

# Building Web APIs in R with Plumber

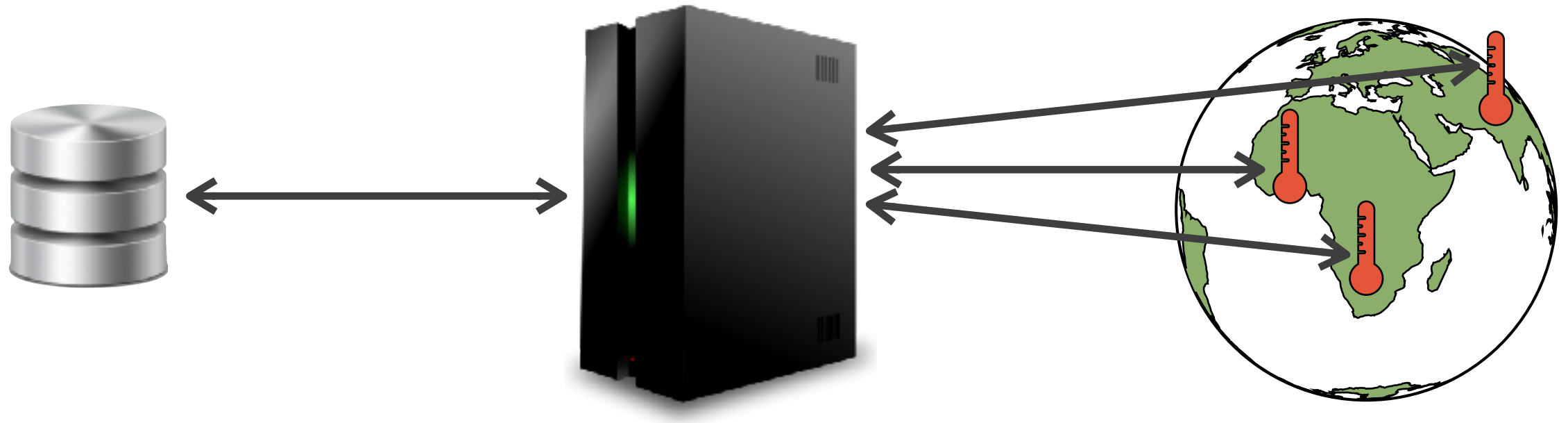
*Jeff Allen 2/2018*

*RStudio*

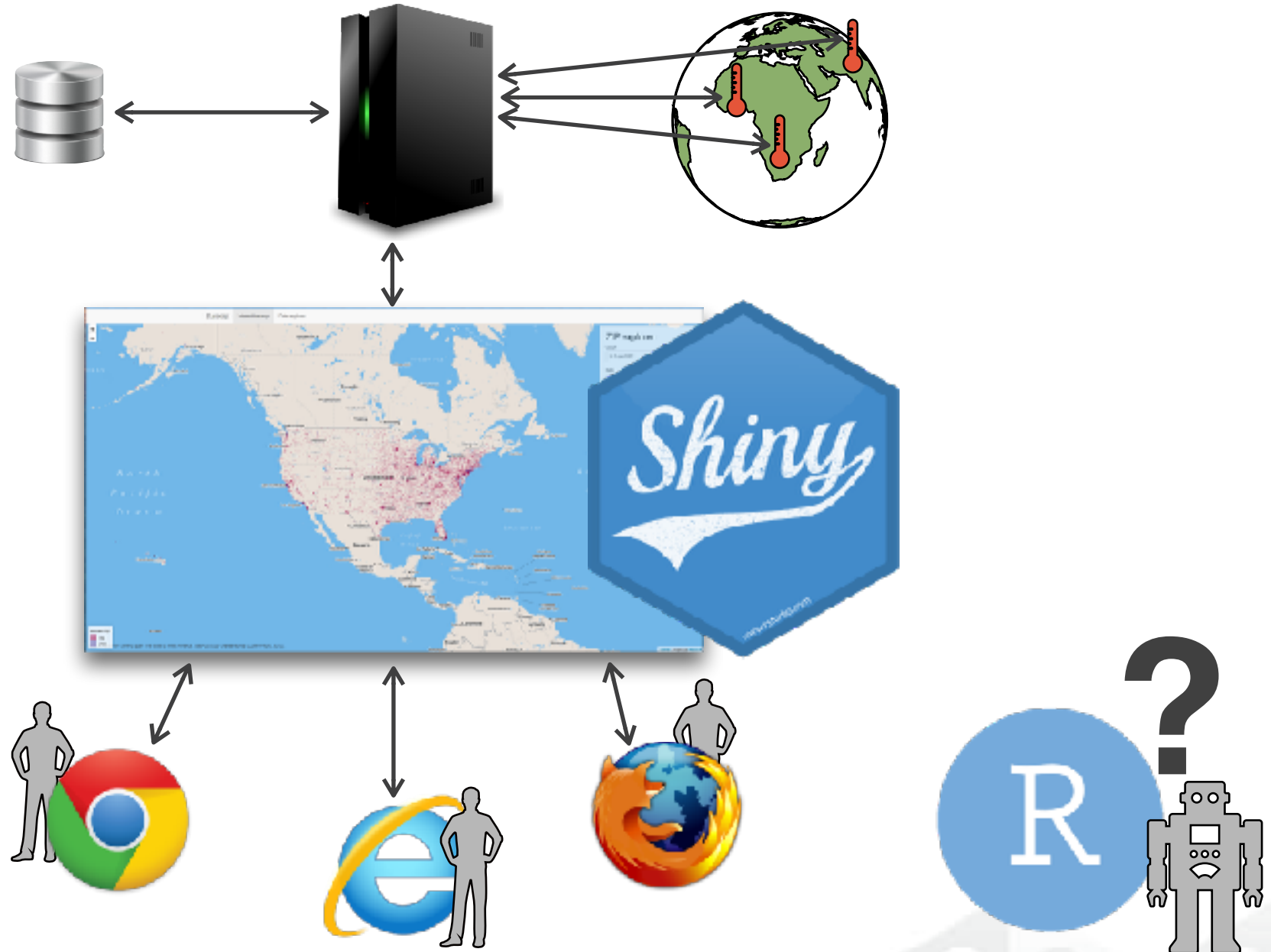
# Web APIs

- Machine-friendly data formats (JSON)
- Programmatically consumed
- Accessible from all major programming languages and platforms
  - Including R (httr), and web browsers

# Weather System



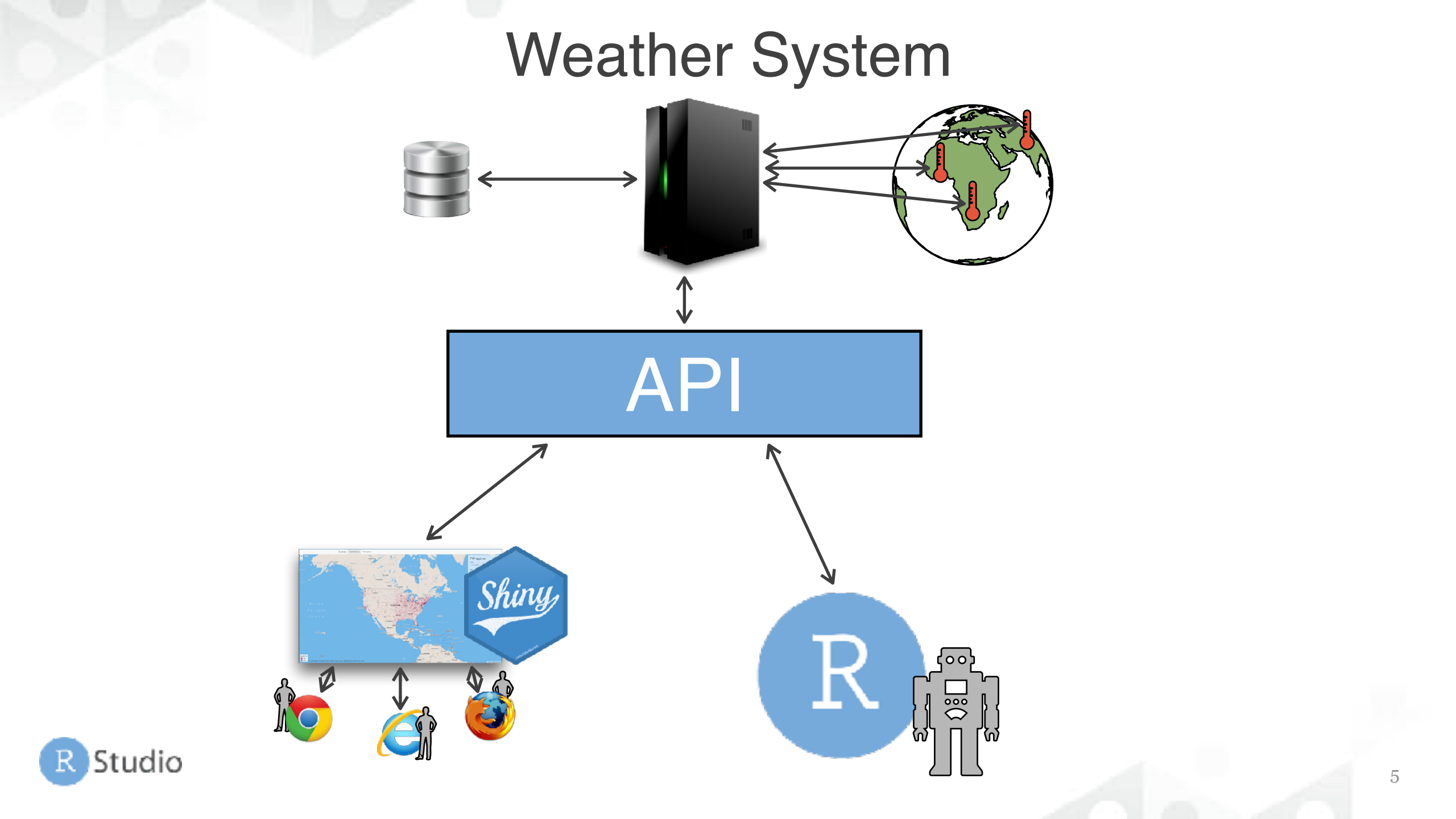
# Weather System



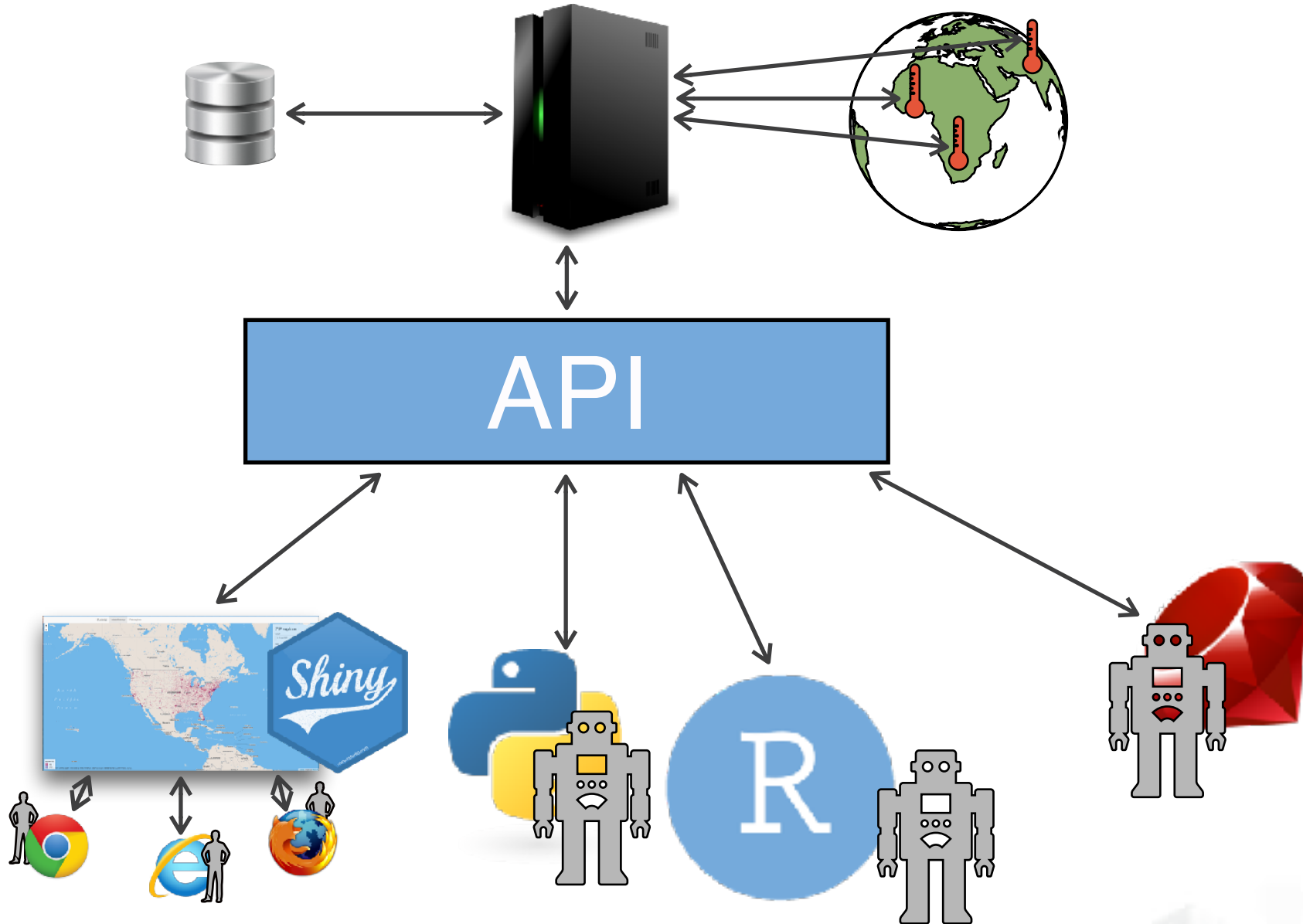
# Weather System

```
graph TD; DB[(Database)] <--> Server[Server]; Server <--> API[API]; Server <--> Earth((Earth)); API <--> Shiny[Shiny]; API <--> R((R)); Shiny <--> Chrome[Chrome]; Shiny <--> IE[IE]; Shiny <--> Firefox[Firefox]; R <--> Robot[Robot];
```

The diagram illustrates the architecture of a Weather System. At the top, a **Server** (represented by a black server rack) is connected to a **Database** (represented by a stack of three silver disks) and a **World Map** (represented by a globe with red location pins). The **Server** is also connected to an **API** (represented by a blue rectangular box labeled "API"). The **API** is connected to two client applications: **Shiny** (represented by a blue hexagon with the word "Shiny" and a map) and **R** (represented by a blue circle with a white "R" and a robot icon). The **Shiny** application is further connected to three web browsers: **Chrome** (represented by a colorful sphere), **IE** (represented by a blue sphere with a white "e"), and **Firefox** (represented by a colorful sphere). The **R** application is connected to a **Robot** icon.



# Weather System



# APIs with Plumber

- Open-source R package
- Converts your existing R code into web APIs using special comments
- `install.packages("plumber")`



```
#' @get /echo  
function(msg) {  
  paste("You said:", msg)  
}
```





library(**dygraphs**)

```
#' @get /spots/<year>/graph
```

```
#' @serialize
```

```
function(year)
```

```
  dygraph(data)
```

```
    main =
```

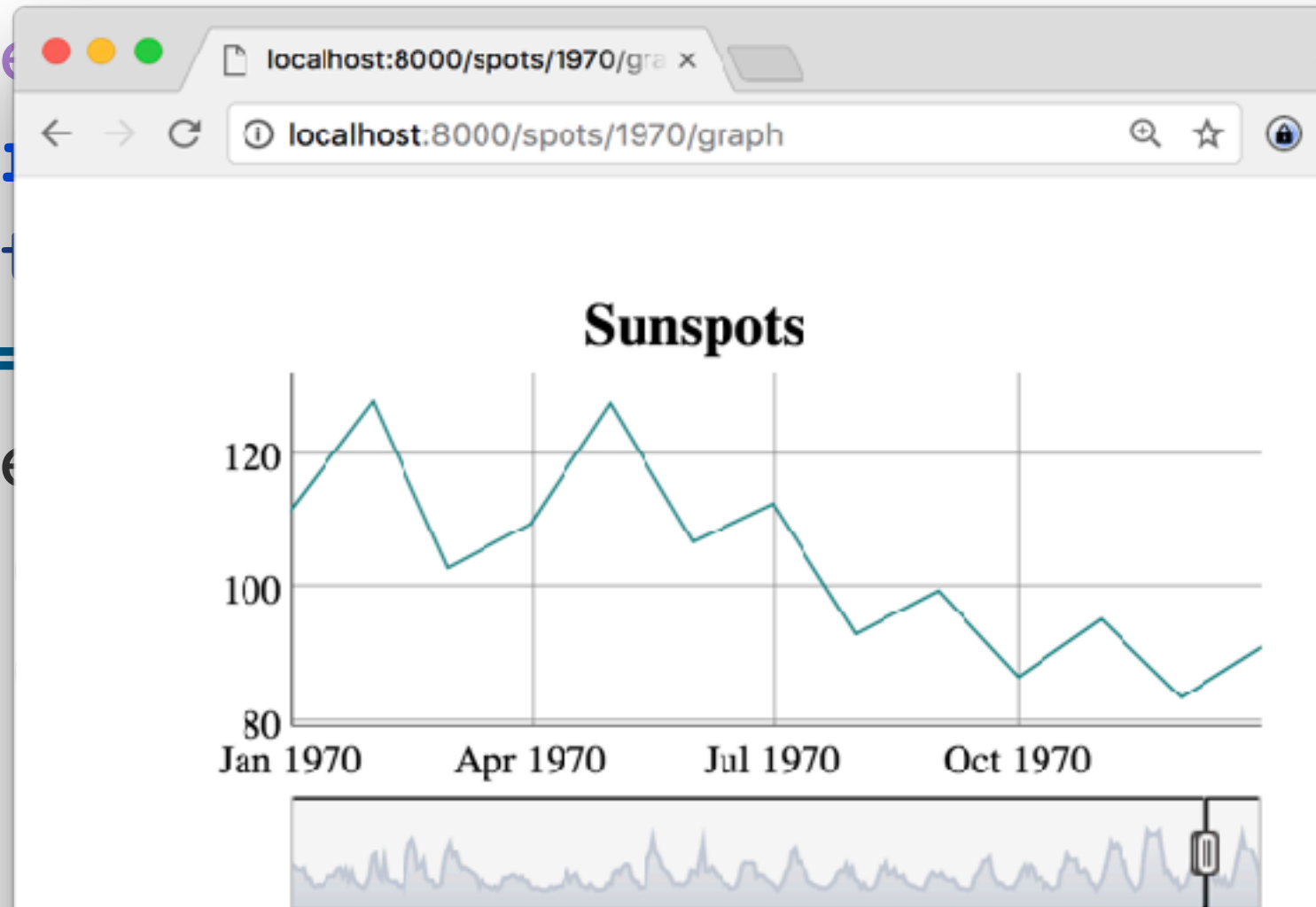
```
    dyRangeSe
```

```
    paste0
```

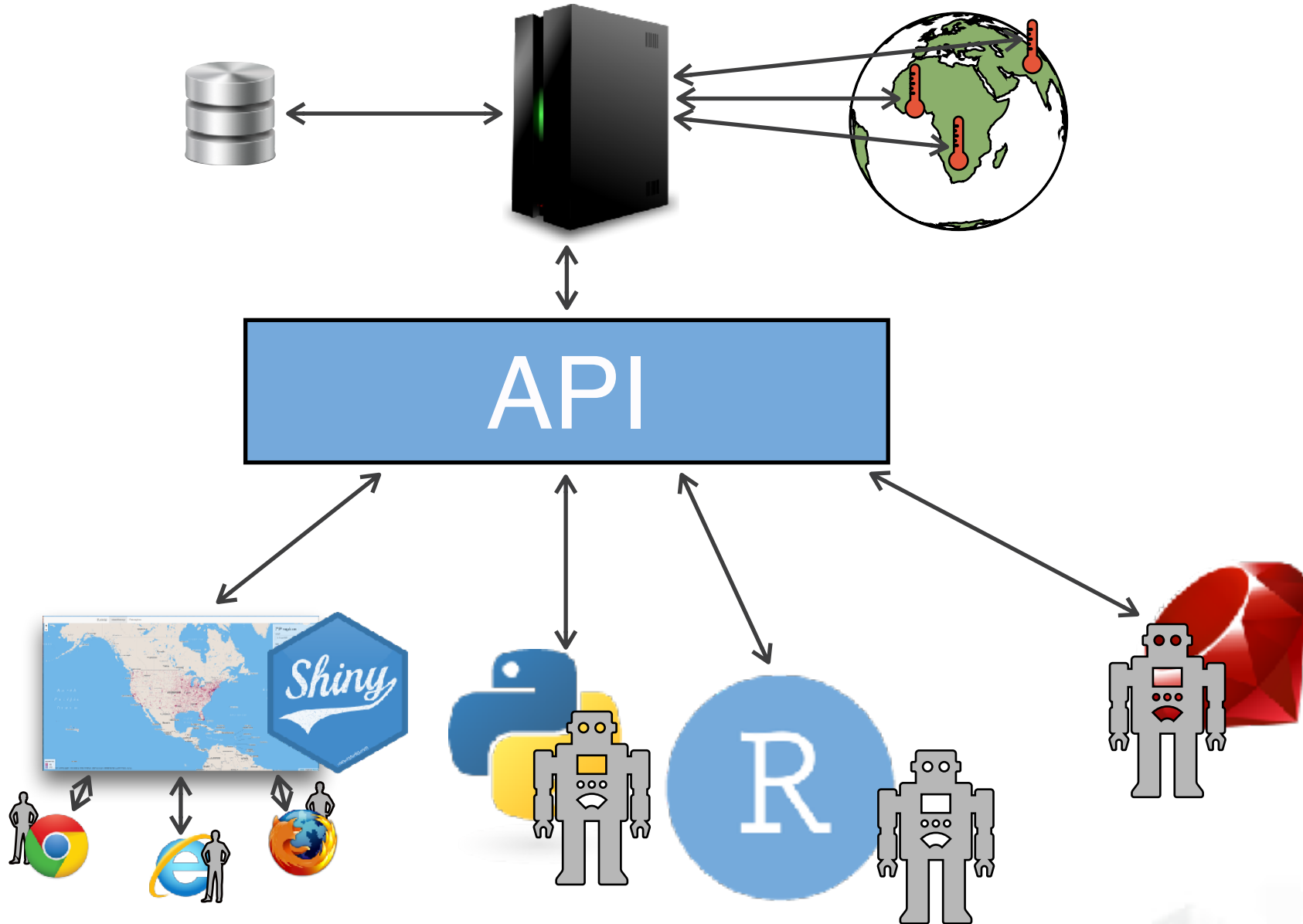
```
    paste0
```

```
)
```

R Studio }



# Weather System

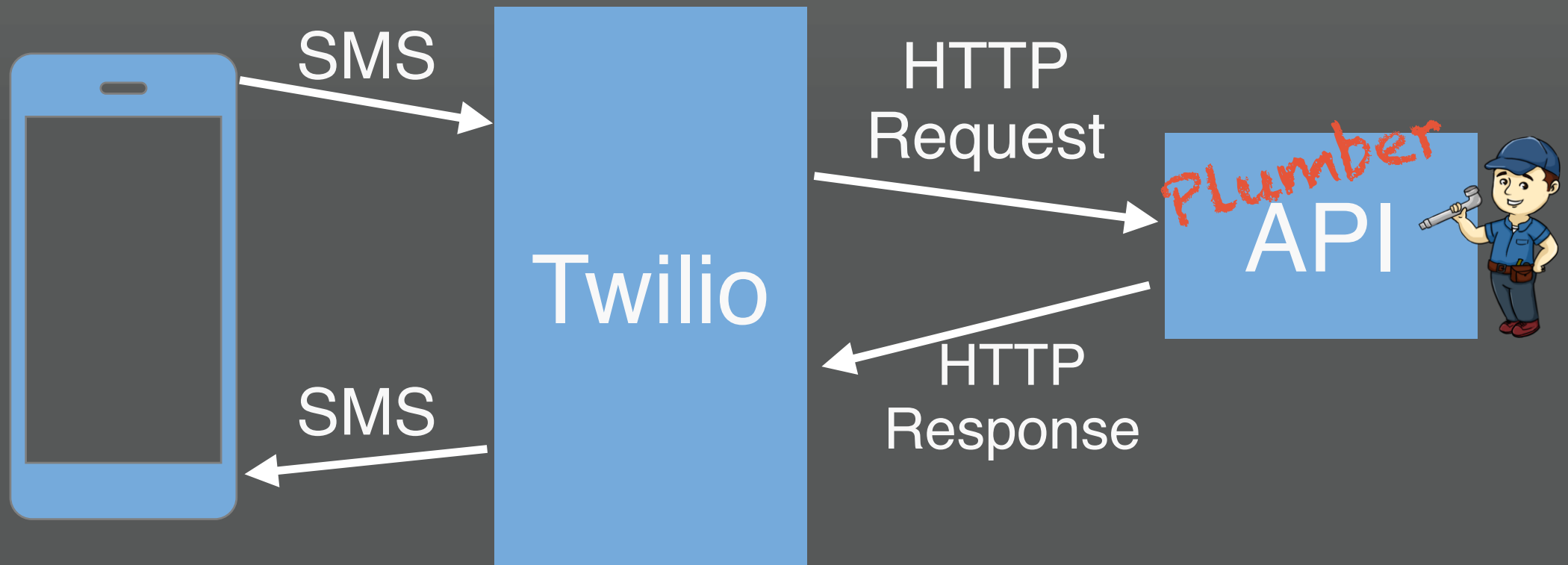


Text recently used emojis to  
972-218-0013

Demo



Text recently used emojis to  
972-218-0013



# Hosting

- RStudio Connect
  - `rsconnect::deployAPI()`
  - Load balancing, access controls
  - *Talk tomorrow: Session 3, production-1*
- Digital Ocean
  - `do_provision()`

```
#' @get /count  
function() {  
  read_csv_async("file.csv") %>%  
  nrow()  
}
```

## Upcoming

- Async support
- Testing?
- Expanded documentation

# Questions?

- <https://rplumber.io>
- StackOverflow - `plumber` tag
- Quick start: <https://rstd.io/plumber-qs>
- GitHub: `trestletech/plumber`
- Slides: <http://rstd.io/rsconf-plumber>