

Block by Block

Introducing blockr, the Flexible Open-Source Dashboard Builder OS12

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The Growing Complexity of Clinical Dashboards

- *“I just need a simple safety monitoring dashboard using SDTM data”*
- *“Can merge external lab data from these CSVs?”*
- *“Actually, efficacy is really important too”*
- *“We want to use some plots for decision making URGENTLY”*

The ONLY constant is Change!



The Faces of Clinical Data Analysis



The Scientist



The Statistician



The Programmer

The Frustrated Scientist

"I need to be able to follow where the data leads me, not where the dashboard allows me to go."



The **Isolated** Statistician

"My models are powerful, but no one else can use them without my help."



The Overwhelmed Programmer

"Every study needs a custom dashboard, and each clinician wants data transformed differently. I'm drowning in code maintenance and conflicting requests!"



Friday Afternoon



URGENT!!

Outputs from your app were used to answer HA questions and an error was found. Audit Monday! Reanalyze ALL data by Sunday 8 PM

Provide full reproducibility report. Explain ALL discrepancies

Work weekend required. Confirm receipt ASAP.

Your bosses bosses boss

Friday Afternoon **PANIC !!**

What does
reproducible even
mean?



How can I prove
my calculations
are correct?



How am I going to
extract all the
code from these
dashboards?



There's a Better Way: Meet blockr

- {blockr} is an open-source R package designed to streamline the creation of Enterprise-grade data analysis pipelines and interactive dashboards.
- Key features:
 - Visual, block-based interface
 - Modular and reusable components
 - Built-in reproducibility
 - Extensible framework

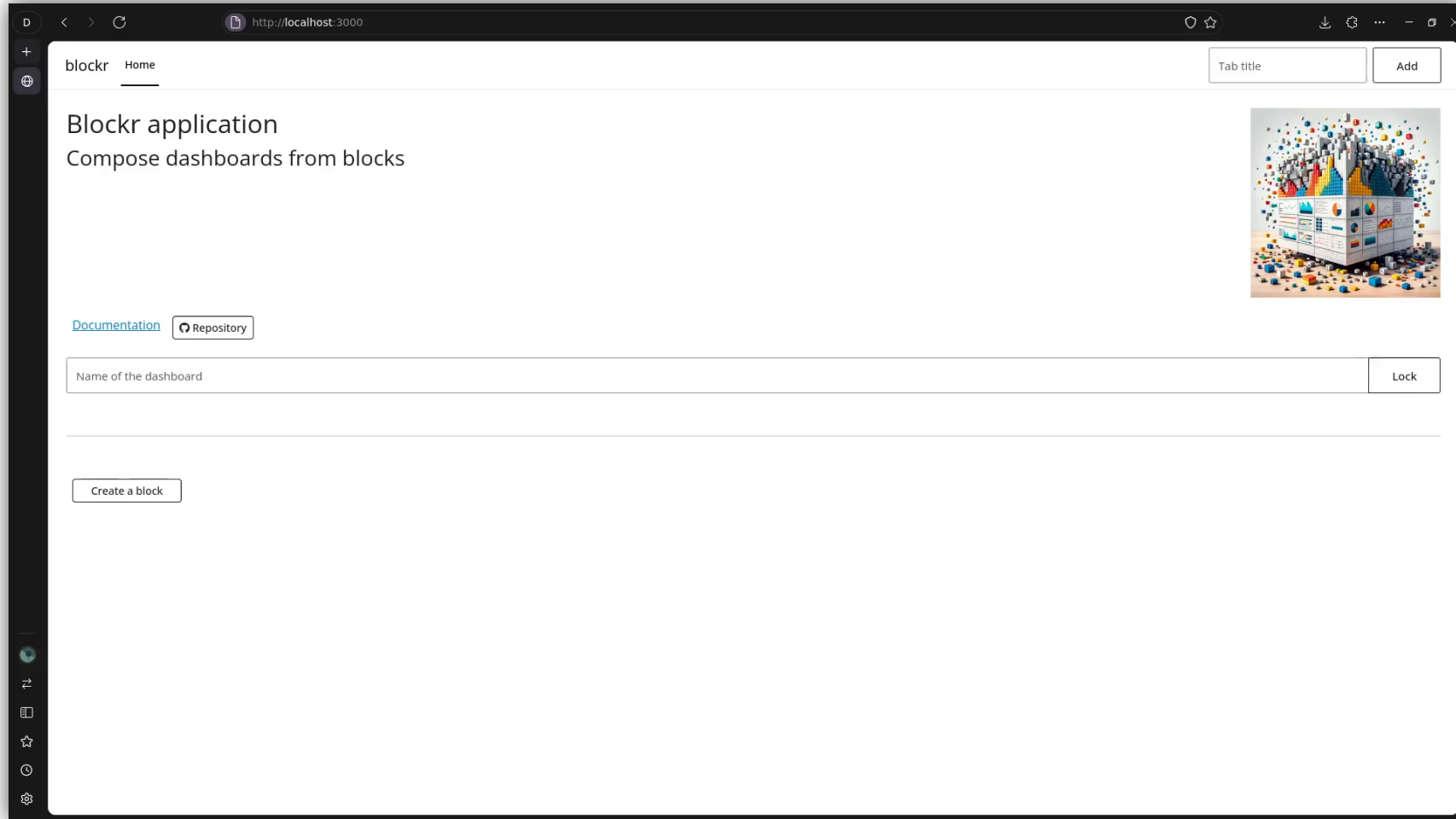
The screenshot shows the 'Stack' application interface. Handwritten annotations point to various components:

- Dataset specs:** Points to the 'Dataset' block header and the '153 rows | 6 cols' indicator.
- Stack toolbox (code, toggle):** Points to the code icon and toggle arrow in the top right of the Dataset block.
- Block inputs:** Points to the 'dataset' dropdown menu and the 'show 5 entries' control.
- Block output (table, plot):** Points to the data table displaying columns: Ozone, Solar.R, Wind, Temp, Month, and Day.
- Block validation:** Points to the error message 'Error: input 'values_Ozone' is not valid.' in the Filter block.
- Block code:** Points to the R code snippet: `dplyr::filter(eval(call("==", Ozone, "")))`.
- Block toolbox (code, toggle, remove):** Points to the code icon, toggle arrow, and trash icon in the bottom right of the Filter block.

	Ozone	Solar.R	Wind	Temp	Month	Day
1	41	190	7.4	67	5	1
2	36	118	8	72	5	2
3	12	149	12.6	74	5	3
4	18	313	11.5	62	5	4
5			14.3	56	5	5



Empowering the Researcher





Unleashing the Statistician

```
lockr.app 1 /home/john/Opifex/BMS/Projects/statistician 2 vim 0 2024-10-24 11:18
app.R block.R buffers
1 new_lm_block ← function(y = character(), predictor = character(), ...) {
2   all_cols ← function(data) colnames(data)
3
4   fields ← list(
5     y = new_select_field(y, all_cols, type = "name"),
6     predictor = new_select_field(predictor, all_cols, type = "name")
7   )
8
9   new_block(
10     fields = fields,
11     expr = quote({
12       model ← lm(data = data, formula = .(y) ~ .(predictor))
13     }),
14     ...,
15     class = c("lm_block", "transform_block")
16   )
17 }
~
~
~
~
~
NORMAL block.R r utf-8[unix] 76% ln :13/17=5
```



Liberating the Programmer

Reproducibility

[Download Rmarkdown](#)

Cardinal Table

Dat 400 rows | 59 cols

mock.cardinal Cardinal 03

ID: ARM: Screening flag: Screening fail: Screening fail reason: ☐ Show column counts

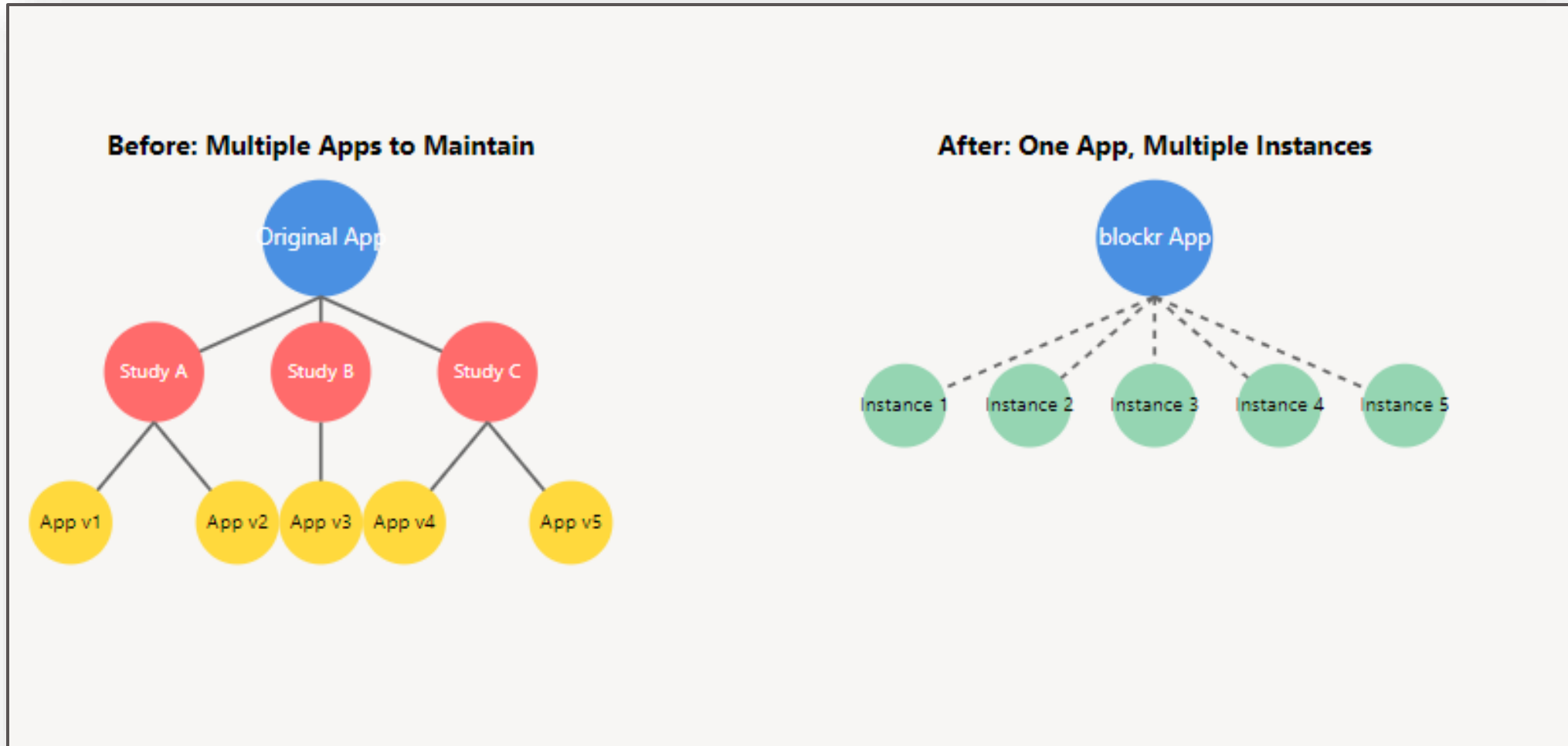
[show more inputs](#)

☐ Prune all zero rows

Text [HTML](#)

Disposition	A: Drug X	B: Placebo	C: Combination
Patients screened	134	134	132
Screening failures	33 (24.6%)	39 (29.1%)	28 (21.2%)
criteria not met	7 (5.2%)	9 (6.7%)	7 (5.3%)
non-compliance	7 (5.2%)	13 (9.7%)	5 (3.8%)
consent withdrawn	7 (5.2%)	10 (7.5%)	9 (6.8%)
other	12 (9.0%)	7 (5.2%)	7 (5.3%)
Patients enrolled	101 (75.4%)	95 (70.9%)	104 (78.8%)
Patients randomized	101 (75.4%)	95 (70.9%)	104 (78.8%)

Multi-Dashboard Management



The Verdict

“I can answer new questions as they arise. I can also save my analysis and share them”



The Scientist

“I can now easily share my models with others!”



The Statistician

“I can finally focus on creating high-quality, reusable components!”



The Programmer

Join the {blockr} Revolution

<https://github.com/BristolMyersSquibb/blockr>

Karma Tarap



<https://www.bms.com/>

John Coene



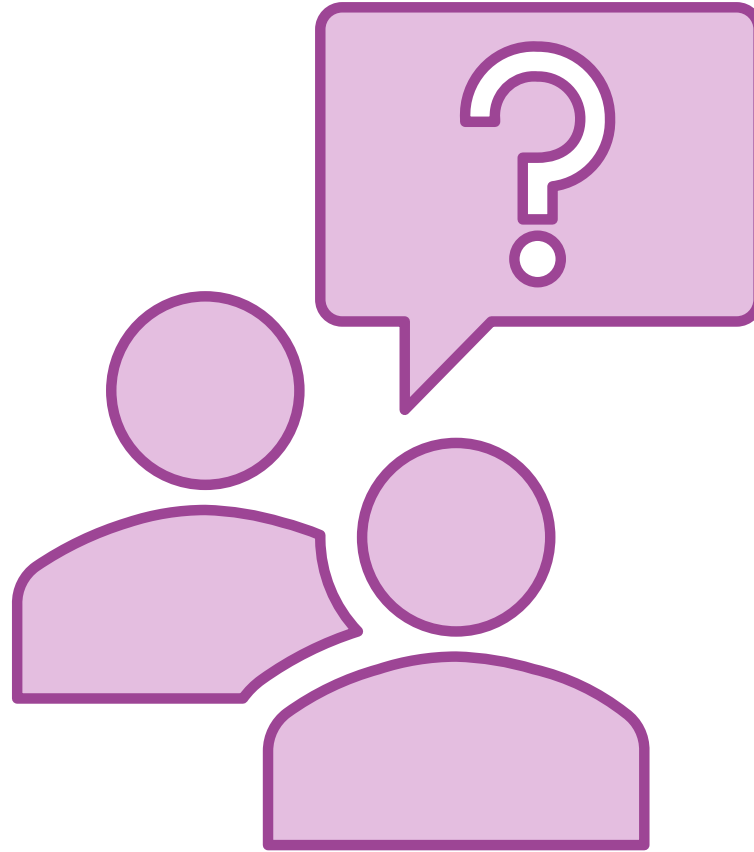
<https://the-y-company.com/>

Nicolas Bennett, Christoph Sax, David Granjon



<https://cynkra.com/>

Q&A | Any questions?





Bristol Myers SquibbTM