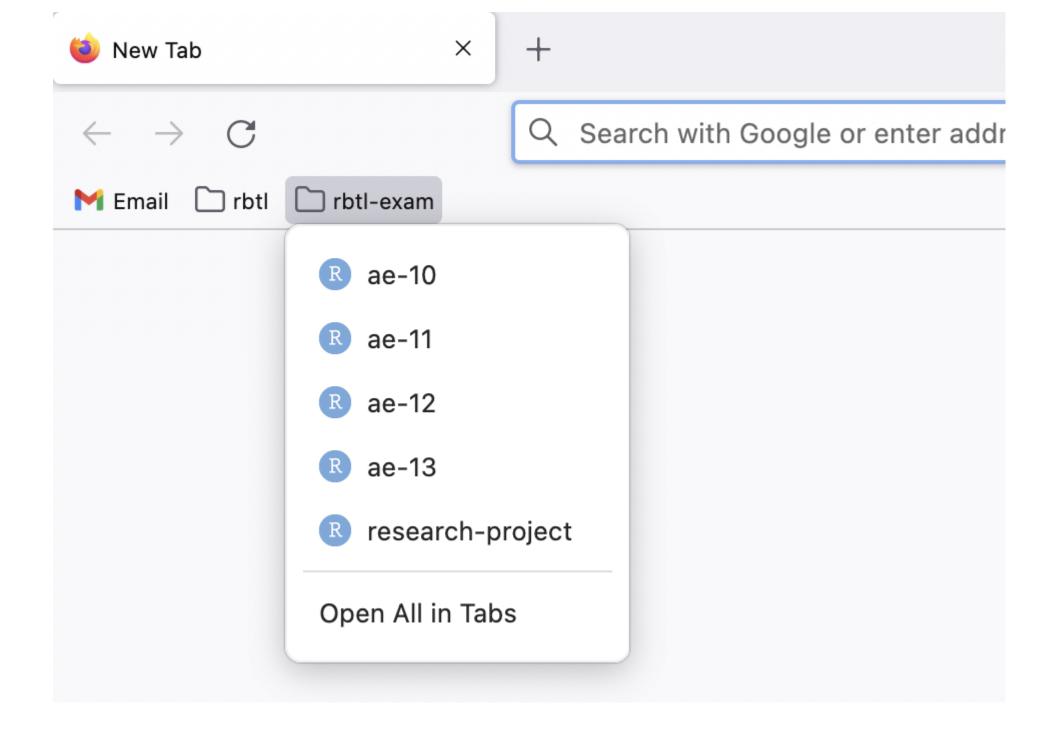
- 1. Part 1: Exam advice and practice
  - Programming exercise
- 2. Part 2: Data communication
  - Live Coding Exercise
- 3. Part 3: What comes next?
- 4. Part 4: Evaluation
- 5. Part 5: Individual work and questions

# Learning Objectives

- 1. Learners can use R Markdown Quarto and GitHub to publish their group project a report.
- 2. Learners can use exported references from Zotero in Better BibTex Format to generate an automated reference list. Assignment 3 YouTube Video 13:58
- 3. Learners can cross-reference figures and tables within an R Markdown file.

# Part 1: Exam advice and practice

#### Bookmarks



## Timing

• Room: IFW C42 (not our lecture room)

• Doors open: 14:30 (also on Zoom)

• Exam start: 15:15

• Exam end: 17:15

#### Workflow

- Open Projects page on RStudio Cloud rbtl-fs22 Workspace
- Look for 'exam-fs22' assignment
- Click 'Start'



#### Workflow

- Briefly read through each section at the beginning to see what's coming
- 20 tasks coding tasks in four sections
- Points for each task are shown
- Work through the sections

```
README.md

data

what_a_waste

exam-fs22.Rproj

section-01.qmd

section-02.qmd
```

#### Workflow

- No cloning repositories in this exam
- No commits during the exam time (one commit after the exam time ends)
- No pushing to GitHub in this exam

#### Rules

- Headphones (music) allowed
- Stick Notes or raised hand for support (no loud calling)
- No talking with each other
- Individual work (0 points of code is shared)

#### **Practice Exam**

#### ae-15-data-communication

- 1. Head over to the GitHub Organisation for the course.
- 2. Find the repo for week 15 that has your GitHub username.
- 3. Clone the repo with your username to the RStudio Cloud.
- 4. Open the file: ae-15a-communicate.qmd
- 5. Use your Sticky Notes to let me know when you are ready.

### Work through the tasks

```
attachEvent("onreadystatechange",H),e.attachE
polean Number String Function Array Date RegE
_={};function F(e){var t=_[e]={};return b.ea
t[1])===!1&&e.stopOnFalse){r=!1;break}n=!1,u&
?o=u.length:r&&(s=t,c(r))}return this},remove
ction(){return u=[],this},disable:function()
re:function(){return p.fireWith(this,argument
ending",r={state:function(){return n},always:
romise)?e.promise().done(n.resolve).fail(n.re
id(function(){n=s},t[1^e][2].disable,t[2][2].
=0,n=h.call(arguments),r=n.length,i=1!==r||e&
(r), l=Array(r);r>t;t++)n[t]&&b.isFunction(n[t
><a href='/a'>a</a><input typ
/TagName("input")[0],r.style.cssText="top:1px
test(r.getAttribute("style")),hrefNormalized:
```

25:00

### Step-wise points

```
ggplot(data = waste data long mean,
          mapping = aes(x = mean percent,
 3
                         y = waste category,
                         fill = income cat)) + # 1
 4
 5
     geom col(position = position dodge()) + # 1
     labs(title = "Waste Composition", # 0.5
 6
          subtitle = "Mean percentages ...", # 0.5
          x = "mean (percent)", # 0.5
8
          y = "waste category", # 0.5
9
          fill = "Income category", # 0.5
10
          caption = "Data from: ...") + # 0.5
11
     scale x continuous(breaks = seq(0, 50, 5)) + # 1
12
     scale fill brewer(type = "qual", palette = 3) + # 1
13
     theme minimal() + \# 0.5
14
     theme(panel.grid.minor = element blank(), # 0.5
15
           panel.grid.major.y = element blank()) # 0.5
16
```

### What to study?

- Practice writing code
- All tasks are coding tasks and a small set of YAML header tasks
- Nothing Git or GitHub related

# Part 2: Data communication

#### What is Quarto?

- Next generation version of R Markdown from RStudio
- Multi-language (Python, R, Julia, Observable)
- Authoring in plain text markdown or Jupyter notebooks

#### Editing documents

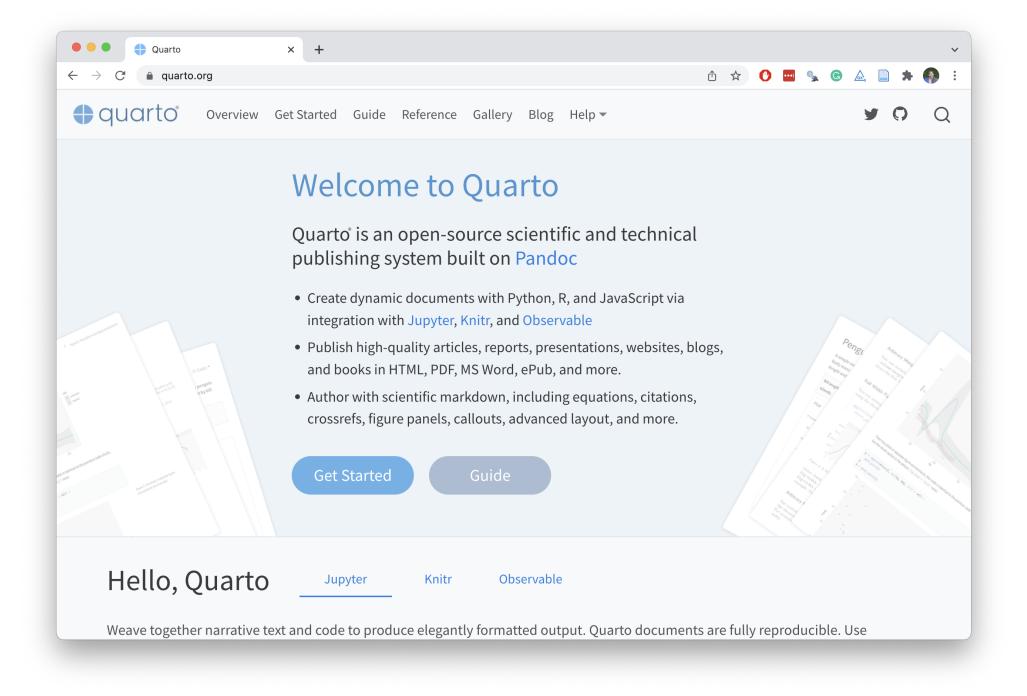
You're not limited to RStudio for editing Quarto documents...

- JupyterLab
- VS Code
- Text Editors

## Authoring

- Technical articles, reports, presentations, websites, blogs, and books in HTML, PDF, MS Word, ePub, and more.
- Author with scientific markdown, including equations, citations, crossrefs, figure panels, callouts, advanced layout, and more.

#### Documentation



### Live Coding Exercise

ae-15-data-communication

1. Back to ae-15a-communicate.qmd

#### Captions and cross-references

- no space between {r} and # | tbl-cap: "A table"
- spelling tbl not tab
- no spaces (use dashes in label)

#### See Table 1...

```
1 ```{r}
2 #/ tbl-cap: "A table"
3 #/ label: tbl-simple-table
4
5 tibble(
6   id = c(1, 2, 3),
7   name = c("X", "Y", "Z")
8 ) %>%
9   knitr::kable()
10 ```
```

Table 1: A table id name

id	name
1	X
2	Υ
3	Z

# Part 3: What comes next?

## Research Project Report

- Due date: 9th of June 23:59
- No commits after that point will be accepted

### rbtl community meetup events

- every two months
- ~1 hour code-along, followed by Apéro
- in-person and remote on Zoom
- first topic suggestions:
  - Get out of the Cloud!
  - Dashboards

# Part 4: Evaluation

#### rbtl evaluation

- 5 mins
- anonymous
- after each lecture

kutt.it/rbtl-eval

#### ETH evaluation

- You received an Email from ETH LET
- Please take 30 minutes now to complete the survey
- If you have completed the survey already, then you can use your time freely now

# Part 5: Individual work and questions

# Thanks!

Slides created via revealjs and Quarto: https://quarto.org/docs/presentations/revealjs/ Access slides as PDF on GitHub

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