

Work automation with R

A journey of moving to open source

Tiger Tang, Mar 22nd, 2023

30+

R users

100+

R business users

15,000+

Manual hours

A few things about moving to open source...

Moving to open source is not free.

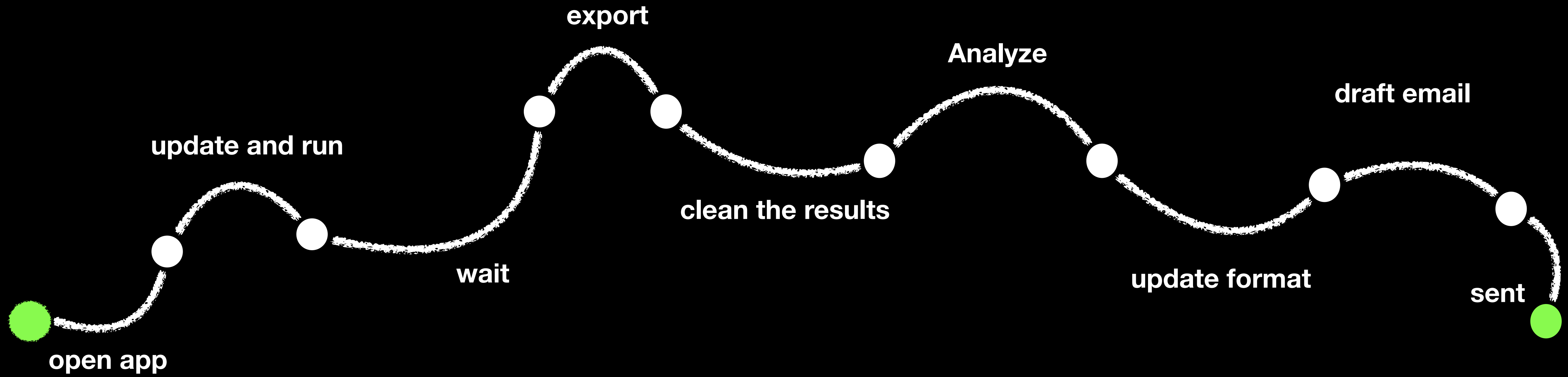
Moving to open source is an on-going process

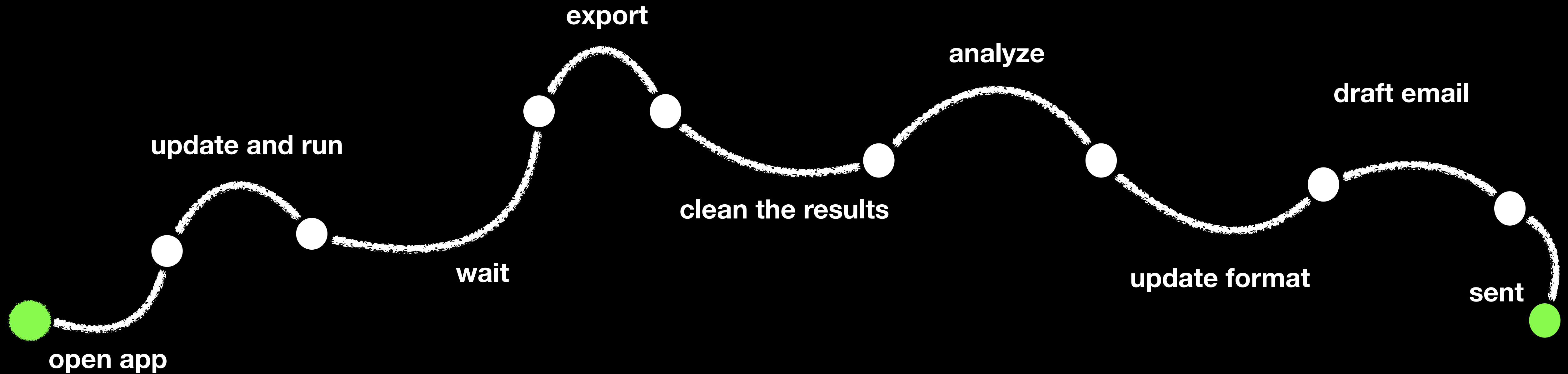
Moving to open source needs everyone on board

Moving to open source does not guarantee all the benefits

But there is a solution:

A typical report workflow

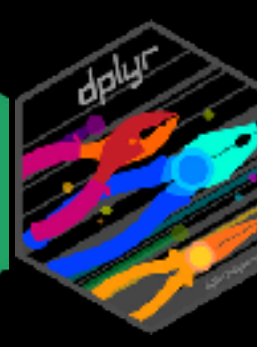




Getting the Data



Wrangling + Analysis + Visualization

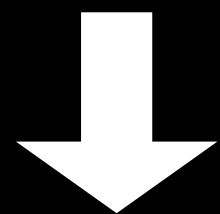
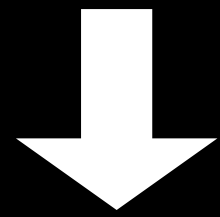


Communication

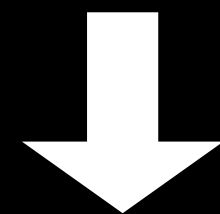
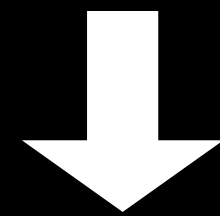


Work automation with R

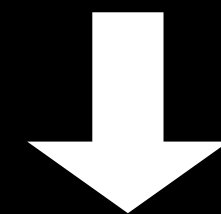
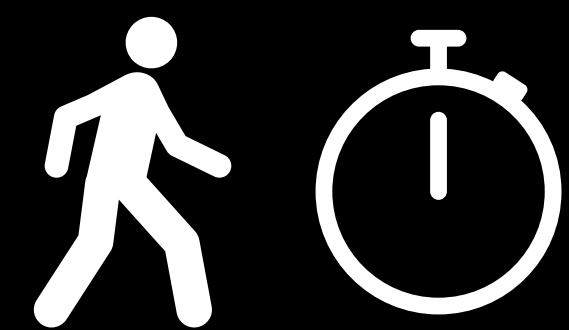
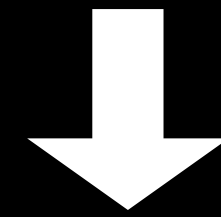
• Attended automation



• Unattended automation



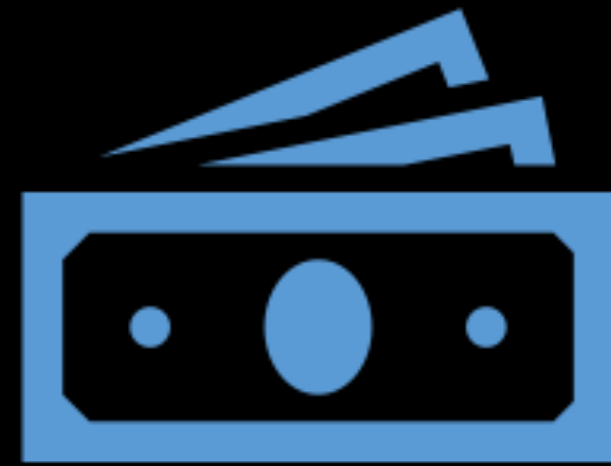
• Hybrid



1. Pitch the project

Start an automation project

1. Pitch the project - decision makers



Cost benefits



Less human error



Reproducibility

Start an automation project

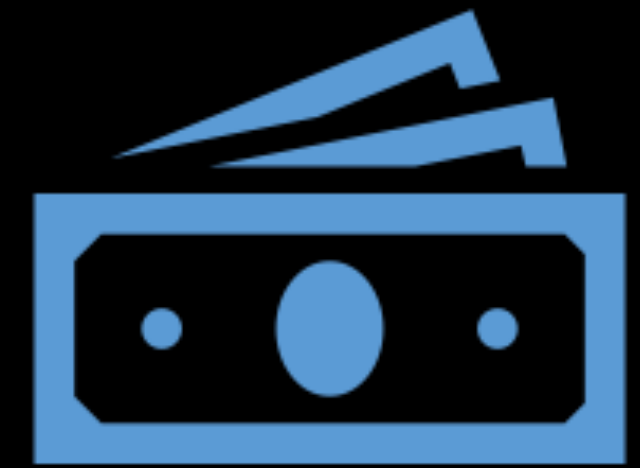
1. Pitch the project - team members



Reproducibility



Less human error



Cost benefits

Start an automation project

1. Pitch the project - stakeholders



Better delivery



Initial delay

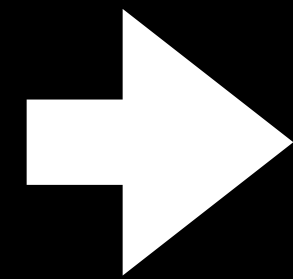


Walkthrough new features

Start an automation project

1. Pitch the project

- To decision makers
- To team members
- To stakeholders



- Focus on cost saving
- Focus on workflow opportunity
- Focus on preparing the change

2. Increase power users



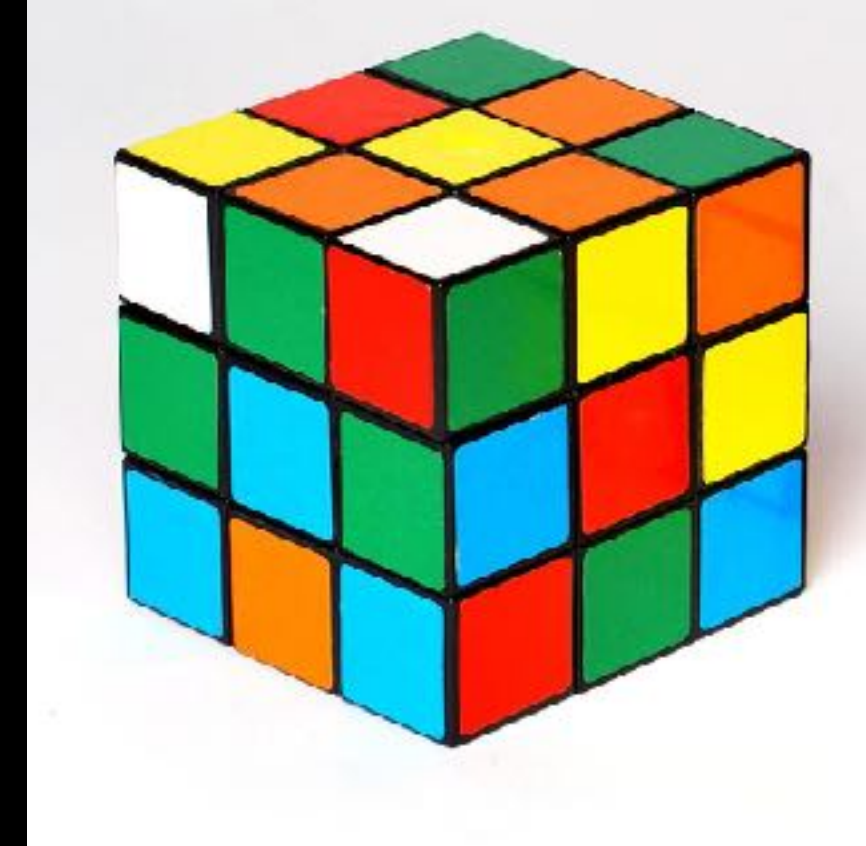
OH, A SHOOTING STAR



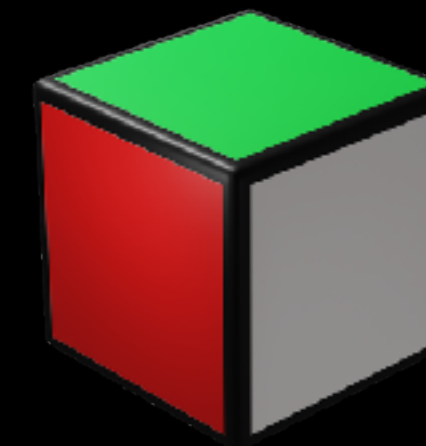
I WISH I CAN MASTER R IN 3 DAYS



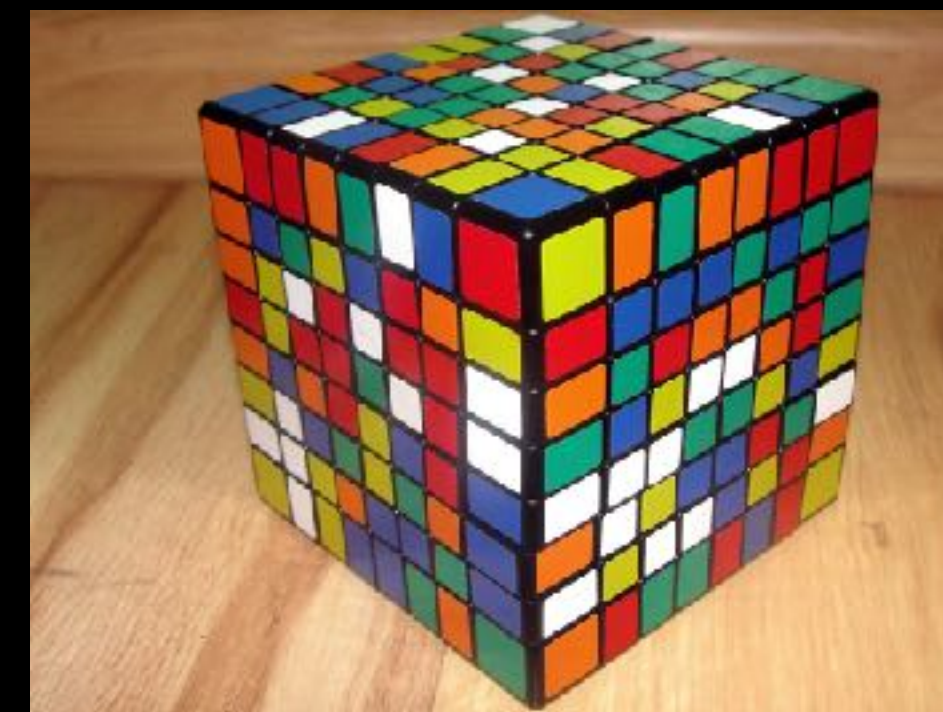
What's covered in the training

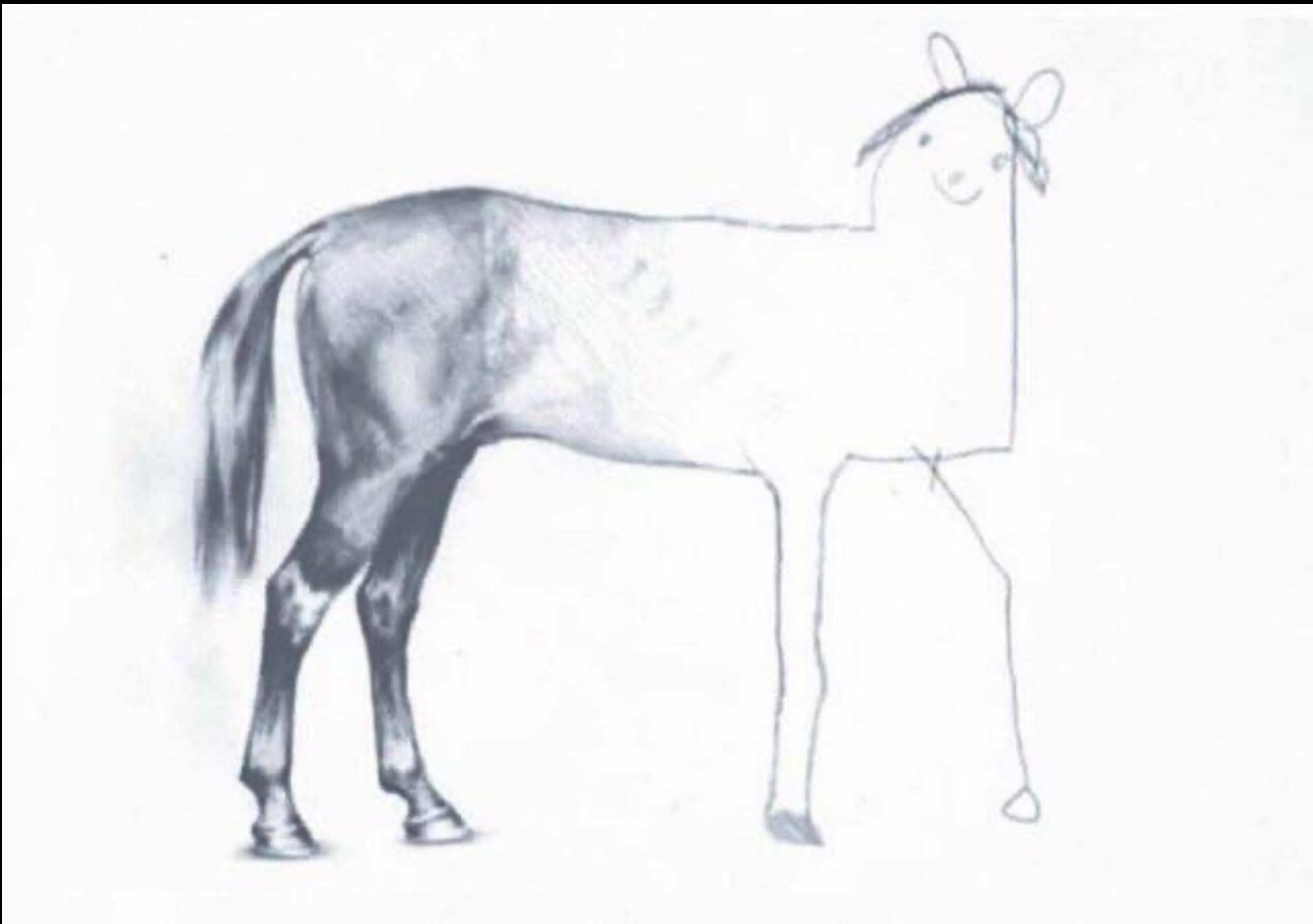


What you learned



What you are asked to solve



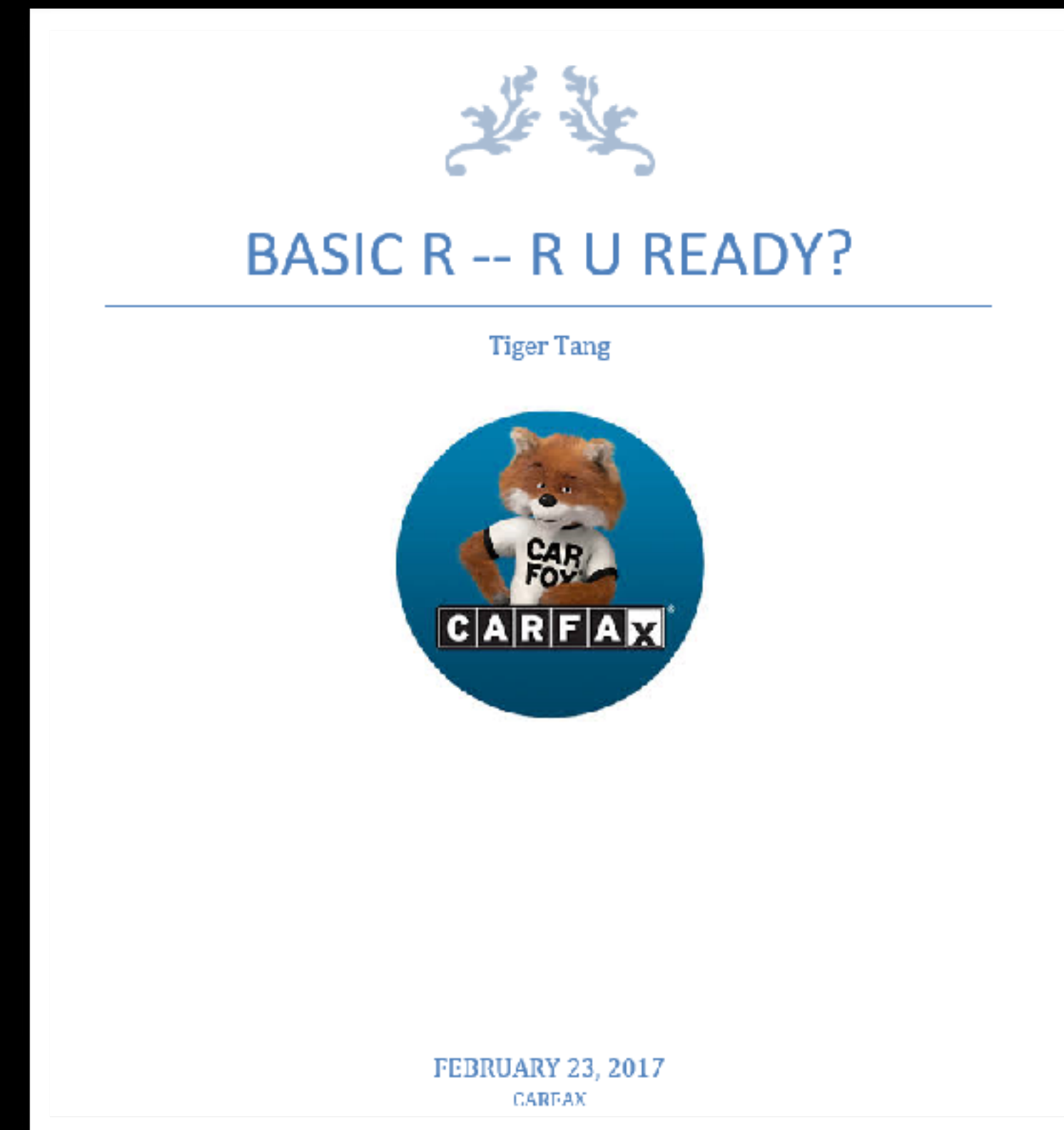


My plan

My project

Start an automation project

2. Increase power users - customized training



2. Increase power users - R exposure/assisted tasks



Data Analysis template

Tiger Tang
March 18, 2023

- [Background](#)
- [Methodology](#)
- [Findings](#)
- [Limitations](#)

Background

This is the business background for this analysis or request.

Methodology

We looked into data from xxx to xxx that covers all regions' behavior. Below are a few key metrics we looked for and their definitions.

Key Items	Definitions
item 1	
item 2	
item 3	
...	...

Findings

Show entries
 Search:

	mpg	cyl	displacement	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21	6	160	110	3.9	2.62	16.46	0	1	4	4
Mazda RX4 Wag	21	6	160	110	3.9	2.875	17.02	0	1	4	4
Datsun 710	22.8	4	108	93	3.85	2.32	18.61	1	1	4	1
Hornet 4 Drive	21.4	6	258	110	3.08	3.215	19.44	1	0	3	1
Hornet Sportabout	18.7	8	360	175	3.15	3.44	17.02	0	0	3	2

Showing 1 to 5 of 5 entries

Previous1Next

Limitations

Start an automation project

2. Increase power users - R collaboration



Internal support

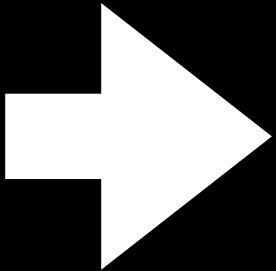


- Top R errors
- Shiny dashboard in 20 mins
- Build R package in 5 mins
- Async in Shiny apps
- Error handling
- ...



Start an automation project

2. Increase power users

- Customized spread-out training
 - Created assistance tools
 - Daily, monthly, yearly collaboration
- 
- Make realistic learning happen
 - Increase user confidence
 - Continued support, collaboration, training

3. Plan your transition

Start an automation project

3. Plan your transition - Understand the goals



Fulfill the tasks



Improve efficiency



Complete the
process

Start an automation project

3. Plan your transition - Build documentations



Business
Reasons



Tools & Steps





Level of efforts



Complexity

Start an automation project

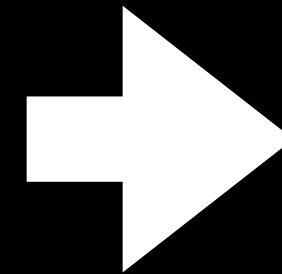
3. Plan your transition - Prioritize the work

Tasks	Complexity	Impact	Stability	Priority
1	High	Low	Low	
2	Medium	Medium	Medium	
3	Medium	High	High	

Start an automation project

3. Plan your transition

- Understand the goals
- Build documentation
- Prioritize the work

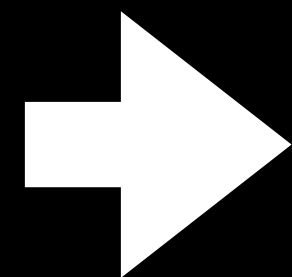
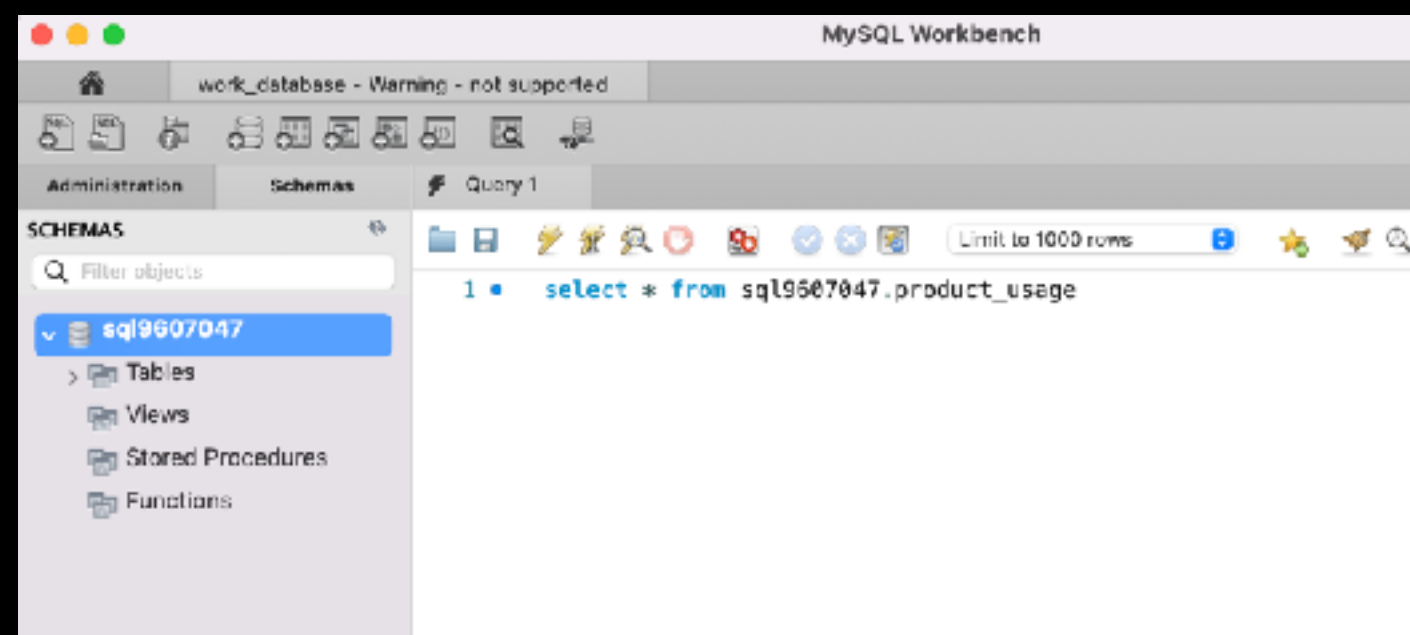
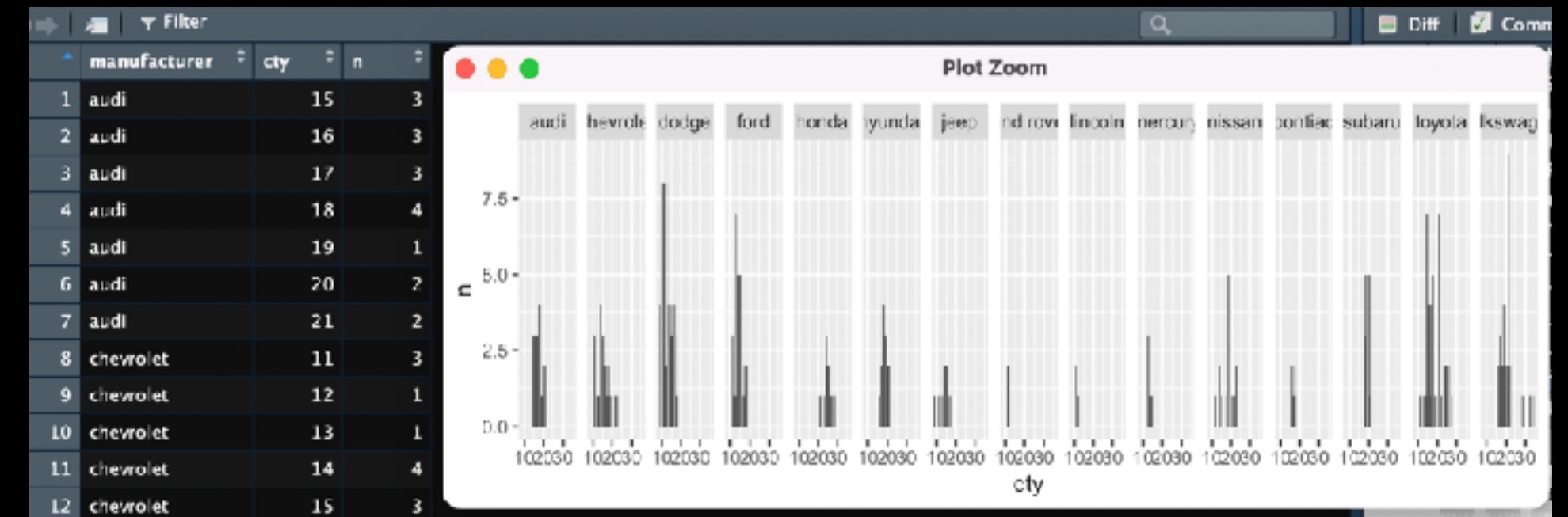
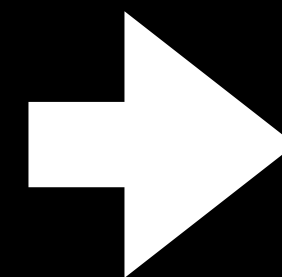
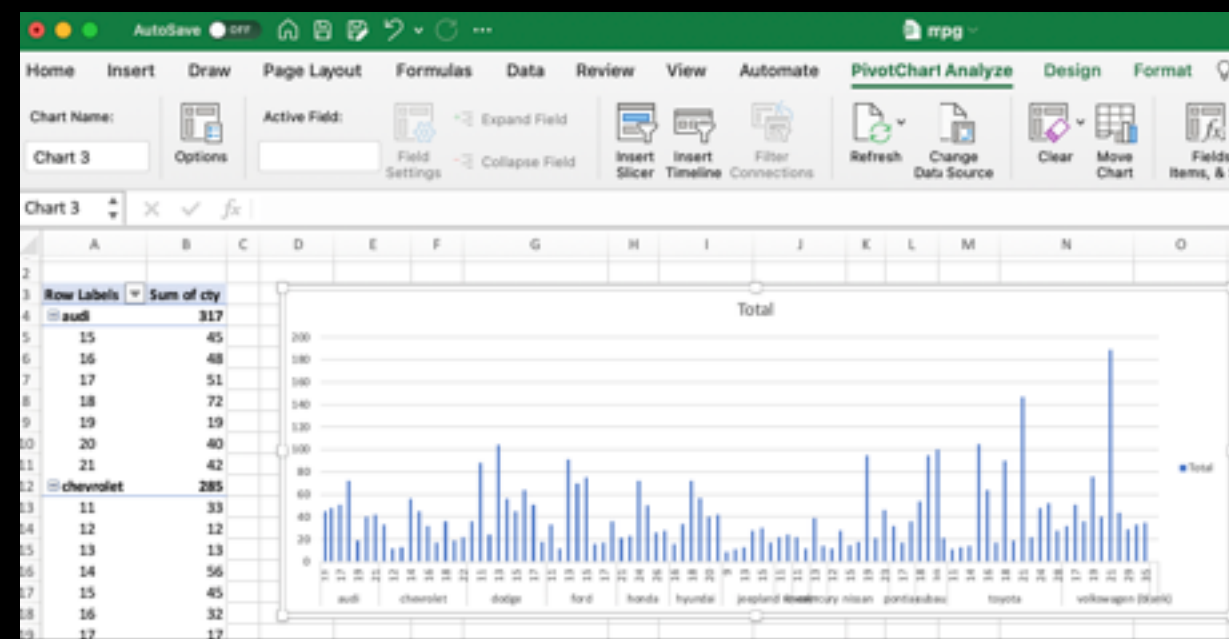


- Direct the efforts
- Find the right path and person
- Find the right order

4. Solutions that connect things

Start an automation project

4. Solutions that connect things - single app connection

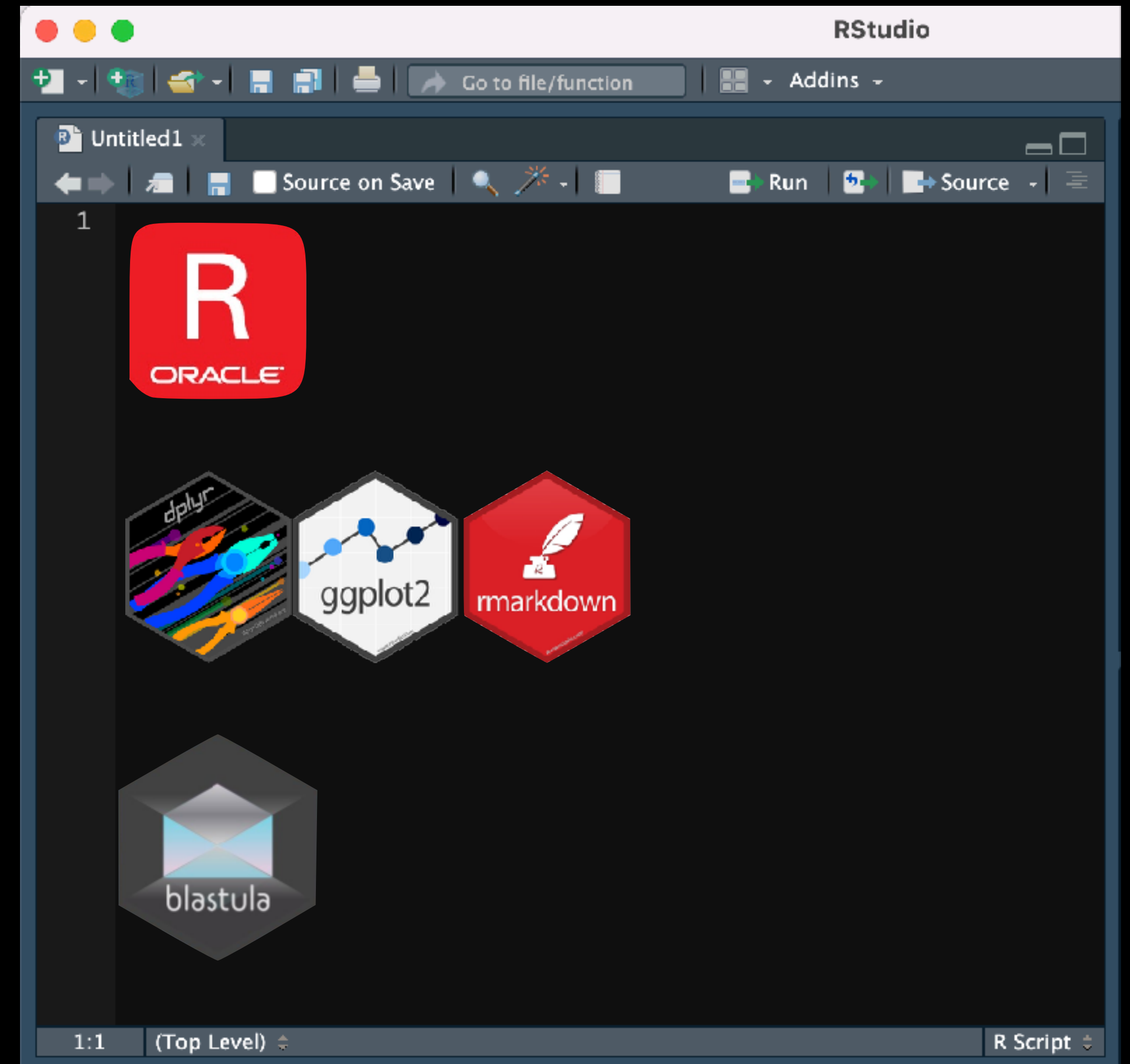
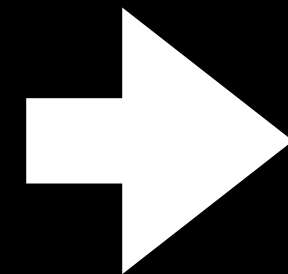


```
library(RMySQL)

mysql_conn <- dbConnect(MySQL(), user = username, password = password,
                        dbname = db_name, host = host, port = port)
res <- dbSendQuery(mysql_conn, "select * from product_usage")
data <- fetch(res, n = -1)
data
dbDisconnect(mysql_conn)
```

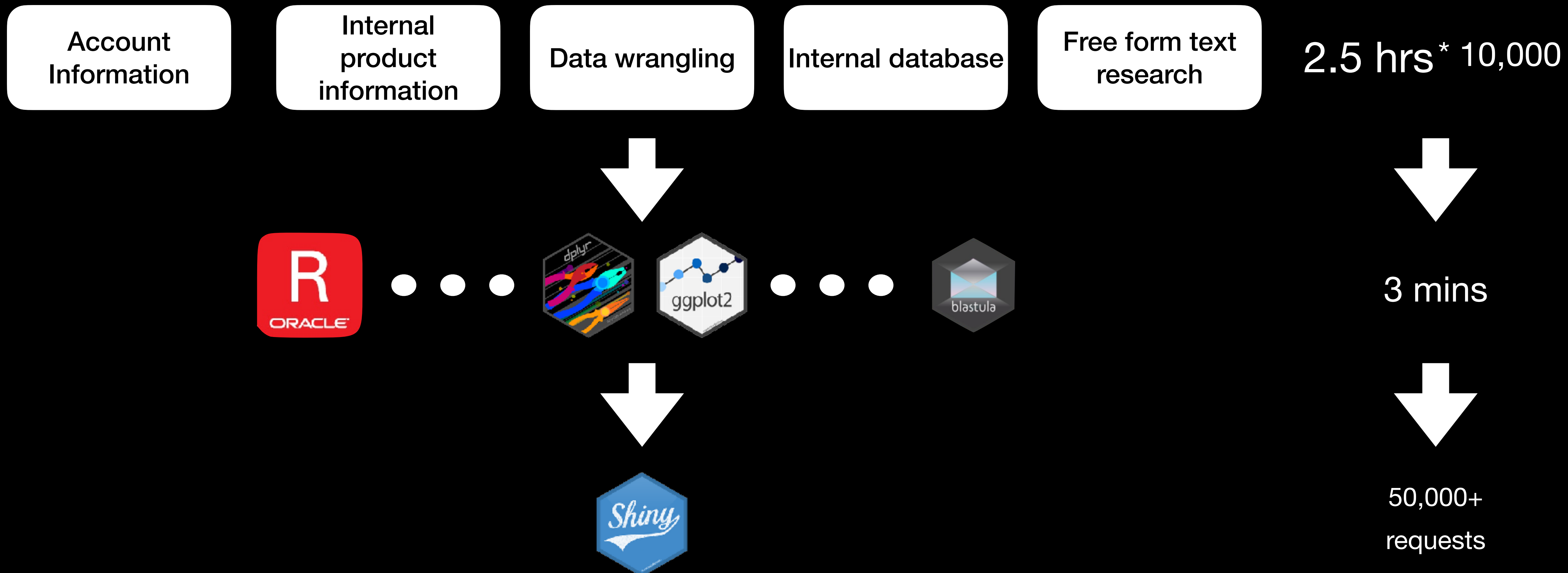
Start an automation project

4. Solutions that connect things - multiple apps connections



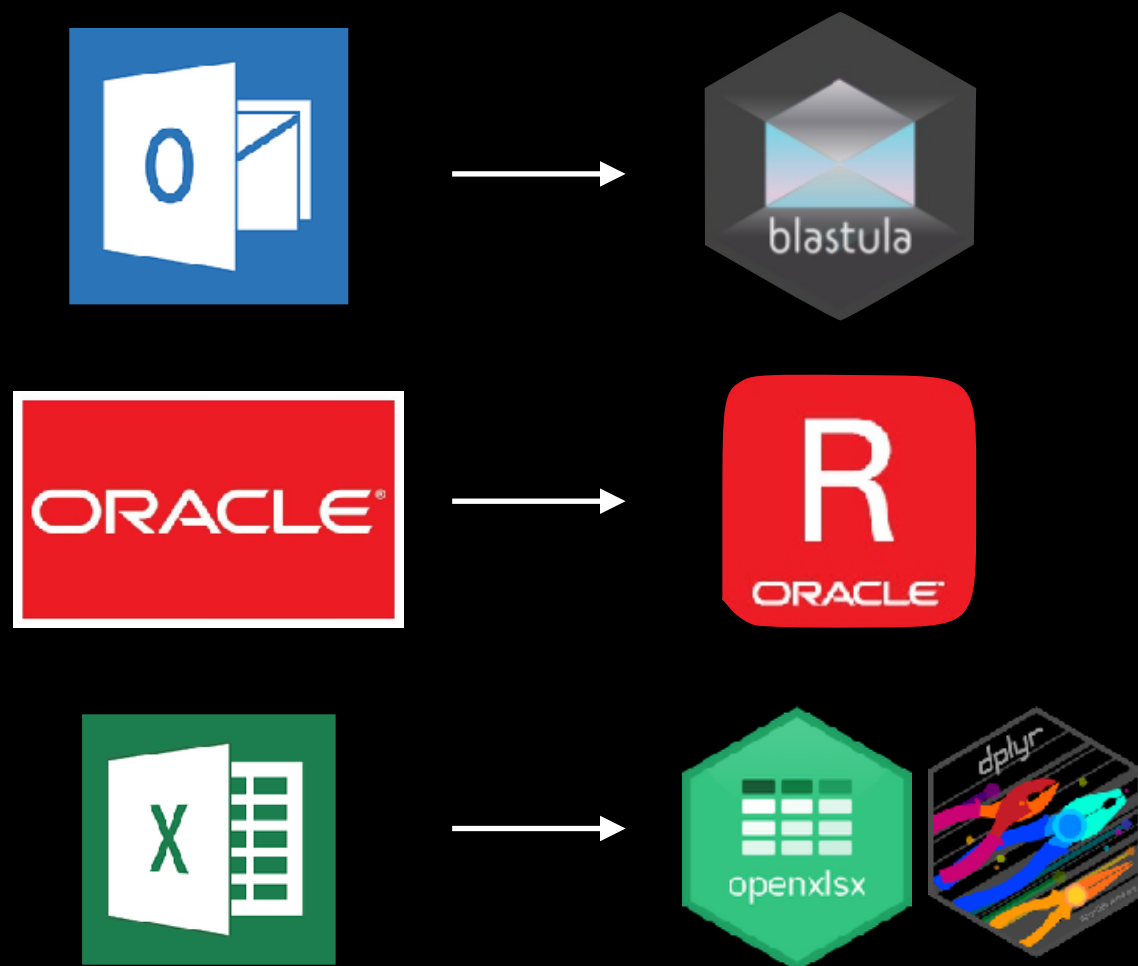
Start an automation project

4. Solutions that connect things - end to end



Start an automation project

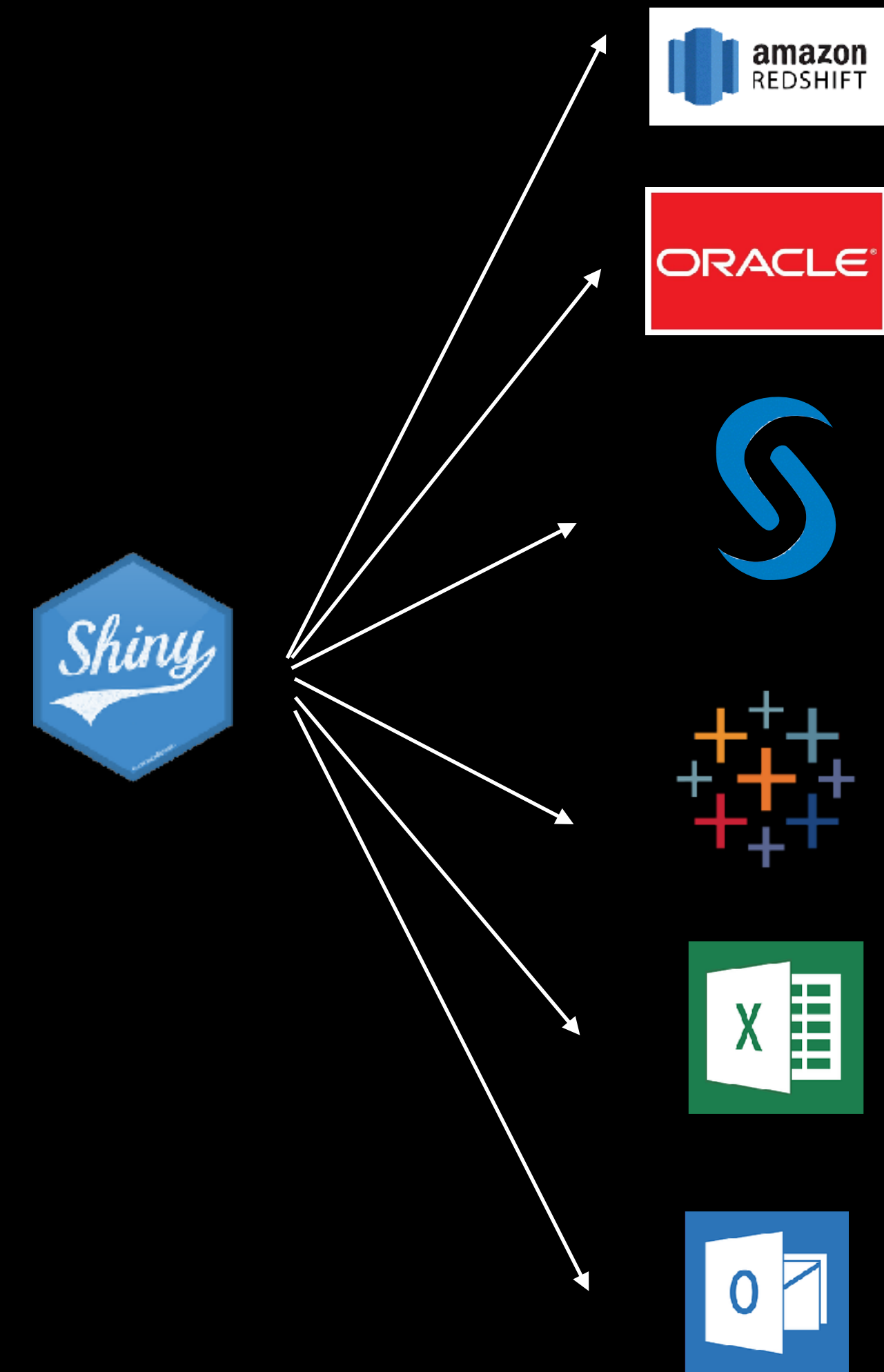
4. Solutions that connect things



Single app connections



Multiple apps connections



End to end

Recap

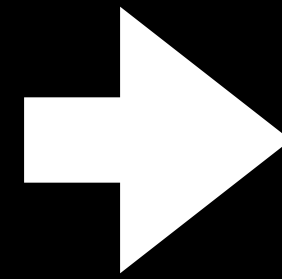
Moving to open source

Needs everyone on board

No guarantee of all the benefits

An on-going process

Not free



Start an automation project

1. Pitch the project

2. Increase power users

3. Plan your transition

4. Solutions that connect things

Resources



Talk at rstudio::conf(2022)

**Chapman & Hall
R book (2024)**

Work automation with R

A journey of moving to open source

Slides: tigertang.org/santander_2023_talk/

Contact: tigertang.org/

Linkedin: www.linkedin.com/in/chongtaitang/

Tiger Tang, Mar 22nd, 2023