

Experimenting in a *Sociotechnical System*



@jessitron

**EVERYTHING
IS AN
EXPERIMENT**



Everything is an experiment

Don't get attached to specific outcomes, as they can prevent you from moving forward.

Construct your experiments with purpose, evaluate them with honesty, share your results, and iterate. Failure is a constant, it's what we learn that matters.



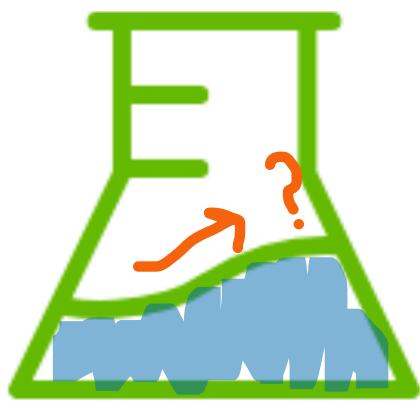


Everything is an experiment

Don't get attached to specific outcomes, as they can prevent you from moving forward.

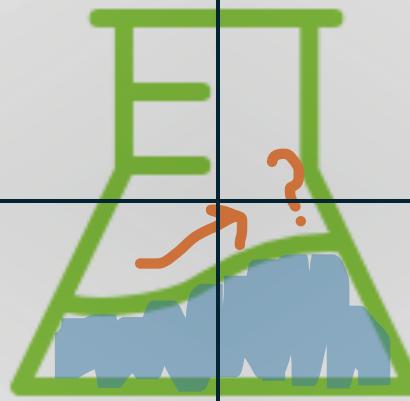
Construct your experiments with purpose, evaluate them with honesty, share your results, and iterate. Failure is a constant, it's what we learn that matters.





Systematic Testing
and Measurement

check effects



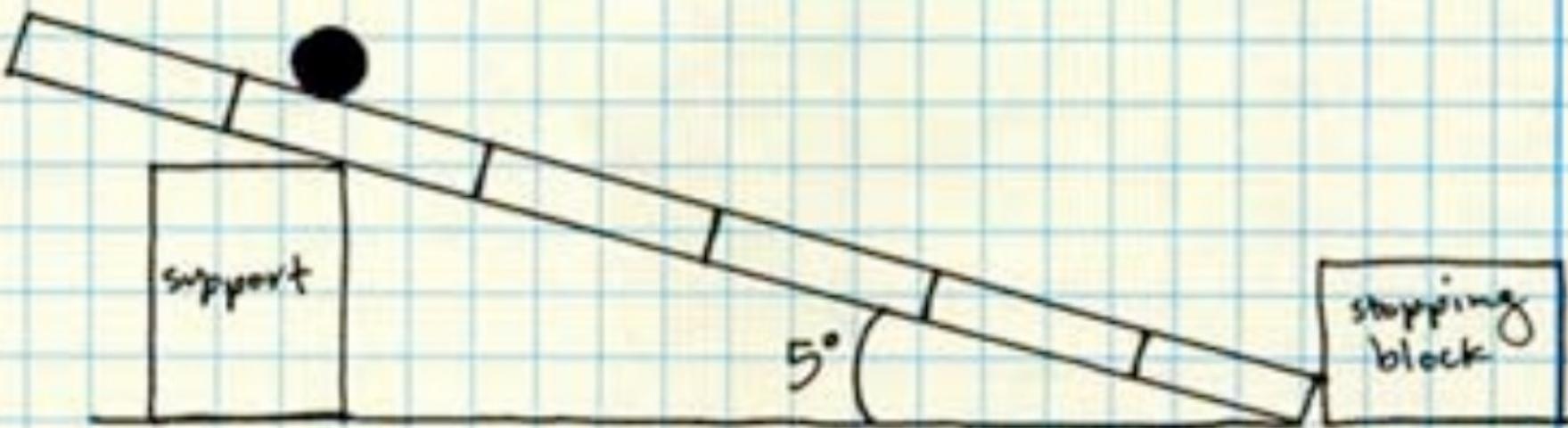
measure and adjust

Action Research



if we look at the results.

Setup:



Procedure:

1. Set up ramp with an angle of incline around 5° .

Data Table:6° RAMP

Release Position	Trial	Times (s)	Average
1 (50 cm)	1	1.04 s	
	2	1.16 s	
	3	1.28 s	1.2125 s
2 (100 cm)	1	2.35 s	
	2	2.25 s	
	3	2.19 s	2.2525 s
3 (150 cm)	1	2.53 s	
	2	2.59 s	
	3	2.69 s	2.6025 s
4 (200 cm)	1	3.16 s	
	2	3.00 s	
	3	3.09 s	3.0625 s
5 (250 cm)	1	3.31 s	
	2	3.43 s	
	3	3.50 s	3.405 s
6 (300 cm)	1	3.66 s	
	2	3.73 s	
	3	3.71 s	3.7075 s

diameter of ball:
1.3 cm

Trial 4: ~~84!~~

Dist.	Time
50 cm	1.37 s
100 cm	2.22 s
150 cm	2.65 s
200 cm	3.00 s
250 cm	3.35 s
300 cm	3.75 s

Discussion:

The acceleration of an object down a frictionless ramp should follow the equation:
 $a = g \sin \theta$ (provided by teacher).

ramp #	$a_{\text{theoretical}}$	a_{measured}	% error
6°	$a = (9.8)(\sin 6)$ $a = 1.02 \text{ m/s}^2$	$a = .45 \text{ m/s}^2$	55.88%
11°	$a = (9.8)(\sin 11)$ $a = 1.86 \text{ m/s}^2$	$a = .87 \text{ m/s}^2$	53.23%

Pretty consistent error
with work!

Calculation of percent error:

(example on
opposite page)

$$\frac{\text{result - known}}{\text{known}} \times 100 = \% \text{ error}$$

give us a sample calc w/
its best too

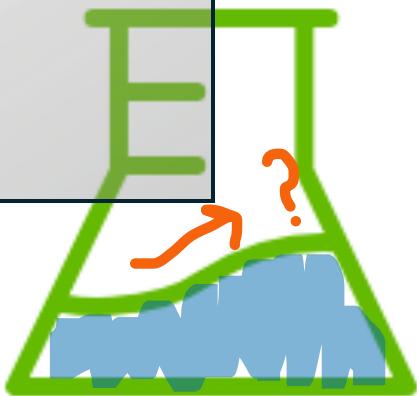


if we look at the results.
state our expectations
have a characterization



state our expectations
have a characterization

Systematic Testing and Measurement





state our expectations

```
describe("calculating the situation from the picture", () => {
  test("trivial case", () => {
    const result = situationFromDrawing("▶");
    expect(result).toEqual({x: 0, y: 0, facing: "east"});
  })

  test("facing west", () => {
    const result = situationFromDrawing("▶");
    expect(result).toEqual({x: 0, y: 0, facing: "east"});
  })

  test("shifted x position", () => {
    const result = situationFromDrawing("▼");
    expect(result).toEqual({x: 1, y: 0, facing: "south"});
  })
})
```

```
17:55:37 0 maze-lambda main ✍ $ npm test

> maze-lambda@1.0.0 test
> tsc && jest test/*.test.js

FAIL test/Situation.test.js
● calculating the situation from the picture > shifted x position

  expect(received).toEqual(expected) // deep equality

    - Expected - 1
    + Received + 1

      Object {
        "facing": "south",
        - "x": 1,
        + "x": 0,
        "y": 0,
      }

      13 |       test("shifted x position", () => {
      14 |         const result = (0, Situation_1.situationFromDrawing)(‐▼");
> 15 |         expect(result).toEqual({ x: 1, y: 0, facing: "south" });
      |         ^
      16 |       });
      17 |     );
      18 |

      at Object.toEqual (test/Situation.test.js:15:24)

PASS test/navigateMaze.test.js

Test Suites: 1 failed, 1 passed, 2 total
Tests:       1 failed, 3 passed, 4 total
Snapshots:   0 total
Time:        0.165 s, estimated 1 s
Ran all test suites matching /test\\Situation.test.js|test\\navigateMaze.test.js/i.
```

```
17:57:01 1 maze-lambda main ✘ $ npm test  
  
> maze-lambda@1.0.0 test  
> tsc && jest test/*.test.js  
  
PASS test/Situation.test.js  
PASS test/navigateMaze.test.js  
  
Test Suites: 2 passed, 2 total  
Tests: 4 passed, 4 total  
Snapshots: 0 total  
Time: 0.153 s, estimated 1 s  
Ran all test suites matching /test\\Situation.test.js|test\\navigateMaze.test.js/i.  
17:57:01 1 maze-lambda main ✘ $
```

FAIL | test/Situation.test.js

- calculating the situation from the picture > shifted y position

```
expect(received).toEqual(expected) // deep equality

- Expected - 1
+ Received + 1

Object {
  "facing": "north",
  "x": 0,
-  "y": 1,
+  "y": 3,
}

20 |   ^
21 |   `);
> 22 |     expect(result).toEqual({ x: 0, y: 1, facing: "north" });
|   ^
23 |   });
24 | });
25 |
```

at Object.toEqual (test/Situation.test.js:22:24)

FAIL test/Situation.test.js

- Console

```
console.log
Position: 0, columns: 2

at log (src/Situation.js:27:13)

console.log
Position: 0, columns: 2

at log (src/Situation.js:27:13)

console.log
Position: 1, columns: 3

at log (src/Situation.js:27:13)

console.log
Position: 1, columns: 2

at log (src/Situation.js:27:13)
```

- calculating the situation from the picture > shifted v no



*state our expectations
have a characterization*

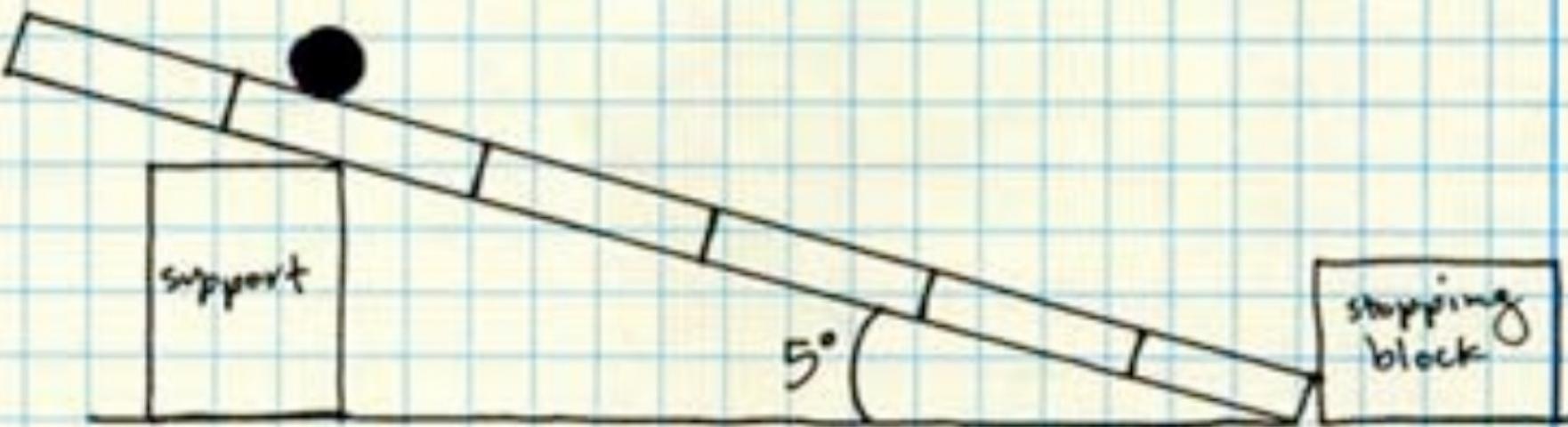


if we look at the results.
state our expectations
have a characterization



if we look at the results.
state our expectations
have a characterization
describe the environment

Setup:



Procedure:

1. Set up ramp with an angle of incline around 5° .

```
FROM --platform=linux/amd64 ghcr.io/martinjt/ocb-config-builder:nightly as build
ARG ADDITIONAL_REPOS
ENV ADDITIONAL_REPOS=${ADDITIONAL_REPOS}
COPY config.yaml ./config.yaml
RUN ocbconfigbuilder
RUN CGO_ENABLED=0 builder --config=/ocb-config.yaml --output-path=/app

FROM cgr.dev/chainguard/static:latest
COPY --from=build /app/otelcol-custom /
COPY --from=build config.yaml /
EXPOSE 4317/tcp 4318/tcp 13133/tcp

CMD ["/otelcol-custom", "--config=/config.yaml"]
```

```
//https://registry.terraform.io/modules/terraform-aws-modules/vpc/aws/3.19.0
module "vpc" {
  source = "terraform-aws-modules/vpc/aws"
  version = "3.19.0"

  name = "pixie-lou-vpc"
  cidr = "10.0.0.0/16"

  azs = ["${local.region}a", "${local.region}b"]
  private_subnets = ["10.0.1.0/24", "10.0.2.0/24"]
  public_subnets = ["10.0.101.0/24", "10.0.102.0/24"]

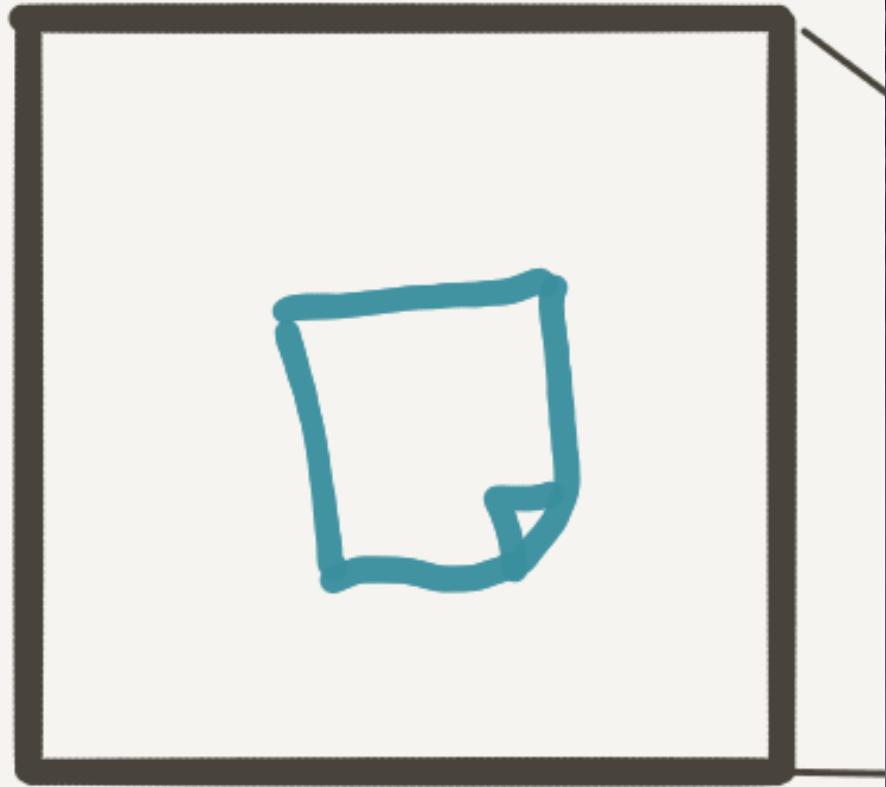
  enable_nat_gateway = true

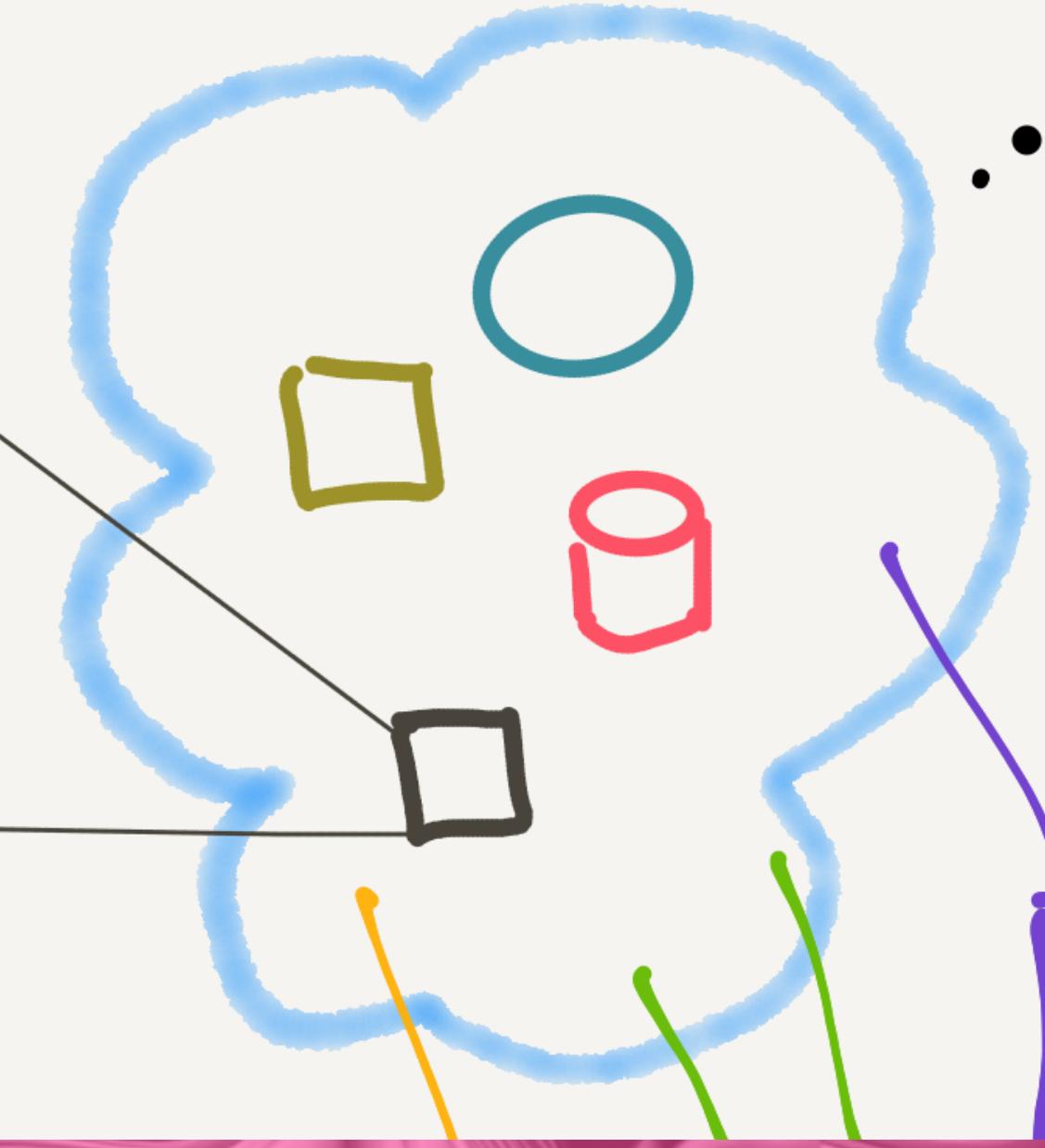
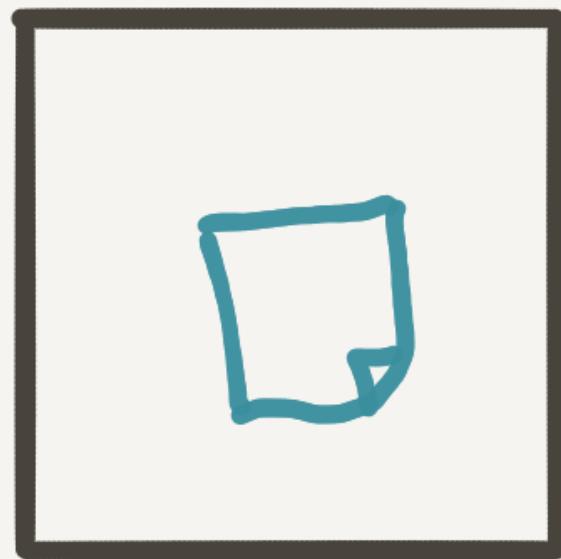
  public_subnet_tags = {
    "kubernetes.io/role/elb" = "1"
  }

  private_subnet_tags = {
    "kubernetes.io/role/internal-elb" = "1"
  }
}
```



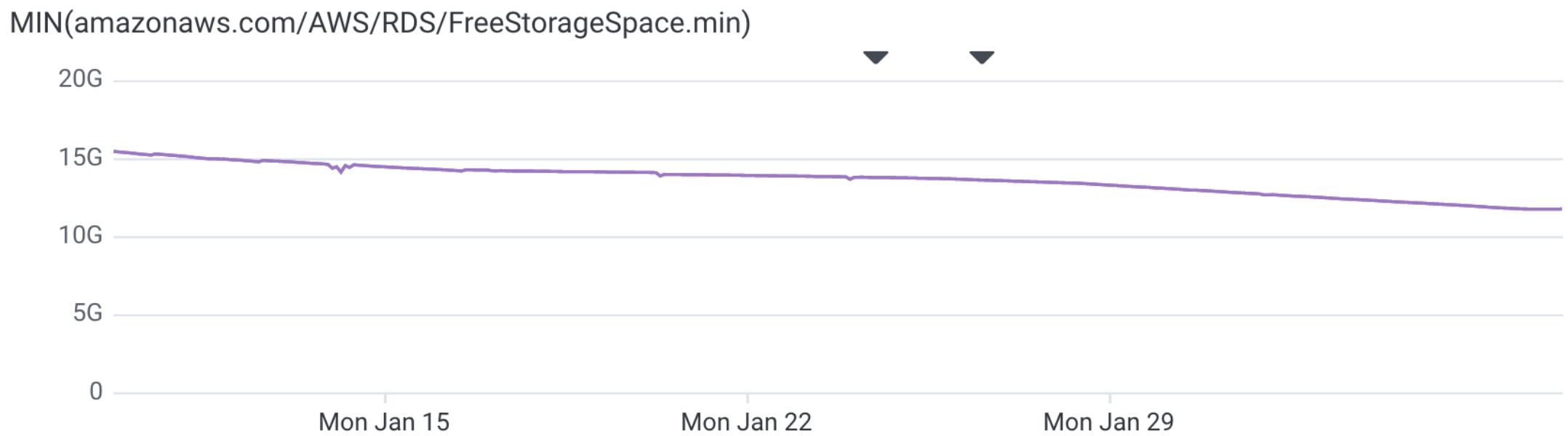
if we look at the results.
state our expectations
have a characterization
describe the environment







Martin vs All the Sessions



VISUALIZE

COUNT

WHERE

db.query contains sessions

GROUP BY

db.query

...

Run Query

db.query

COUNT

	SELECT session_data from sessions WHERE session_id = ?	...	22,341,107	...
	INSERT INTO sessions (user_id, session_id, session_data) VALUES (?, ?, ?)	...	6,213,518	...
	UPDATE sessions SET session_data = ?, user_id = ? WHERE session_id = ? AND user_id IN (?,0)	...	1,249,920	...
	DELETE FROM sessions WHERE user_id = ?	...	377	...
	DELETE FROM sessions where session_id = ?	...	321	...

elapsed query time: 3.508097233s # results: 5

Jan 28 2024 20:50:45 – Feb 12 2024 03:57:14 UTC-06:00 (Granularity: 1 hour)



COUNT

25k

20k

15k

10k

5k

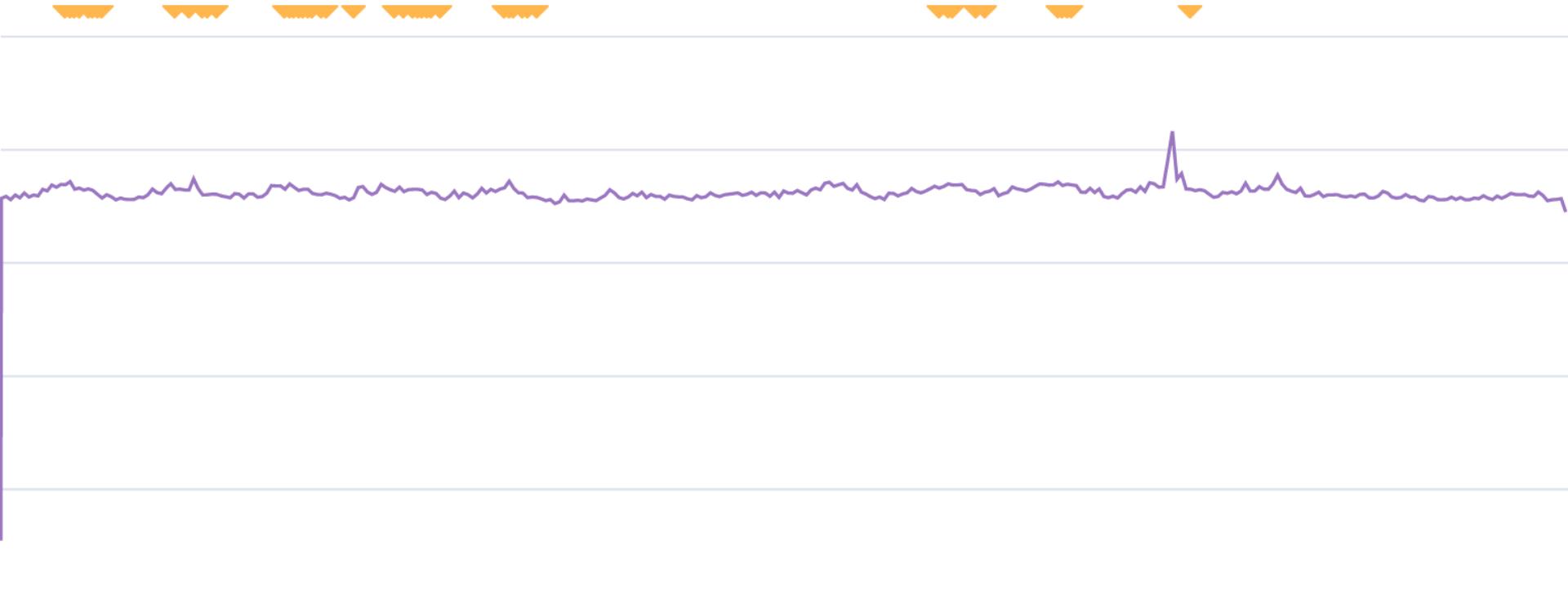
0

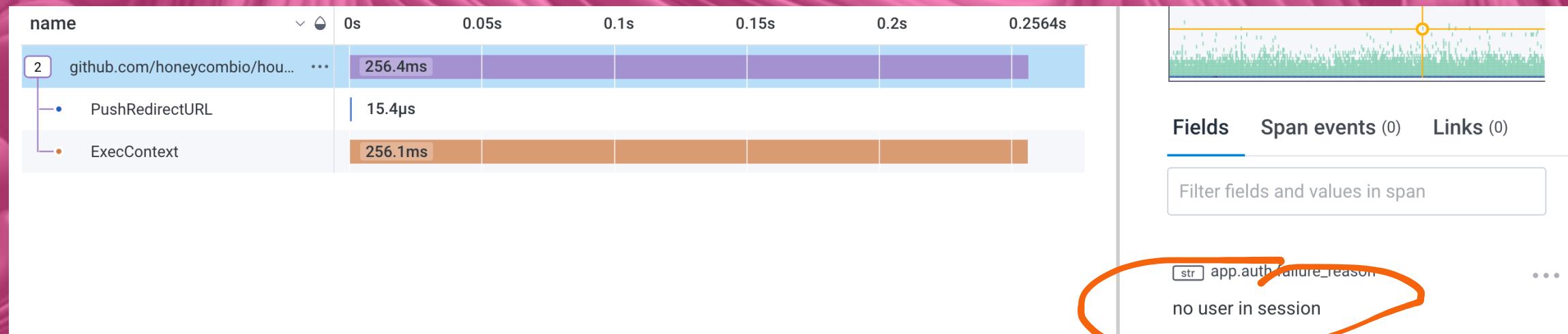
Wed Jan 31

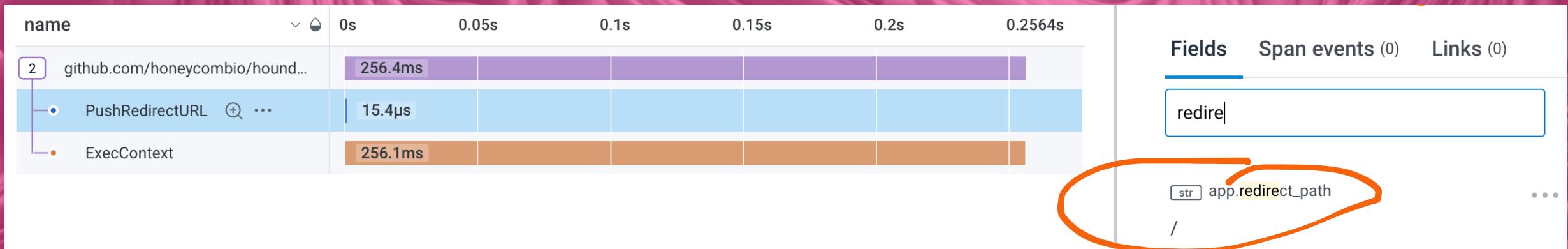
Sat Feb 3

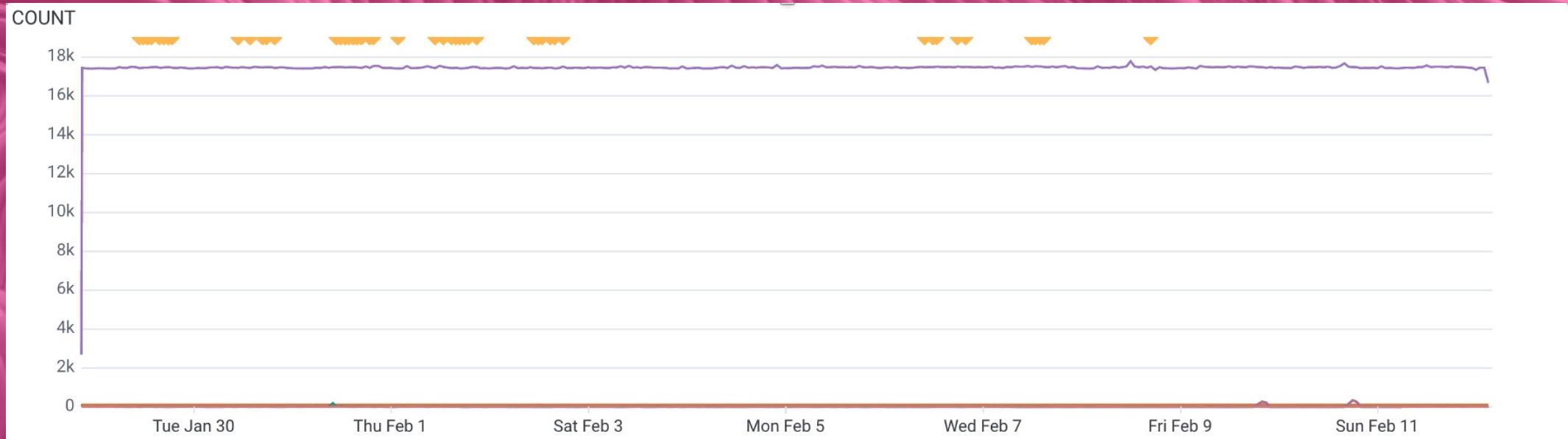
Tue Feb 6

Fri Feb 9









Overview BubbleUp Correlations Traces Events

events

VISUALIZE

COUNT

WHERE

```
db.query = INSERT INTO sessions (user_id, session_id, session_data) VALUES (?, ?, ?)
```

GROUP BY

None; don't segment

Run Query

ORDER BY

COUNT desc

LIMIT

None

HAVING

None; include all results

Query Assistant [?](#)



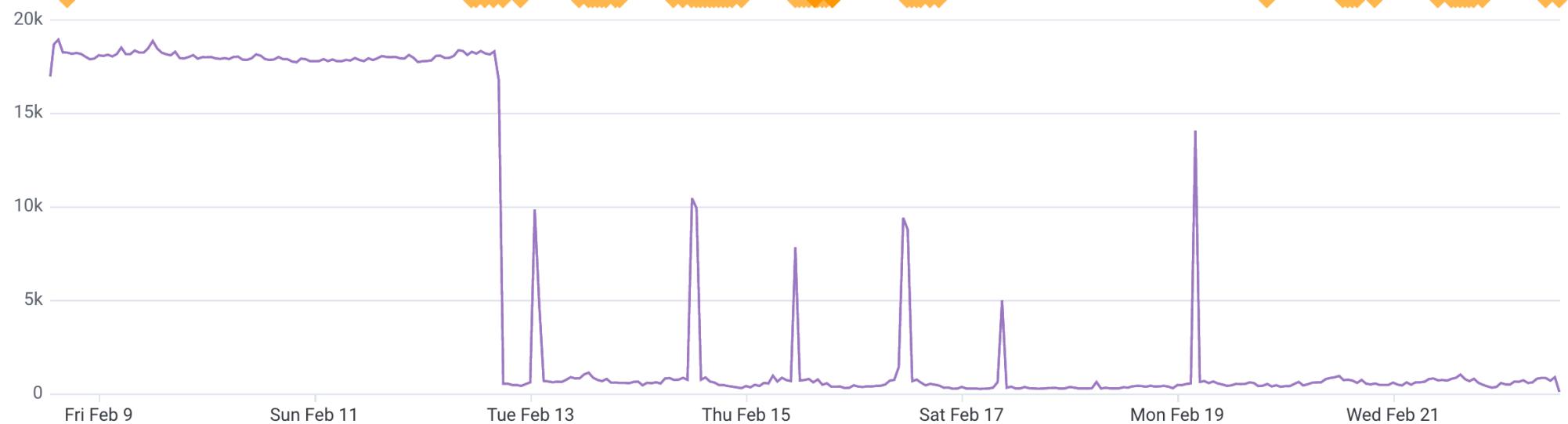
Query Results

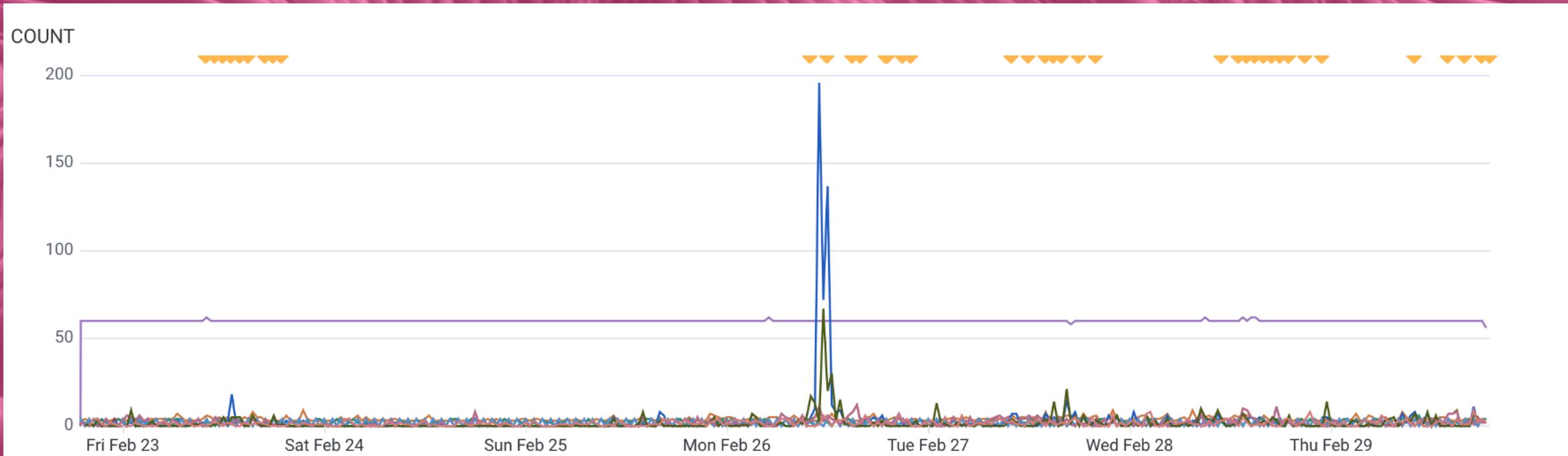
Last 14 days (run 7 days ago)



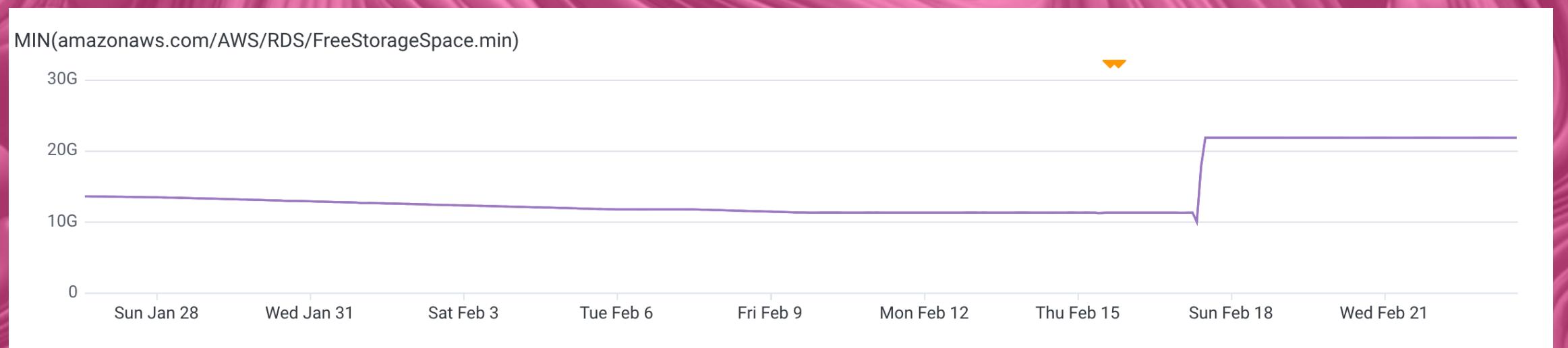
Feb 8 2024 13:12:19 – Feb 22 2024 13:12:19 UTC-06:00 (Granularity: 1 hour)

COUNT





Overview BubbleUp Correlations Traces Events





if we look at the results.

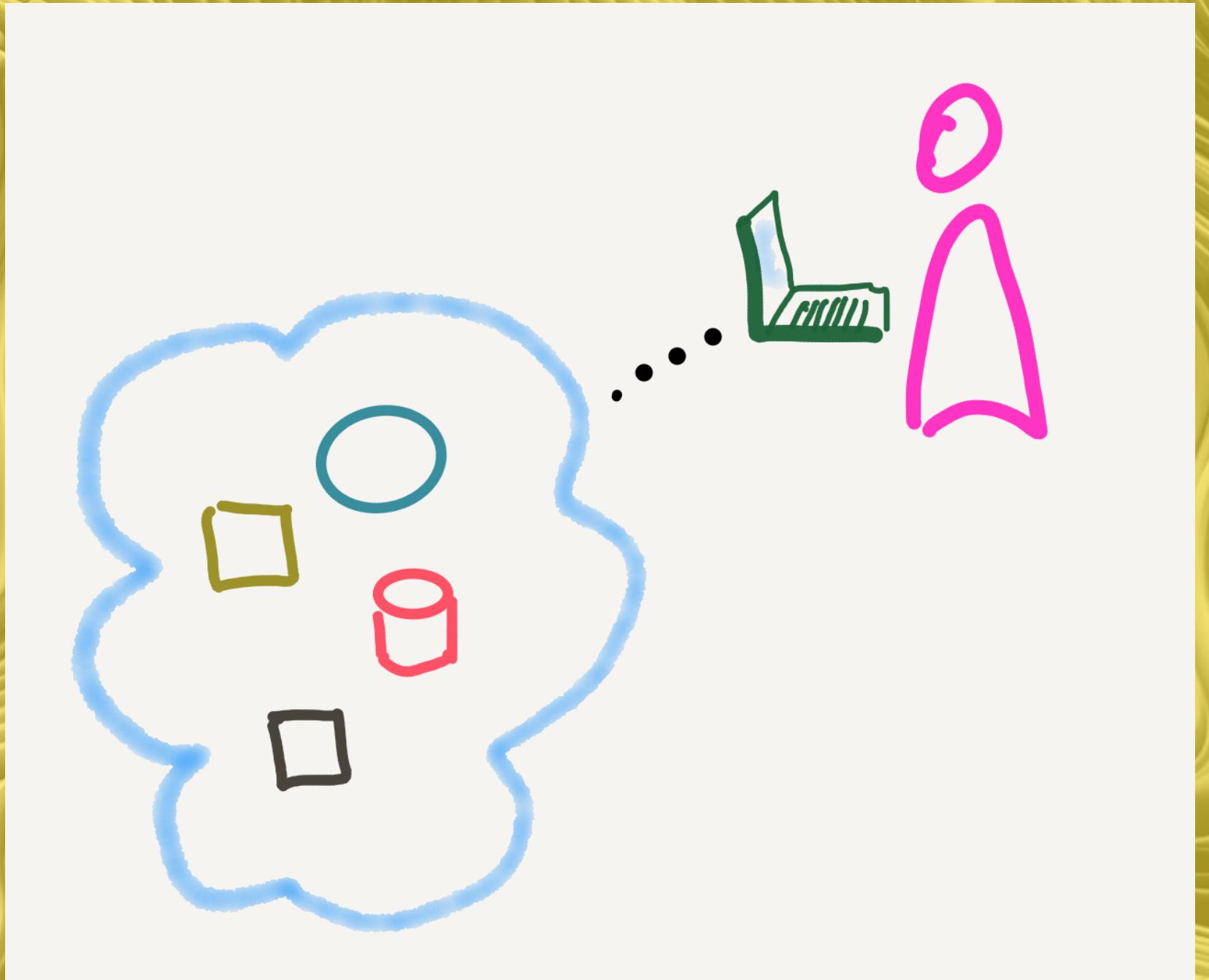
Especially the
ones we didn't
expect!



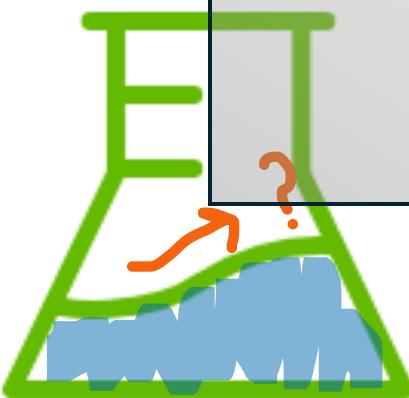
if we look at the results.
state our expectations
have a characterization
describe the environment



if we look at the results.
state our expectations
have a characterization
describe the environment
start from observation



Check Effects



The safety and effectiveness of a new hysteroscopic method for permanent birth control: results of the first Essure pbc clinical study

J F Kerin ¹, C S Carignan, D Cher

Affiliations + expand

PMID: 11787907 DOI: 10.1111/j.1479-828x.2001.tb01311.x

Abstract

Background: Current methods of female surgical sterilisation require incisional surgery, general anaesthesia and a prolonged recovery time. We studied the safety and effectiveness of Essure pbc, a minimally invasive, transcervically placed micro-insert that occludes the Fallopian tubes, resulting in permanent female contraception. **Device under study:** The Essure pbc implant is a dynamically expanding micro-insert which is placed in the proximal section of the Fallopian tube using a modified minimal access technology for cannulating the tube.

Study population: Women aged 21-43 seeking permanent birth control.

Methodology: Essure pbc micro-inserts were inserted into the proximal portion of the Fallopian tubes under hysteroscopic visualisation with intravenous sedation or paracervical block.

Results: Bilateral device placement was achieved in 111 of 130 (85%) women who underwent device placement attempts. Women found the device placement procedure to be highly acceptable. Of women wearing the device for up to two years rate, 97% rated it to be very good to excellent. There have been no pregnancies reported in 1894 woman-months of effectiveness. Adverse events preventing women from relying on Essure pbc were < 5%.

Liz vs Lambda Architecture

AWS News Blog

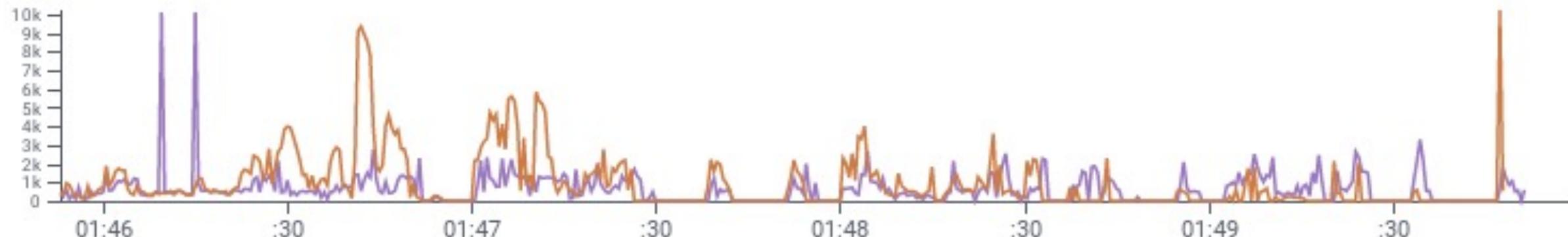
AWS Lambda Functions Powered by AWS Graviton2 Processor – Run Your Functions on Arm and Get Up to 34% Better Price Performance

by Danilo Poccia | on 29 SEP 2021 | in [AWS Lambda](#), [Compute](#), [Graviton](#), [Serverless](#) | [Permalink](#) |  [Comments](#) |  [Share](#)

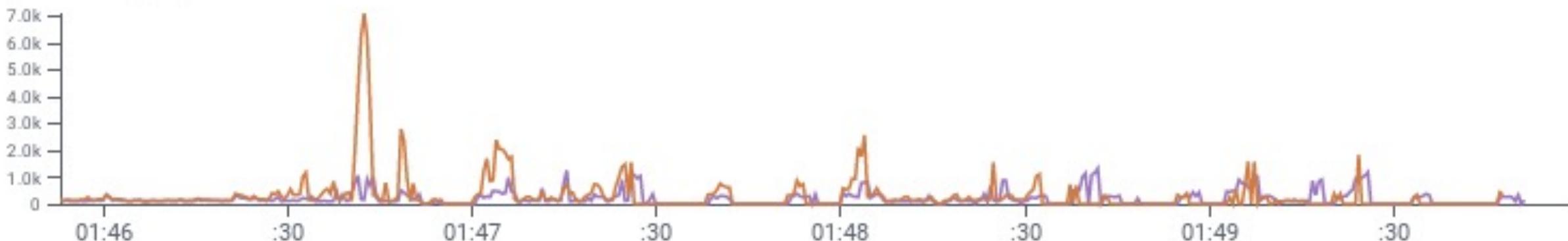


if we look at the results.
state our expectations
have a characterization
describe the environment
start from observation

P99(duration_ms)



P50(duration_ms)



arch	COUNT	HEATMAP(Log_Duration)	P99(duration_ms)	P50(duration_ms)
amd64	262,988		1,168.09377	139.24663
arm64	161,394		2,677.62006	175.50275

arch	P99(duration_ms)	P50(duration_ms)
amd64	1,168.09377	139.24663
arm64	2,677.62006	175.50275



LaunchDarkly APP 6:48 PM

Liz Fong-Jones updated the flag **Retriever Lambda ARM Percentage**

- Added the variation **1% ARM**

Liz Fong-Jones updated the flag **Retriever Lambda ARM Percentage** in **Production**

- Changed the default variation from **50% ARM** to **1% ARM**



lizf 6:49 PM

reverting ARM experiment, just keeping a trickle on 1% for validation of non-breakage/dogfooding of the lambda layer on both archs. it was 20% slower at p50 and 100% slower at p99, so we need to roll back.



1



1



1



1



1 reply 17 days ago



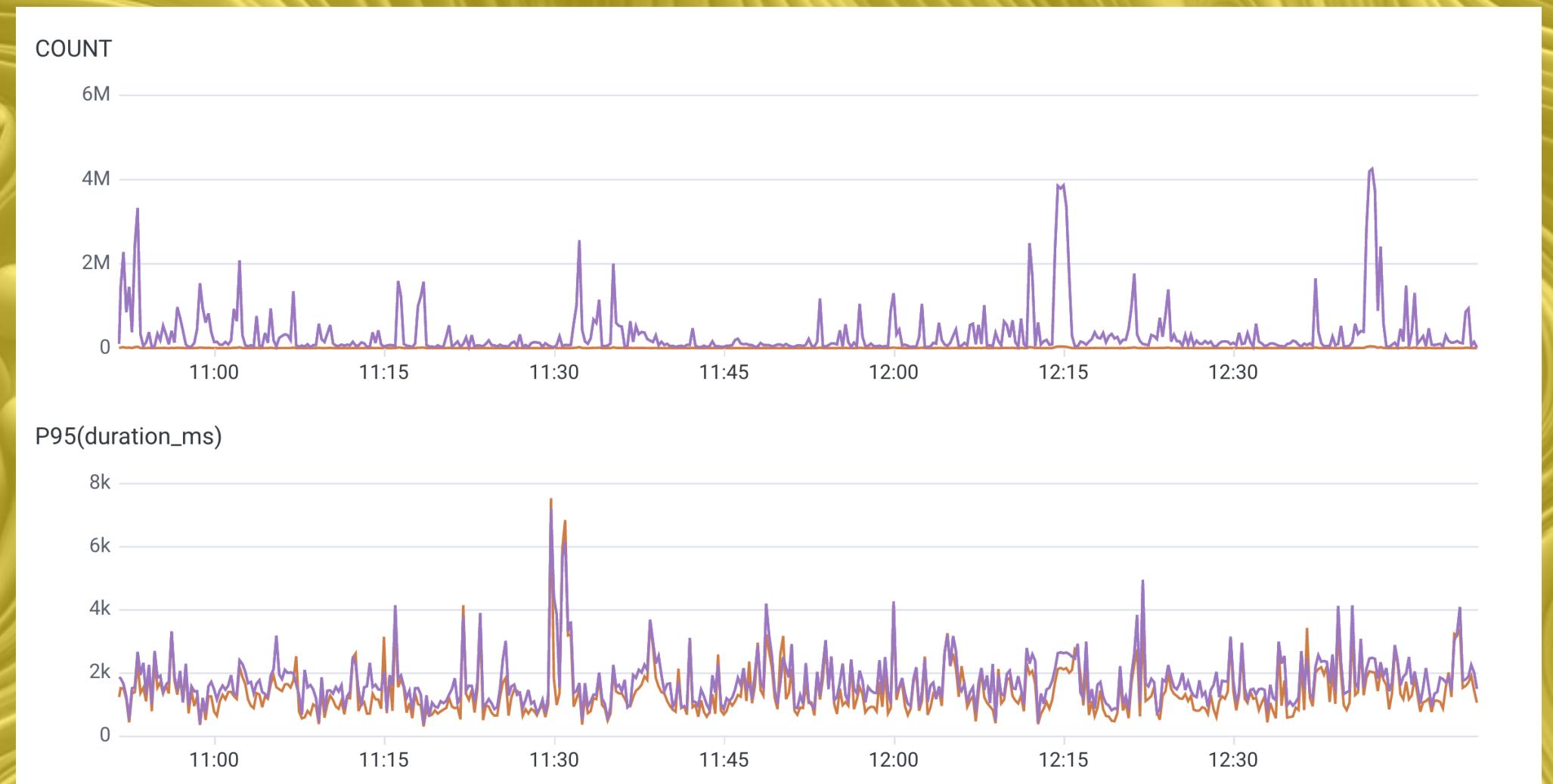
if we look at the results.
state our expectations
have a characterization
describe the environment
start from observation

are willing to back up

Why so slow?

- AWS capacity constraints
- Go (pre-1.18) register calling convention
- lz4 library asm optimization





arch	COUNT	P95(duration_ms)	AVG(relative_cost_units)
arm64	163,710,628	2,131.89797	2,893,141.13722
amd64	1,624,701	1,791.27988	3,533,219.04083

arch

AVG(relative_cost_units)



arm64

2,893,141.13722

...



amd64

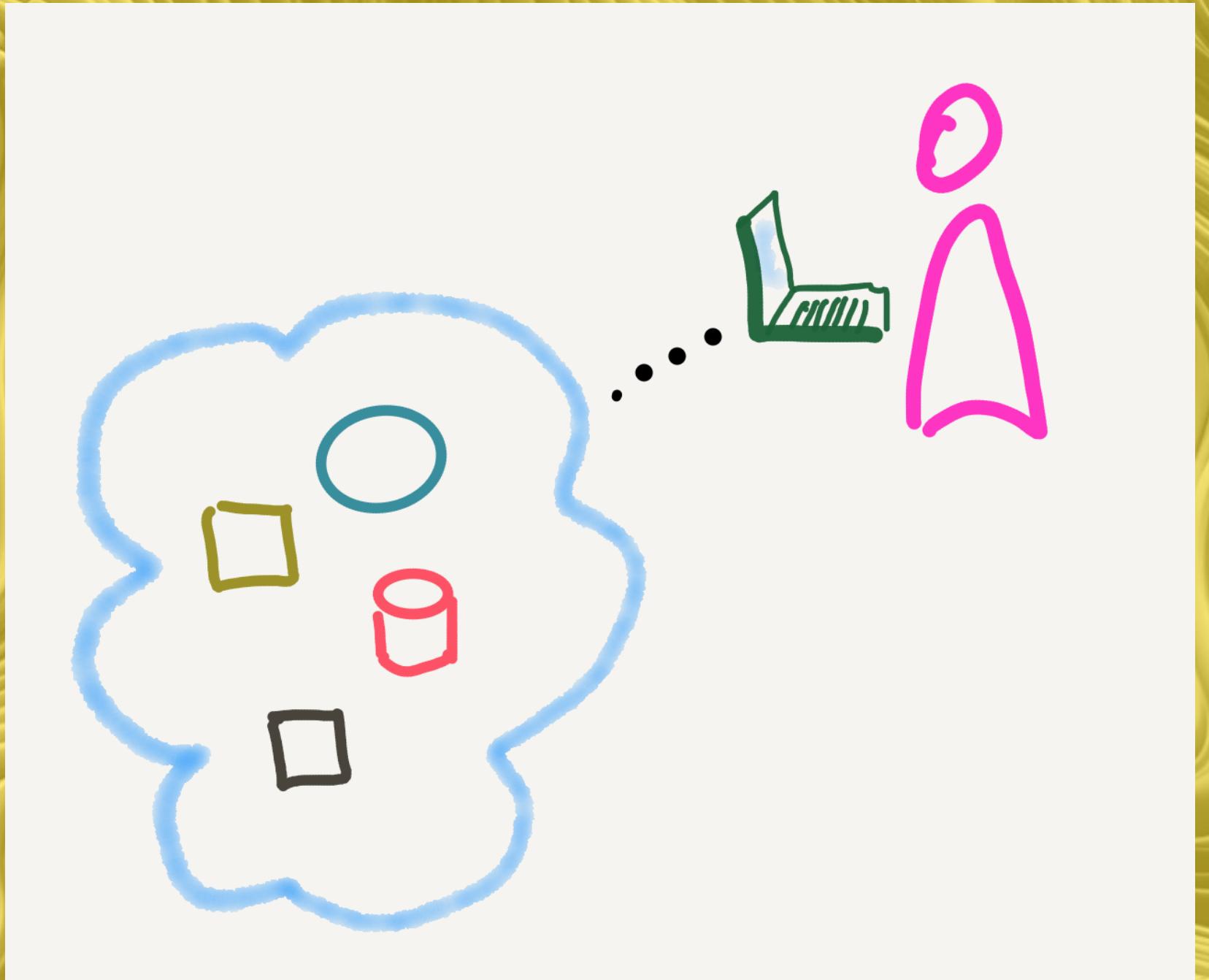
3,533,219.04083

...



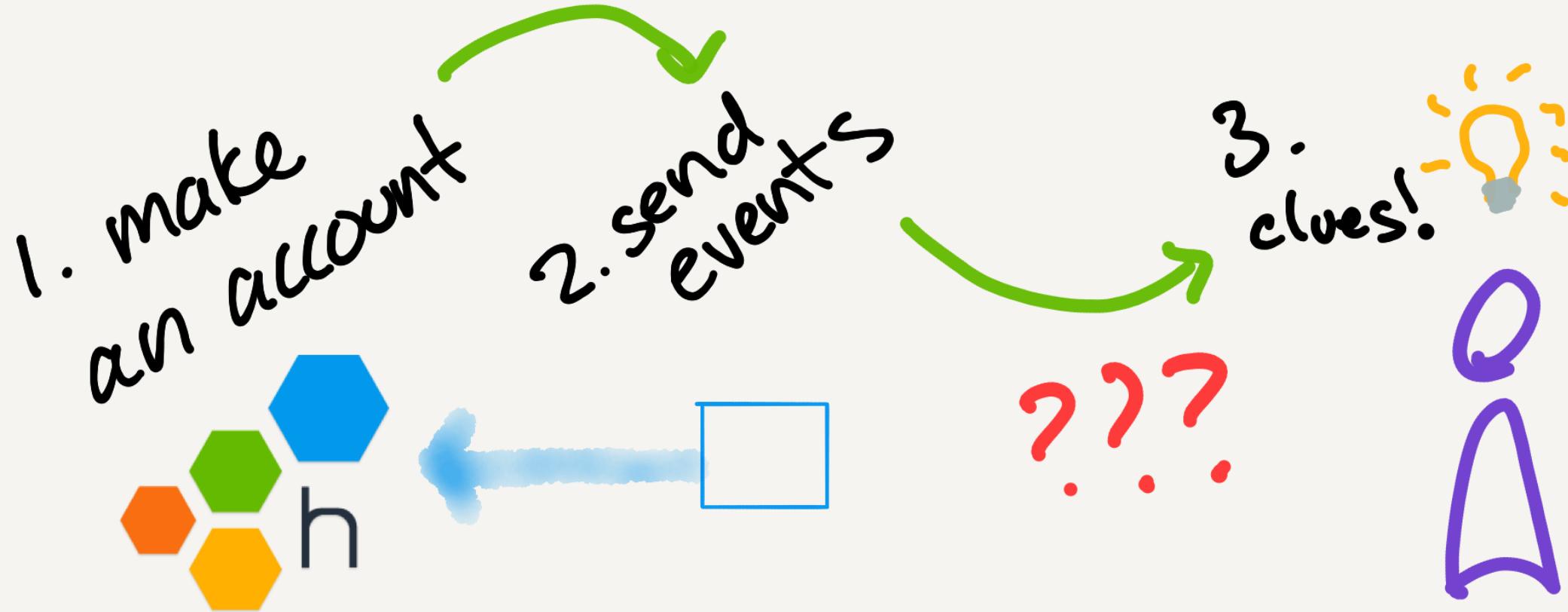
**EVERYTHING
IS AN
EXPERIMENT**

keep it compatible



Navbar Reorder



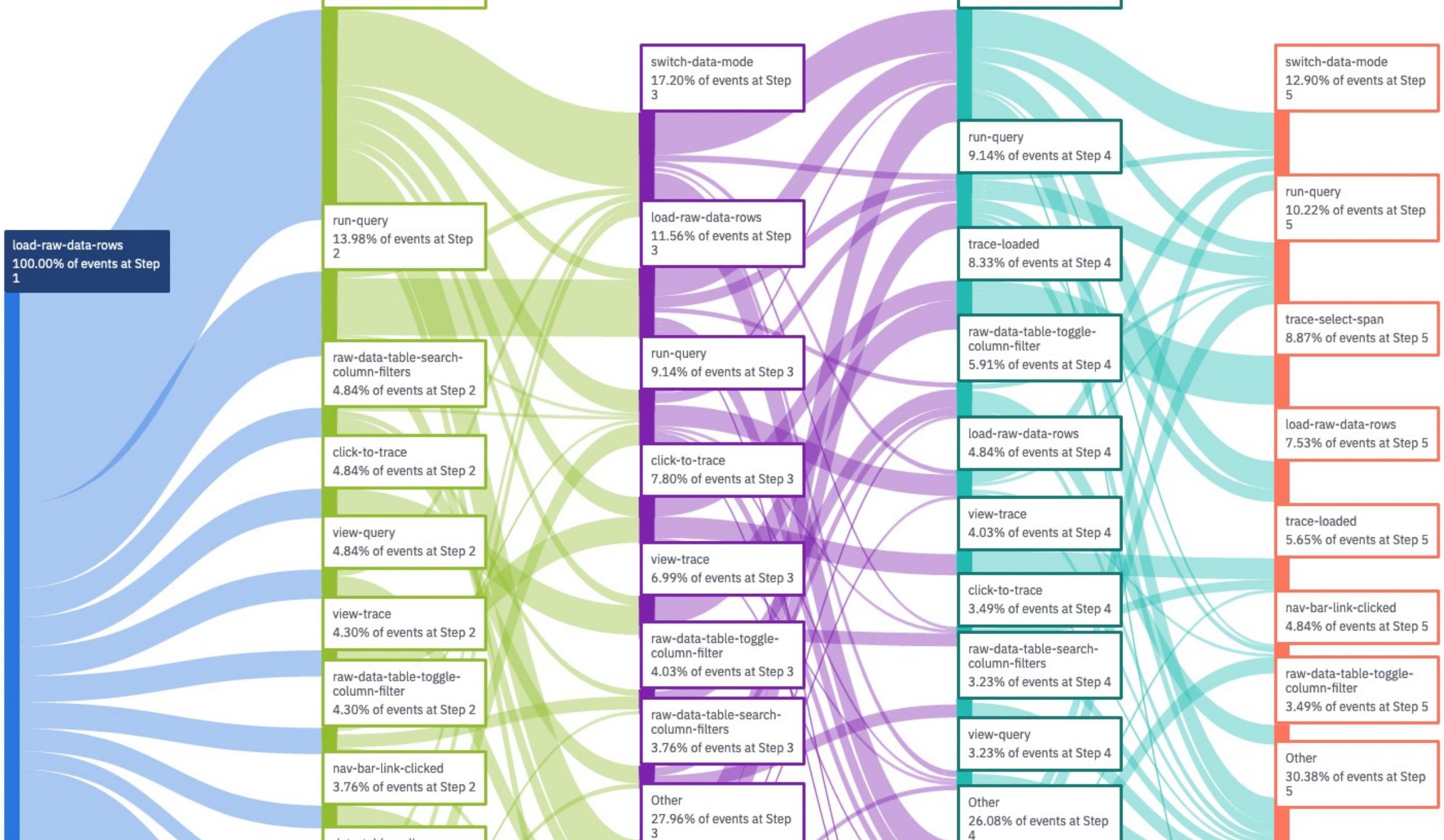




*state our expectations
have a characterization*



state our expectations
have a characterization
start from observation



Settings

 jessitron-site ▾

[Overview](#) [Schema](#) [Definitions](#) [Metrics](#) [Markers](#) [Delete](#)

Description

Add a description for this dataset

 API created Jul 14, 2023

Default Granularity ?

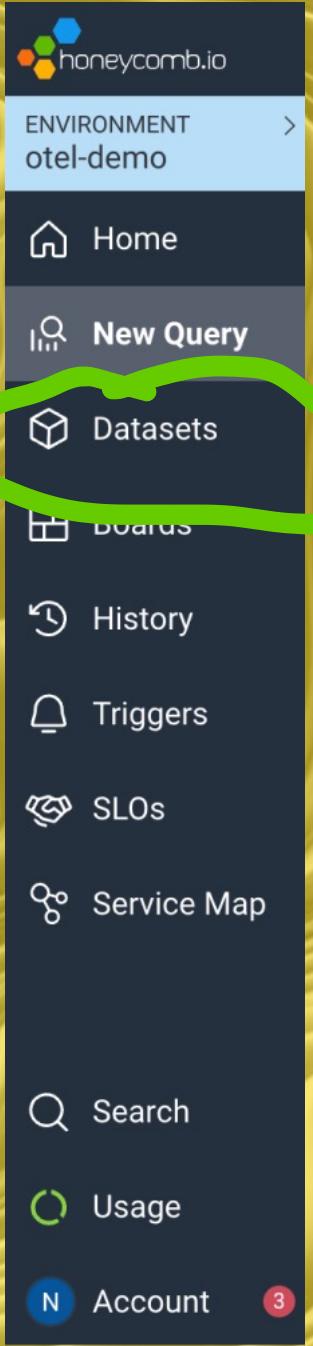
Queries in this dataset won't drop below the default granularity unless you choose to override it manually when making an individual query.

None



Suggested Queries

This feature allows you to select a board to provide suggested queries for this dataset. The queries will be drawn from the selected board's query definitions. Multiple datasets can be selected here. This is useful for datasets that have multiple different types of data or different levels of detail.



Settings

jessitron-site ▾

Overview Schema Definitions Metrics Markers Delete

Description

Add a description for this dataset

🐝 API created Jul 14, 2023

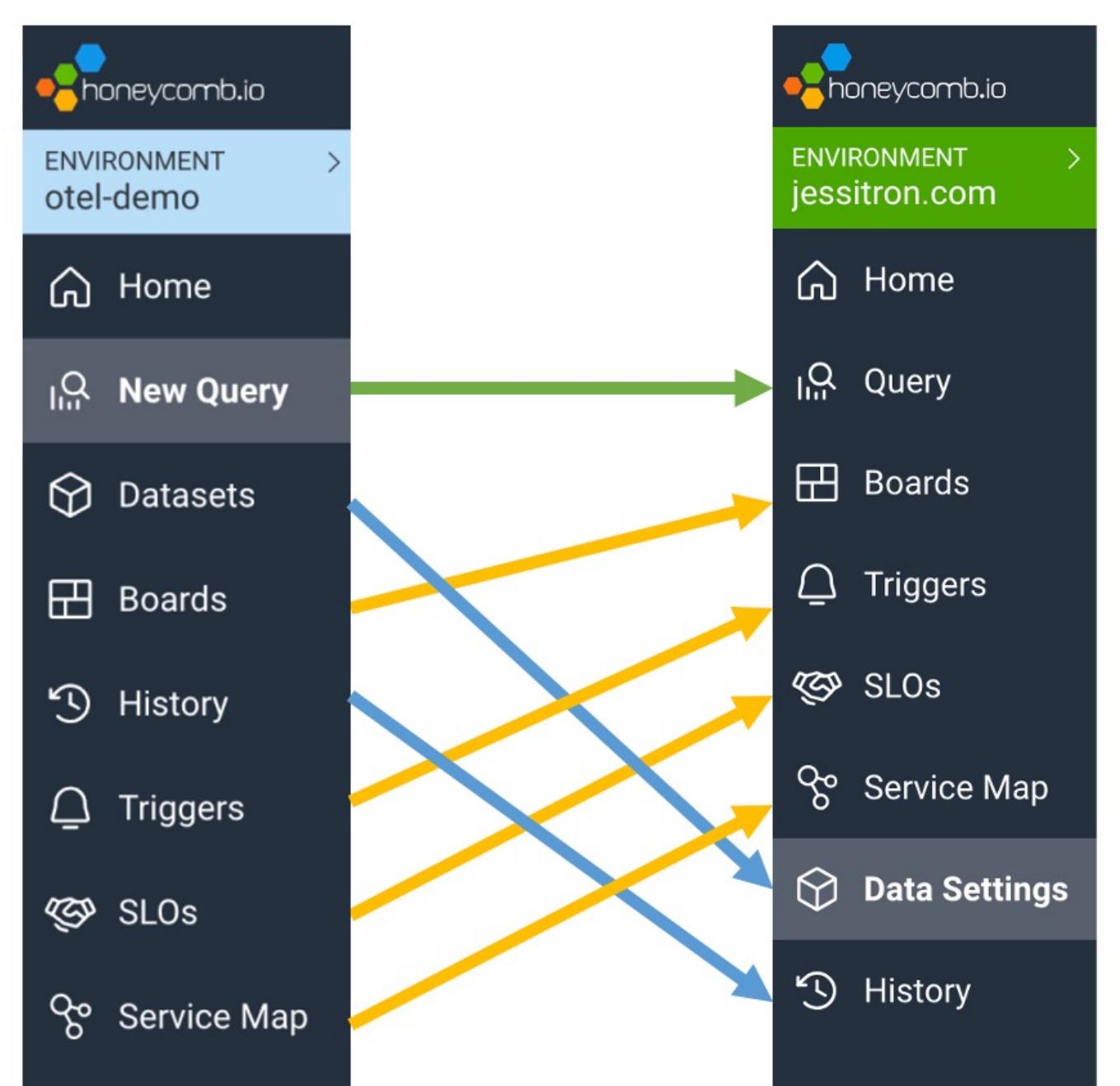
Default Granularity ⓘ

Queries in this dataset won't drop below the default granularity unless you choose to override it manually when making an individual query.

None ▾

Suggested Queries

This feature allows you to select a board to provide suggested queries for this dataset. The queries will be drawn from the selected board's Schemas. Multiple datasets can be selected on the dashboard. The





**EVERYTHING
IS AN
EXPERIMENT**

describe the environment

What % of teams looking at Datasets within first 1hr of data in?

What question does this chart answer? Enter a description here.

1 DASHBOARD

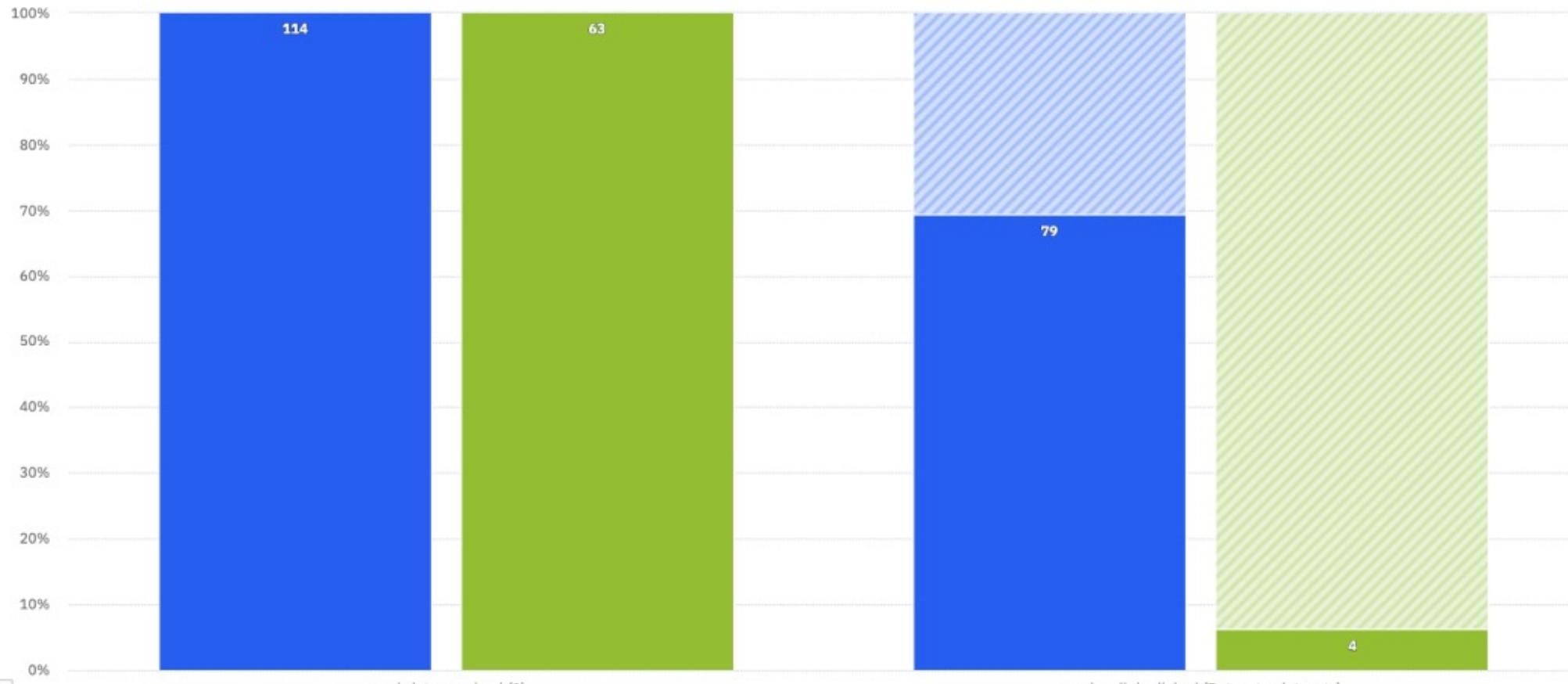
Conversion rate for team-created-at > 2023-04-01; team-creat... +1 who performed send-data-received +1 in this order



Anomaly + Forecast

Compare to past ▾

Daily ▾ 7d 30d 60d 90d



Total Conversion

● before change

69.3%
Last 190 Days

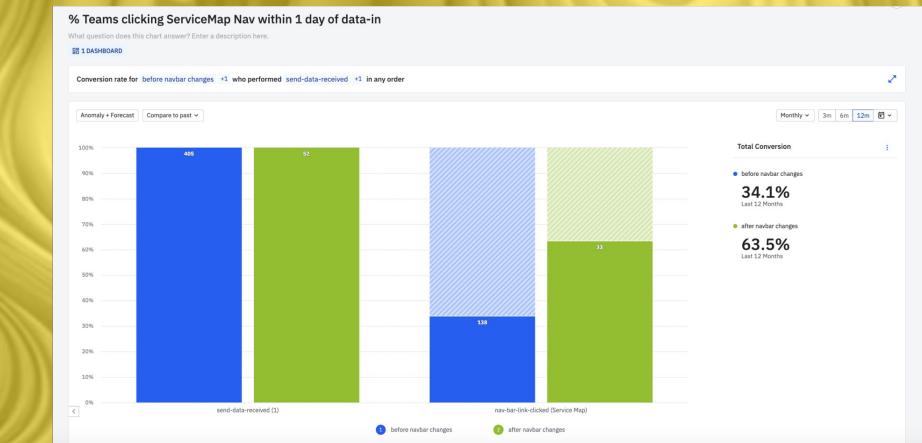
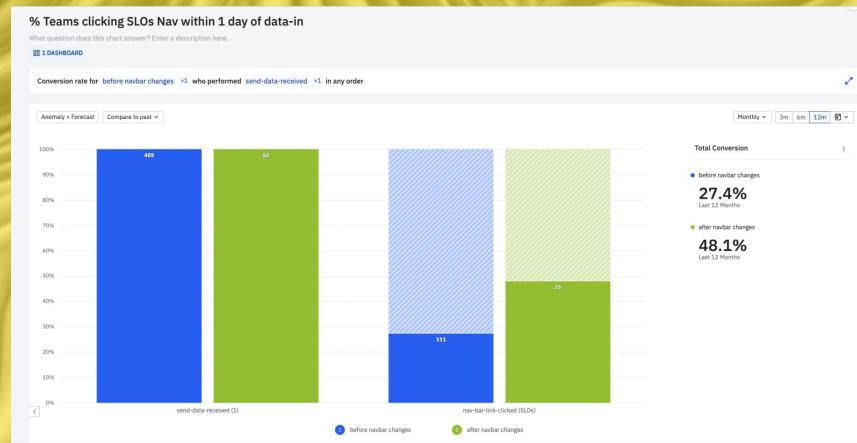
● after change

6.35%
Last 190 Days

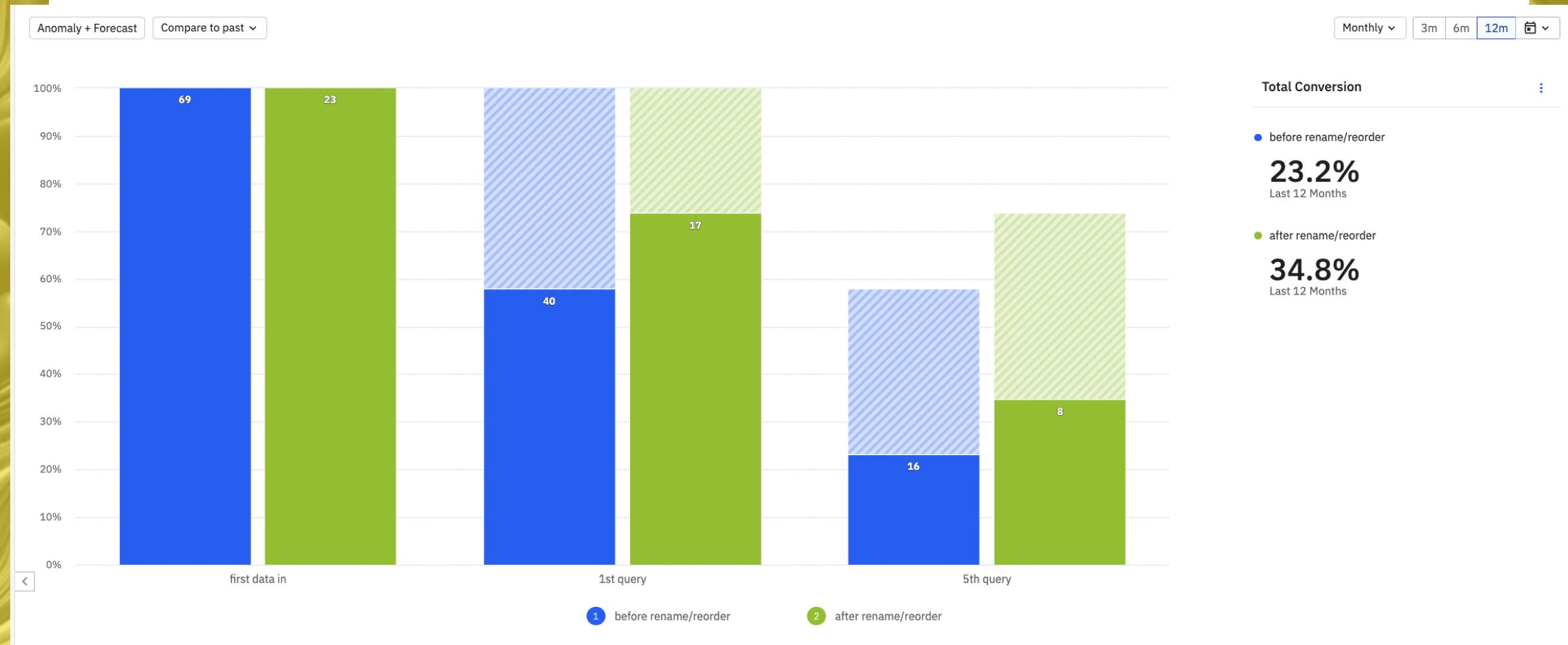
1 before change

2 after change

More people clicked on good things



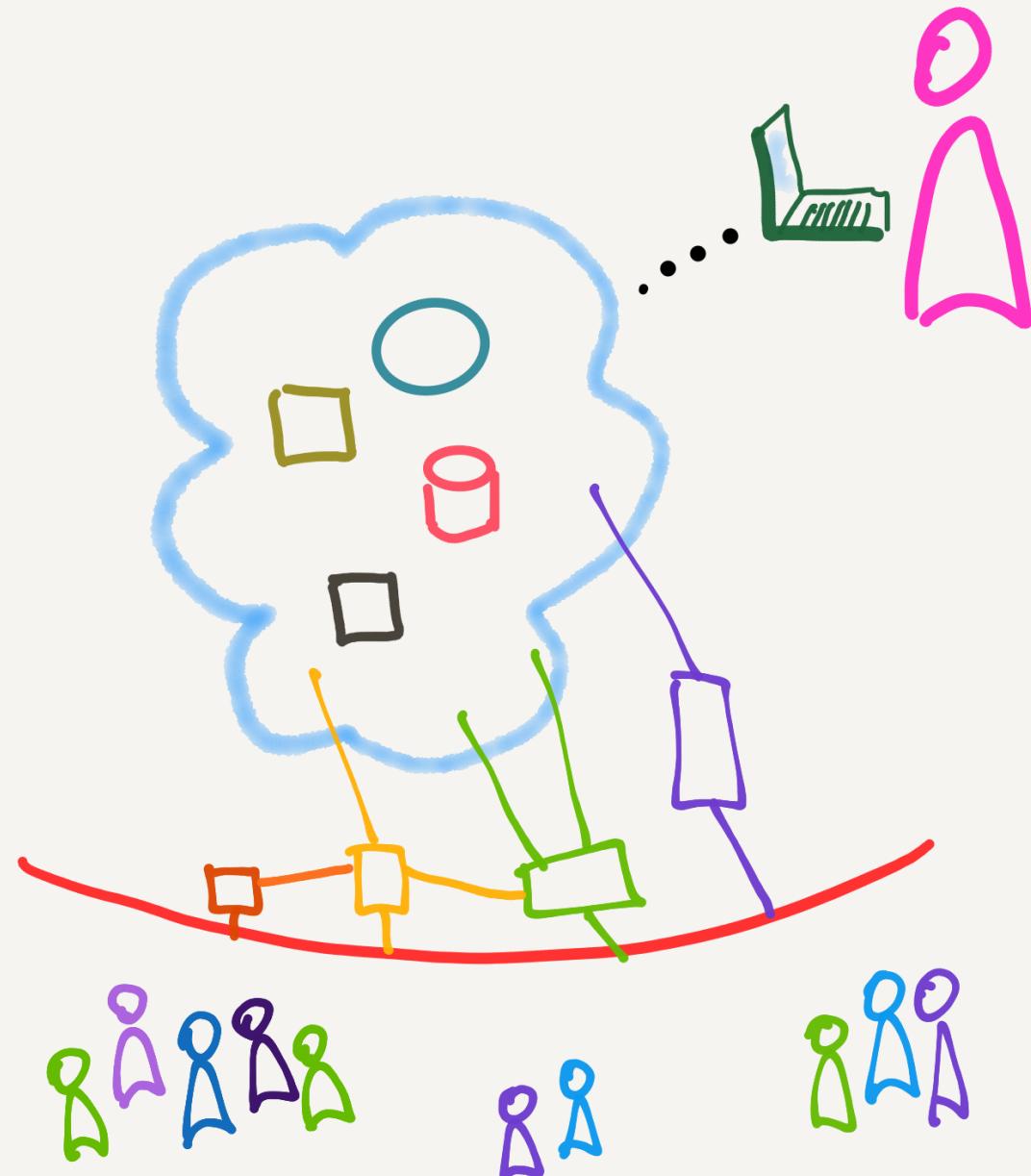
Is there more querying? Hard to say.

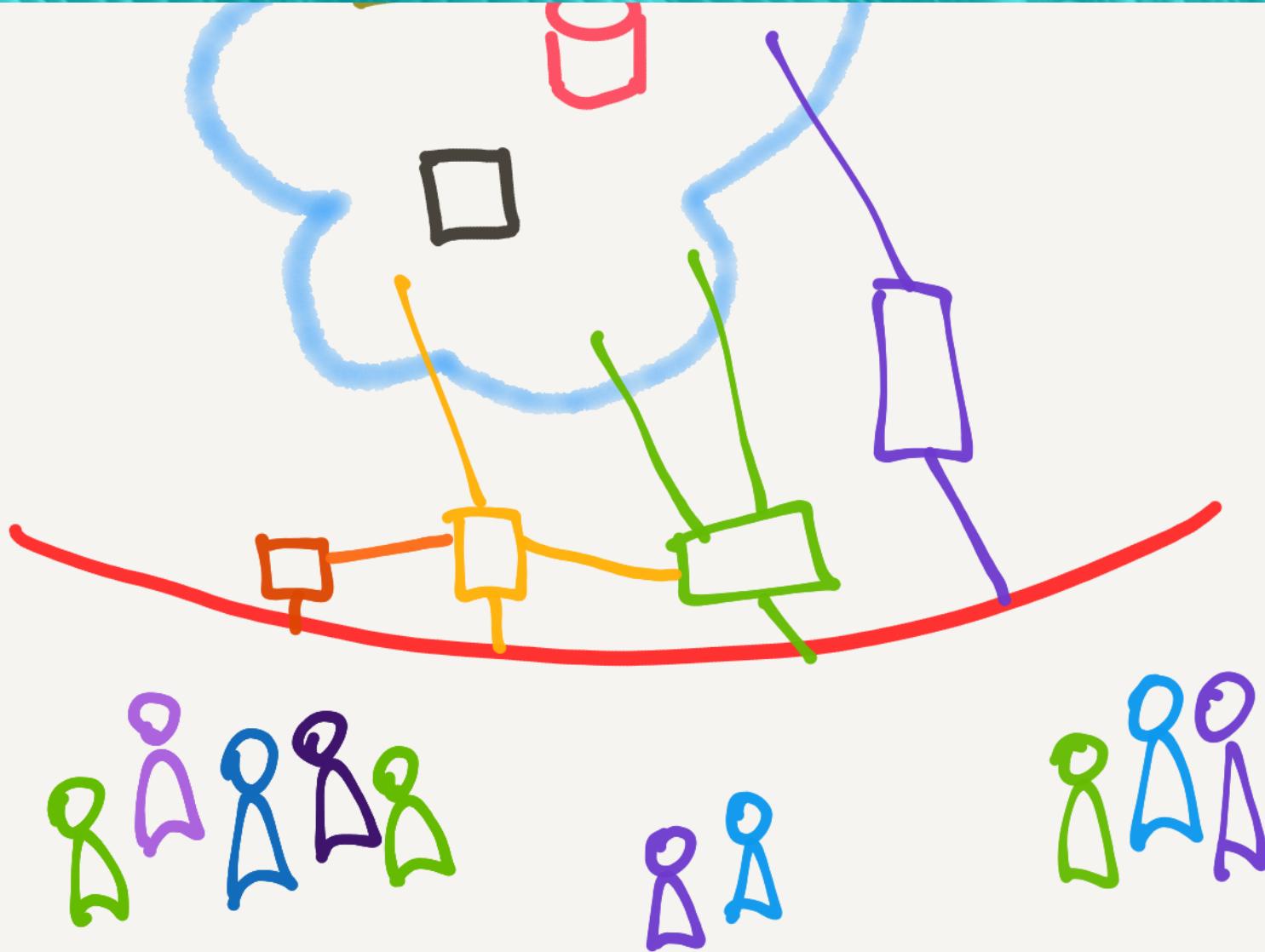




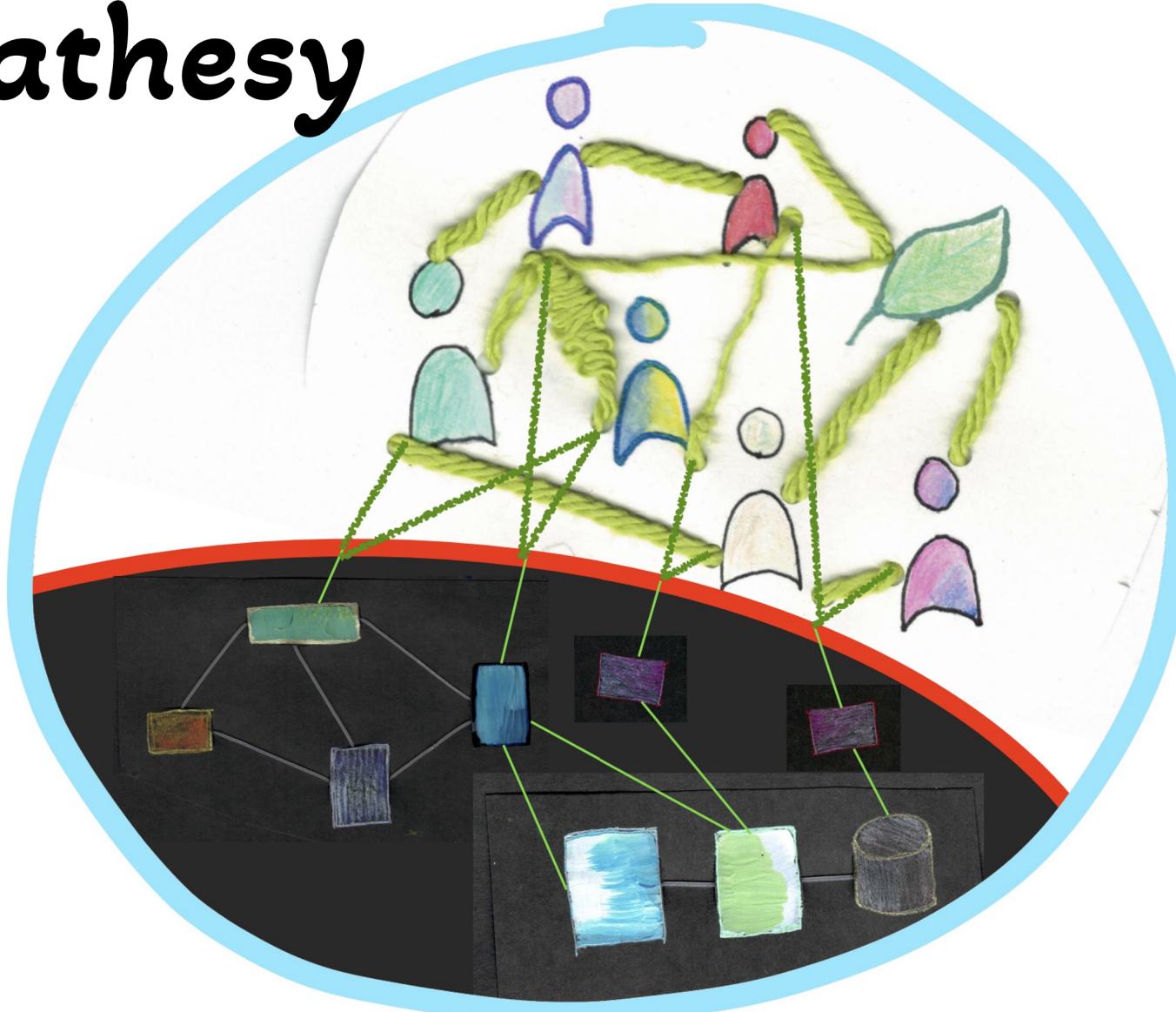
if we look at the results.

keep it compatible





Symmathesies



ARTICLE

CAUSE, EFFECT, AND THE STRUCTURE OF THE SOCIAL WORLD

MEGAN T. STEVENSON*

ABSTRACT

When it comes to the type of limited-scope interventions that lend themselves to [RCTs], social change is hard to engineer. Stabilizing forces push people back toward the path they would have been on absent the intervention. ...a success achieved in one setting may not port well to another.

another.

This has a variety of implications. It suggests that a dominant perspective on

ARTICLE

CAUSE, EFFECT, AND THE STRUCTURE OF THE SOCIAL WORLD

MEGAN T. STEVENSON*

ABSTRACT

Iron Law of Evaluation:
The expected value of any net impact assessment of any large-scale social program is zero.

dependent, meaning that a success achieved in one setting may not port well to another.

This has a variety of implications. It suggests that a dominant perspective on

Safety reporting of Essure medical device: a qualitative and quantitative assessment on the FDA manufacturer and user facility device experience database in 2018

[Chenyu Zou](#),^{✉ 1,*} [Brandy Davis](#),¹ [Patricia R. Wigle](#),² [Ana L. Hincapie](#),² and [Jeff Jianfei Guo](#)²

► Author information ► Article notes ► Copyright and License information ► [PMC Disclaimer](#)

Associated Data

► [Supplementary Materials](#)

► [Data Availability Statement](#)

Abstract

Go to: ►

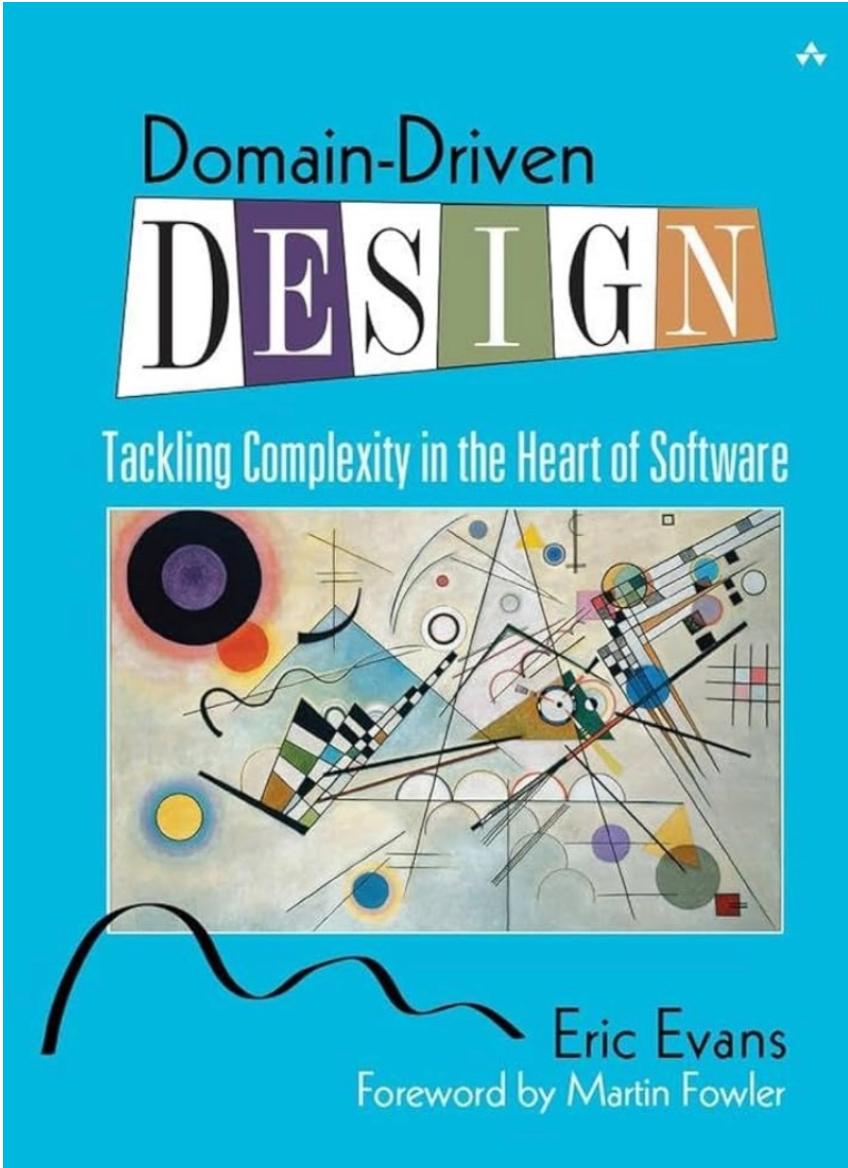
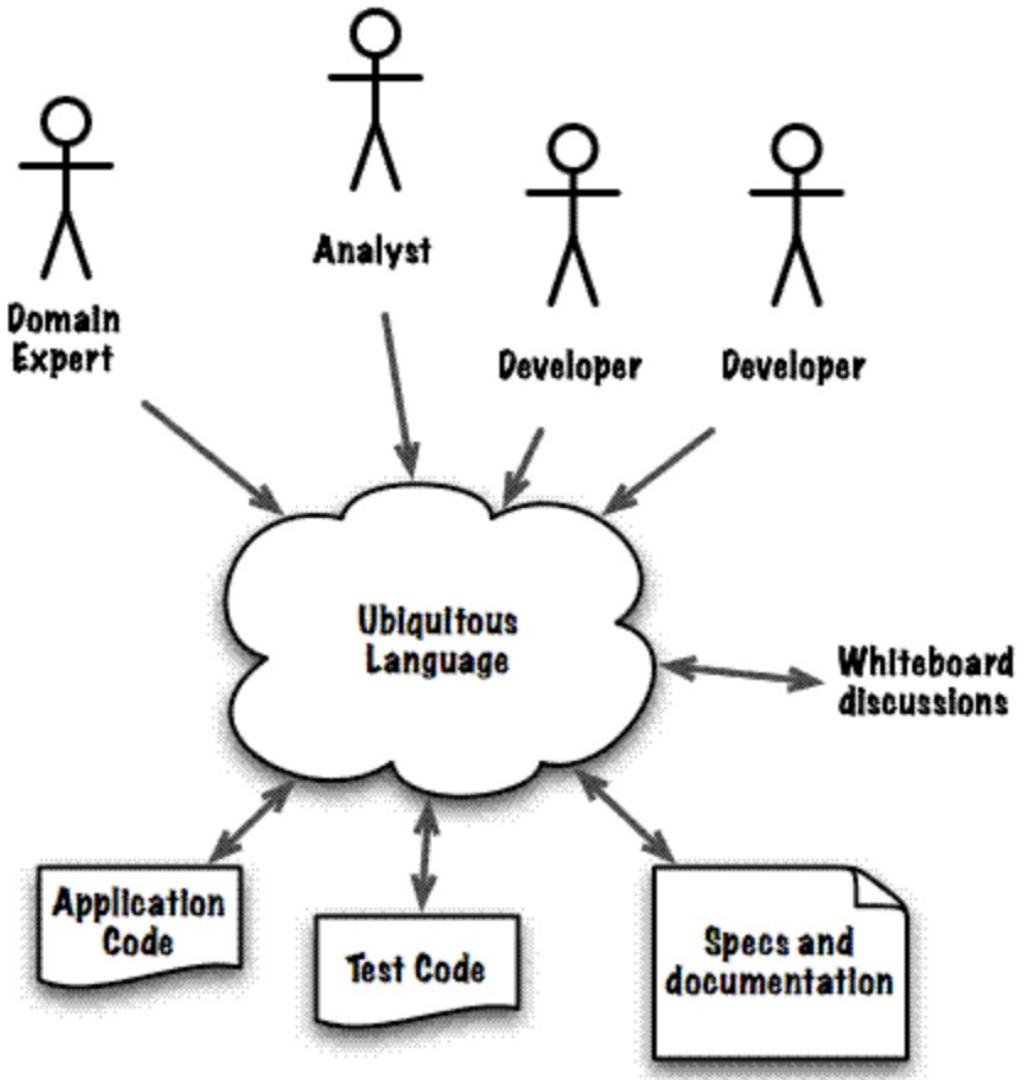
Background

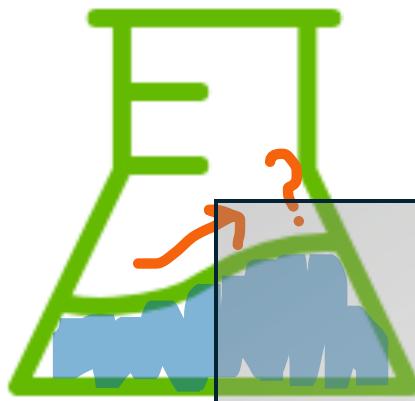
There have been numerous cases of adverse events since the introduction of Essure medical devices for sterilization in 2002. This study analyzed the safety event reports of the Essure reported in the Manufacturer and User Facility Device Experience (MAUDE).



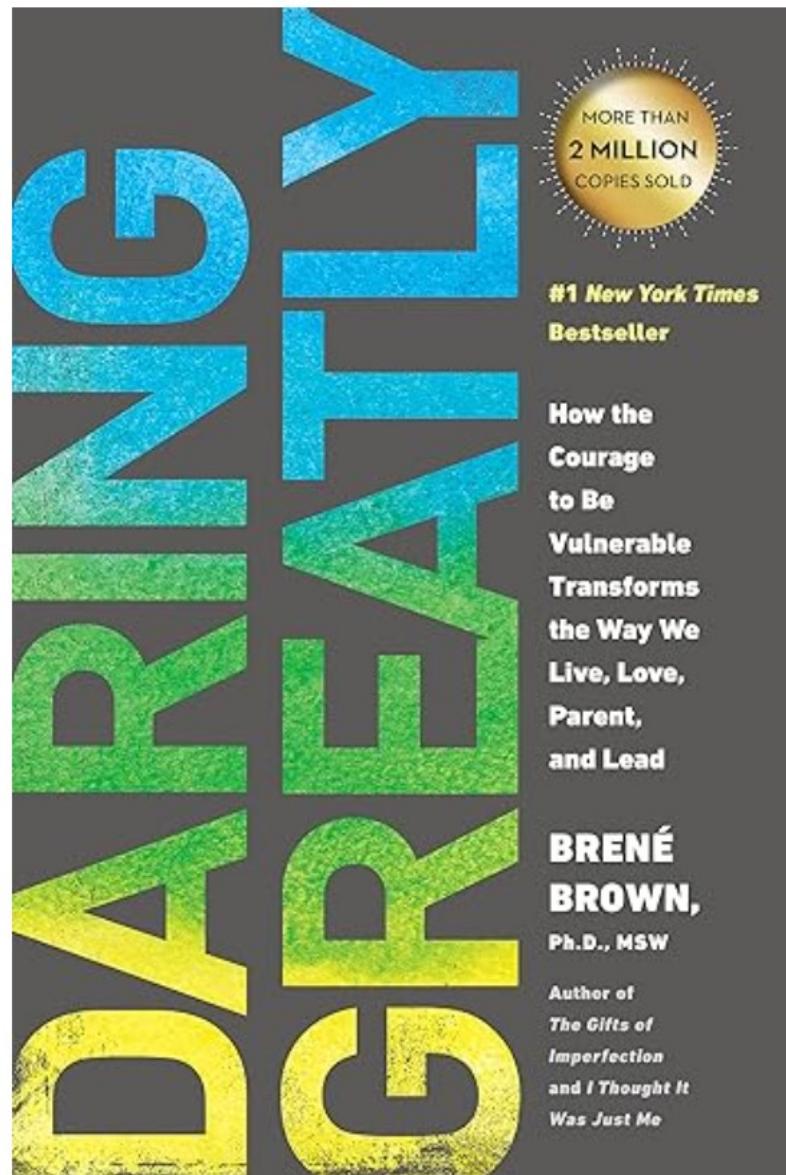
if we look at the results.
and keep
looking!







Action Research





if we look at the results.
more than
numbers!



if we look at the results.

notice our expectations

evolve a characterization

describe the environment

keep making observations

keep it compatible

are willing to back up

The
Pragmatic
Programmers

Agile Retrospectives

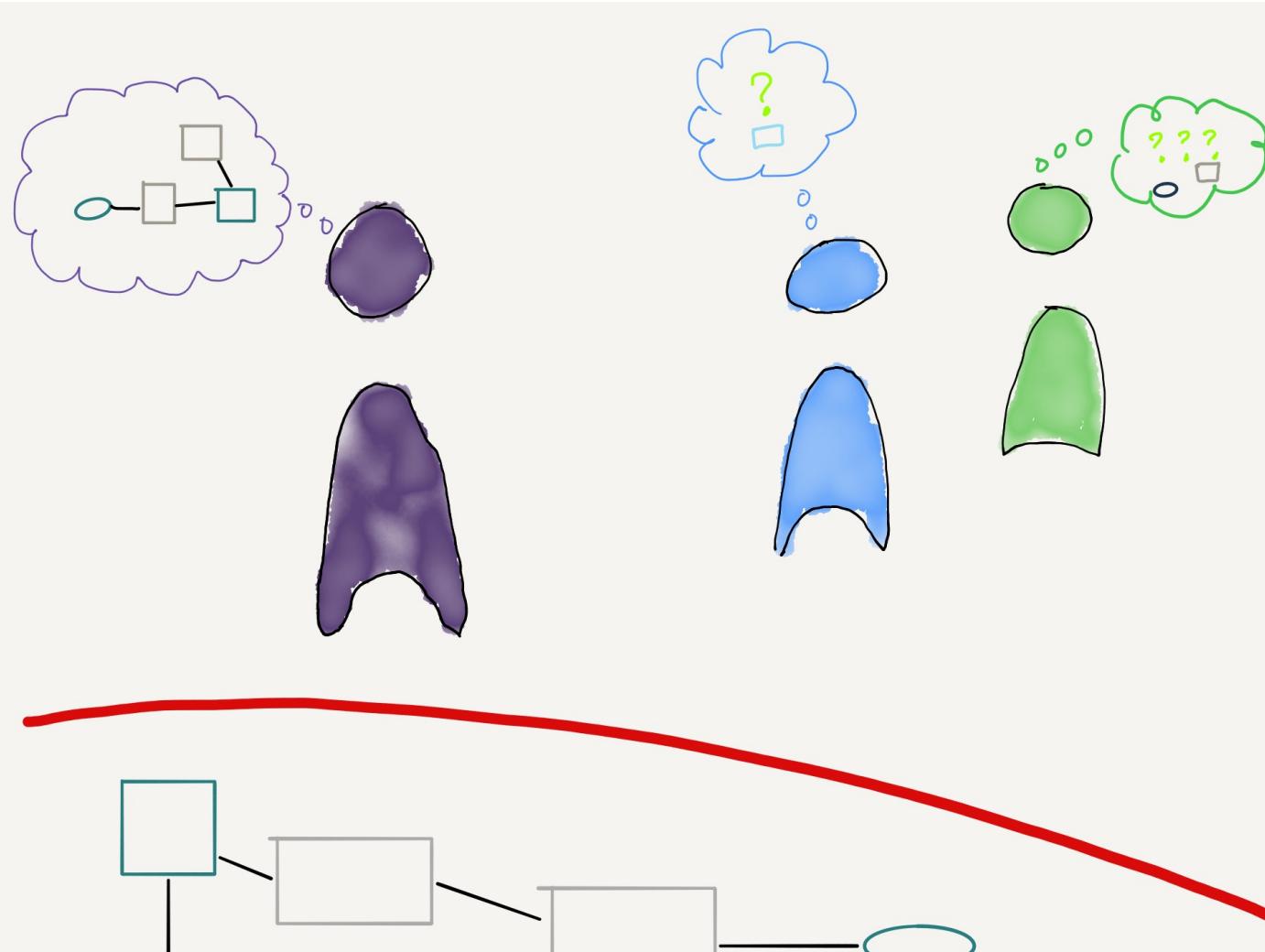
Second Edition

A Practical Guide
for Catalyzing Team
Learning and Improvement



Esther Derby
Diana Larsen
David Horowitz
edited by Adaobi Obi Tulton

Audi vs Purple Developer



Observation: what is not as you would prefer it?

Characterization: what do you think is going on?

How can you test that characterization?

if this is true, what else would I expect?

Action: what do you think we can do about it?

Why do you think that will work?

Results:

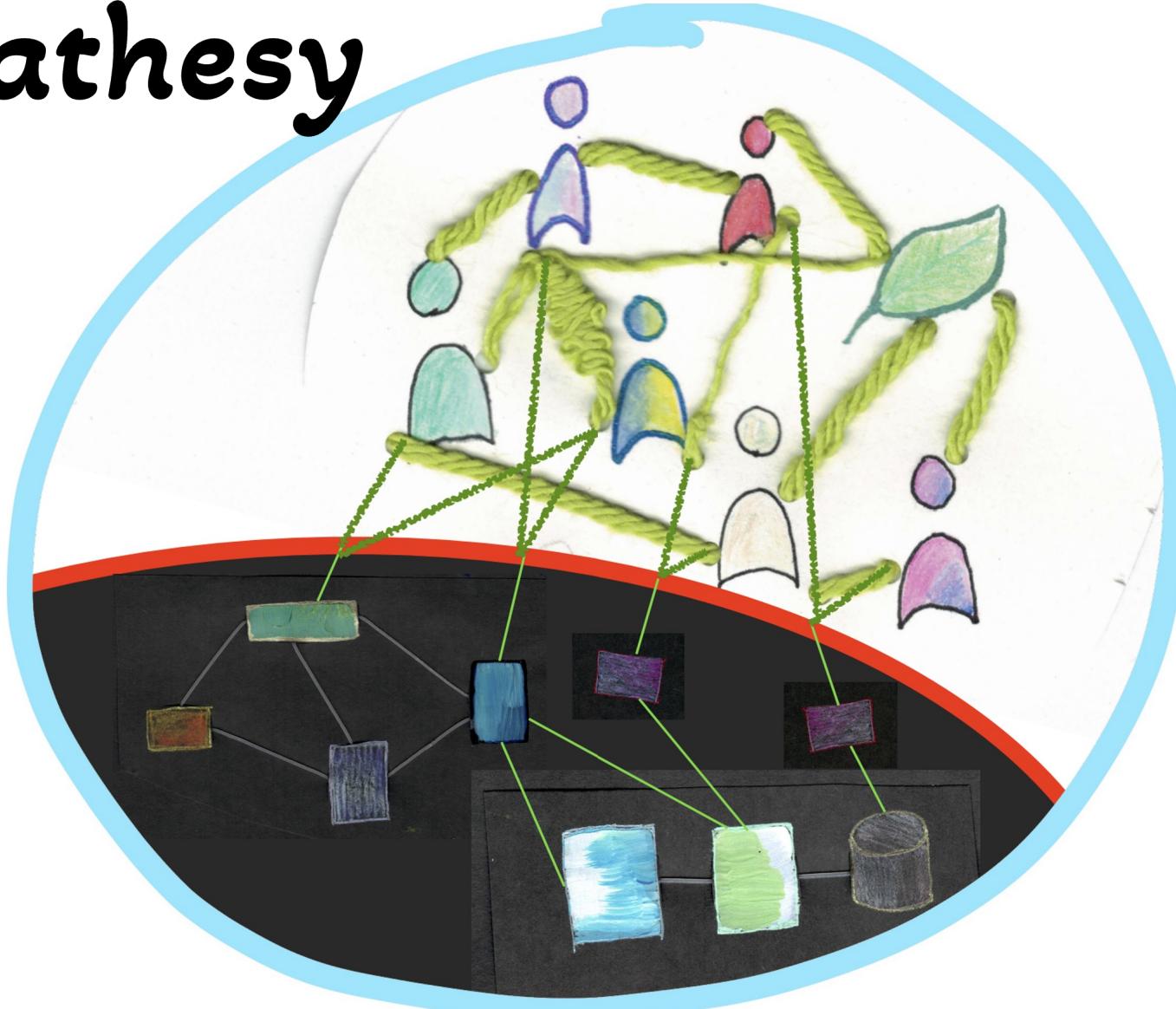
What might you notice if it's working? (and when?)

What might you notice if it isn't?

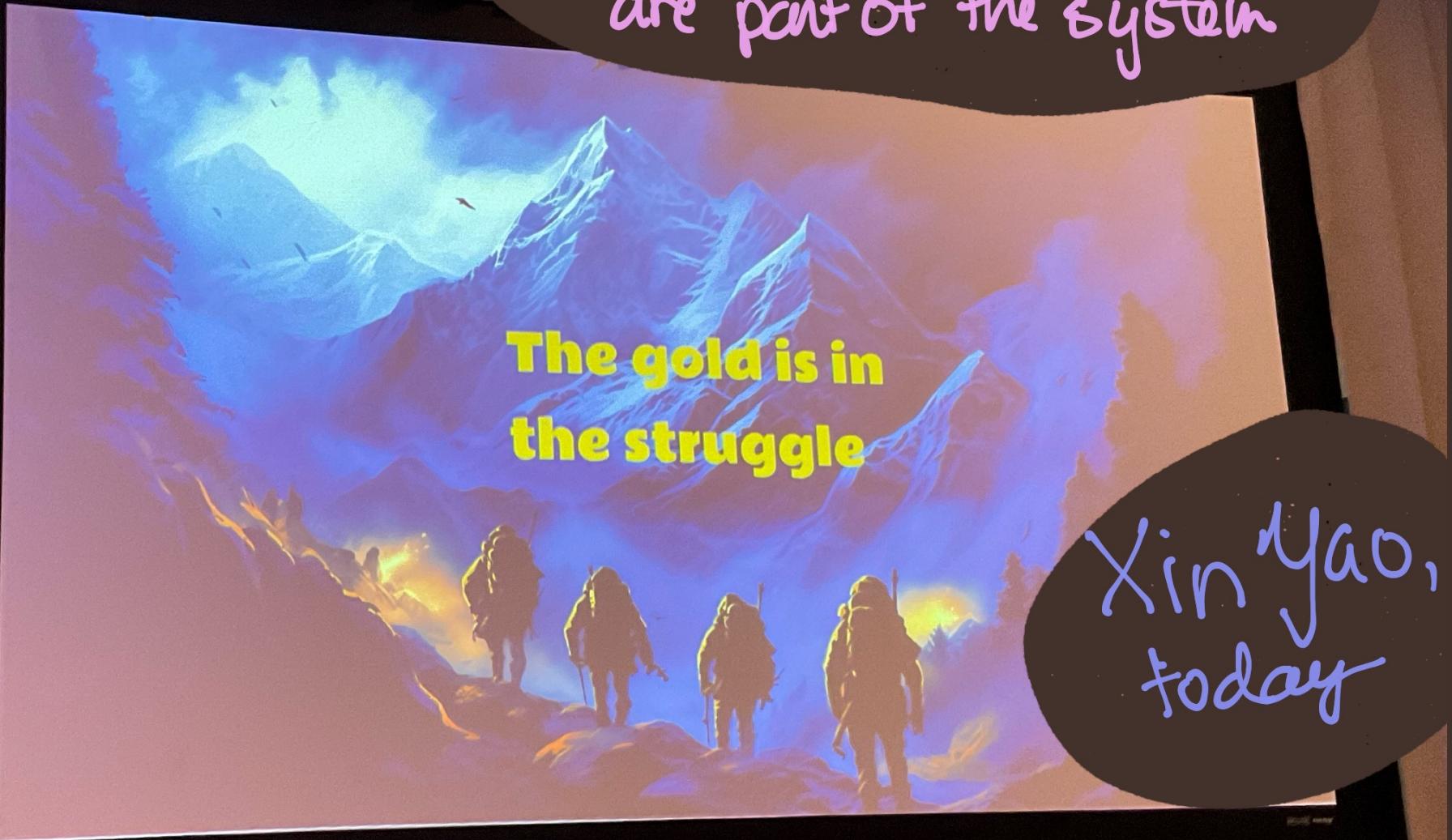
What else should we keep an eye on?

What's the worst that can happen?

Symmathesies



In biology, challenges & struggles
are part of the system



The gold is in
the struggle

Xin Yao,
today



if we look at the results.

notice our expectations

evolve a characterization

describe the environment

keep making observations

keep it compatible

are willing to back up



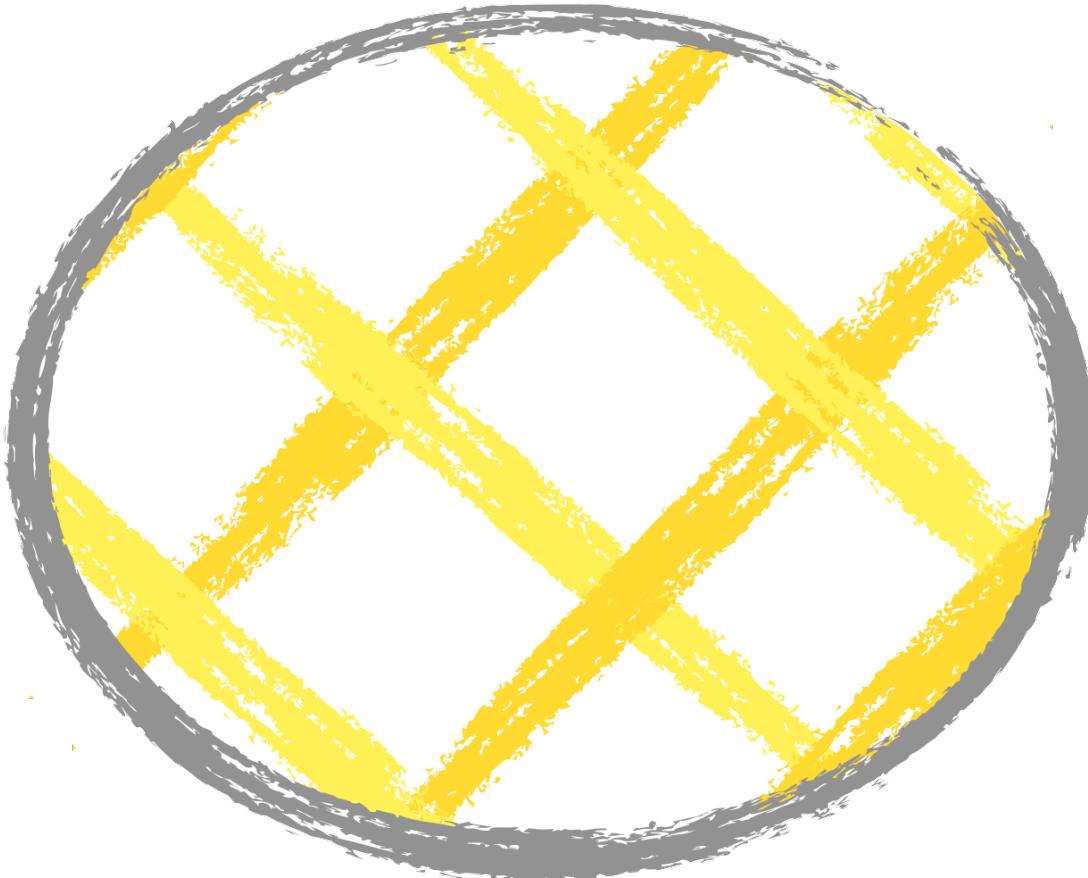
if we look at the results.
notice our expectations
evolve a characterization
describe the environment
keep making observations
keep it compatible
are willing to back up
if we let it change us.



Great! Now how do we

Scale it Up?

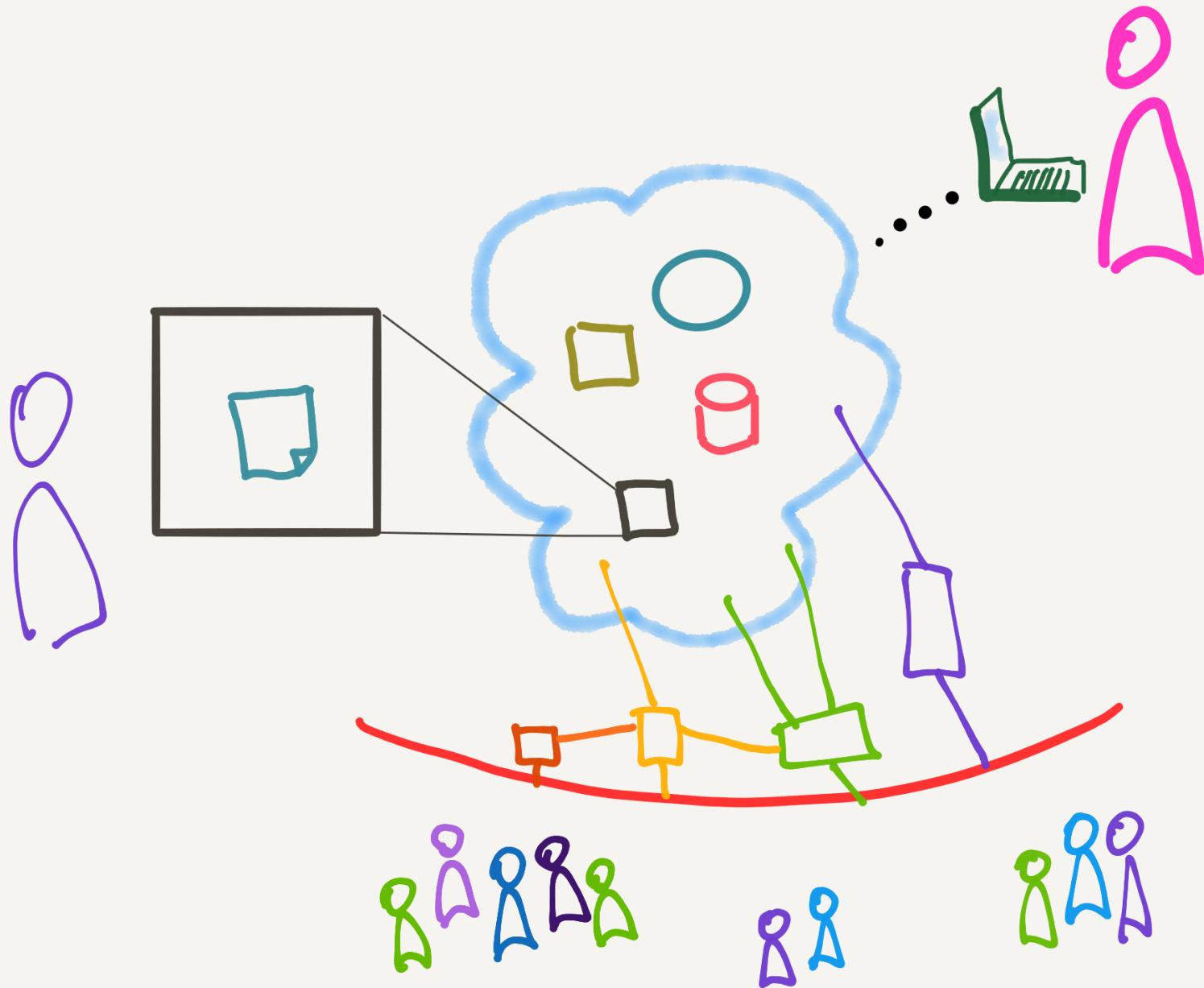
Iron Law of Evaluation:
The expected value of any net impact
assessment of any large-scale social program is
zero.



A Radical Culture of Culture Building

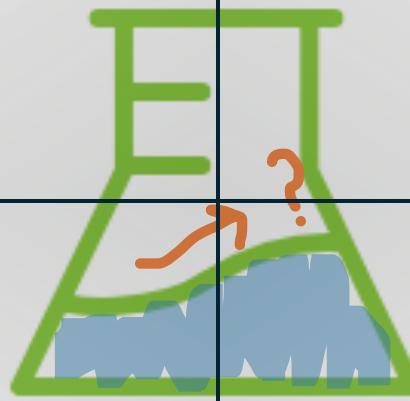
Beth Andres-Beck

<https://bandresbecky.gumroad.com/l/culture-building>



Systematic Testing
and Measurement

check effects



measure and adjust

Action Research



if we look at the results.
state our expectations
have a characterization
describe the environment
start from observation
keep it compatible
are willing to back up
if we let it change us.



if we look at the results.



if we look at the results.

if we let it change us.



The gold is in
the struggle

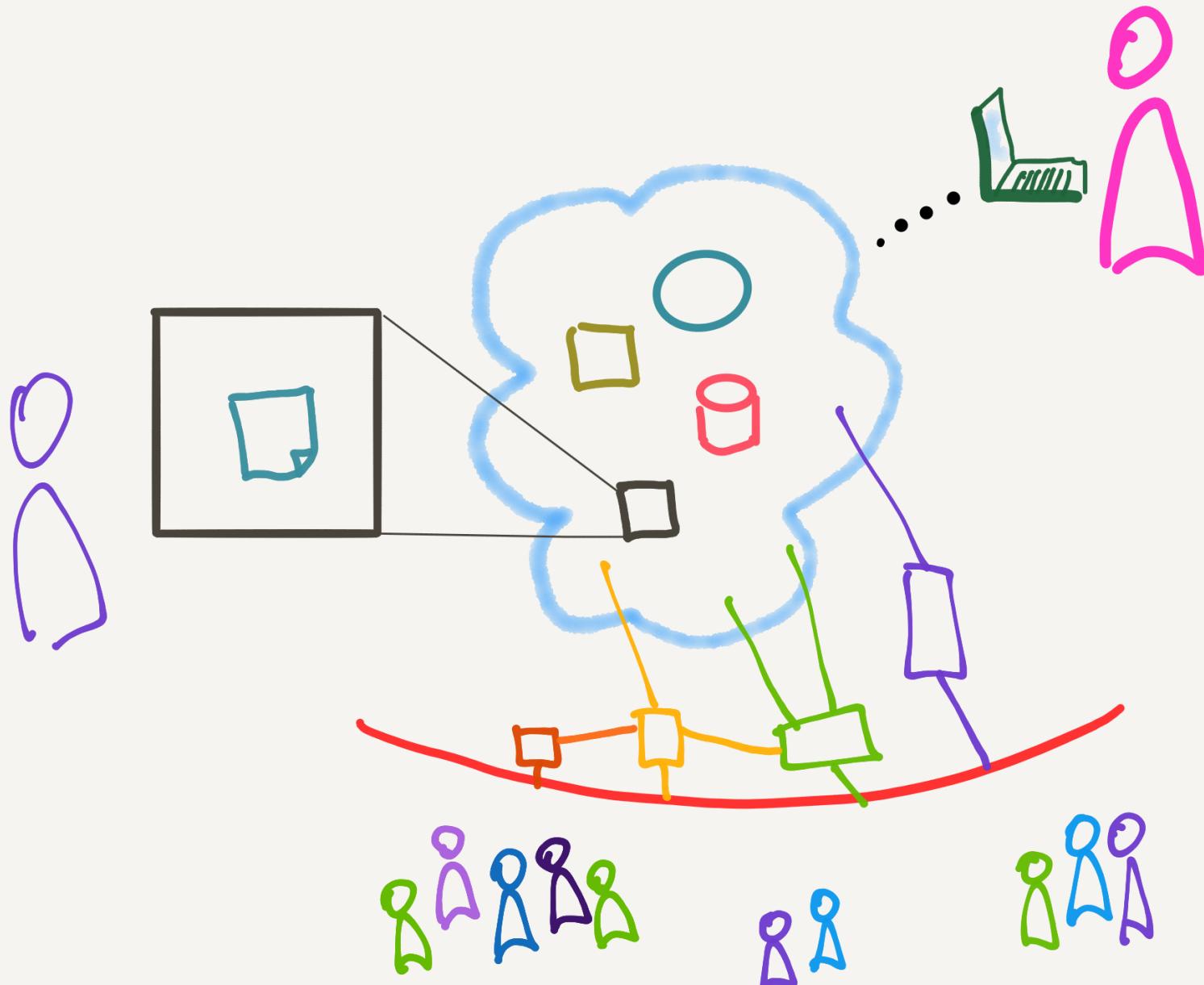
"The change we are seeking will
inevitably change us."

Xin Yao,
today



if we look at the results.
state our expectations
have a characterization
describe the environment
start from observation

compare with each other
if we let it change us.



Symmathesy



Symmathecist

in the medium of code

Experimenting in a SocioTechnical System



<https://jessitron.com/2024/03/13/talk-experimenting-in-sociotechnical-systems/>