#CORRELCON2020

BUILDING A MODULARIZED SHINY APP WITH THE GOLEM 📦 AND HTML WIDGETS

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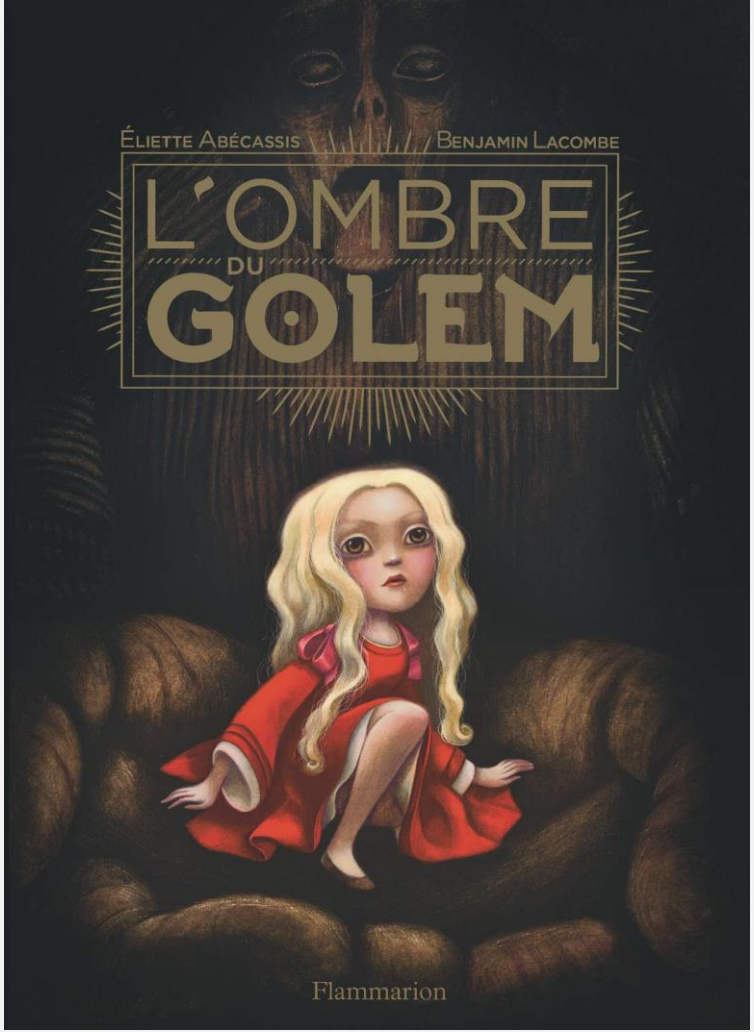
Artwork by Benjamin Lacombe



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CORRELAID X CHALLENGE 2020

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MOVING THROUGH BERLIN BY BIKE

ANALYSING ACCIDENTS AND BICYCLE INFRASTRUCTURE IN BERLIN

A CONTRIBUTION TO THE CORRELAID X CHALLENGE 2020

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ABOUT THE PROJECT

A Shiny app created with ☕ and ❤️ for the CorrelAidX Challenge 2020
"Analysing and visualising German regional statistics with datenguidepy"
by Cédric Scherer, Andreas Neumann, Saleh Hamed & Steffen Reinhold

CorrelAidX Berlin, a local chapter of CorrelAid
Good Causes. Better Effects. Local Implementation.

CorrelAid is a network of young data analysts who want to change the world with a more inclusive, integrated and innovative approach to data analysis. The organization builds on three pillars: We take a pioneer role in analytics consulting for nonprofit organisations. We connect young, driven data scientists and offer them the possability to apply and develop their skills on real-world problems. Last but not least, we start a dialogue on the potential of data and analytics for the civic society.

You want more?

Learn more about CorrelAid
Read more about our methodology
Get the code from GitHub

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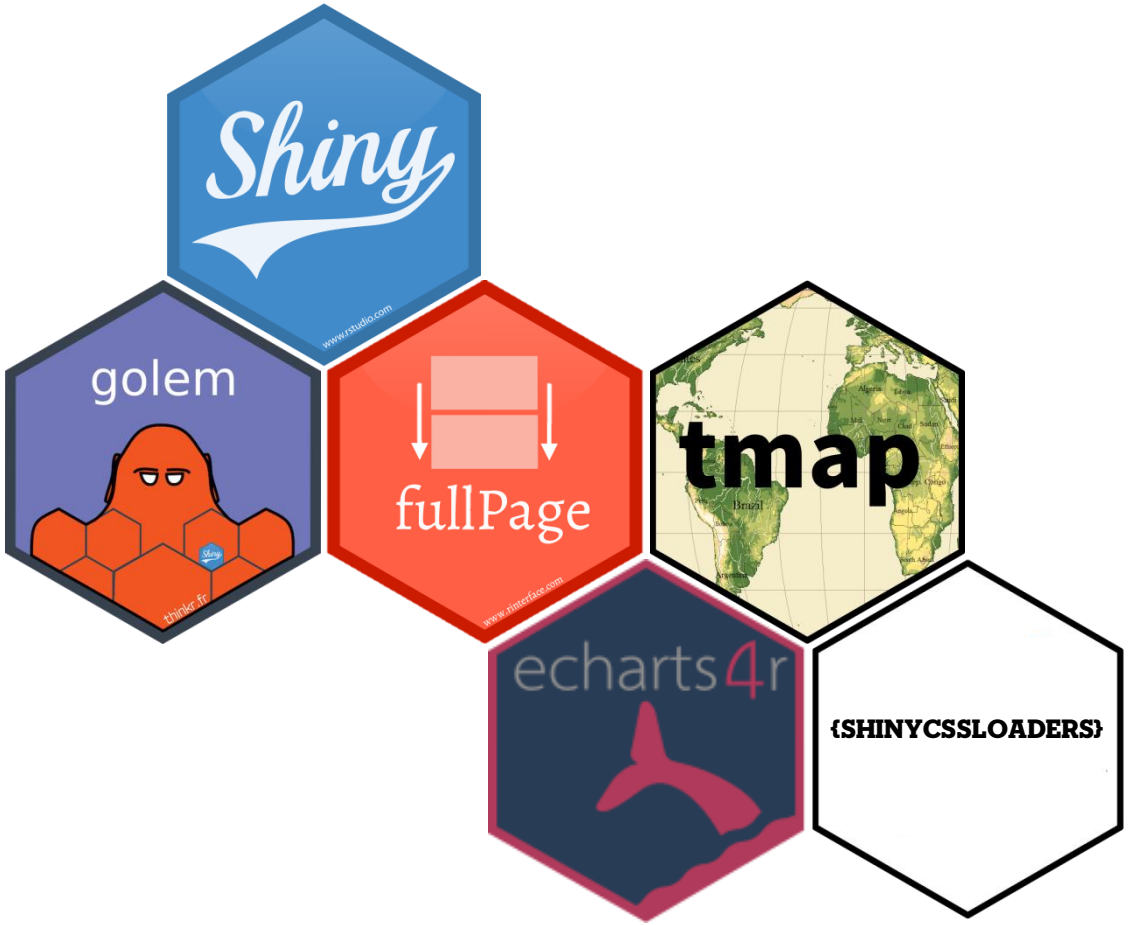

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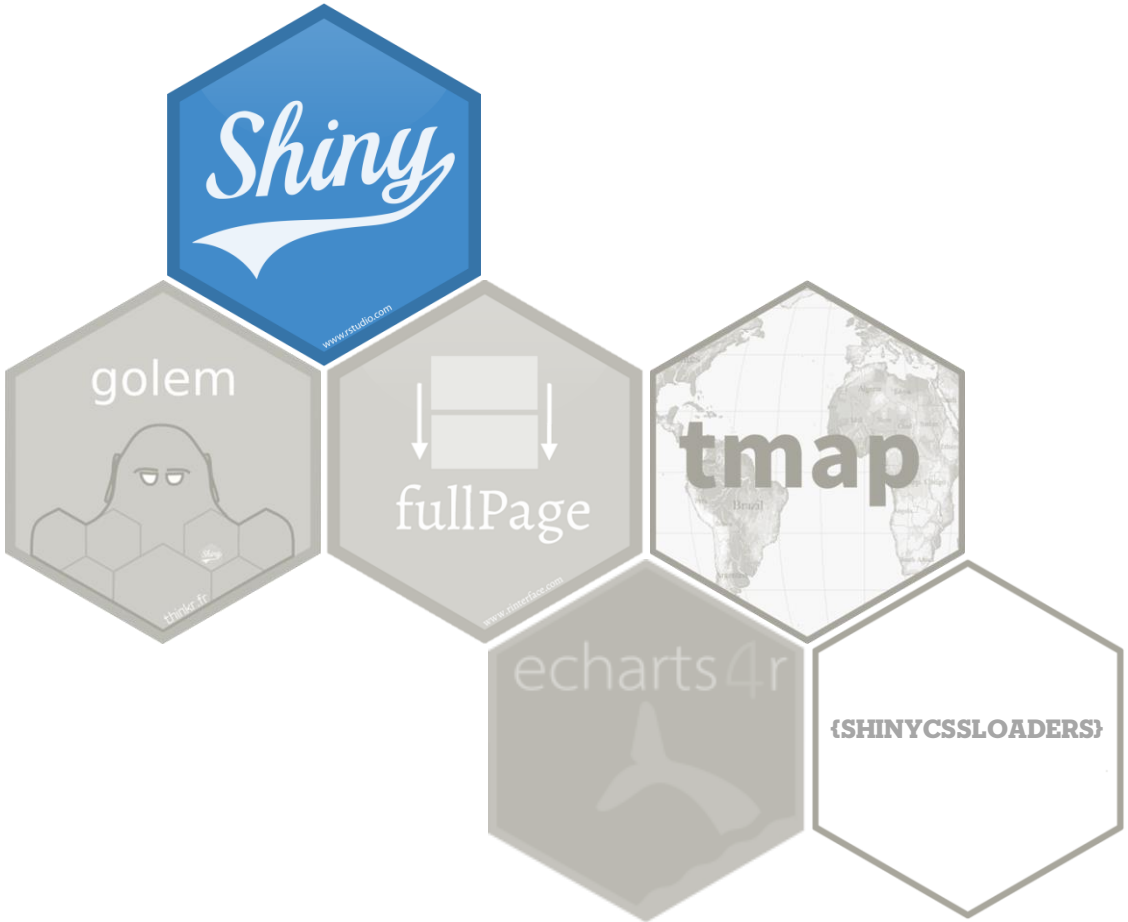

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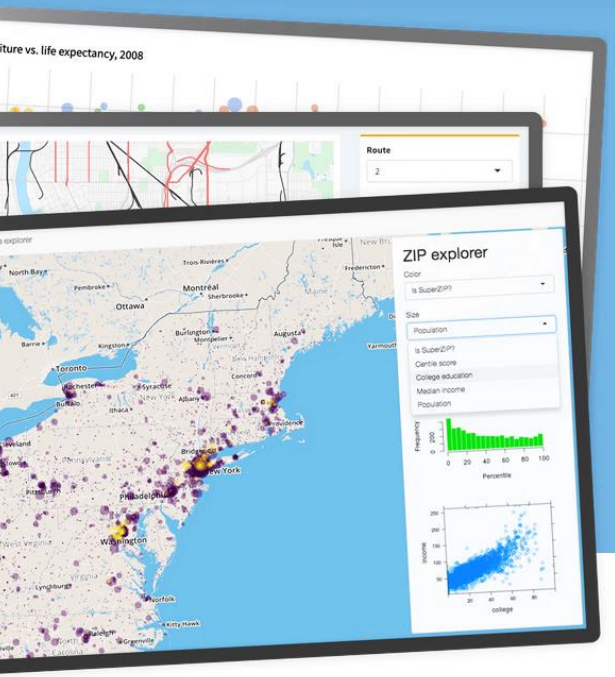

Shiny is an **R package** that makes it easy to build **interactive web apps** straight from R.

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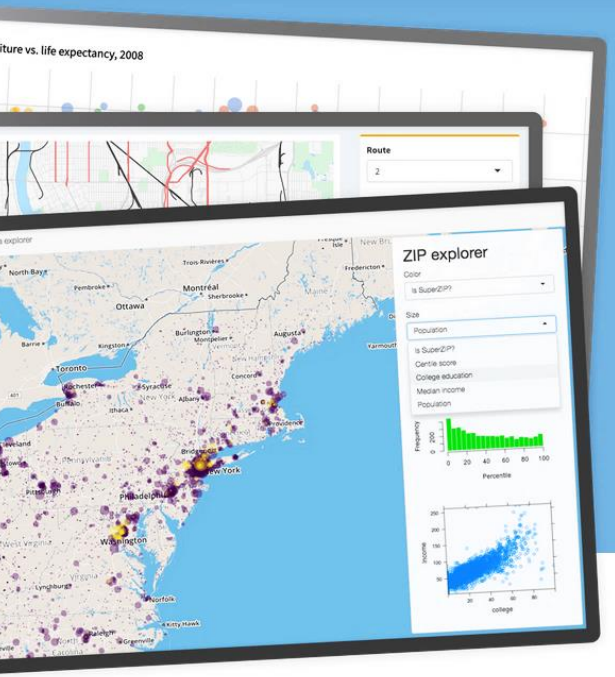

Shiny is an **R package** that makes it easy to build **interactive web apps** straight from R.

You can host standalone apps on a webpage, build dashboards or embed them in R Markdown documents.

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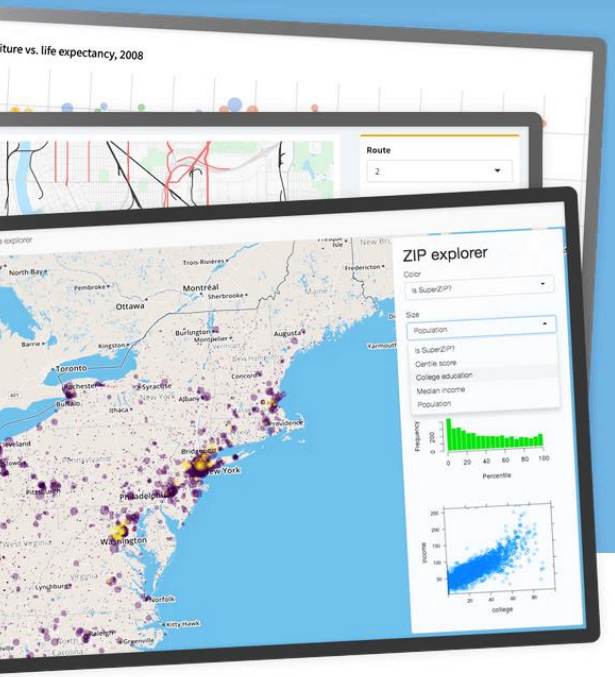

Shiny is an **R package** that makes it easy to build **interactive web apps** straight from R.

You can host standalone apps on a webpage, build dashboards or embed them in R Markdown documents.

You can extend your Shiny apps with CSS themes, htmlwidgets, and JavaScript actions.

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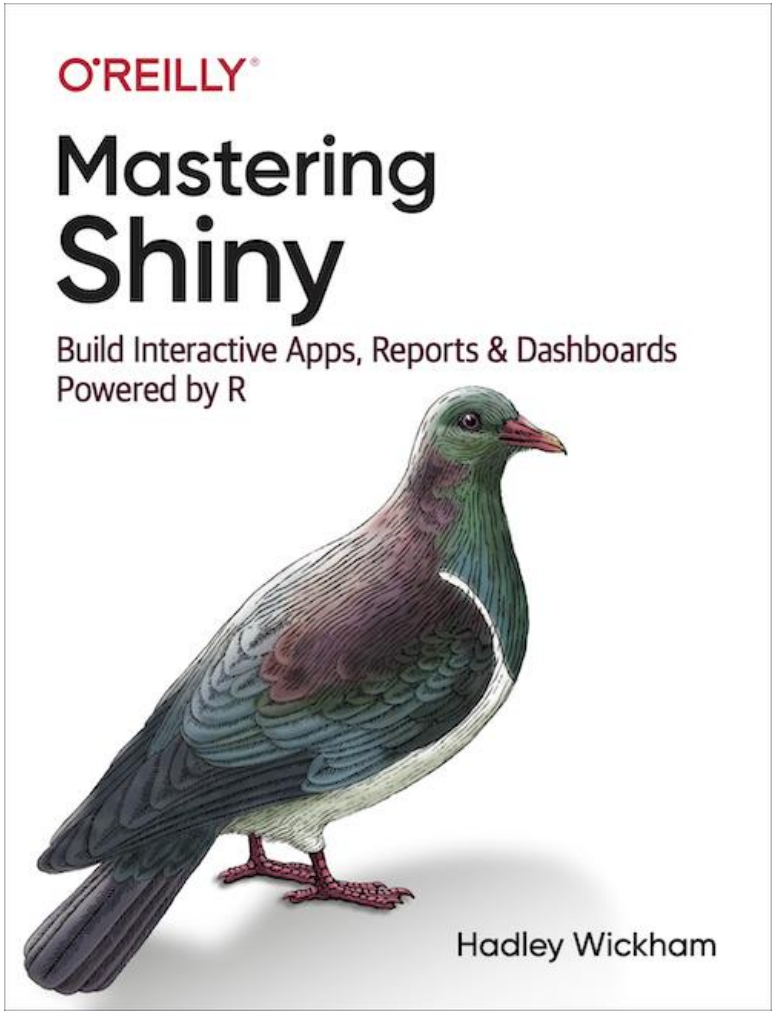
MASTERING SHINY

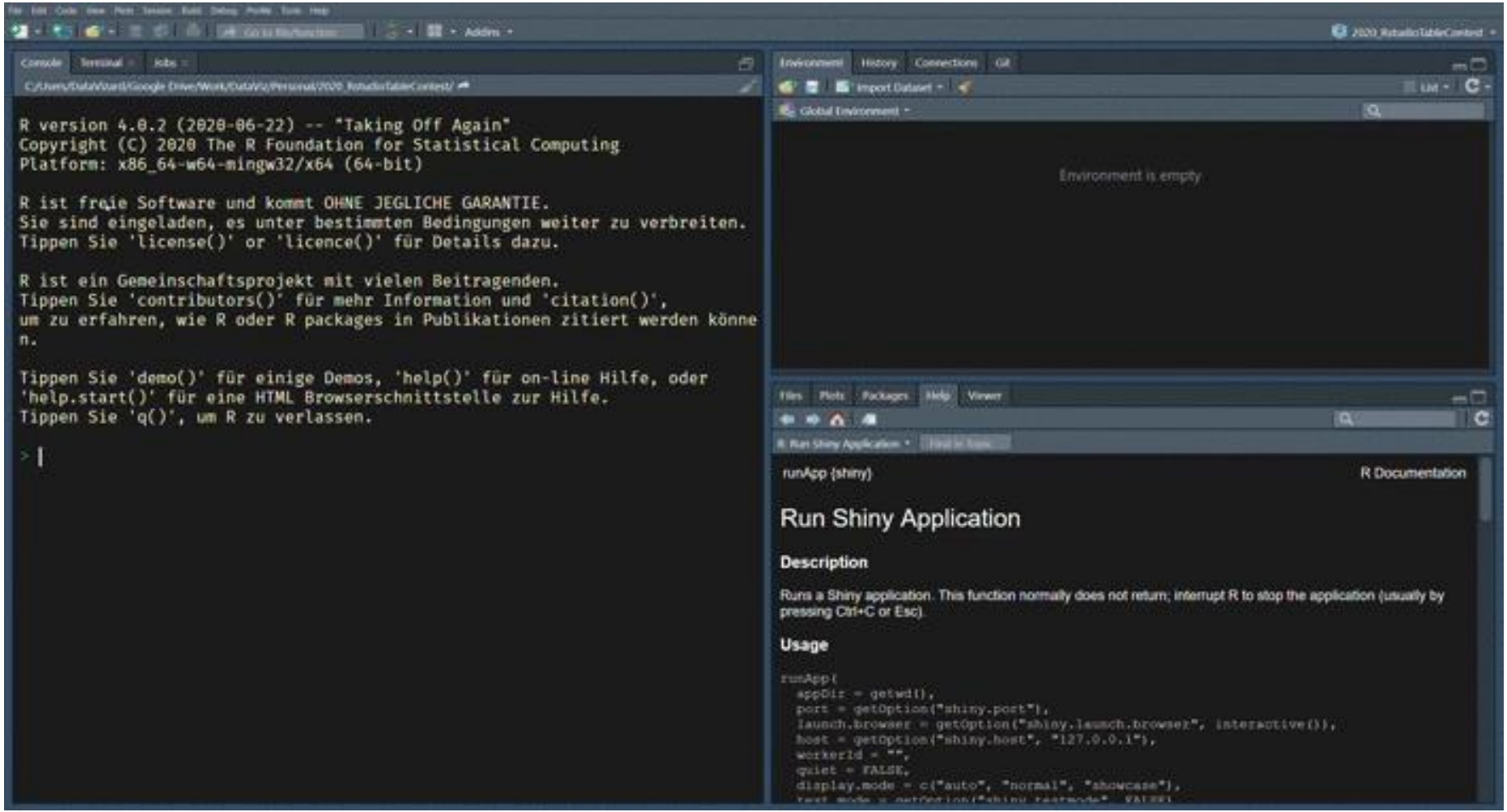
Hadley Wickham

👉 mastering-shiny.org



Create a new directory and in this directory a file called app.R with the following content:

```
library(shiny)
ui <- fluidPage(
    "Hello, world!"
)
server <- function(input, output, session) {
}
shinyApp(ui, server)
```


R version 4.0.2 (2020-06-22) -- "Taking Off Again"
Copyright (C) 2020 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)
R ist freie Software und kommt OHNE JEGLICHE GARANTIE.
Sie sind eingeladen, es unter bestimmten Bedingungen weiter zu verbreiten.
Tippen Sie 'license()' or 'licence()' für Details dazu.
R ist ein Gemeinschaftsprojekt mit vielen Beitragenden.
Tippen Sie 'contributors()' für mehr Information und 'citation()',
um zu erfahren, wie R oder R packages in Publikationen zitiert werden könne
n.
Tippen Sie 'demo()' für einige Demos, 'help()' für on-line Hilfe, oder
'help.start()' für eine HTML Browserschnittstelle zur Hilfe.
Tippen Sie 'q()', um R zu verlassen.
Environment is empty
runApp {shiny}
R Documentation
Run Shiny Application
Description
Runs a Shiny application. This function normally does not return; interrupt R to stop the application (usually by pressing Ctrl+C or Esc).
Usage
runApp(
appDir = getwd(),
port = getOption("shiny.port"),
launch.browser = getOption("shiny.launch.browser", interactive()),
host = getOption("shiny.host", "127.0.0.1"),
workerId = "",
quiet = FALSE,
display.mode = c("auto", "normal", "showcase"),

Modularizing Shiny app code

Last Updated: 17 Apr 2020

By: Winston Chang

As Shiny applications grow larger and more complicated, we use modules to manage the growing complexity of Shiny application code.

Modularizing Shiny app code

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As Shiny applications grow larger and more complicated, **we use modules to manage the growing complexity** of Shiny application code.

MOD.R

```
create_plot <- function(input, output, session, data) { ... }

create_plot_ui <- function(id) { ... }
```

SERVER.R

```
callModule(create_plot, id = 'plotA', data = dataA)
callModule(create_plot, id = 'plotB', data = dataB)
callModule(create_plot, id = 'plotC', data = dataC)
```

UI.R

```
create_plot_ui(id = 'plotA')
create_plot_ui(id = 'plotB')
create_plot_ui(id = 'plotC')
```

MOD.R

```
create_plot <- function(input, output, session, data) { ... }

create_plot_ui <- function(id) { ... }
```

SERVER.R

callModule(**create_plot**, id = 'plotA', data = dataA)
callModule(**create_plot**, id = 'plotB', data = dataB)
callModule(**create_plot**, id = 'plotC', data = dataC)

UI.R

create_plot_ui(id = 'plotA')
create_plot_ui(id = 'plotB')
create_plot_ui(id = 'plotC')

MOD.R

create_plot <- function(input, output, session, data) { ... }

create_plot_ui <- function(id) { ... }

SERVER.R

```
callModule(create_plot, id = 'plotA', data = dataA)
callModule(create_plot, id = 'plotB', data = dataB)
callModule(create_plot, id = 'plotC', data = dataC)
```

UI.R

```
create_plot_ui(id = 'plotA')
create_plot_ui(id = 'plotB')
create_plot_ui(id = 'plotC')
```

MOD.R

```
create_plot <- function(input, output, session, data) { ... }

create_plot_ui <- function(id) { ... }
```

SERVER.R

```
callModule(create_plot, id = 'plot', data = data)
callModule(create_map, id = 'map', data = data)
```

UI.R

```
create_plot_ui(id = 'plot')
create_map_ui(id = 'map')
```

MOD.R

```
create_plot <- function(input, output, session, data) { ... }

create_plot_ui <- function(id) { ... }

create_map <- function(input, output, session, data) { ... }

create_map_ui <- function(id) { ... }
```

SERVER.R

```
callModule(create_plot, id = 'plot', data = data)
callModule(create_map, id = 'map', data = data)
```

UI.R

```
create_plot_ui(id = 'plot')
create_map_ui(id = 'map')
```

MOD_PLOT.R

```
create_plot <- function(input, output, session, data) { ... }

create_plot_ui <- function(id) { ... }
```

MOD_MAP.R

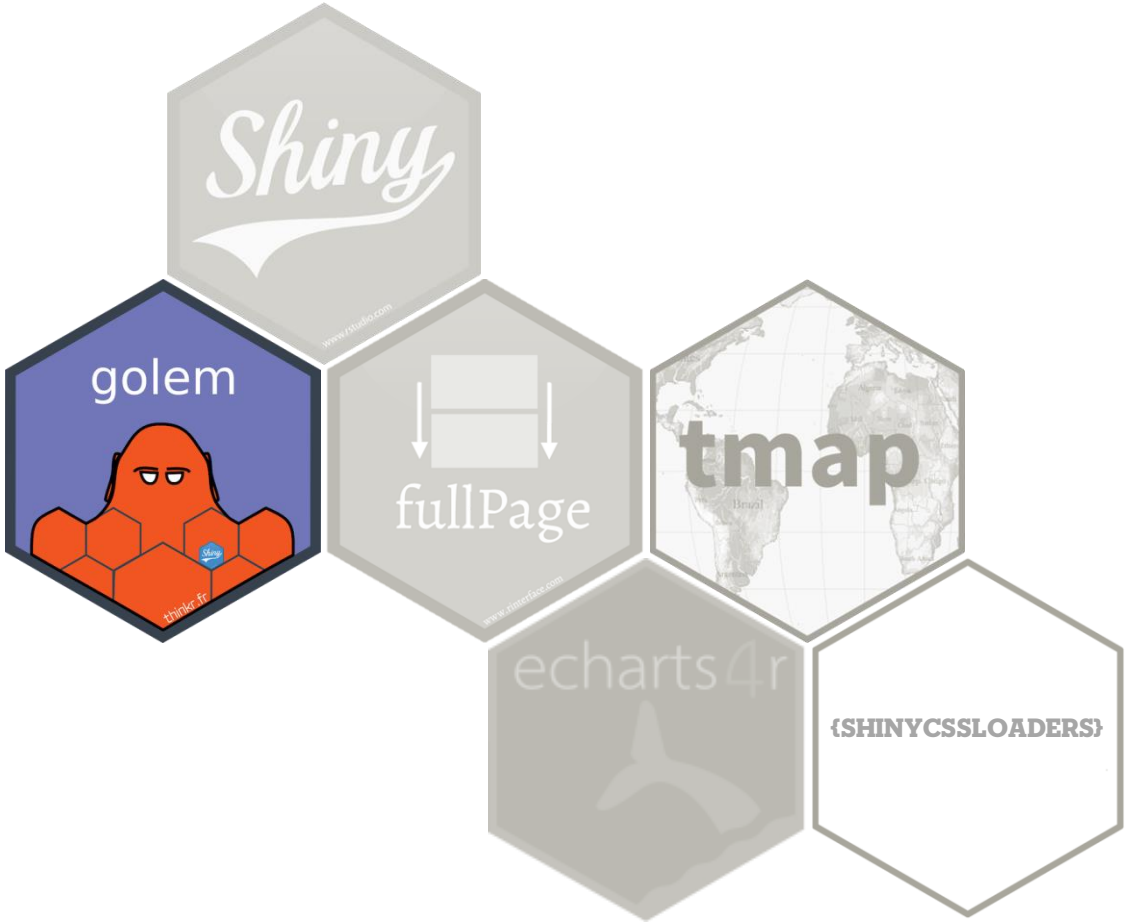
```
create_map <- function(input, output, session, data) { ... }

create_map_ui <- function(id) { ... }
```

MOD_PLOT.R

```
create_plot_server <- function(input, output, session, data) {
    ns <- session$ns
    ...
}

create_plot_ui <- function(id) {
    ns <- NS(id)
    ...
}
```



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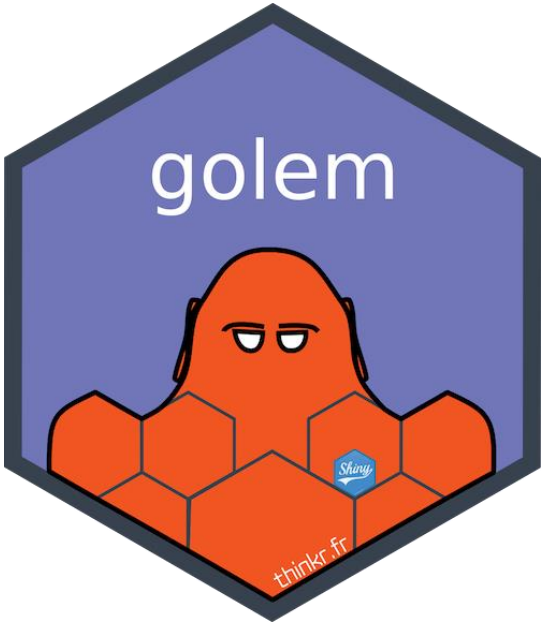
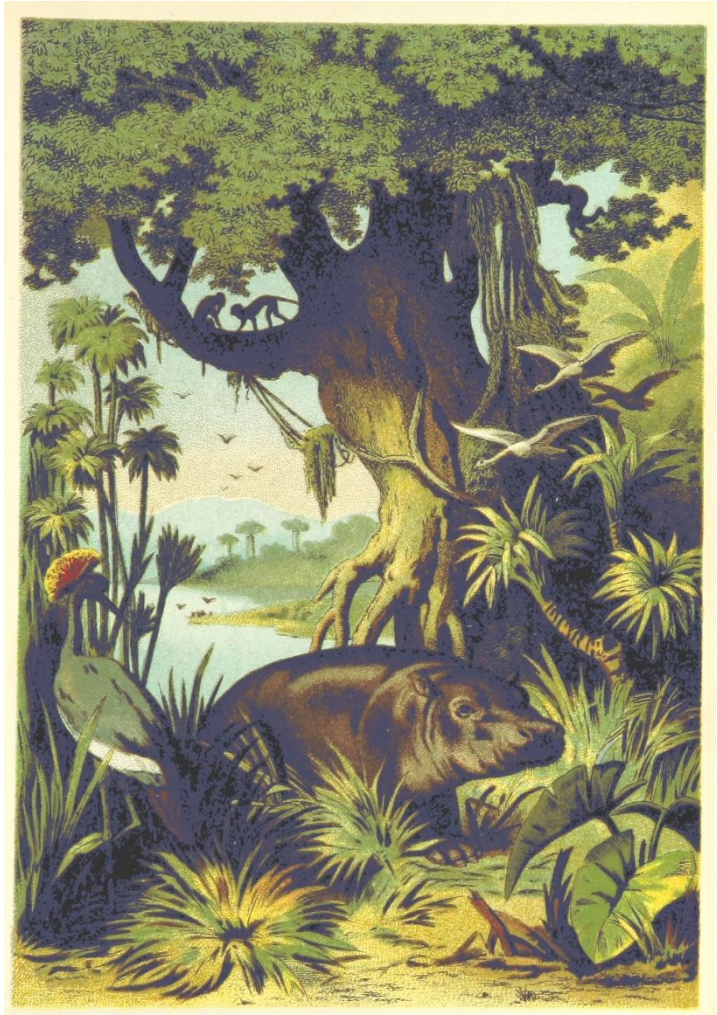


The {golem} package is an opinionated framework for building production-grade shiny applications.

ENGINEERING PRODUCTION-GRADE SHINY APPS

Colin Fay, Sébastien Rochette,
Vincent Guyader, Cervan Girard

👉 engineering-shiny.org



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If you haven't already installed {golem}:

```
install.packages("golem")
remotes::install_github("Thinkr-open/golem")
```

New Project

Back

Project Type

- R Package using RcppEigen
- R Package using RcppParallel
- Book Project using bookdown
- R Package using devtools
- Package for Shiny App using golem
- New Plumber API Project
- Simple R Markdown Website

Create a new Package for Shiny App using golem

Cancel

```
# Building a Prod-Ready, Robust Shiny Application.
#
# README: each step of the dev files is optional, and you don't have to
# fill every dev scripts before getting started.
# 01_start.R should be filled at start.
# 02_dev.R should be used to keep track of your development during the project.
# 03_deploy.R should be used once you need to deploy your app.
```

01_START.R

02_DEV.R

03_DEPLOY.R

```
########################################
#### CURRENT FILE: ON START SCRIPT #####
########################################

## Fill the DESCRIPTION ----
## Add meta data about your application
golem::fill_desc(
  pkg_name = "golex", # The Name of the package containing the App
  pkg_title = "PKG_TITLE", # The Title of the package containing the App
  pkg_description = "PKG_DESC.", # The Description  of the package containing
    the App
  author_first_name = "AUTHOR_FIRST", # Your First Name
  author_last_name = " AUTHOR_LAST", # Your Last Name
  author_email = "AUTHOR@MAIL.COM", # Your Email
  repo_url = NULL # The URL of the GitHub Repo (optional)
)
```


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Codes on GitHub:

Z3TT/CORRELCON2020_GOLEM_HTML_WIDGETS

01_START.R

02_DEV.R

03_DEPLOY.R

```
#########################################
#### CURRENT FILE: ON START SCRIPT #####
#########################################

## Fill the DESCRIPTION ----
## Add meta data about your application
golem::fill_desc(
  pkg_name = "correlcon", # The Name of the package containing the App
  pkg_title = "A turtorial on the golem package and html widgets for nice looking
    Shiny apps", # The Title of the package containing the App
  pkg_description = "This Shiny app is build with the help of the {golem} framework
    and exemplary uses the html widgets {echarts4R}, {tmap}, and
    {shinycssloader}.", # The Description  of the package containing the App
  author_first_name = "Cédric", # Your First Name
  author_last_name = "Scherer", # Your Last Name
  author_email = "cedricphilippscherer@gmail.com", # Your Email
  repo_url = NULL # The URL of the GitHub Repo (optional)
)
```

#CORRELCON2020

01_START.R

02_DEV.R

03_DEPLOY.R

```
## Set {golem} options ----
golem::set_golem_options()

## Create Common Files ----
## See ?usethis for more information
usethis::use_mit_license( name = "Cédric Scherer" )  # You can set another license here
usethis::use_readme_rmd( open = FALSE )
usethis::use_code_of_conduct()
usethis::use_lifecycle_badge( "Experimental" )
usethis::use_news_md( open = FALSE )

## Use git ----
usethis::use_git()

## Init Testing Infrastructure ----
## Create a template for tests
golem::use_recommended_tests()
```

```
## Use Recommended Packages ----
golem::use_recommended_deps()

## Favicon ----
# If you want to change the favicon (default is golem's one)
golem::remove_favicon()
golem::use_favicon("https://raw.githubusercontent.com/CorrelAid/xberlin/
    master/inst/app/www/favicon.ico") # path = "path/to/ico". Can be an online file.

## Add helper functions ----
golem::use_utils_ui()
golem::use_utils_server()

# You're now set! ----

# go to dev/02_dev.R
rstudioapi::navigateToFile( "dev/02_dev.R" )
```


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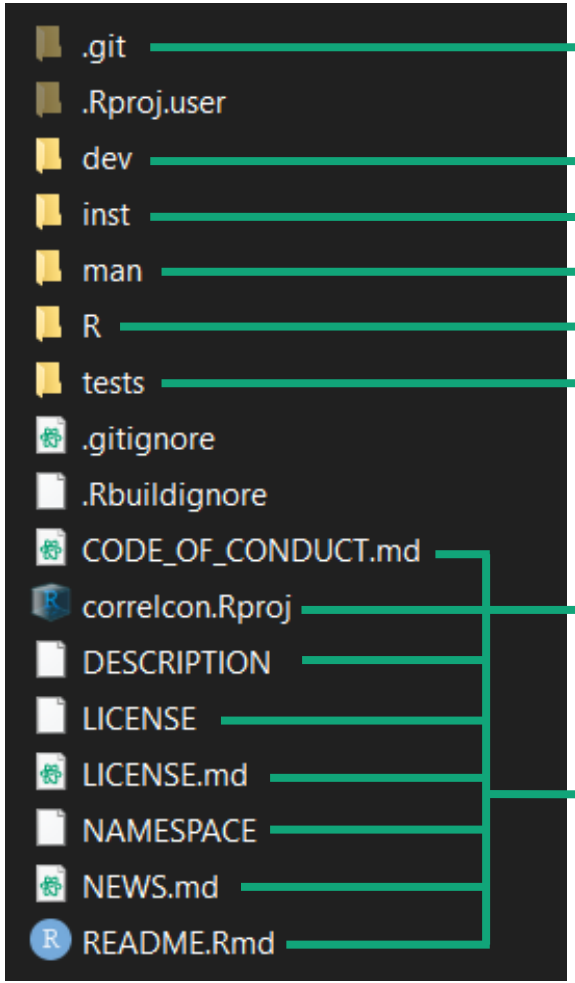

#CORRELCON2020

```
####################################
#### CURRENT FILE: DEV SCRIPT #####
####################################

# Engineering

## Dependencies ----
## Add one line by package you want to add as dependency
usethis::use_package( "echarts4r" )
usethis::use_package( "tmap" )

## Add modules ----
## Create a module infrastructure in R/
golem::add_module( name = "bars_echarts" ) # Name of the module
golem::add_module( name = "map_tmap" ) # Name of the module
```

```
#####################################
#### CURRENT FILE: DEV SCRIPT #####
#####################################

# Engineering

## Dependencies ----
## Add one line by package you want to add as dependency
usethis::use_package( "echarts4r" )
usethis::use_package( "tmap" )

## Add modules ----
## Create a module infrastructure in R/
golem::add_module( name = "bars_echarts" ) # Name of the module
golem::add_module( name = "map_tmap" ) # Name of the module
```

```
#' bars_echarts UI Function
#'
#' @description A shiny Module.
#'
#' @param id,input,output,session Internal parameters for {shiny}.
#'
#' @noRd
#'
#' @importFrom shiny NS tagList
mod_bars_echarts_ui <- function(id){
  ns <- NS(id)
  tagList(

  )
}
```

```
#' bars_echarts Server Function
#'
#' @noRd
mod_bars_echarts_server <- function(input, output, session){
  ns <- session$ns

}

## To be copied in the UI
# mod_bars_echarts_ui("bars_echarts_ui_1")

## To be copied in the server
# callModule(mod_bars_echarts_server, "bars_echarts_ui_1")
```

SERVER.R

```
callModule(mod_bars_echarts_server, "bars_echarts_ui_1")
callModule(mod_map_tmap_server, "map_tmap_ui_1")
```

UI.R

```
mod_bars_echarts_ui("bars_echarts_ui_1")
mod_map_tmap_ui("map_tmap_ui_1")
```

R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_ui <- function(id){
  ns <- NS(id)
  tagList( )
}
mod_bars_echarts_server <- function(input, output, sess
  ns <- session$ns
}
```

R/MOD_MAP_TMAP.R

```
mod_map_tmap_ui <- function(id){
  ns <- NS(id)
  tagList( )
}
mod_map_tmap_server <- function(input, output, session){
  ns <- session$ns
}
```

01_START.R

02_DEV.R

03_DEPLOY.R

```
## Add helper functions ----
## Creates ftc_* and utils_*
golem::add_fct( "helpers" )
golem::add_utils( "helpers" )

## External resources ----
## Creates .js and .css files at inst/app/www
golem::add_js_file( "script" )
golem::add_js_handler( "handlers" )
golem::add_css_file( "custom" )

## Add internal datasets ----
## If you have data in your package
usethis::use_data_raw( name = "my_dataset", open = FALSE )

## Tests ----
## Add one line by test you want to create
usethis::use_test( "app" )
```


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```
# Documentation

## Vignette ----
usethis::use_vignette("correlcon")
devtools::build_vignettes()

## Code coverage ----
## (You'll need GitHub there)
usethis::use_github()
usethis::use_travis()
usethis::use_appveyor()

# You're now set! ----
# go to dev/03_deploy.R
rstudioapi::navigateToFile("dev/03_deploy.R")
```


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01_START.R

02_DEV.R

03_DEPLOY.R

```
#######################################
#### CURRENT FILE: DEPLOY SCRIPT #####
#######################################

# Test your app

## Run checks ----
## Check the package before sending to prod
devtools::check()
rhub::check_for_cran()

# Deploy

## RStudio ----
## If you want to deploy on RStudio related platforms
golem::add_rstudioconnect_file()
golem::add_shinyappsio_file()
golem::add_shinyserver_file()
```

```
## Docker ----
## If you want to deploy via a generic Dockerfile
golem::add_dockerfile()

## If you want to deploy to ShinyProxy
golem::add_dockerfile_shinyproxy()

## If you want to deploy to Heroku
golem::add_dockerfile_heroku()
```


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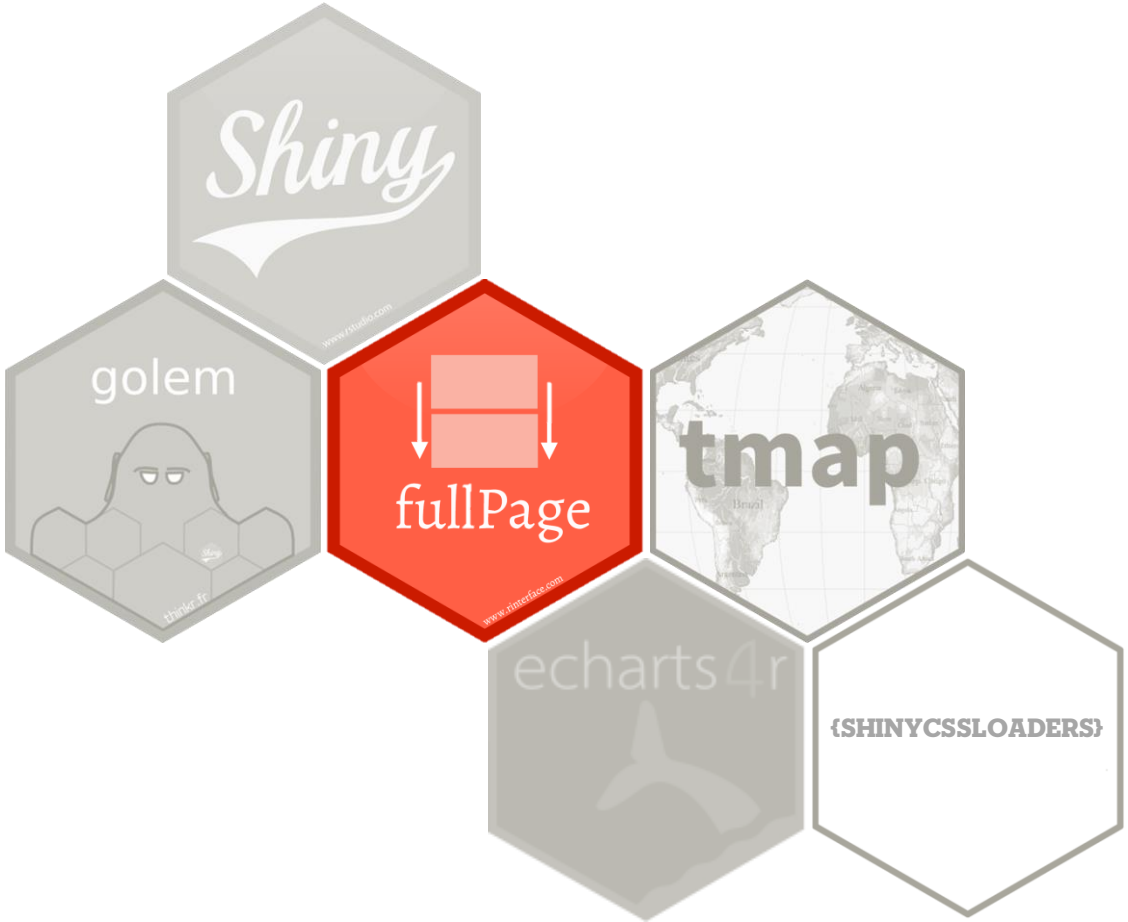

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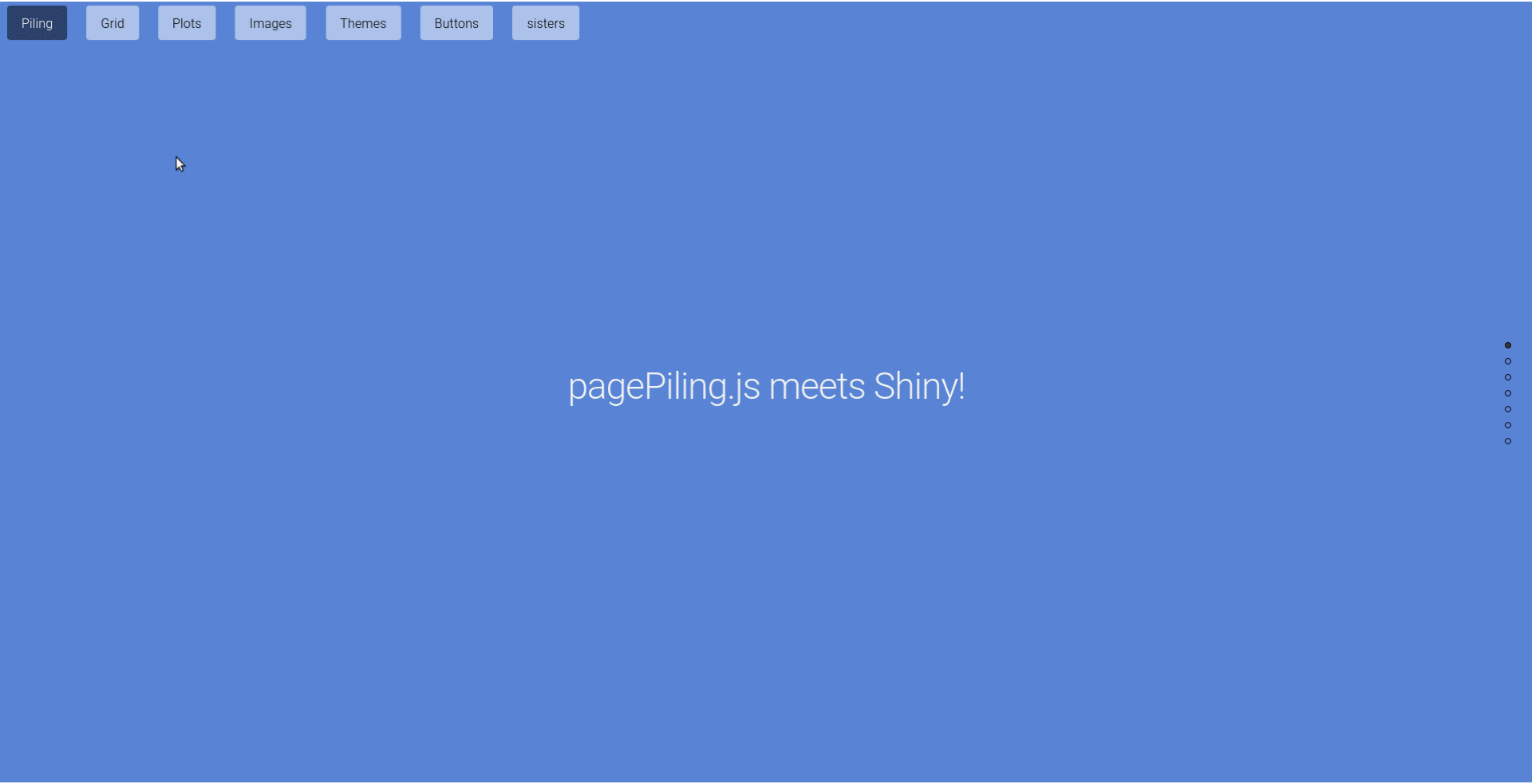
Piling
Grid
Plots
Images
Themes
Buttons
sisters
pagePiling.js meets Shiny!
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APP_SERVER.R

APP_UI.R

```
#' The application server-side
#'
#' @param input,output,session Internal parameters for {shiny}. #' @import shiny
#' @noRd
app_server <- function( input, output, session ) {
 # List the first level callModules here
 callModule(mod_bars_echarts_server, "bars_echarts_ui_1")
 callModule(mod_map_tmap_server, "map_tmap_ui_1")
}
```

APP_SERVER.R

APP_UI.R

```
#' The application server-side
#'
#' @param input,output,session Internal parameters for {shiny}. #' @import shiny
#' @noRd
app_server <- function( input, output, session ) {
 # List the first level callModules here
 callModule(mod_bars_echarts_server, "bars_echarts_ui_1")
 callModule(mod_map_tmap_server, "map_tmap_ui_1")
}
```

SERVER.R

callModule(mod_bars_echarts_server, "bars_echarts_ui_1")
callModule(mod_map_tmap_server, "map_tmap_ui_1")

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APP_SERVER.R

APP_UI.R

```
#' The application User-Interface
#' @param request Internal parameter for `{shiny}`.
#' @import shiny fullPage
#' @noRd
app_ui <- function(request) {
  tagList(
    # Leave this function for adding external resources
    golem_add_external_resources(),
    # List the first level UI elements here
    fullPage::pagePiling(
      sections.color = c('#f1f1f1', '#dddddd'),
      opts = list(easing = "linear", keyboardScrolling = TRUE),
      menu = c("interactive bar chart" = "bar",
               "interactive map" ="map"),
      fullPage::pageSection(center = TRUE,
                            menu = "bar",
                            mod_bars_echarts_ui("bars_echarts_ui_1")),
      fullPage::pageSection(center = TRUE,
                            menu = "map",
                            mod_map_tmap_ui("map_tmap_ui_1"))
    )
  )
}
```

APP_SERVER.R

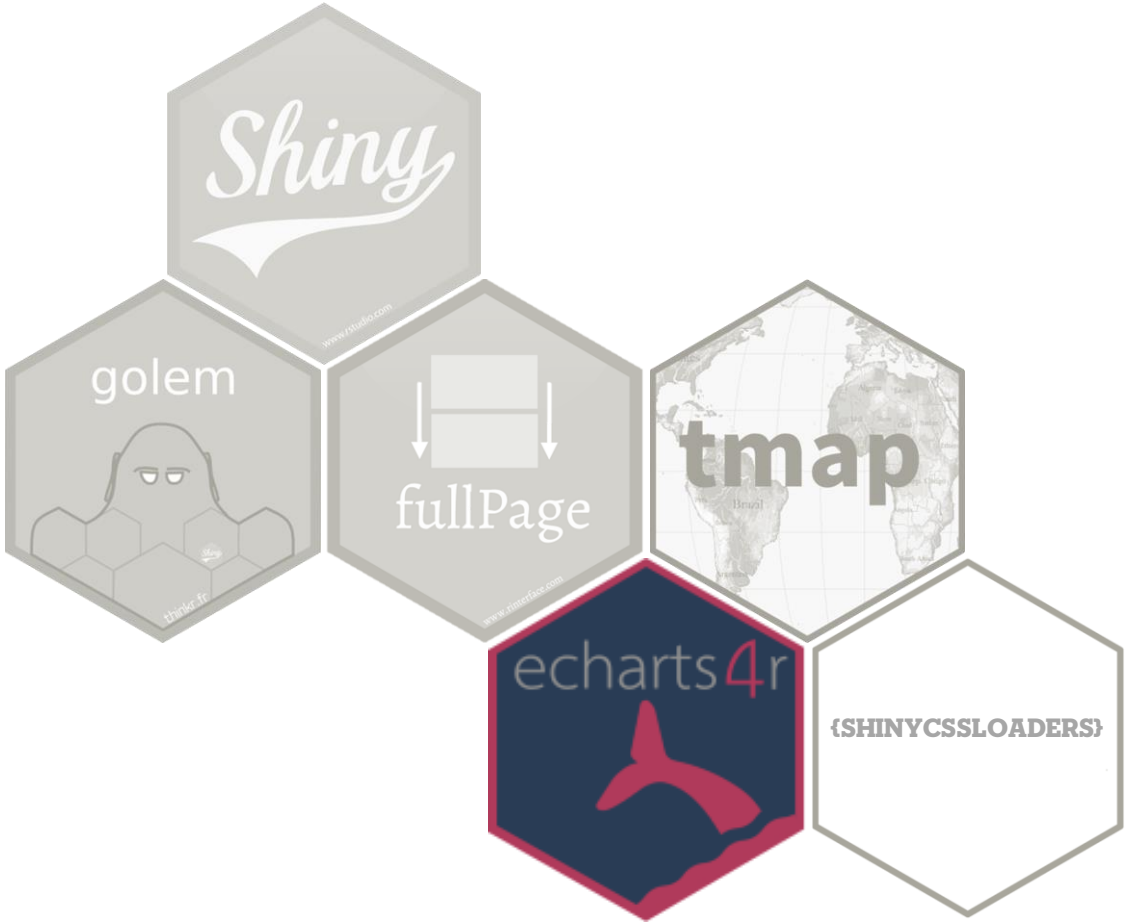
APP_UI.R

```
#' The application User-Interface
#' @param request Internal parameter for `{shiny}`.
#' @import shiny fullPage
#' @noRd
app_ui <- function(request) {
  tagList(
    # Leave this function for adding external resources
    golem_add_external_resources(),
    # List the first level UI elements here
    fullPage::pagePiling(
      sections.color = c('#f1f1f1', '#dddddd'),
      opts = list(easing = "linear", keyboardScrolling = TRUE),
      menu = c("interactive bar chart" = "bar",
               "interactive map" ="map"),
      fullPage::pageSection(center = TRUE,
                            menu = "bar",
                            mod_bars_echarts_ui("bars_echarts_ui_1")),
      fullPage::pageSection(center = TRUE,
                            menu = "map",
                            mod_map_tmap_ui("map_tmap_ui_1"))
    )
  )
}
```

UI.R

```
mod_bars_echarts_ui("bars_echarts_ui_1")
mod_map_tmap_ui("map_tmap_ui_1")
```

#CORRELCON2020



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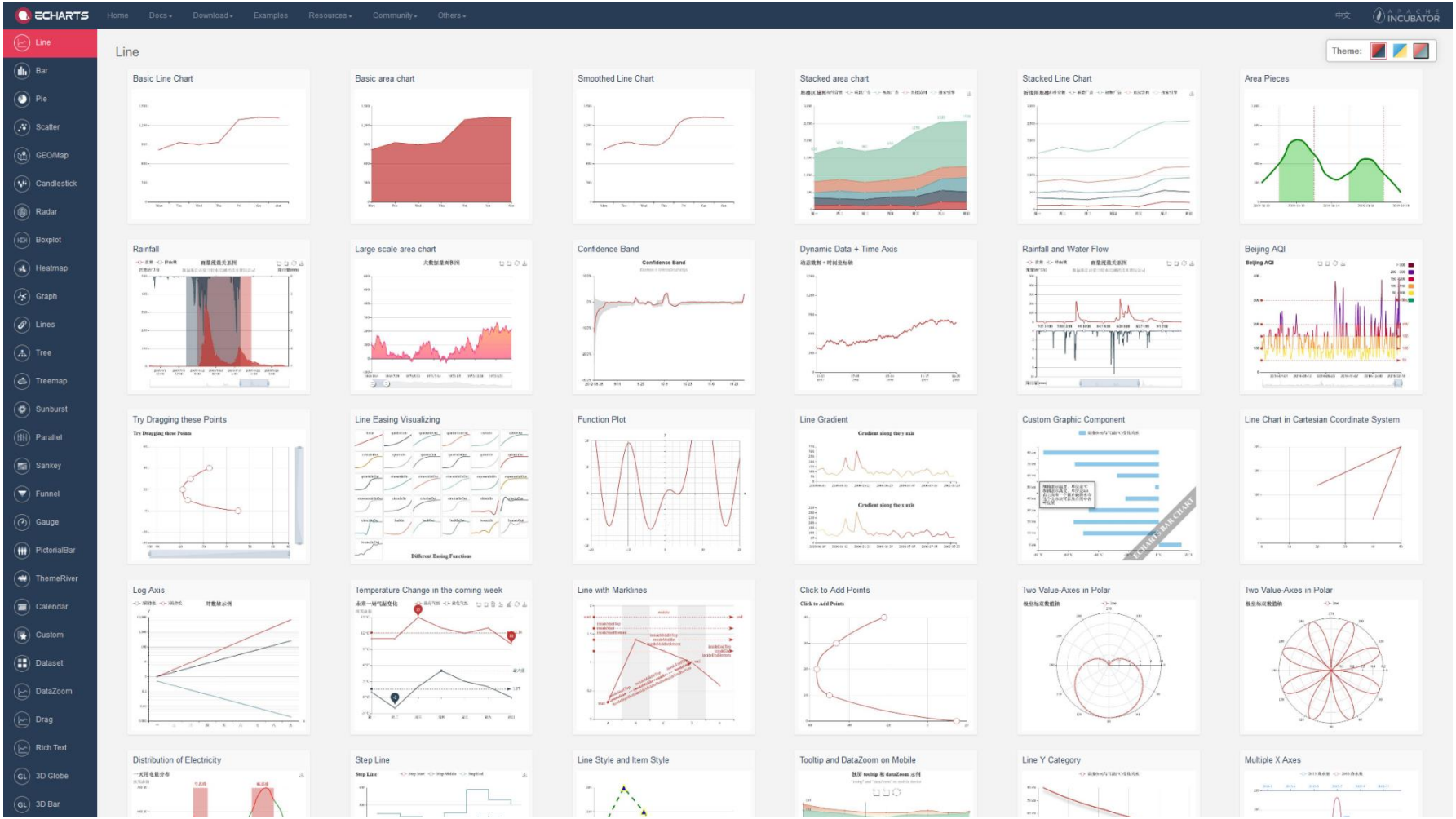

#CORRELCON2020

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echarts4r

Interactive visualisations for R via Apache ECharts (incubating)

GET STARTED | REFERENCE | TIMELINE | SHINY DEMO

New Features

"Use (almost) any chart serie as chart proxy, now on CRAN!"

EXPLORE | CHANGELOG

Installation

The package is available on CRAN. The full installation can be obtained with:

```
install.packages("echarts4r")
```

However, if you only want a *lite* version you can simply do, this is useful for a lighter version that installs faster if you do not want to use any of the geospatial features of the package:

```
install.packages("echarts4r", dependencies = c("Depends", "Imports"))
```

You can also install the *unstable* development version of echarts4r with `remotes` from Github, see changes.

```
# install.packages("remotes")
remotes::install_github("JohnCoene/echarts4r")
```

如果您位于中国，请安装:

```
# install.packages("remotes")
remotes::install_git("https://gitee.com/JohnCoene/echarts4r")
```

Links

Download from CRAN at https://cloud.r-project.org/package=echarts4r

Browse source code at https://github.com/JohnCoene/echarts4r/

Report a bug at https://github.com/JohnCoene/echarts4r/issues

Original library at https://echarts.apache.org/

License

Full license

Apache License (>= 2.0)

Community

Code of conduct

Developers

John Coene

Author, maintainer, copyright holder

All authors...

Support

Sponsor the project

Sponsor

R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_server <- function(input, output, session){
  ns <- session$ns

  output$bars <- echarts4r::renderEcharts4r({
    accidents_sum_bikes %>%
    dplyr::group_by(type) %>%
    echarts4r::e_charts(Gemeinde_name) %>%
    echarts4r::e_bar(accidents) })
}
```

R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_server <- function(input, output, session){
  ns <- session$ns

  output$bars <- echarts4r::renderEcharts4r({
    accidents_sum_bikes %>%
    dplyr::group_by(type) %>%
    echarts4r::e_charts(Gemeinde_name) %>%
    echarts4r::e_bar(accidents)
  })
}
```

RENDER CHART FOR UI

#CORRELCON2020

R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_server <- function(input, output, session){
  ns <- session$ns

  output$bars <- echarts4r::renderEcharts4r({
    accidents_sum_bikes %>%
    dplyr::group_by(type) %>%
    echarts4r::e_charts(Gemeinde_name) %>%
    echarts4r::e_bar(accidents)
  })
}
```

BAR CHART

ACCIDENTS VS GEMEINDE_NAME GROUPED BY TYPE

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R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_server <- function(input, output, session){
  ns <- session$ns

  output$bars <- echarts4r::renderEcharts4r({
    accidents_sum_bikes %>%
    dplyr::group_by(type) %>%
    echarts4r::e_charts(Gemeinde_name) %>%
    echarts4r::e_bar(accidents) %>%
    echarts4r::e_x_axis(axisTick = list(interval = 0),
                        axisLabel = list(rotate = 30),
                        nameGap = 35) %>%
    echarts4r::e_grid(bottom = 100, left = 150)
  })
}
```

ROTATE LABELS

TO SHOW ALL GEMEINDE_NAMES

R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_server <- function(input, output, session){
  ns <- session$ns

  output$bars <- echarts4r::renderEcharts4r({
    accidents_sum_bikes %>%
    dplyr::group_by(type) %>%
    echarts4r::e_charts(Gemeinde_name) %>%
    echarts4r::e_bar(accidents) %>%
    echarts4r::e_x_axis(axisTick = list(interval = 0),
                        axisLabel = list(rotate = 30),
                        nameGap = 35) %>%
    echarts4r::e_grid(bottom = 100, left = 150) %>%
    echarts4r::e_toolbox_feature(feature = "dataZoom") %>%
    echarts4r::e_toolbox_feature(feature = "dataView") %>%
    echarts4r::e_toolbox(bottom = 0)
  })
}
```

ADD TOOLBOX

R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_ui <- function(id){
  ns <- NS(id)
  fullPage:: pageContainer(
    h1("An interactive bar chart"),
    br(),
    echarts4r::echarts4rOutput(ns("bars"), height = "50vh")
    br(), br(),
    p("Source: Statistische Ämter des Bundes und der Länder via",
      tags$a(href="https://unfallatlas.statistikportal.de/_opendata2020.html", "Unfallatlas"))
  )
}
```


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R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_ui <- function(id){
  ns <- NS(id)
  fullPage:: pageContainer(
    h1("An interactive bar chart"),
    br(),
    echarts4r::echarts4rOutput(ns("bars"), height = "50vh")
    br(), br(),
    p("Source: Statistische Ämter des Bundes und der Länder via",
      tags$a(href="https://unfallatlas.statistikportal.de/_opendata2020.html", "Unfallatlas"))
  )
}
```


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R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_ui <- function(id){
  ns <- NS(id)
  fullPage:: pageContainer(
    h1("An interactive bar chart"),
    br(),
    echarts4r::echarts4rOutput(ns("bars"), height = "50vh")
    br(), br(),
    p("Source: Statistische Ämter des Bundes und der Länder via",
      tags$a(href="https://unfallatlas.statistikportal.de/_opendata2020.html", "Unfallatlas"))
  )
}
```


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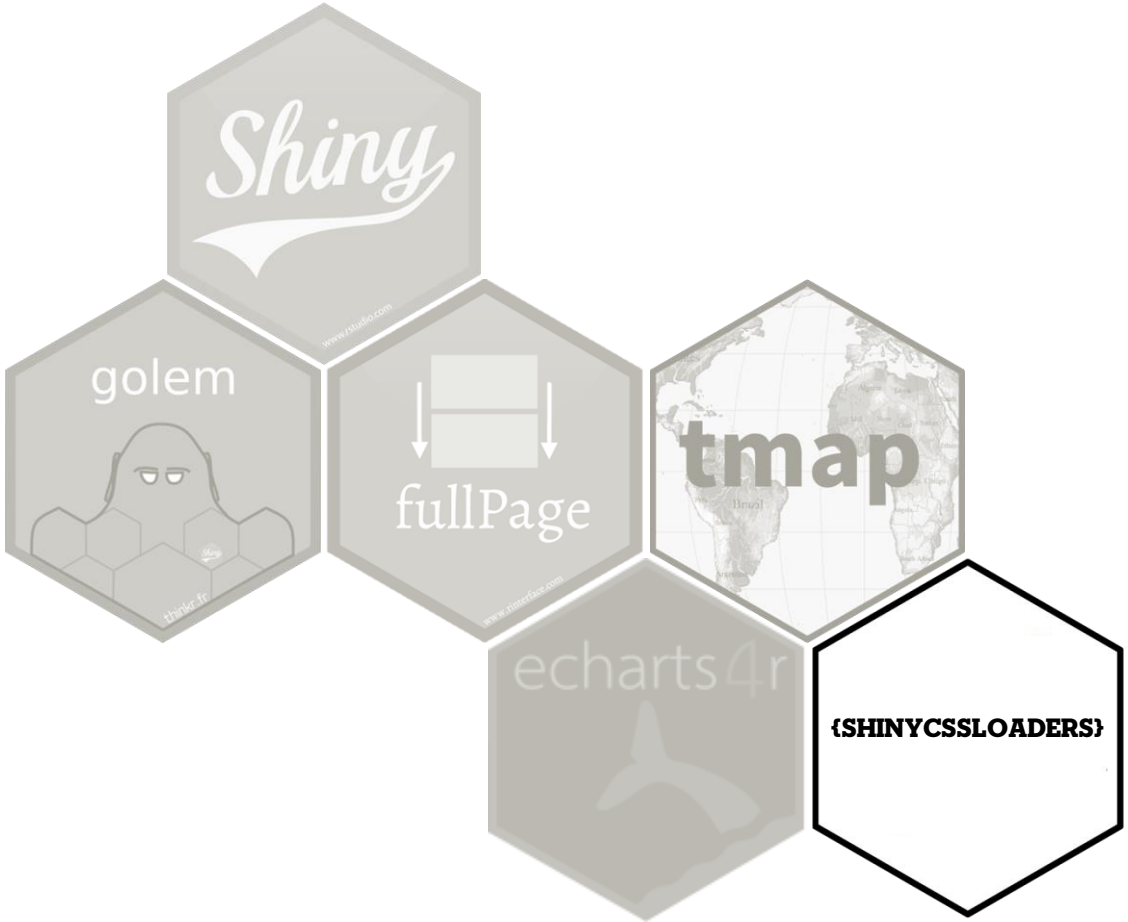

Shiny
golem
fullPage
tmap
echarts4r
{SHINYCSSLOADERS}

{shinycssloaders} - Add loading animations to a Shiny output while it's recalculating

CRAN 1.0.0 build passing

When a Shiny output (such as a plot, table, map, etc.) is recalculating, it remains visible but gets greyed out. Using {shinycssloaders}, you can add a loading animation ("spinner") to outputs instead of greying them out. By wrapping a Shiny output in `withSpinner()`, a spinner will automatically appear while the output is recalculating.

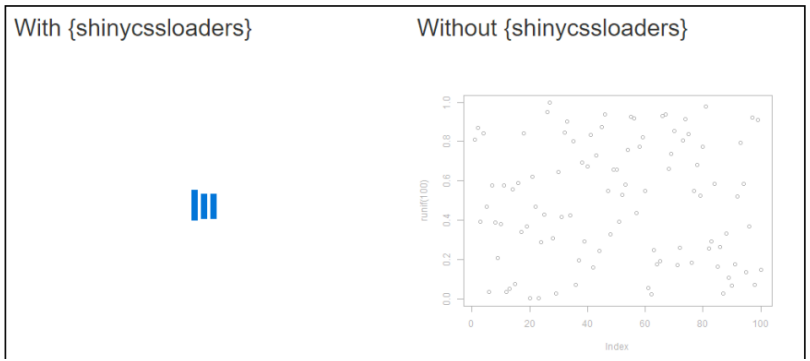
You can choose from one of 8 built-in animation types, and customize the colour/size. You can also use your own image instead of the built-in animations. See the demo Shiny app online for examples.

Table of contents

Example

For interactive examples and to see some of the features, check out the demo app.

Below is a simple example of what {shinycssloaders} looks like:



Contributors 3

daattali Dean Attali

andrewsali

sTeamTraen Nick Brown

Languages

CSS 65.6% R 28.5%
JavaScript 5.9%

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Single Element CSS Spinners

BG FG

Created by @lukehaas

R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_ui <- function(id){
  ns <- NS(id)
  fullPage::pageContainer(
  pageContainer(
    h1("An interactive bar chart"),
    br(),
    shinycssloaders::withSpinner(
      echarts4r::echarts4rOutput(ns("bars"), height = "50vh")
    )
  ),
  br(), br(),
  p("Source: Statistische Ämter des Bundes und der Länder via",
tags$a(href="https://unfallatlas.statistikportal.de/_opendata2020.html", "Unfallatlas"))
  )
}
```


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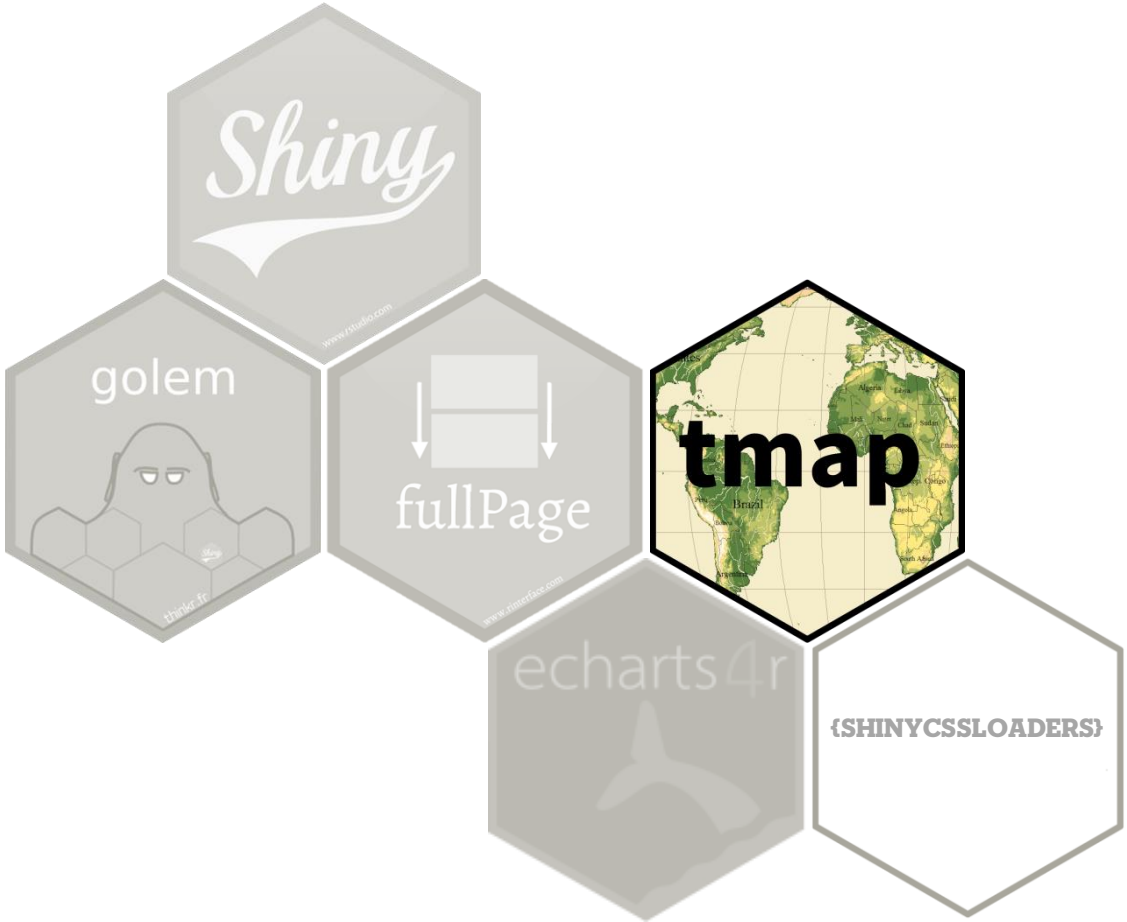
R/MOD_BARS_ECHARTS.R

```
mod_bars_echarts_ui <- function(id){
  ns <- NS(id)
  fullPage::pageContainer(
  pageContainer(
    h1("An interactive bar chart"),
    br(),
    shinycssloaders::withSpinner(
      echarts4r::echarts4rOutput(ns("bars"), height = "50vh")
    )
  ),
  br(), br(),
  p("Source: Statistische Ämter des Bundes und der Länder via",
tags$a(href="https://unfallatlas.statistikportal.de/_opendata2020.html", "Unfallatlas"))
  )
}
```

APP_UI.R

```
options(
  spinner.type = 7,
  spinner.color="#11a579",
  spinner.size = 1
)
```


Shiny
golem
fullPage
tmap
echarts4r
{SHINYCSSLOADERS}

tmap: get started!

With the tmap package, thematic maps can be generated with great flexibility. The syntax for creating plots is similar to that of `ggplot2`, but tailored to maps. This vignette is for those who want to get started with tmap within a couple of minutes. A more detailed description of tmap can be found in an article published in the Journal of Statistical Software (JSS). However, that article describes tmap version 1.11-2, which is out-of-date. Some major changes have been made since then, which are described in `vignette("tmap-changes")`.

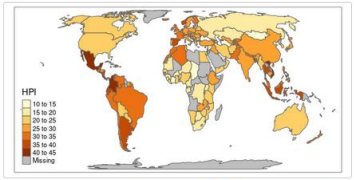
For more context on R's geographic capabilities we recommend the online version of the book Geocomputation with R. The Making maps with R chapter of the book provides many more context and abundant code examples of map making with `tmap` and other packages. Other good resources are the vignettes of the `sf` package, and the website rspatial.org .

Hello World!

A good place to start is to create a map of the world. After installing tmap, the following lines of code should create the map shown below.

```
library(tmap)
data("World")

tm_shape(World) +
    tm_polygons("HPI")
```



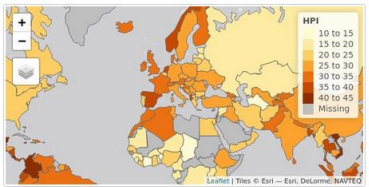
The object `World` is a spatial object of class `sf` from the sf package; it is a `data.frame` with a special column that contains a geometry for each row, in this case polygons. In order to plot it in tmap, you first need to specify it with `tm_shape`. Layers can be added with the + operator, in this case `tm_polygons`. There are many layer functions in tmap, which can easily be found in the documentation by their `tm_` prefix. See also `?"tmap-element"`.

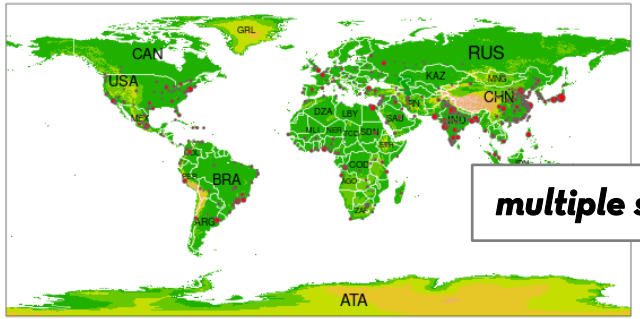
Interactive maps

Each map can be plotted as a static image or viewed interactively using `"plot"` and `"view"` modes, respectively. The mode can be set with the function `tmap_mode`, and toggling between the modes can be done with the 'switch' `ttm()` (which stands for toggle thematic map.

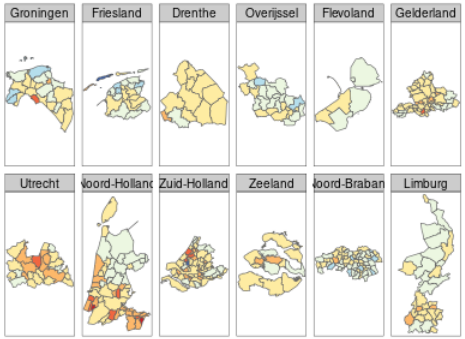
```
tmap_mode("view")

tm_shape(World) +
    tm_polygons("HPI")
```

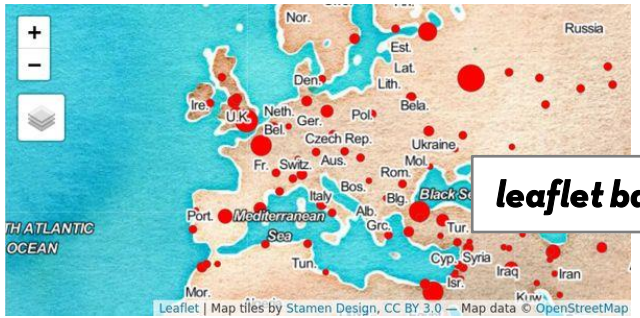




multiple shapes and layers



multiple maps via facets



leaflet base- and tilemaps

R/MOD_MAP_TMAP.R

```
mod_map_tmap_server <- function(input, output, session){
  ns <- session$ns

  output$map <- renderTmap({
    tmap::tm_shape(traffic_summary_int, name = "Ratio Map") +
      tmap::tm_polygons(
        id = "NAME.x",
        col = "bike"
      )
  })
}
```

R/MOD_MAP_TMAP.R

```
mod_map_tmap_server <- function(input, output, session){
  ns <- session$ns

  output$map <- renderTmap({
    tmap::tm_shape(traffic_summary_int, name = "Ratio Map") +
      tmap::tm_polygons(
        id = "NAME.x",
        col = "bike"
      )
  })
}
```

RENDER MAP FOR UI

#CORRELCON2020

R/MOD_MAP_TMAP.R

```
mod_map_tmap_server <- function(input, output, session){
  ns <- session$ns

  output$map <- renderTmap({
    tmap::tm_shape(traffic_summary_int, name = "Ratio Map") +
      tmap::tm_polygons(
        id = "NAME.x",
        col = "bike"
      )
  })
}
```

CHLOROPLETH MAP

POLYGONS NAME.X
COLORED BY BIKE

R/MOD_MAP_TMAP.R

```
mod_map_tmap_server <- function(input, output, session){
  ns <- session$ns

  output$map <- renderTmap({
    tmap::tm_shape(traffic_summary_int, name = "Ratio Map") +
      tmap::tm_polygons(
        id = "NAME.x",
        col = "bike",  alpha = .75, border.col = "white",
        palette = rev(rcartocolor::carto_pal(n = 5, "ag_Sunset")),
        breaks = c(1, 5, 10, 15, 20, 25, 30, Inf),
        legend.reverse = TRUE,
        textNA = "No Accidents in 2019",
        title = "Number of reported\nbike accidents",
        popup.vars = c("District:" = "Gemeinde_name",
                       "Total number of bike accidents:" = "n_total",
                       "Accidents on bicycle infrastructure:" = "n_bike",
                       "Proportion:" = "perc_bike")
      )
  })
}
```

MODIFY COLORS + LEGEND

R/MOD_MAP_TMAP.R

```
mod_map_tmap_server <- function(input, output, session){
  ns <- session$ns

  output$map <- renderTmap({
    tmap::tm_shape(traffic_summary_int, name = "Ratio Map") +
      tmap::tm_polygons(
        id = "NAME.x",
        col = "bike",  alpha = .75, border.col = "white",
        palette = rev(rcartocolor::carto_pal(n = 5, "ag_Sunset")),
        breaks = c(1, 5, 10, 15, 20, 25, 30, Inf),
        legend.reverse = TRUE,
        textNA = "No Accidents in 2019",
        title = "Number of reported\nbike accidents",
        popup.vars = c("District:" = "Gemeinde_name",
                       "Total number of bike accidents:" = "n_total",
                       "Accidents on bicycle infrastructure:" = "n_bike",
                       "Proportion:" = "perc_bike")
      )
  })
}
```

MODIFY TOOLTIPS

R/MOD_MAP_TMAP.R

```
mod_map_tmap_ui <- function(id){
  ns <- NS(id)
  fullPage::pageContainer(
    tags$style(
      type = "text/css",
      "div.info.legend.leaflet-control {text-align:left; }
       div.leaflet-control-layers-expanded {text-align:left;}"
    ),
    h1("An interactive map"), br(),
    shinycssloaders::withSpinner(
      tmap::tmapOutput(ns("map"), height = 530)
    ),
    br(), br(),
    p("Source: Statistische Ämter des Bundes und der Länder via",
      tags$a(href="https://unfallatlas.statistikportal.de/_opendata2020.html", "Unfallatlas"),
      "• Geoportal Berlin via",
      tags$a(href="https://data.technologiestiftung-berlin.de/", "Technologiestiftung Berlin"))
  )
}
```

R/MOD_MAP_TMAP.R

```
mod_map_tmap_ui <- function(id){
  ns <- NS(id)
  fullPage::pageContainer(
    tags$style(
      type = "text/css",
      "div.info.legend.leaflet-control {text-align:left; }
       div.leaflet-control-layers-expanded {text-align:left;}"
    ),
    h1("An interactive map"), br(),
    shinycssloaders::withSpinner(
       tmap::tmapOutput(ns("map"), height = 530)
    ),
    br(), br(),
    p("Source: Statistische Ämter des Bundes und der Länder via",
      tags$a(href="https://unfallatlas.statistikportal.de/_opendata2020.html", "Unfallatlas"),
      "• Geoportal Berlin via",
      tags$a(href="https://data.technologiestiftung-berlin.de/", "Technologiestiftung Berlin"))
  )
}
```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R/MOD_MAP_TMAP.R

```
mod_map_tmap_ui <- function(id){
  ns <- NS(id)
  fullPage::pageContainer(
    tags$style(
      type = "text/css",
      "div.info.legend.leaflet-control {text-align:left; }
       div.leaflet-control-layers-expanded {text-align:left;}"
    ),
    h1("An interactive map"), br(),
    shinycssloaders::withSpinner(
      tmap::tmapOutput(ns("map"), height = 530)
    ),
    br(), br(),
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      tags$a(href="https://unfallatlas.statistikportal.de/_opendata2020.html", "Unfallatlas"),
      "• Geoportal Berlin via",
      tags$a(href="https://data.technologiestiftung-berlin.de/", "Technologiestiftung Berlin"))
  )
}
```

R/MOD_MAP_TMAP.R

```
mod_map_tmap_ui <- function(id){
  ns <- NS(id)
  fullPage::pageContainer(
    tags$style(
      type = "text/css",
      "div.info.legend.leaflet-control {text-align:left; }
       div.leaflet-control-layers-expanded {text-align:left;}"
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    h1("An interactive map"), br(),
    shinycssloaders::withSpinner(
      tmap::tmapOutput(ns("map"), height = 530)
    ),
    br(), br(),
    p("Source: Statistische Ämter des Bundes und der Länder via",
      tags$a(href="https://unfallatlas.statistikportal.de/_opendata2020.html", "Unfallatlas"),
      "• Geoportal Berlin via",
      tags$a(href="https://data.technologiestiftung-berlin.de/", "Technologiestiftung Berlin"))
  )
}
```

Codes on GitHub:

Z3TT/CORRELCON2020_GOLEM_HTML_WIDGETS

Additional Code for adding button in branch “buttons”

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RESOURCES

Books

- „Mastering Shiny“ by Hadley Wickham (mastering-shiny.org)
- „Engineering Production-Grade Shiny Apps“ by Colin Fay *et al.* (engineering-shiny.org)
- „JavaScript for R“ by Joene Coene (javascript-for-r.com)

Packages for charts

- {plotly} (plot.ly/r)
- {echarts4r} (echarts4r.john-coene.com)
- {ggiraph} (davidgohel.github.io/ggiraph)
- {highcharter} (jkunst.com/highcharter)
- {dygraphs} (rstudio.github.io/dygraphs)
- {charter} (github.com/johncoene/charter)
- {rbokeh} (hafen.github.io/rbokeh)
- {metricsgraphics} (hrbrmstr.github.io/metricsgraphics)
- {rthreejs} (github.com/bwlewis/rthreejs)
- {visnetwork} (dataknowledge.github.io/visNetwork)
- {networkD3} (christophergandrud.github.io/networkD3/)
- {DiagrammeR} (rich-iannone.github.io/DiagrammeR)

Packages for tables

- {DT} (rstudio.github.io/DT)
- {formattable} (renkun-ken.github.io/formattable)

Packages for maps

- {leaflet} (rstudio.github.io/leaflet)
- {tmap} (github.com/mtennekes/tmap)
- {mapdeck} (symbolixau.github.io/mapdeck)
- {echarts4r} (echarts4r.john-coene.com)

Packages for theming

- {shinydashboard} (rstudio.github.io/shinydashboard/)
- {shinydashboardPlus} (rinterface.github.io/shinydashboardPlus)
- {fullPage} (rinterface.github.io/fullPage)
- {bs4Dash} (rinterface.github.io/bs4Dash)
- {shinybulma} (rinterface.github.io/shinybulma)

RESOURCES

Books

- „Mastering Shiny“ by Hadley Wickham (mastering-shiny.org)
- „Engineering Production-Grade Shiny Apps“ by Colin Fay *et al.* (engineering-shiny.org)
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- {plotly} (plot.ly/r)
- {echarts4r} (echarts4r.john-coene.com)
- {ggiraph} (davidgohel.github.io/ggiraph)
- {highcharter} (jkunst.com/highcharter)
- {dygraphs} (rstudio.github.io/dygraphs)
- {charter} (github.com/johncoene/charter)
- {rbokeh} (hafen.github.io/rbokeh)
- {metricsgraphics} (hrbrmstr.github.io/metricsgraphics)
- {rthreejs} (github.com/bwlewis/rthreejs)
- {visnetwork} (dataknowledge.github.io/visNetwork)
- {networkD3} (christophergandrud.github.io/networkD3/)
- {DiagrammeR} (rich-iannone.github.io/DiagrammeR)

gallery.htmlwidgets.org
nanxstats/awesome-shiny-extensions

Packages for tables

- {DT} (rstudio.github.io/DT)
- {formattable} (renkun-ken.github.io/formattable)

Packages for maps

- {leaflet} (rstudio.github.io/leaflet)
- {tmap} (github.com/mtennekes/tmap)
- {mapdeck} (symbolixau.github.io/mapdeck)
- {echarts4r} (echarts4r.john-coene.com)

Packages for theming

- {shinydashboard} (rstudio.github.io/shinydashboard/)
- {shinydashboardPlus} (rinterface.github.io/shinydashboardPlus)
- {fullPage} (rinterface.github.io/fullPage)
- {bs4Dash} (rinterface.github.io/bs4Dash)
- {shinybulma} (rinterface.github.io/shinybulma)

#CORRELCON2020

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THANK YOU!

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