App:
http://trix-$-dev.cfapps.io/swagger-ui

Grafana:
https://idb-grafana-616.cfapps.io/

Please install
Postman or any other tool to make requests to an API.

https://www.getpostman.com

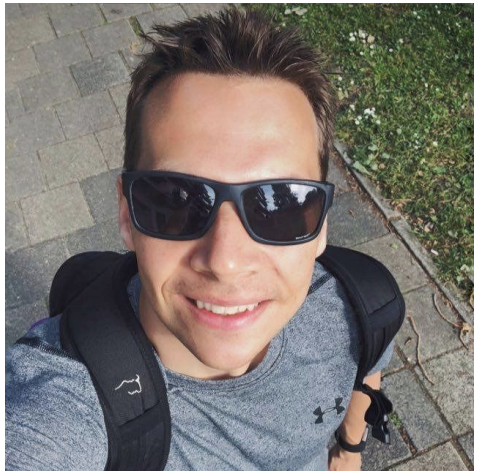
Functional Monitoring

Learning from your users through metrics

Ivo de Bruijn & Joost van Wollingen

Ivo de Bruijn

Software Test Engineer, bol.com



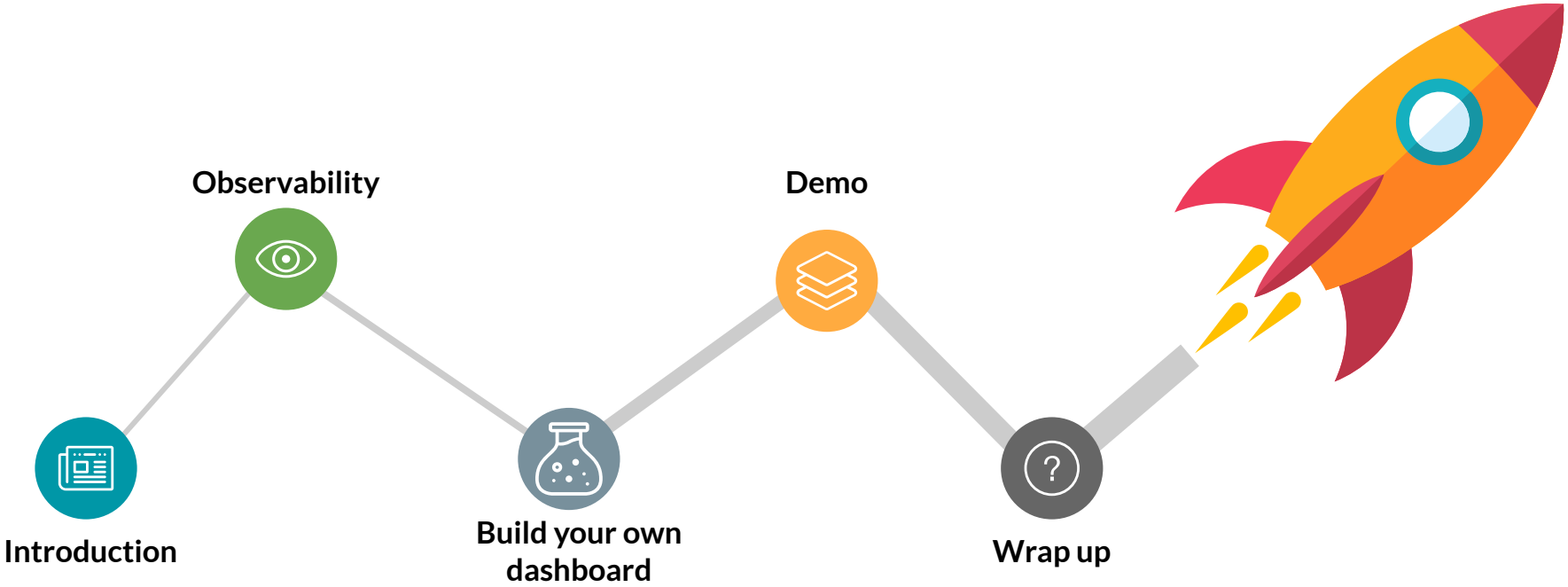
@instabruijn

Joost van Wollingen

Quality & Test automation, Xebia

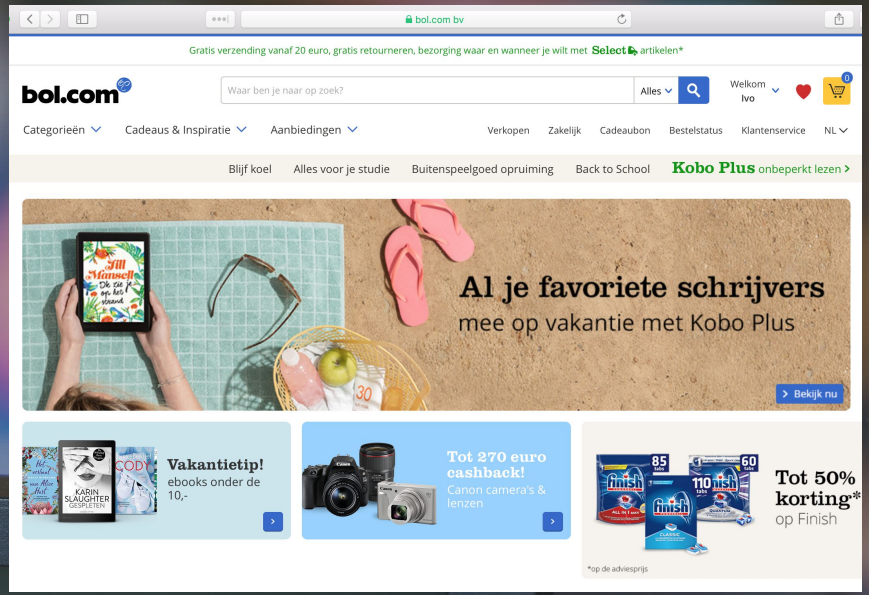
@jpjwolli

Agenda


Introduction
Observability
Build your own dashboard
Demo
Wrap up

bol.com

de winkel van ons allemaal



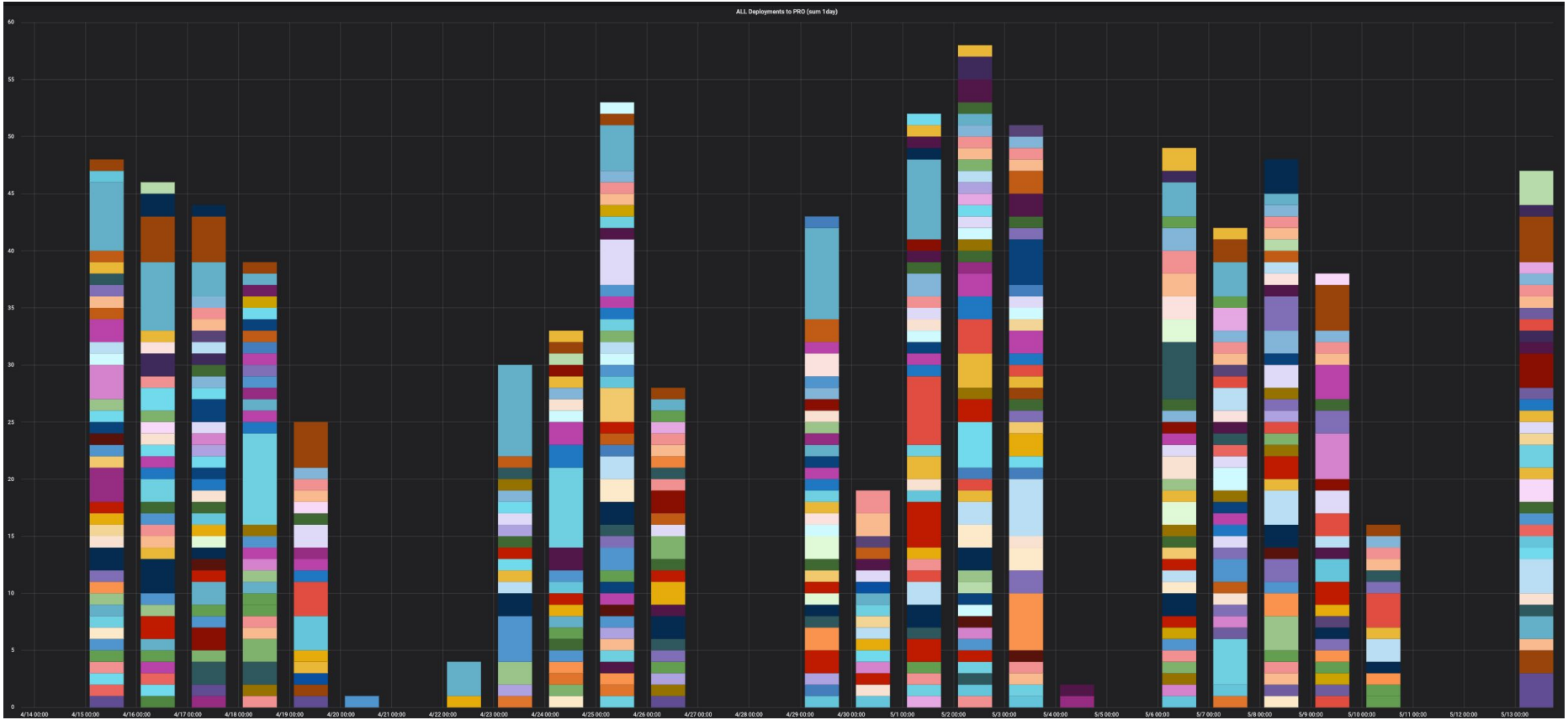
bol.com facts and figures

- 8+ million active customers
- 1400+ employees
- Operating in a highly competitive market
- 380+ people in the IT department
- 60+ Scrum teams
- 600+ microservices + legacy
- Currently migrating to the cloud

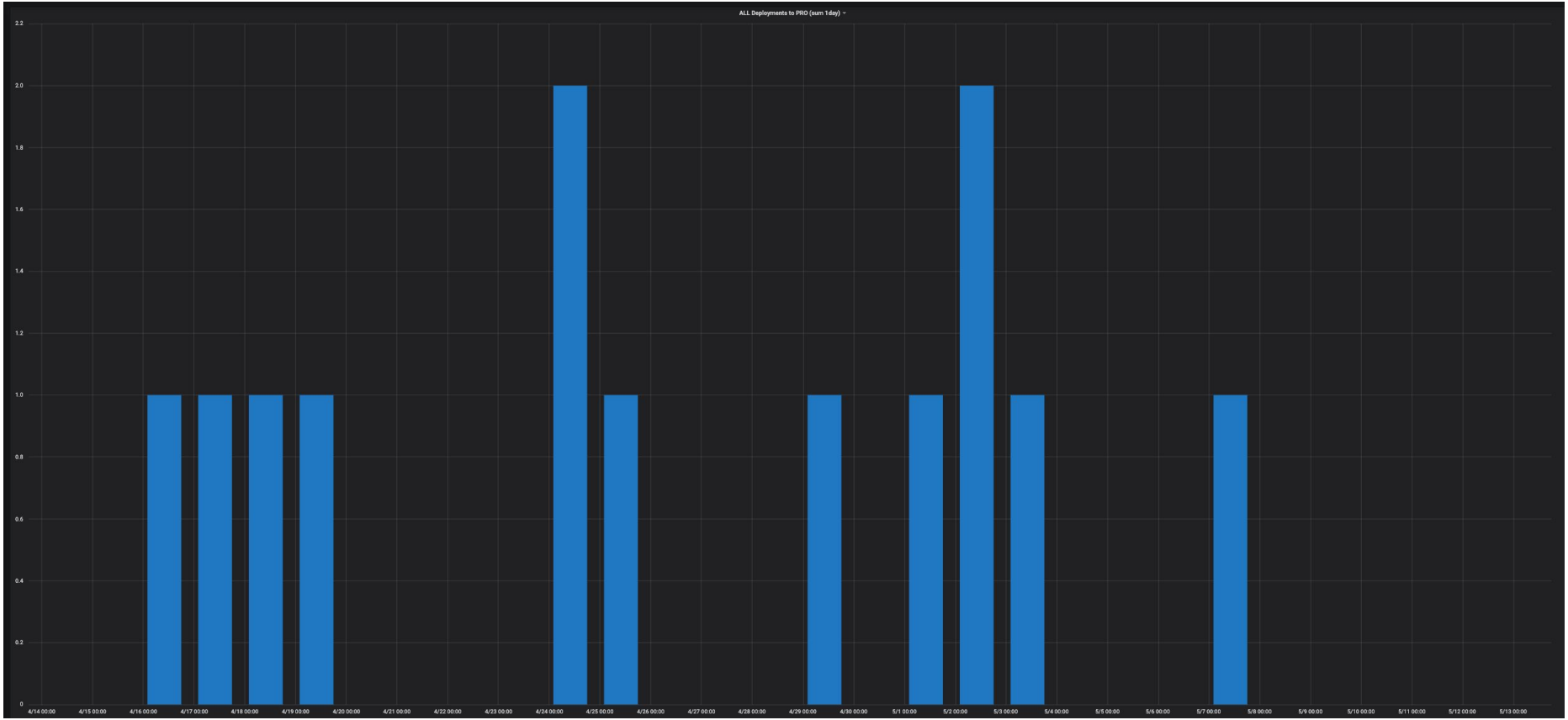
You build it, you run it, you love it!

I love it!

800+ Deployments to Production per month



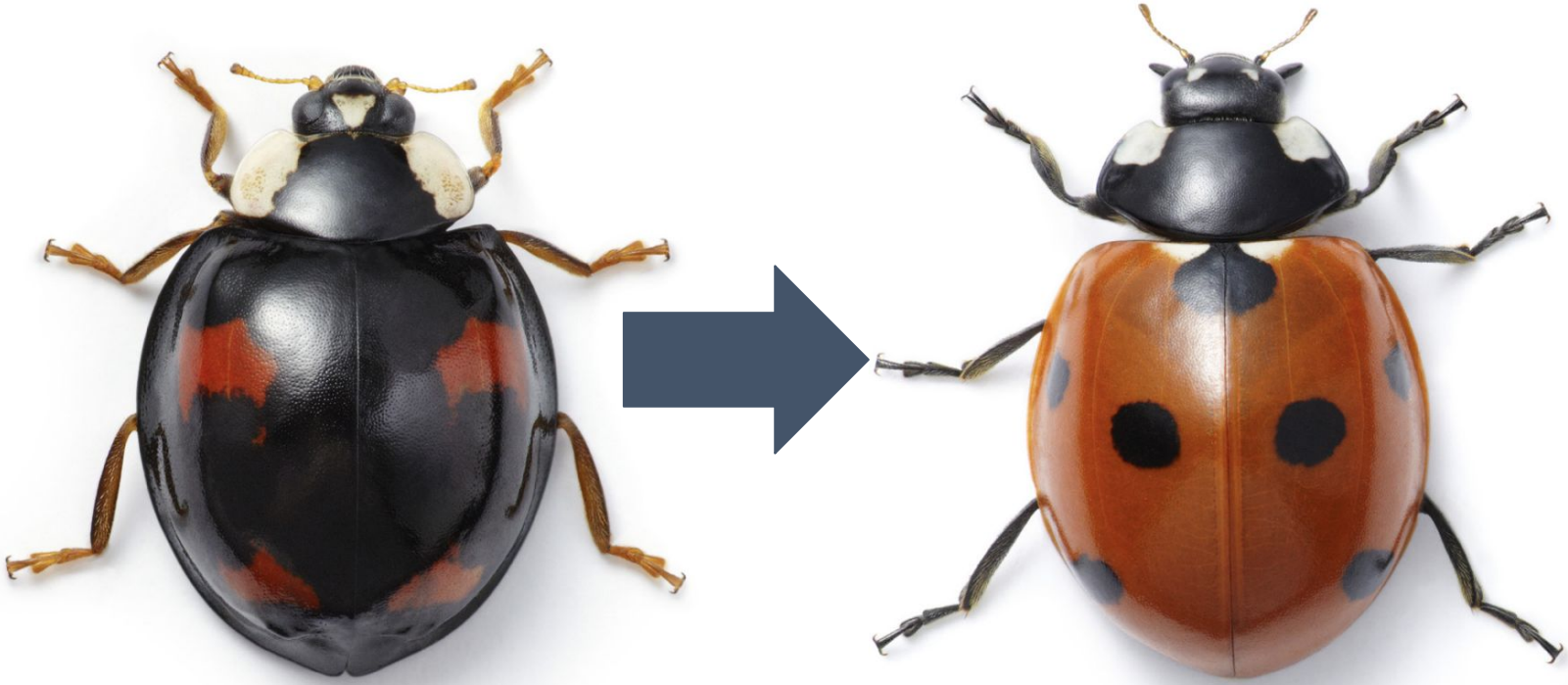
Example: 13 Deployments for one App



Time between releases	Time available for testing
Months to Weeks	Several days of manual testing to find bugs
Weeks to Days	
Days to Hours	
Every commit	Absolute reliance on fully automated pipelines

Mark Hrynczak, Do Less Testing, Atlassian

Transformation of the testing role



Information Provider

Quality Accelerant

What is “shift left” ?

[..] in which the teams focus on **quality**, work on **problem prevention** instead of detection, and **begin testing as early as possible**.

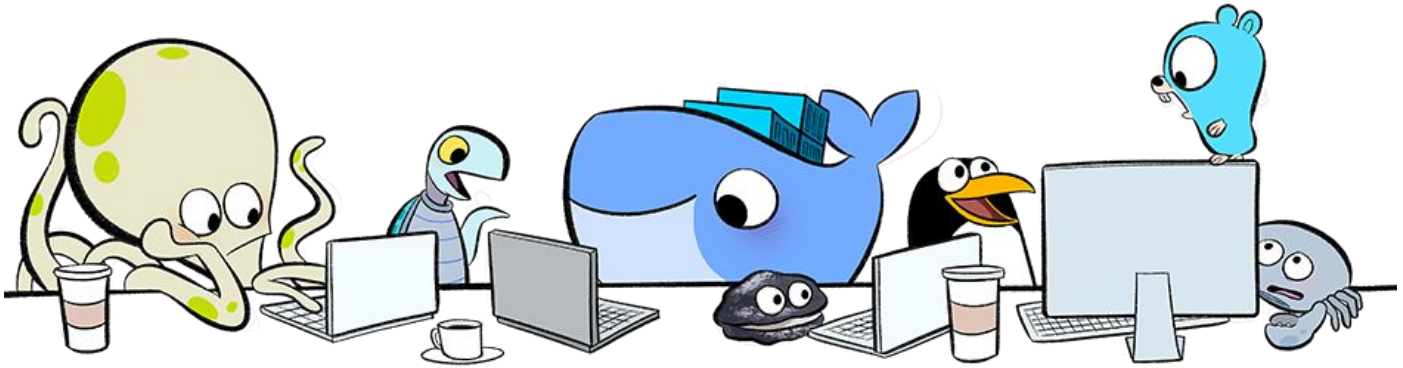
https://testopsblog.wordpress.com/2017/03/29/what-is-continuous-testing/

Deep dive: docker-for-testers

We won the award for Best Tutorial at the EuroSTAR 2017 conference

On 16-11-2017
Category: Blog, Development, Testing Tags: Testing

https://bolcom.github.io/docker-for-testers/



What is “shift right” ?

[..] **shift-right** includes the **acceptance and deployment** of software, **A/B testing**, etc… In other words, software testing in a **production environment**.

http://blog.qatestlab.com/2017/07/04/shift-right-testing/

Observability

Testing in production

Testability

Observability

Controllability

https://en.wikipedia.org/wiki/Software_testability
https://dryicons.com/free-icons/control
https://dryicons.com/free-icons/looking-glass-icons
https://dryicons.com/icon/single-test-tube-icon-5815

Testability

Observability

Controllability

The degree to which it is possible to observe (intermediate and final) test results.

https://en.wikipedia.org/wiki/Software_testability
https://dryicons.com/free-icons/control
https://dryicons.com/free-icons/looking-glass-icons
https://dryicons.com/icon/single-test-tube-icon-5815

Testability

Observability

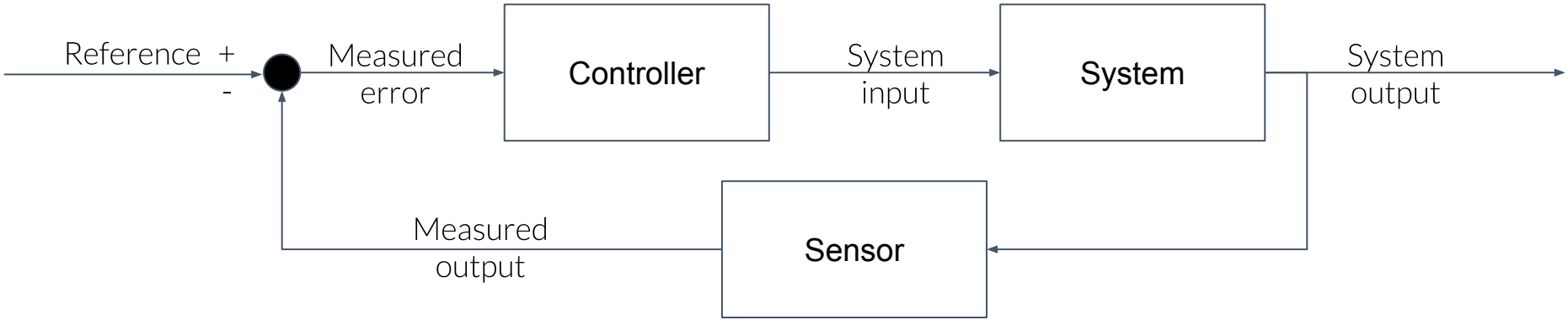
Controllability

The degree to which it is possible to control the state of the system under test (SUT) as required for testing.

https://en.wikipedia.org/wiki/Software_testability
https://dryicons.com/free-icons/control
https://dryicons.com/free-icons/looking-glass-icons
https://dryicons.com/icon/single-test-tube-icon-5815

Control theory

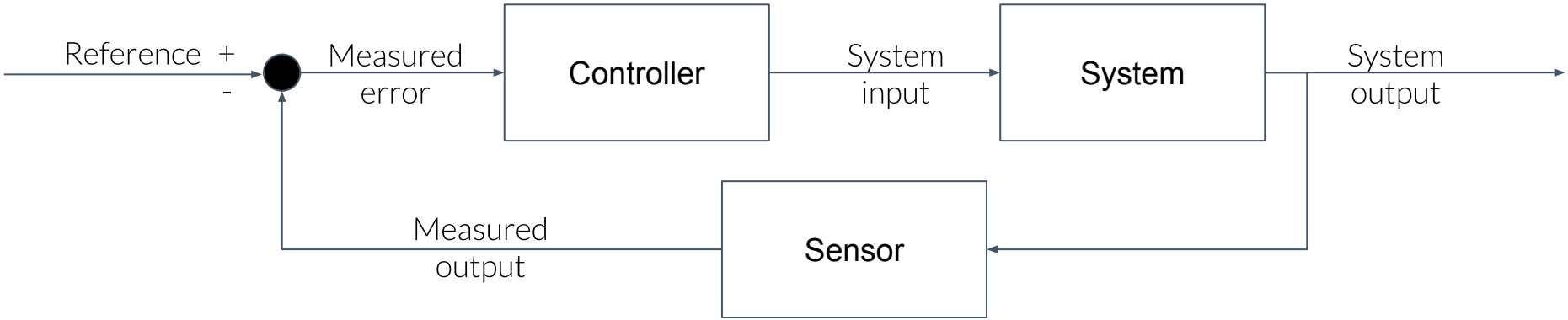
In control theory, **observability** is a measure of how well internal states of a system can be inferred from knowledge of its external outputs.



https://en.wikipedia.org/wiki/Control_theory#Controllability_and_observability

Control theory

Controllability is related to the possibility of forcing the system into a **particular state** by using an appropriate **control** signal.



https://en.wikipedia.org/wiki/Control_theory#Controllability_and_observability

Observable output

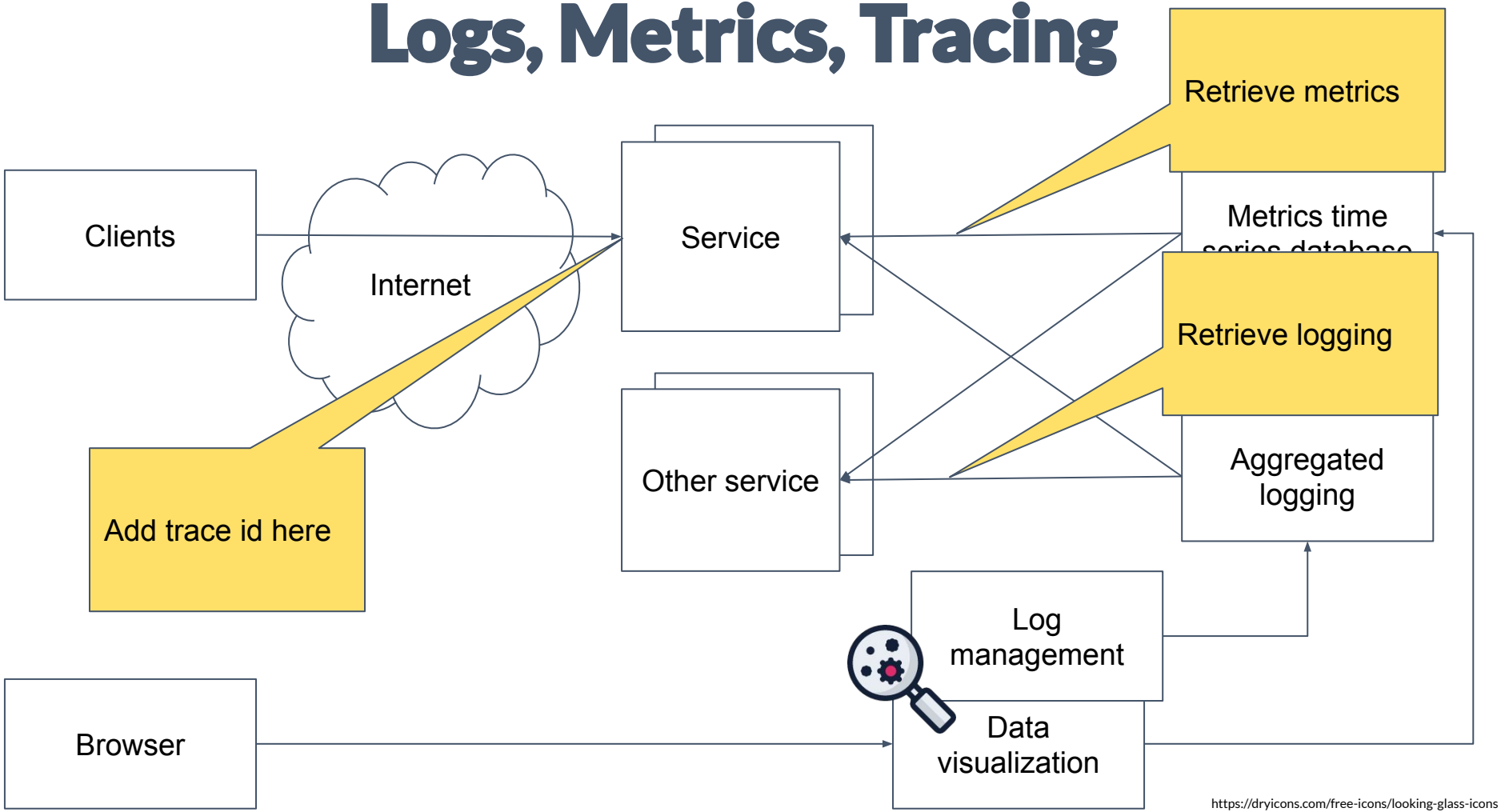
Logs

Metrics

Tracing

Health checks

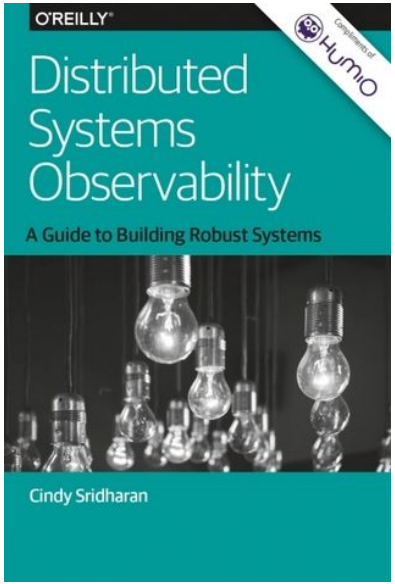
Logs, Metrics, Tracing



https://dryicons.com/free-icons/looking-glass-icons

What does observability bring you?

- Use metrics, logging and traces for testing
- Test and detect failure modes during development that would cause incidents on production
- Safely deploy and rollback based on what you measure
- Understand, debug and improve your system based on what you measure



Distributed Systems Observability by Cindy Sridharan

Monitoring

Classical monitoring
CPU
RAM
I/O
Disk space
Uptime

Challenges
- Monitoring all kinds of applications
- Not the creator of the application
- Impossible to have all relevant domain knowledge

&

https://www.stackstate.com/

Functional monitoring
Business events
User Experience

Challenges
- Finding correct technical translation of business events
- Have actionable alerts

Create your first dashboard

Tools we will use

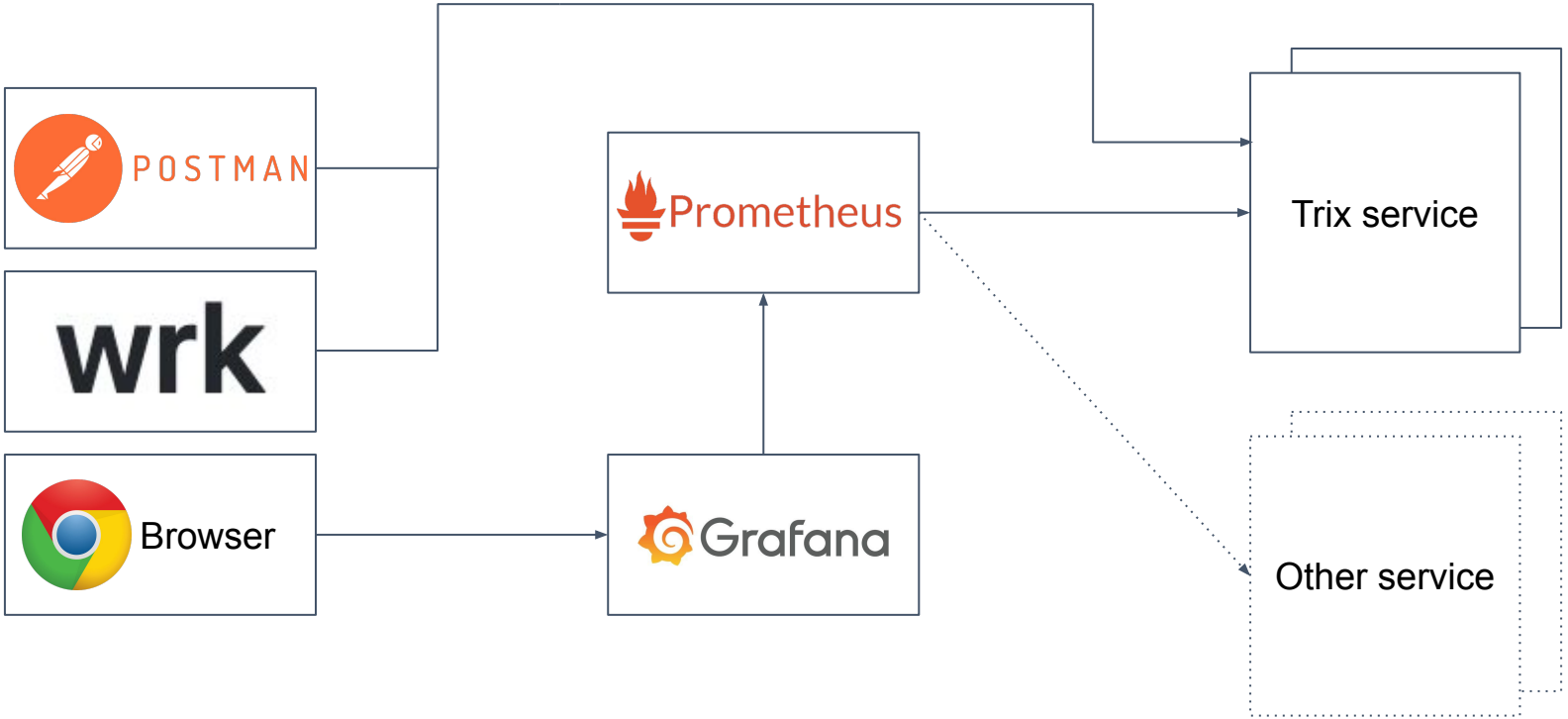
Visualize metrics

Metrics store

Interact with SUT

HTTP benchmark tool

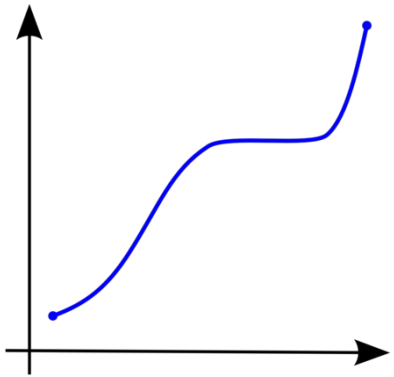
Describe system under test



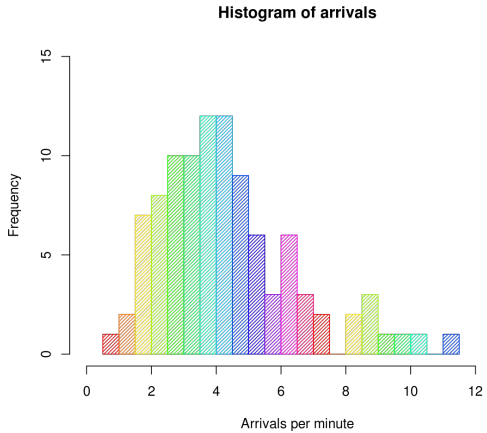
Types of metrics

Gauge

Counter



Histogram



Instructions

http://bit.do/funcmon

Coffee Break
We continue at 11:30

Your most recent production incident

- Make groups of 3 to 4 persons
- Think back on the last production incident you've been involved in and make sure you can answer the following:
  - What happened & why did it happen?
  - How did you become aware of it? Could you measure it?
  - What did you learn from the incident?
  - What are you doing differently from now on?
- Share stories in your group
- Share the story that is the most interesting/cool/impactful with the entire class

Live demo +
code samples

Code sample: counter

“A *Counter* reports merely a count over a specified property. ”

```
Counter counter = Counter
   .builder("counterName")
   .description("what you like")
   .tags("tst", "serviceX")
   .register(registry);

counter.increment();
```

Code sample: timer

"A *Timer* will report at least the total time and events count of specific time series."

```
SimpleMeterRegistry registry = new SimpleMeterRegistry();

Timer timer = registry.timer("trix.eventName");
timer.record(() -> {
    try {
            ...execute some code…

    } catch (InterruptedException ignored) { }
});
```

Simple but powerful

Simple

```
Counter counter = Counter
  .builder("counterName")
  .description("what you like")
  .tags("tst", "serviceX")
  .register(registry);

counter.increment();
```

Powerful

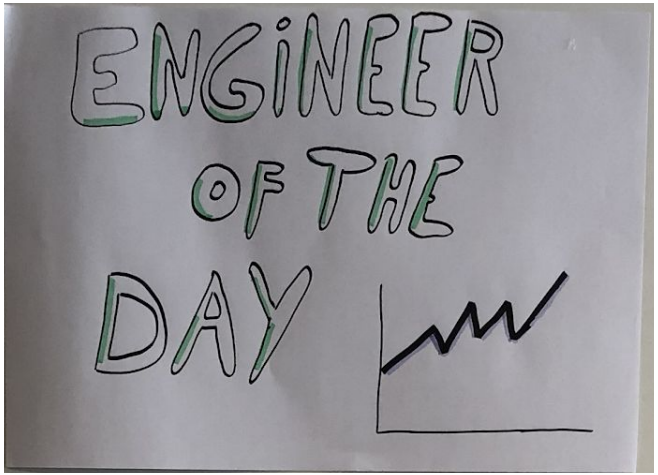
Heavy load

Focus/Defocus

Questions?

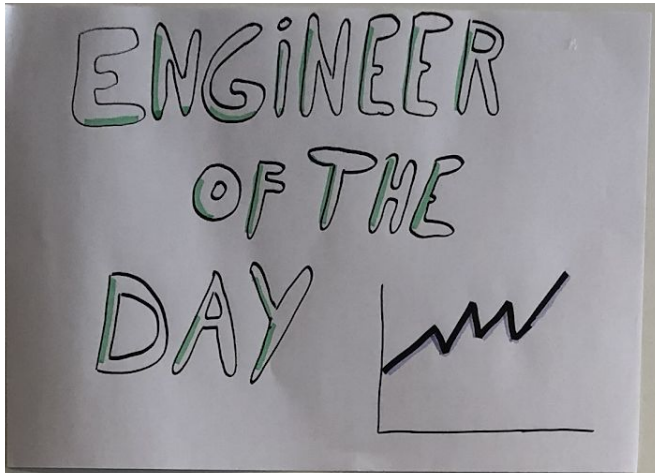
Tips for getting your team started

- Engineer of the Day
- Get a TV screen at your team and show the dashboards 24/7
- Observability as part of DoD
- Do a testability workshop with your team
  https://leanpub.com/softwaretestability



Evaluation & take aways

- What are you going to measure now?
- What will you do differently?



- Please give us your feedback!