Streamlining and Automation: Simplify Your App and Simplify Your Life

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Jumping Rivers

Bespoke data science solutions in support & development

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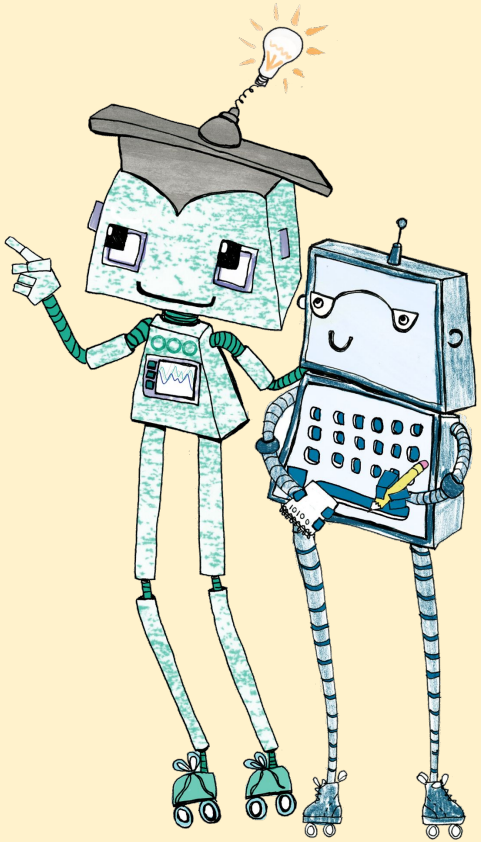
Machine learning
Dashboard development
R packages
APIs
Data pipelines
Code review



plumber Shiny tidymodels scikit learn Flask

Data Does Not Sit Still

World Health Organization
REGIONAL OFFICE FOR Europe

WHO/Europe COVID-19 Vaccine Programme Monitor

- Overview
- Vaccine allocation and utilization
- Vaccine uptake
- Notes on the data

Select a group

- (●) All countries and territories
- ( ) High Income
- ( ) Upper-middle Income
- ( ) Low and Low-middle Income

ⓘ Starting from 18 April 2023, the frequency of update of WHO/Europe COVID-19 Vaccine Programme Monitor dashboards is every four weeks.
ⓘ The next update of data for countries in the EU/EEA is expected on 25th May.

1,714,597,911
Total doses administered

632,382,176
(67.7%)
Total first dose uptake

602,248,985
(64.5%)
Total complete series uptake

324,760,298
(34.8%)
Total first booster dose uptake

91,319,850
(9.8%)
Total second booster dose uptake

54 / 54
Data from any source

53 / 54
Reporting to WHO

Data availablility

Availability of officially reported data



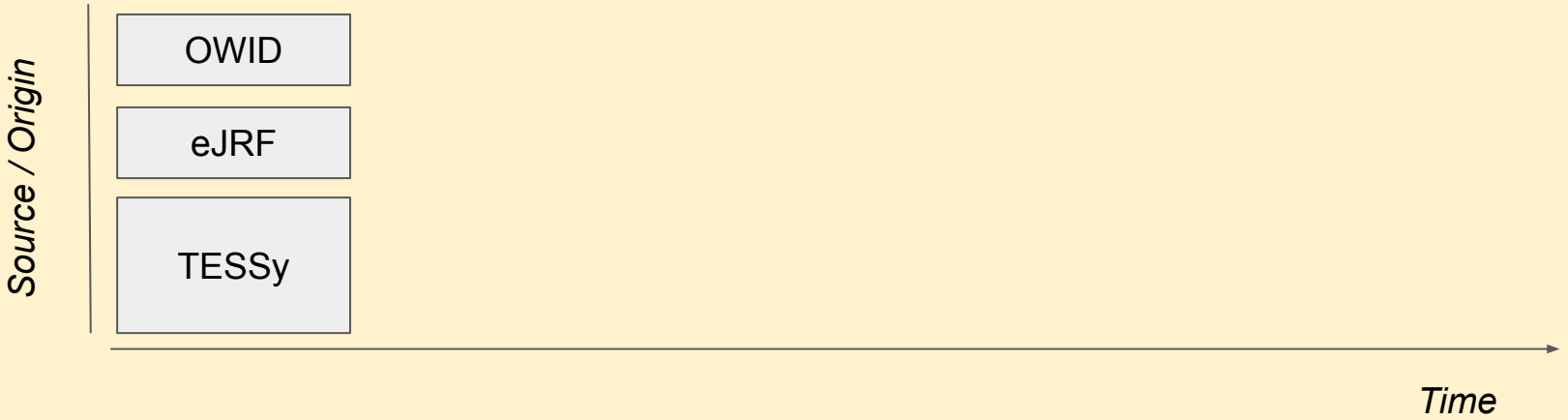
Data officially reported to WHO are current for epidemiological week 19, 2023 as reported by May 16, 2023

Vaccination data officially reported to WHO

COUNTRY	LATEST REPORT DATE	TOTAL DOSES	FIRST DOSE	SECOND DOSE	FIRST BOOSTER DOSE	SECOND BOOSTER DOSE	UNKNOWN DOSE	UPTAKE WITH AT LEAST ONE DOSE (%)	UPTAKE WITH A COMPLETE VACCINE SERIES (%)	UPTAKE WITH FIRST BOOSTER DOSE (%)	UPTAKE WIT SECON BOOSTE DOSE (%
Albania	May 14, 2023	3,080,679	1,348,396	1,277,987	399,190	55,106	0	47.4	44.9	14.0	1.9
Andorra	Apr 09, 2023	157,038	57,910	53,496	43,067	2,565	0	76.0	70.2	56.5	3.4
Armenia	May 14, 2023	2,156,999	1,122,040	990,069	44,890	0	0	37.9	33.6	1.5	0.0
Austria	Apr 16, 2023	20,398,290	6,899,570	6,328,544	5,405,069	1,755,412	9,695	77.6	75.1	60.7	19.7
Azerbaijan	May 14, 2023	13,822,539	5,434,010	4,886,264	3,502,265	0	0	53.6	48.2	34.5	0.0
Belarus	Apr 16, 2023	21,205,264	6,438,808	6,010,753	5,699,425	3,056,278	0	68.1	67.2	60.3	32.3
Belgium	Apr 16, 2023	29,116,970	9,254,250	8,730,094	7,244,265	3,888,361	0	80.3	79.5	62.9	33.7
Bosnia & Herzegovina	Jan 29, 2022	1,924,950	943,394					28.8	25.8		
Bulgaria	Apr 16, 2023	4,616,448	2,107,690	1,563,774	832,040	112,944	0	30.3	29.9	12.0	1.6
Croatia	Oct 23, 2022	5,357,755	2,317,461	2,043,594	954,875	40,415	1,410	57.1	55.3	23.5	1.0
Cyprus	Apr 09, 2023	1,858,569	669,109	631,610	487,319	70,466	65	75.4	73.9	54.9	7.9
Czech Republic	Apr 16, 2023	18,612,721	6,971,880	6,475,924	4,365,183	799,734	0	65.2	64.4	40.8	7.5
Denmark	Apr 16, 2023	15,020,674	4,776,583	4,695,523	3,643,369	1,905,199	0	82.0	81.4	62.6	32.7
Estonia	Apr 16, 2023	2,204,078	845,066	762,833	487,178	109,001	0	63.6	63.4	36.7	8.2

https://worldhealthorg.shinyapps.io/EURO_COVID-19_vaccine_monitor/

Data Evolves



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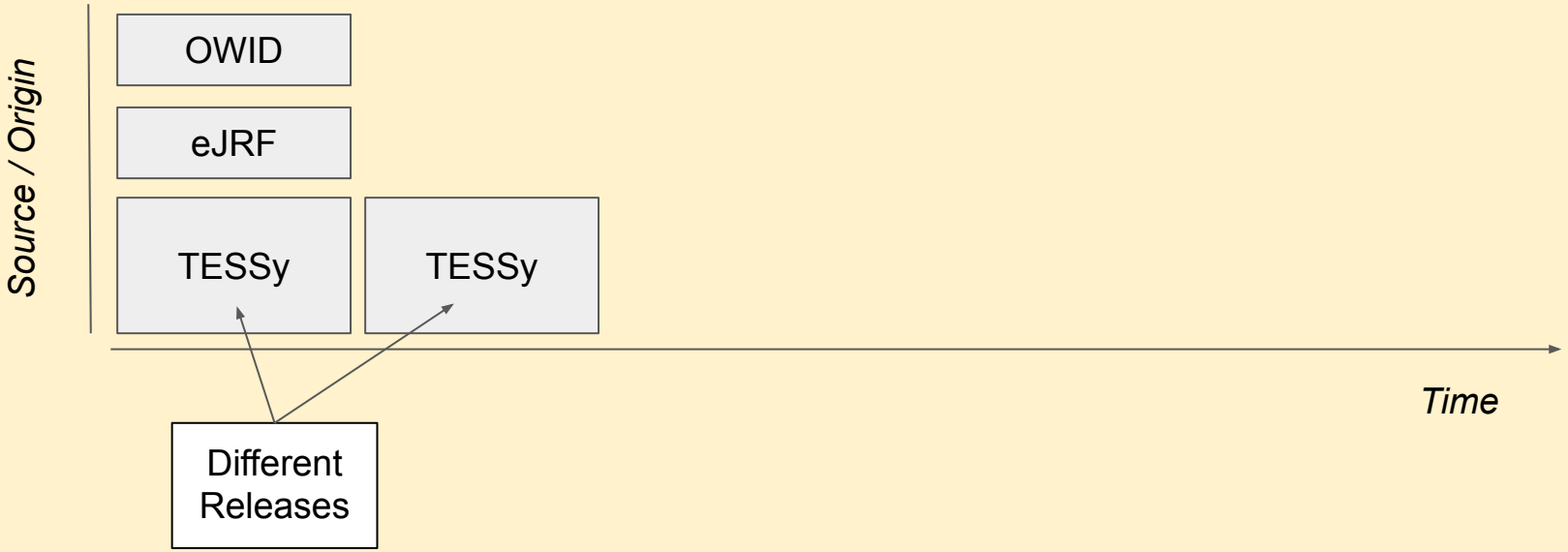

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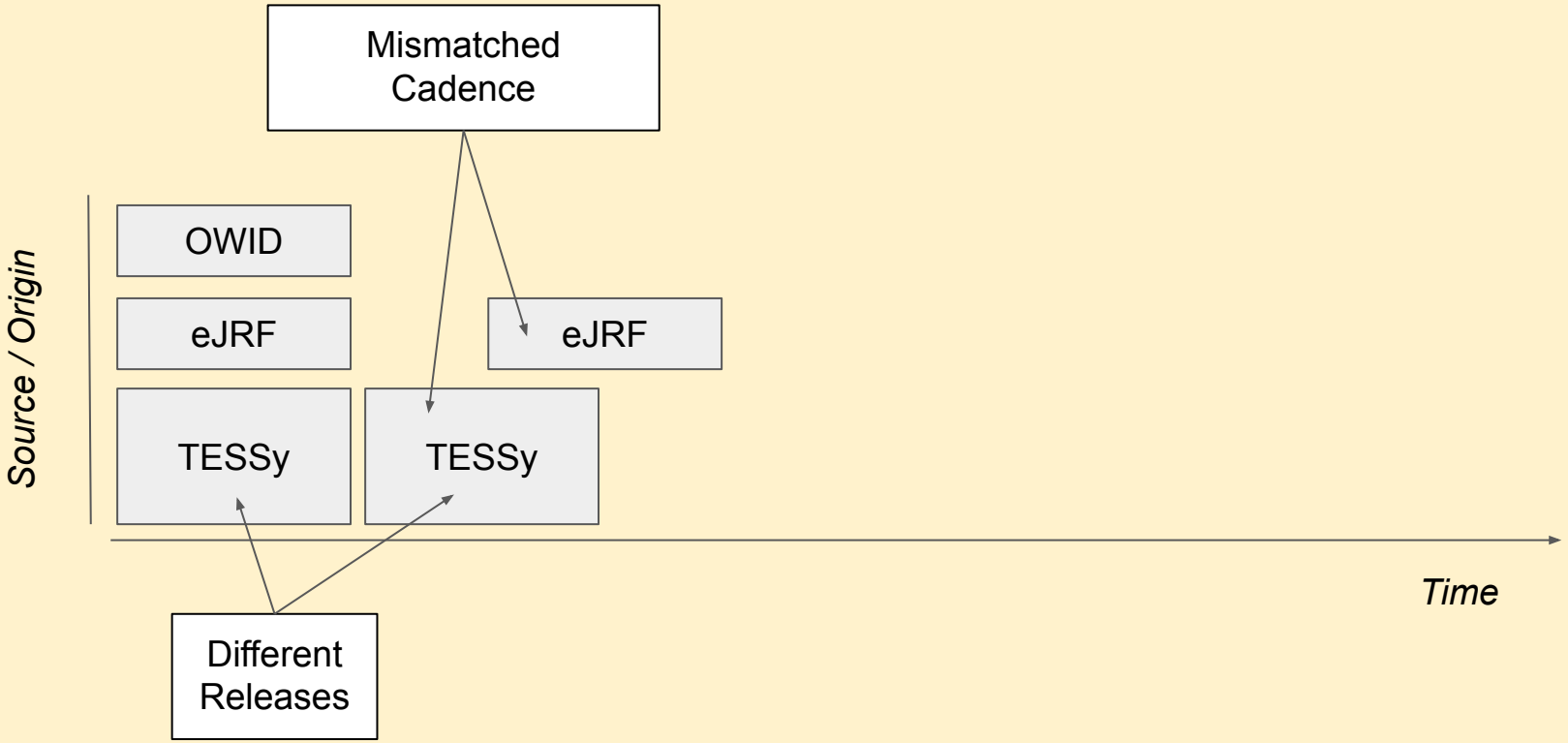

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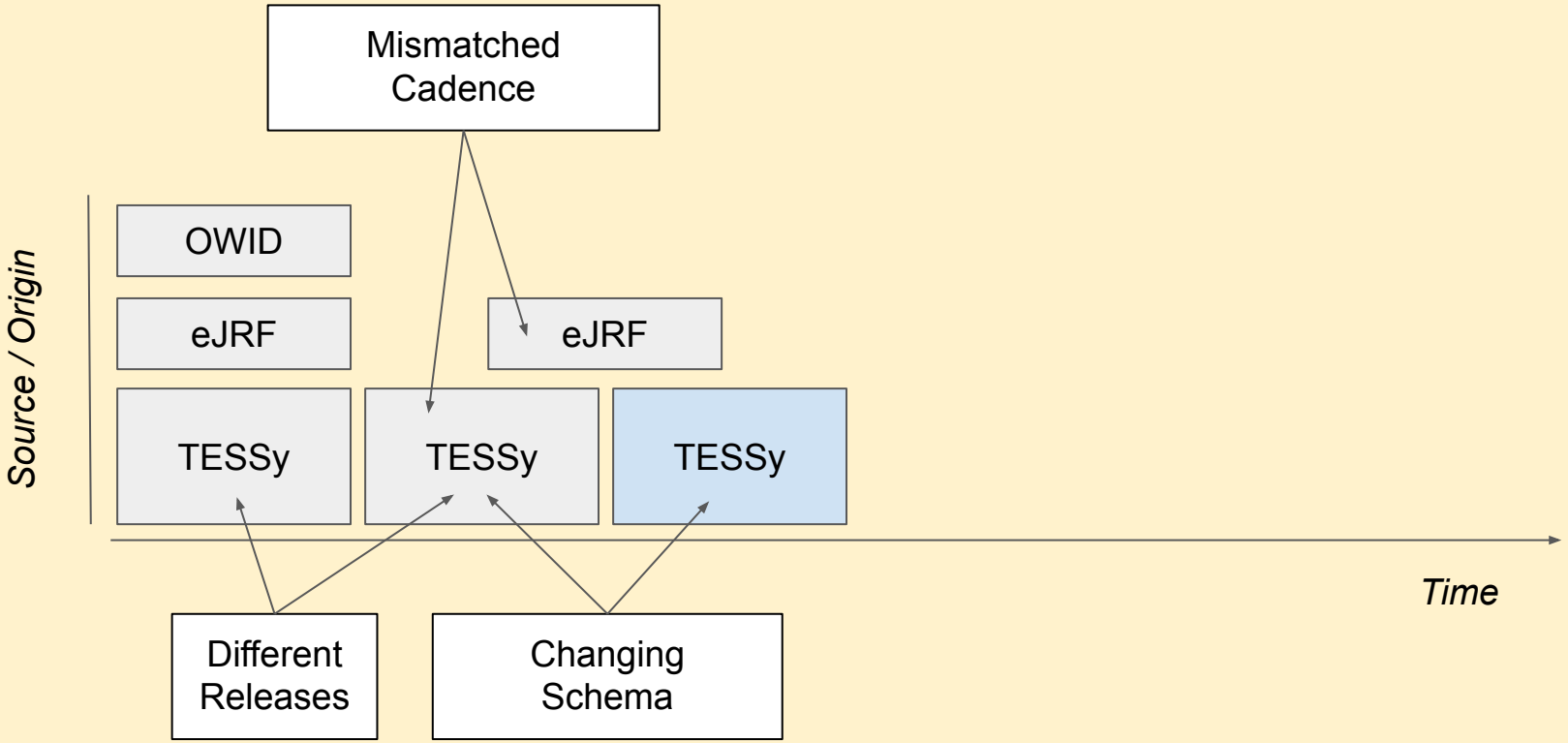

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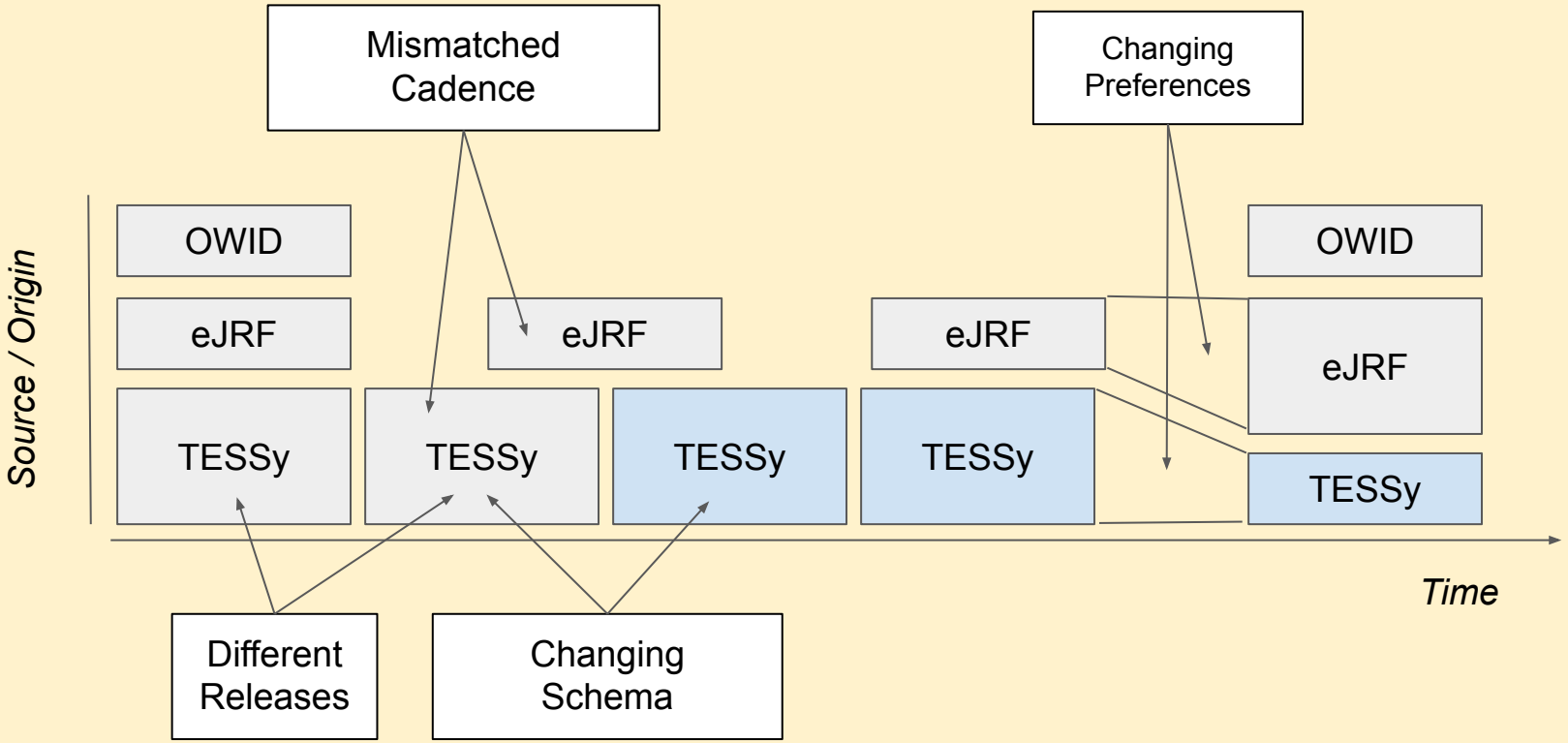
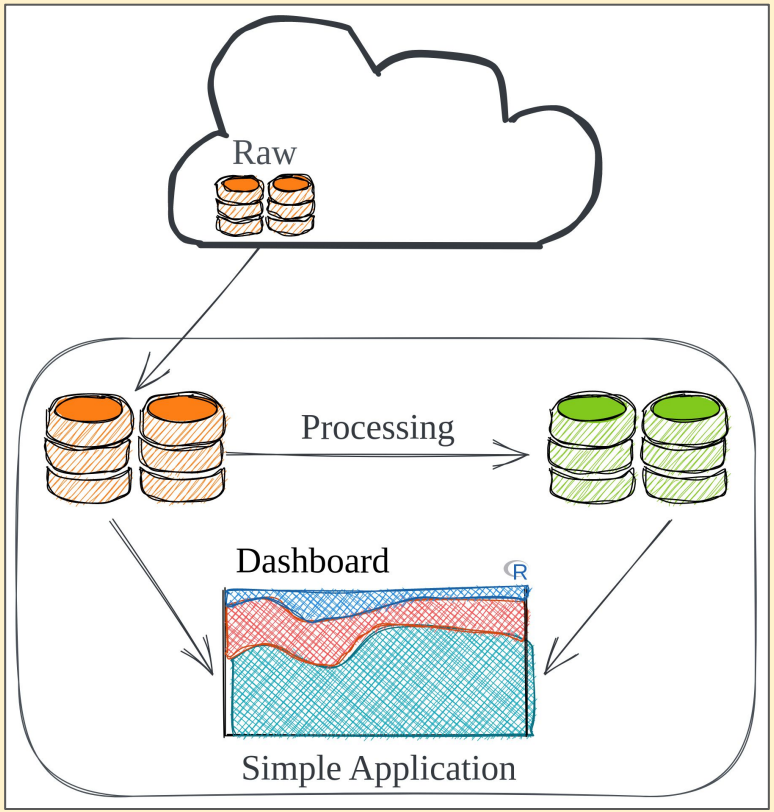
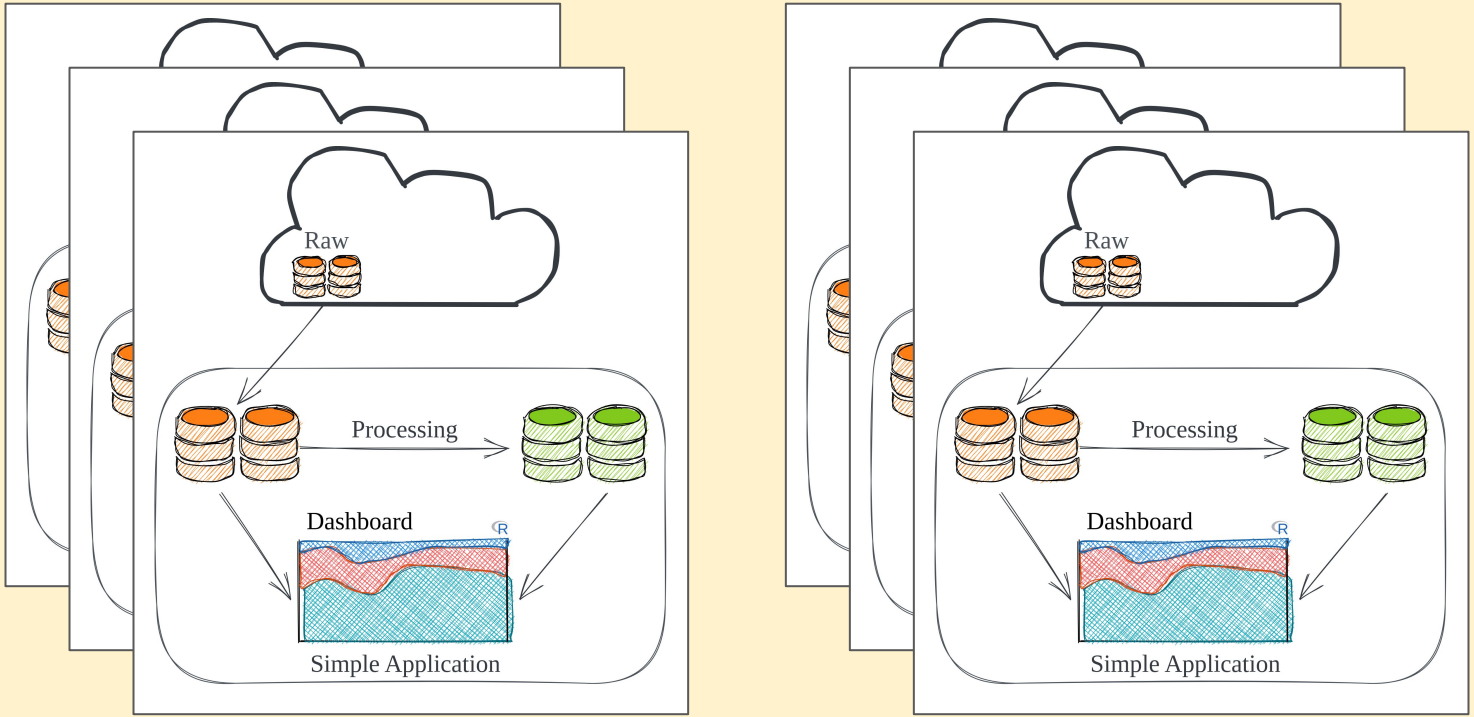


A Typical Shiny App

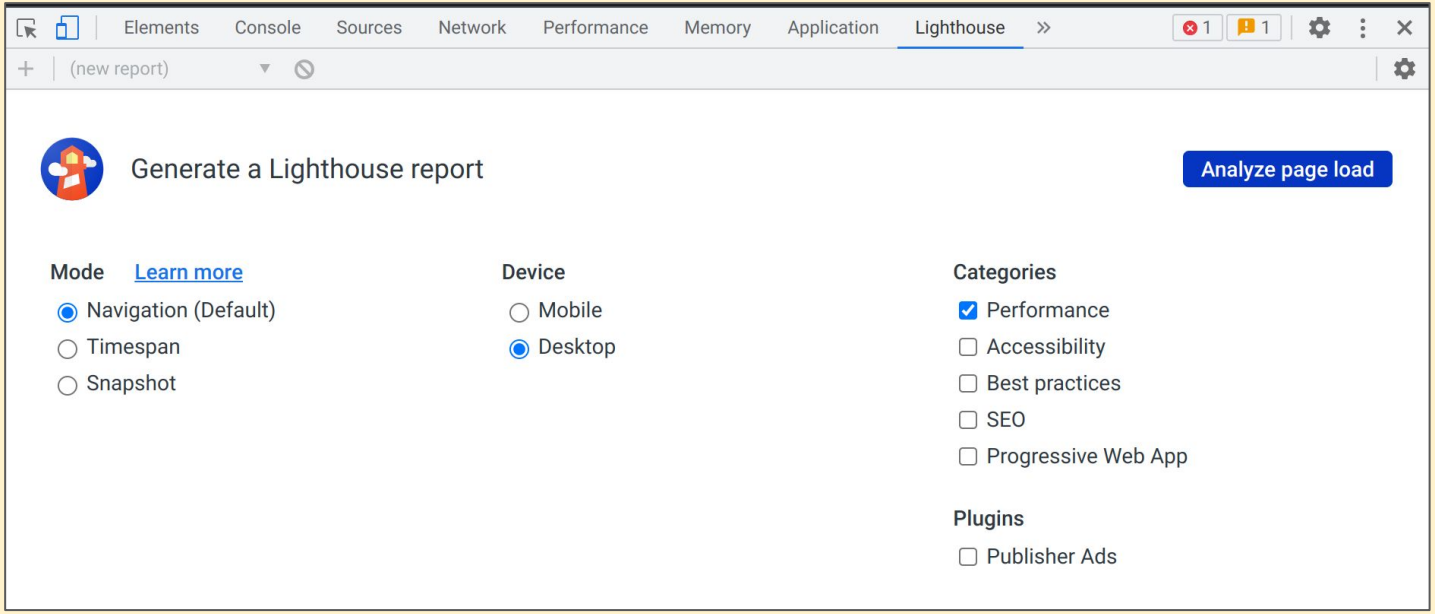


Add more users …



Data is Slow

Diagnosis: Profiling from the browser



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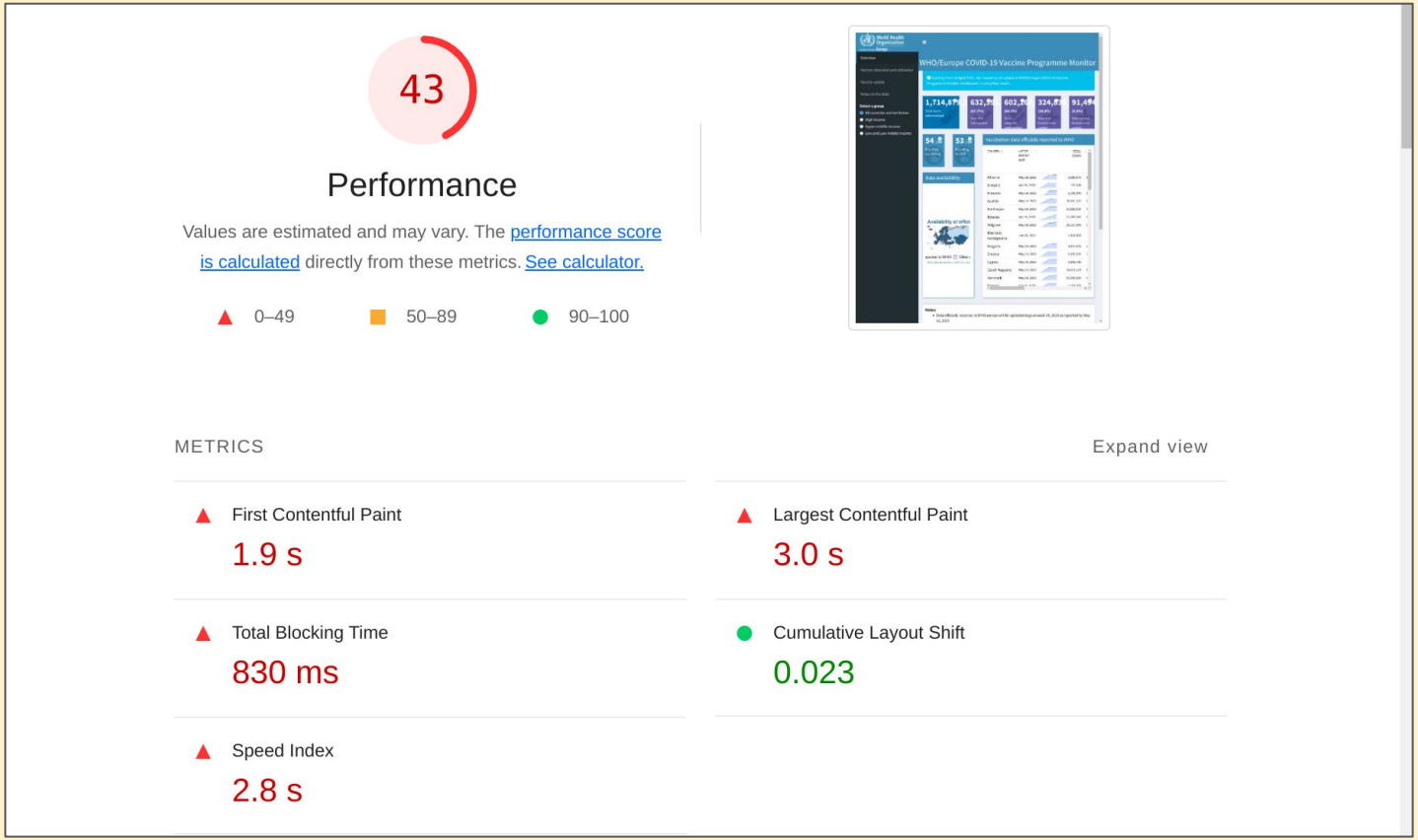
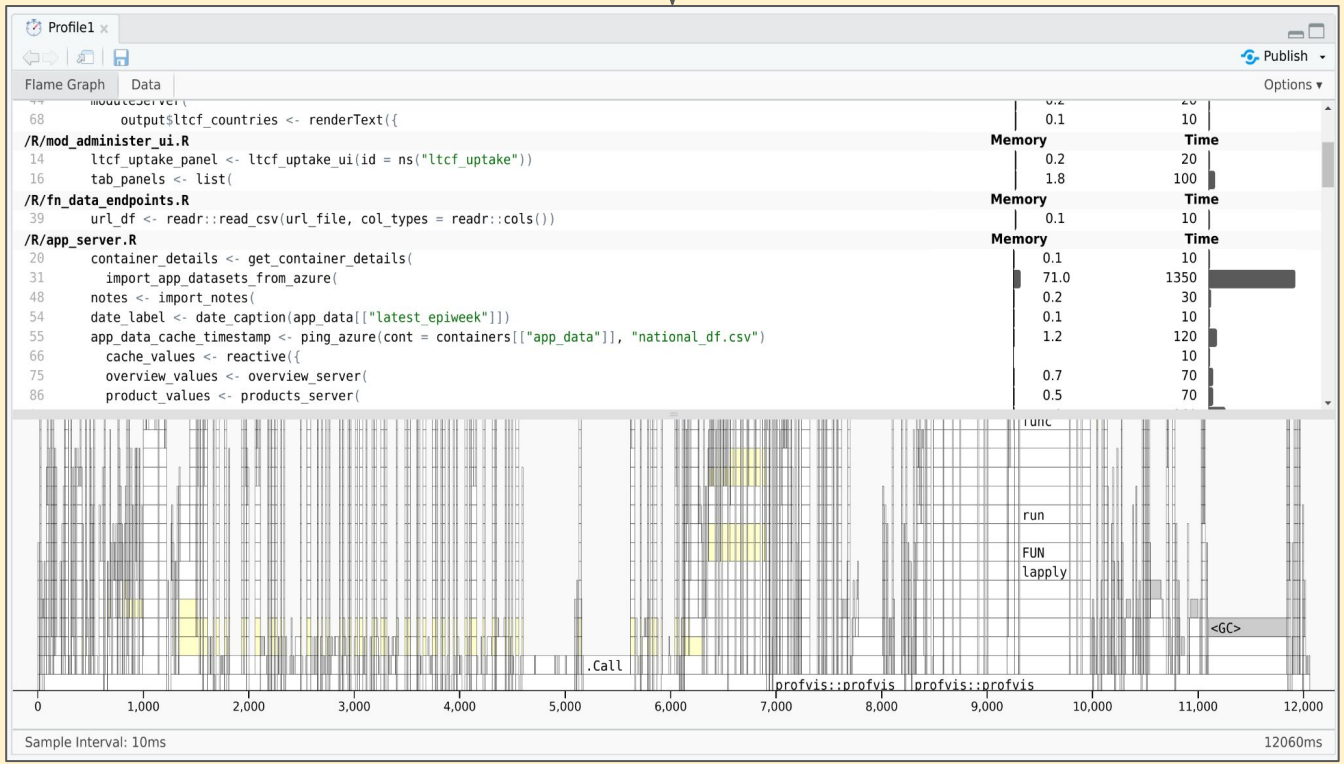
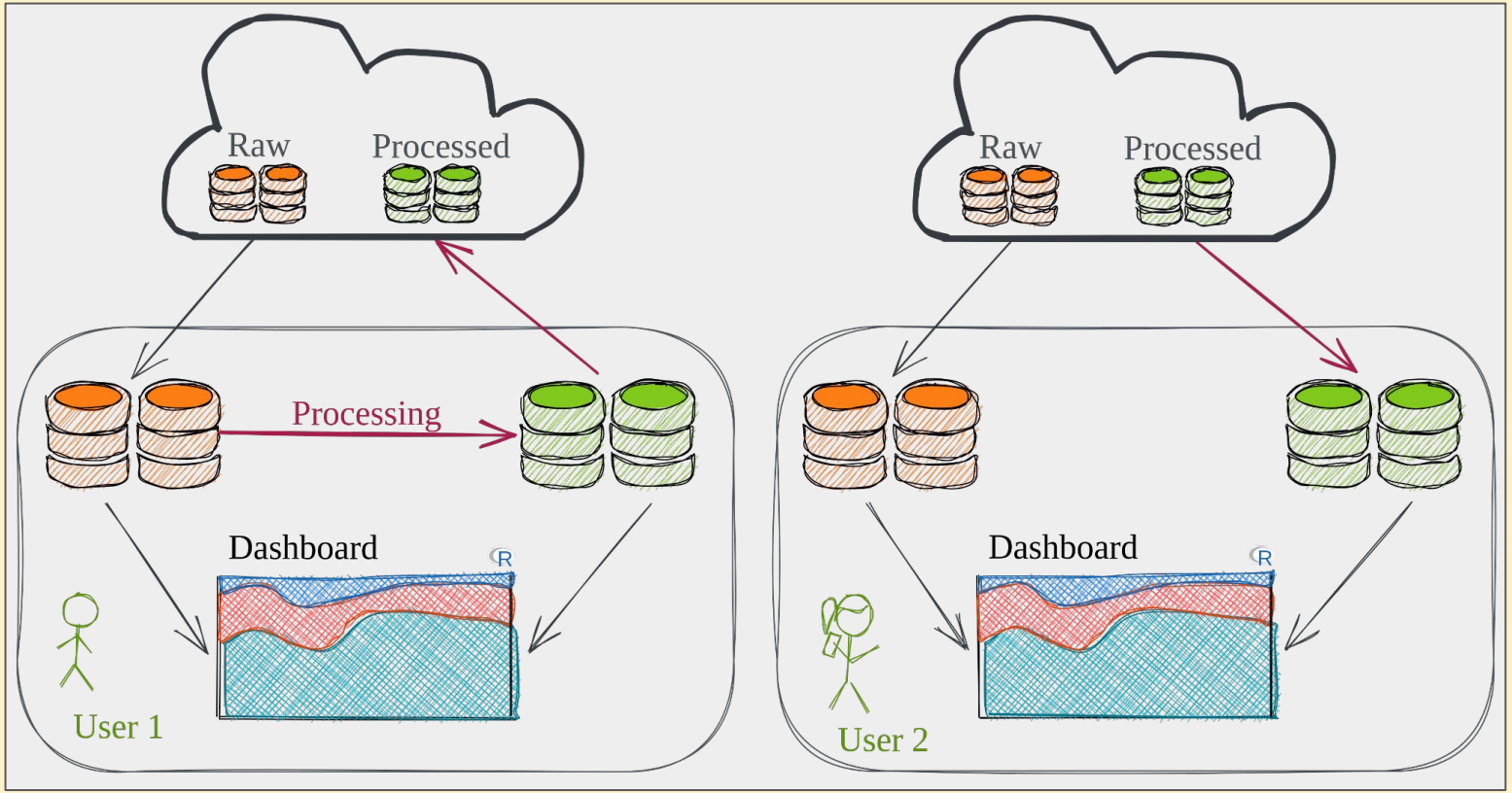


Diagnosis: Profiling in R

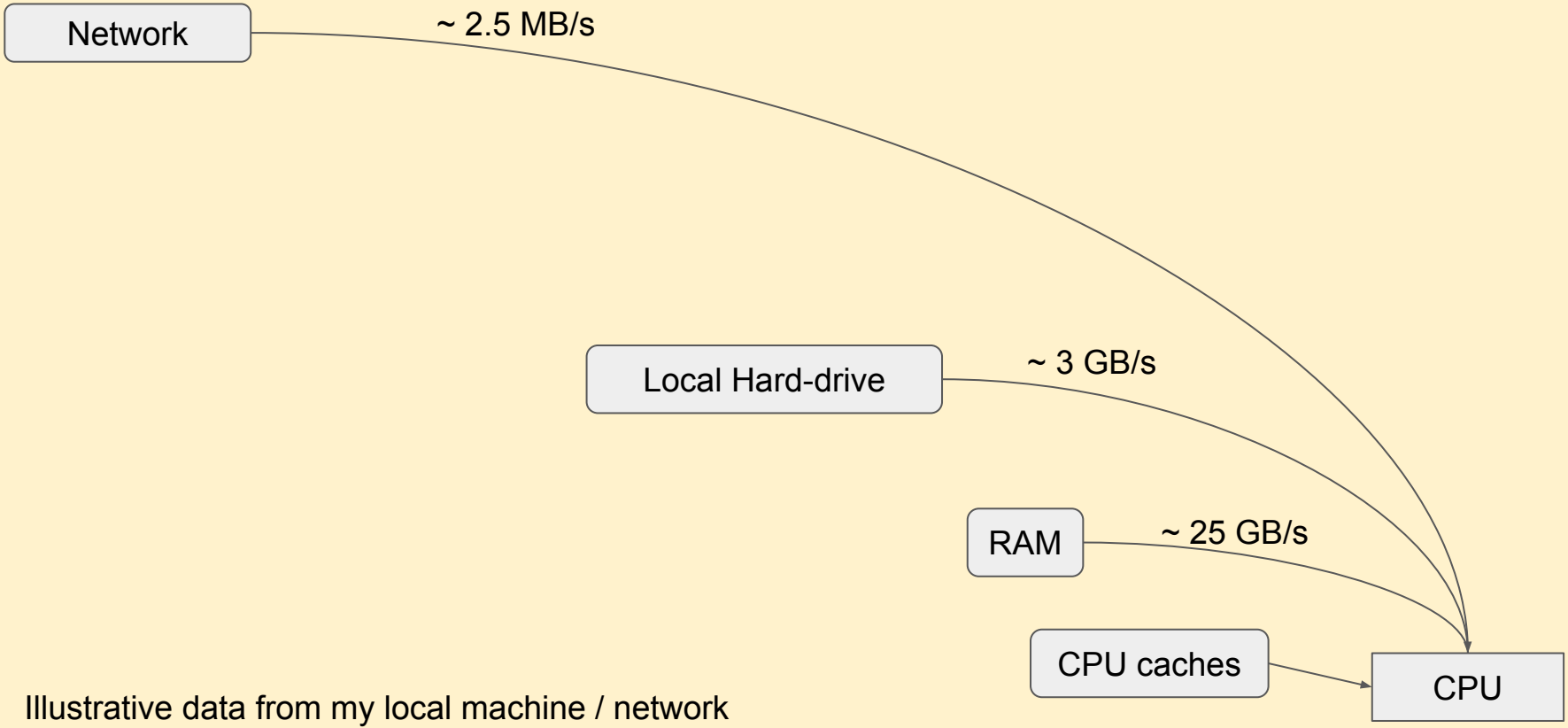
```
> profvis::profvis(shiny::runApp())
```



Incremental Improvement: Sporadic processing

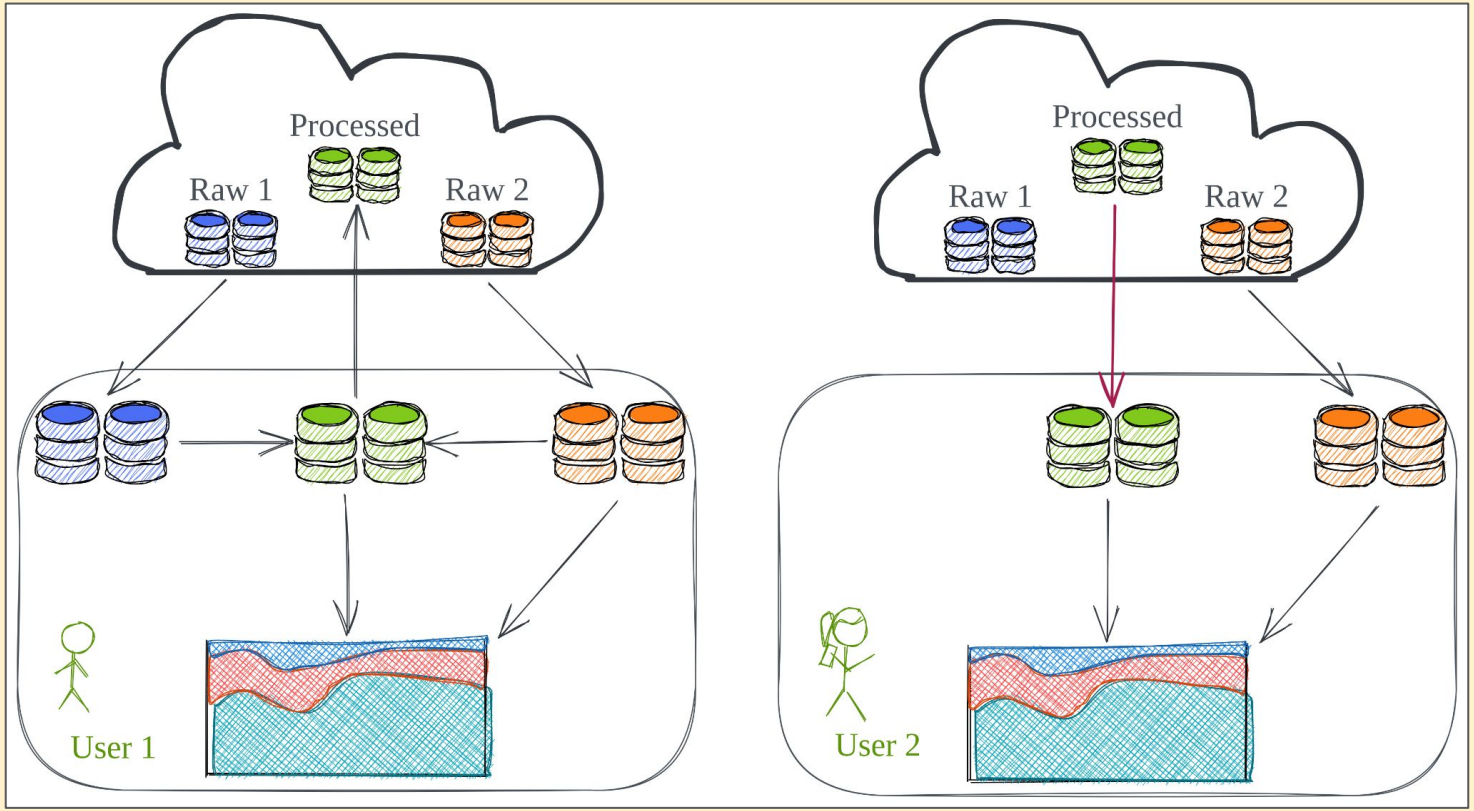


Network data is …..slooooooowwwww…..



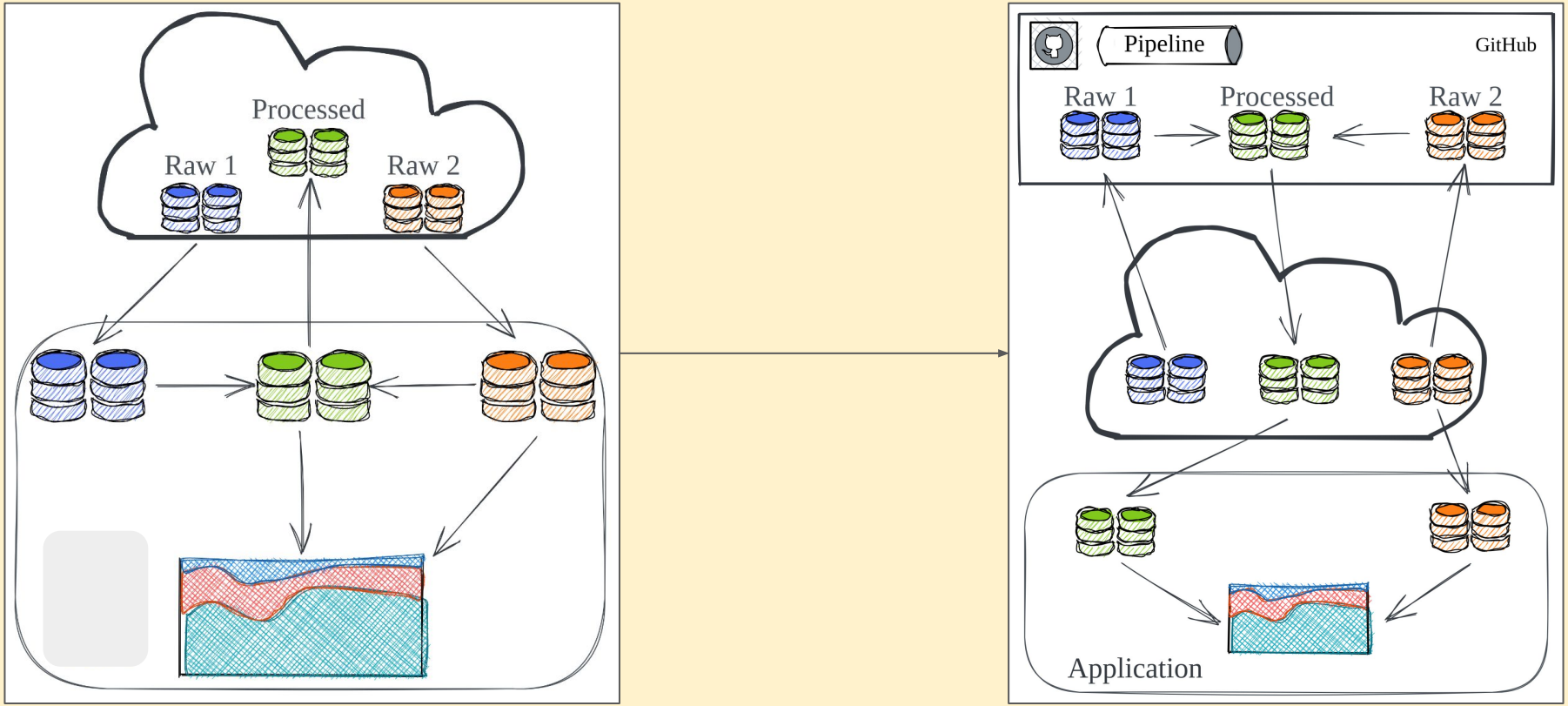
Illustrative data from my local machine / network

Incremental Improvement: Transfer what you need



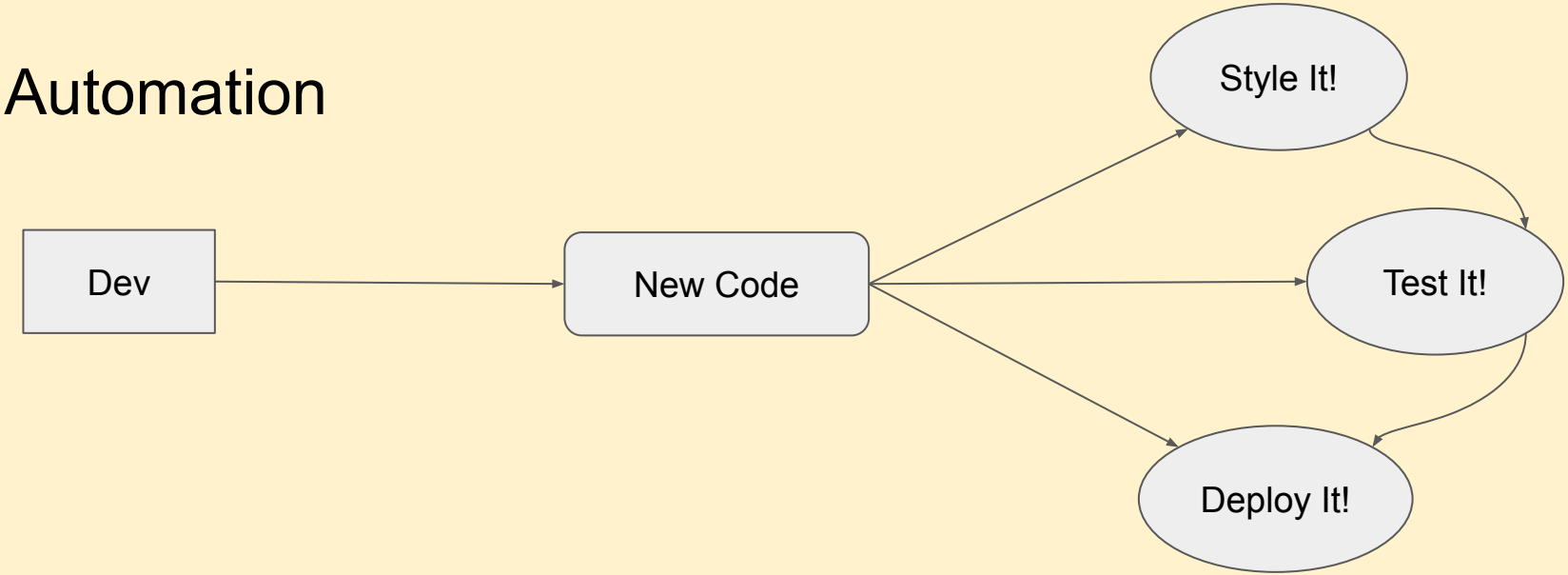
Streamline Your App

Move processing out of the App

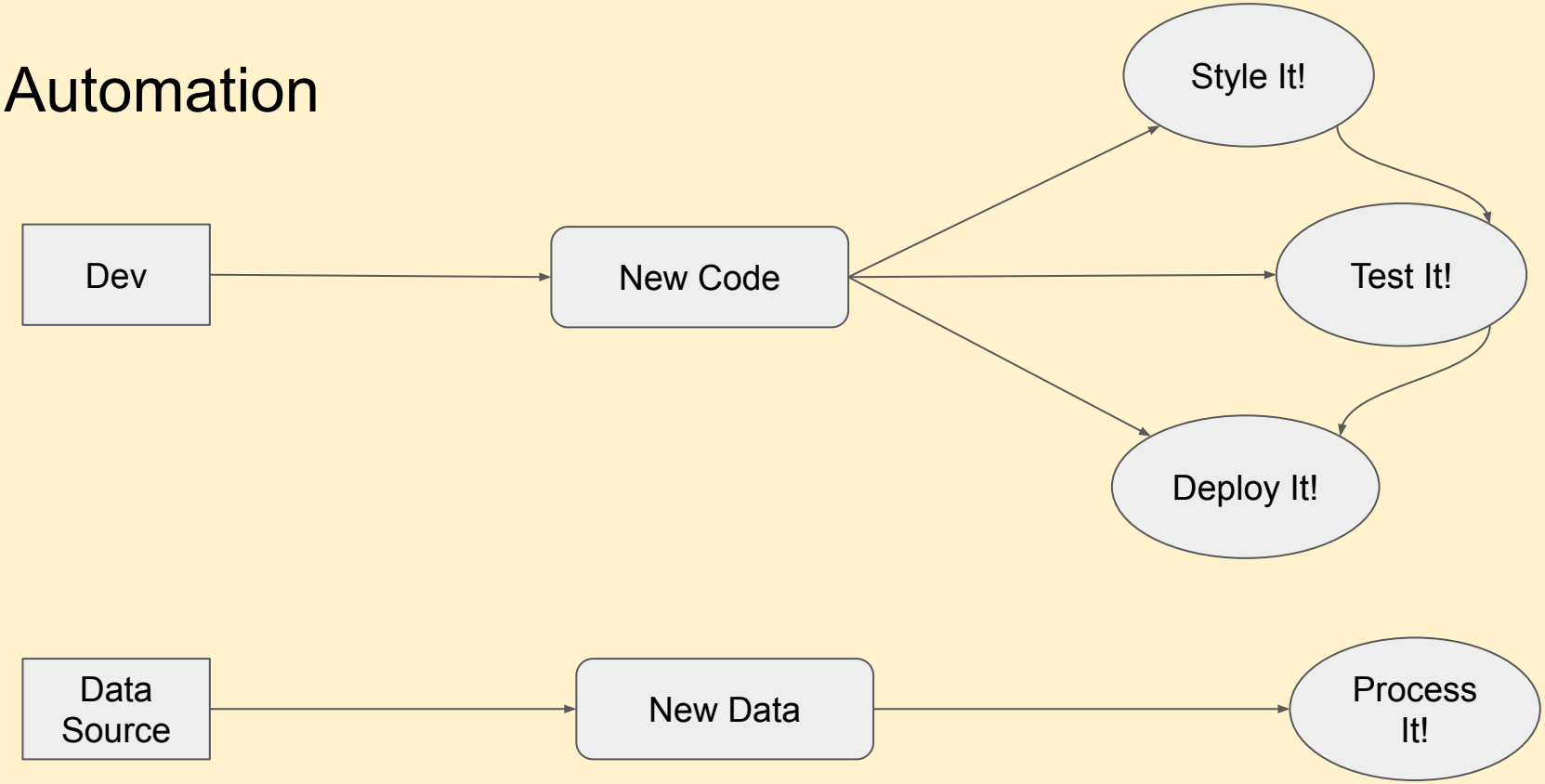


Simplify Your Life

Automation



Automation


Dev
New Code
Style It!
Test It!
Deploy It!
Data Source
New Data
Process It!

GitHub Actions

Run tasks as part of an automated workflow

- When should the workflow run?
- What operating system should be used?
- What variables should be defined?
- What tasks should run

Can use in-development or released code

Tests:

- Run on demand
- e.g., PR created/updated, PR merged

Deployment:

- On merging into main branch
- Branch-specific deployment

Data Processing:

- On schedule (each weekday)

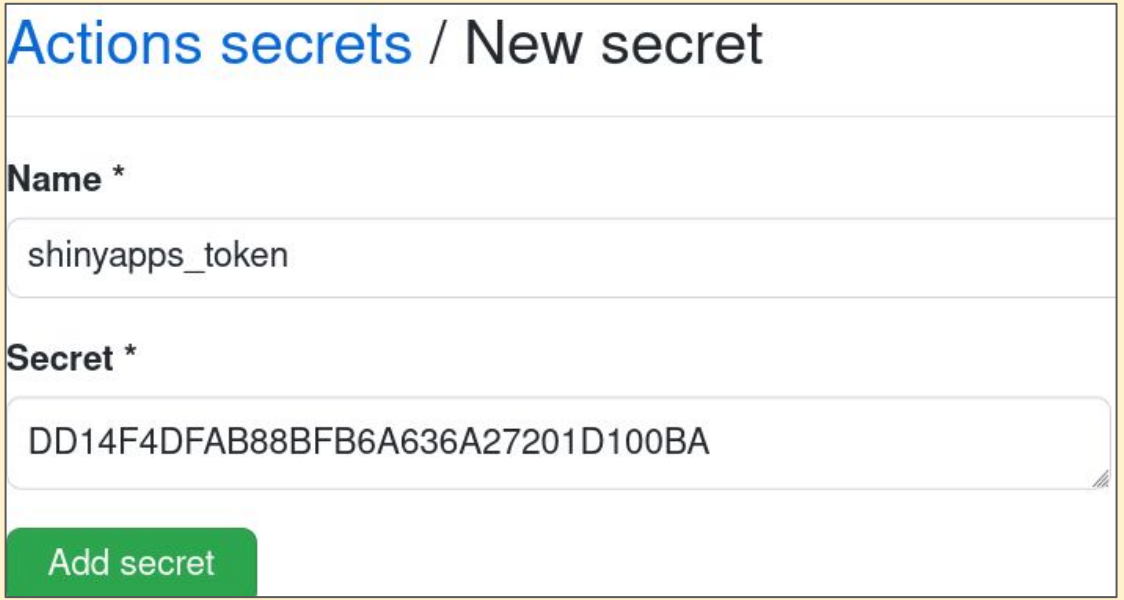
Simplify deployment

In shinyapps.io:

- *Account* -> *Tokens* menu
- “Add token” button
- Note the *Token* and *Secret* values

In GitHub:

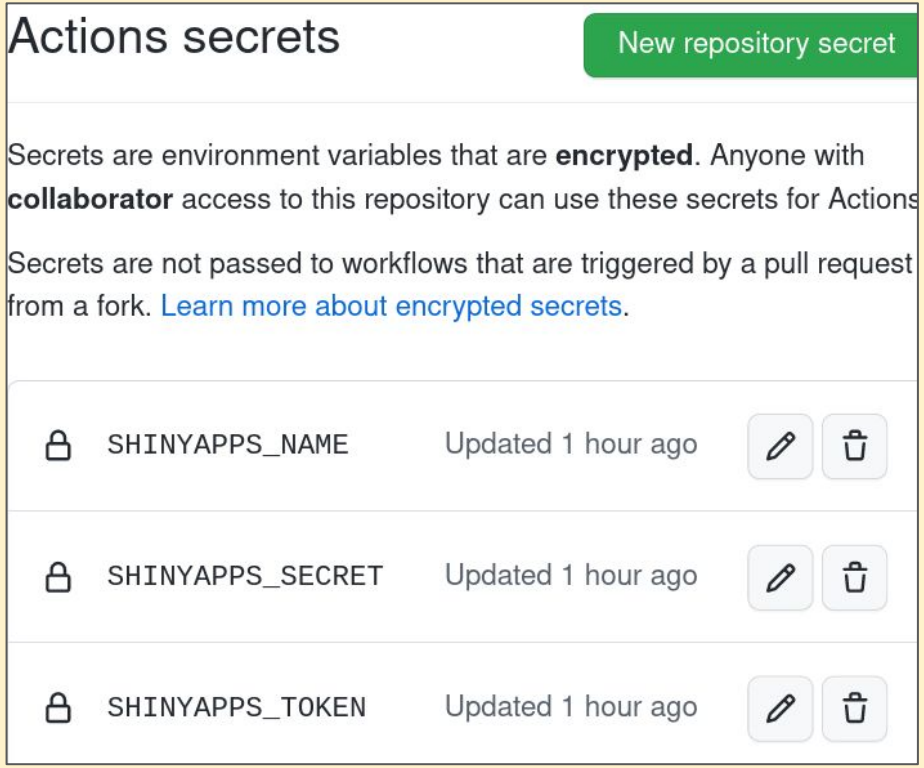
- *Secrets* -> *Actions* menu
- Store the shinyapps.io name, token and secret



Simplify deployment

This gives us three “Actions secrets”

These can be used in GitHub Actions



Simplify Deployment

Based on:
https://github.com/r-lib/actions/blob/v2-branch/examples/shiny-deploy.yaml

Use {rsconnect} to deploy to shinyapps.io

Secrets are accessible using `secrets.SECRET_NAME`

```yaml
# .github/workflows/shiny-deploy.yaml
on:
  push:
    branches: [main, master]

name: shiny-deploy

jobs:
  shiny-deploy:
    runs-on: ubuntu-latest
    env:
      GITHUB_PAT: ${{ secrets.GITHUB_TOKEN }}
    steps:
      - uses: actions/checkout@v3

      - uses: r-lib/actions/setup-pandoc@v2

      - uses: r-lib/actions/setup-r@v2
        with:
          use-public-rspm: true

      - uses: r-lib/actions/setup-renv@v2

      - name: Install rsconnect
        run: install.packages("rsconnect")
        shell: Rscript {0}
# … continued
```

Simplify Deployment

Based on:
https://github.com/r-lib/actions/blob/v2-branch/examples/shiny-deploy.yaml

Use {rsconnect} to deploy to shinyapps.io

Secrets are accessible using `secrets.SECRET_NAME`

```yaml
# … continued
      - name: Authorize and deploy app
        env:
          # Provide your app name and deployment server below
          APPNAME: github-deployed-app
          SERVER: shinyapps.io
        run: |
          rsconnect::setAccountInfo(
            "${{ secrets.SHINYAPPS_NAME }}",
            "${{ secrets.SHINYAPPS_TOKEN }}",
            "${{ secrets.SHINYAPPS_SECRET }}")
          rsconnect::deployApp(
            appName = "${{ env.APPNAME }}",
            account = "${{ secrets.SHINYAPPS_NAME }}",
            server = "${{ env.SERVER }}")
        shell: Rscript {0}
```

Summary

Simplify Your App

- Do as little processing as possible
- Access as little data as possible
- {profvis} for profiling R code
- lighthouse for assessing start-up times

Simplify Your Life

- Automate the boring / repetitive / forgettable stuff
- GitHub Actions for post-push workflows
- pre-commit for pre-push workflows

Simplifying your app might make your architecture more complicated

This presentation was based on two blog posts:

- https://www.jumpingrivers.com/blog/who-shiny-covid-maintenance-continuous-integration/
- https://www.jumpingrivers.com/blog/who-shiny-covid-maintenance-github-actions/
- See our blog for further articles on shiny, data science, R and python: https://www.jumpingrivers.com/blog