
Testing in Production: there is a better way

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Founder of Refactorly (refactor.ly)

Sagrada Família

- 1882 - Francisco de Paula del Villar.
- 1883 - He resigned, and Antoni Gaudí started.
- 1884 - Gaudí appointed Architect Director.
- 1926 - Gaudí died. Project $\frac{1}{4}$ done.
- 1936 - Spanish Civil War.
- 2017 - ETA 2026.
- 2020 - COVID-19.



By Zachbarbo - Own work, CC BY-SA 4.0,
<https://commons.wikimedia.org/w/index.php?curid=122381649>



520 Bridge

- Longest floating bridge in the world.
- Planning to replace the previous one started in 1997.
- Development started in 2011.
- As soon as 2012 cracks in the first pontoons batch found.
- The problems stemmed from shortcuts allegedly taken by contractors to complete pontoons to meet set deadlines.
- Repairs pushed back opening from 2014 to 2016.
- In March 2015, two construction accidents on the bridge slowed construction for reevaluation of safety measures.

Confidence

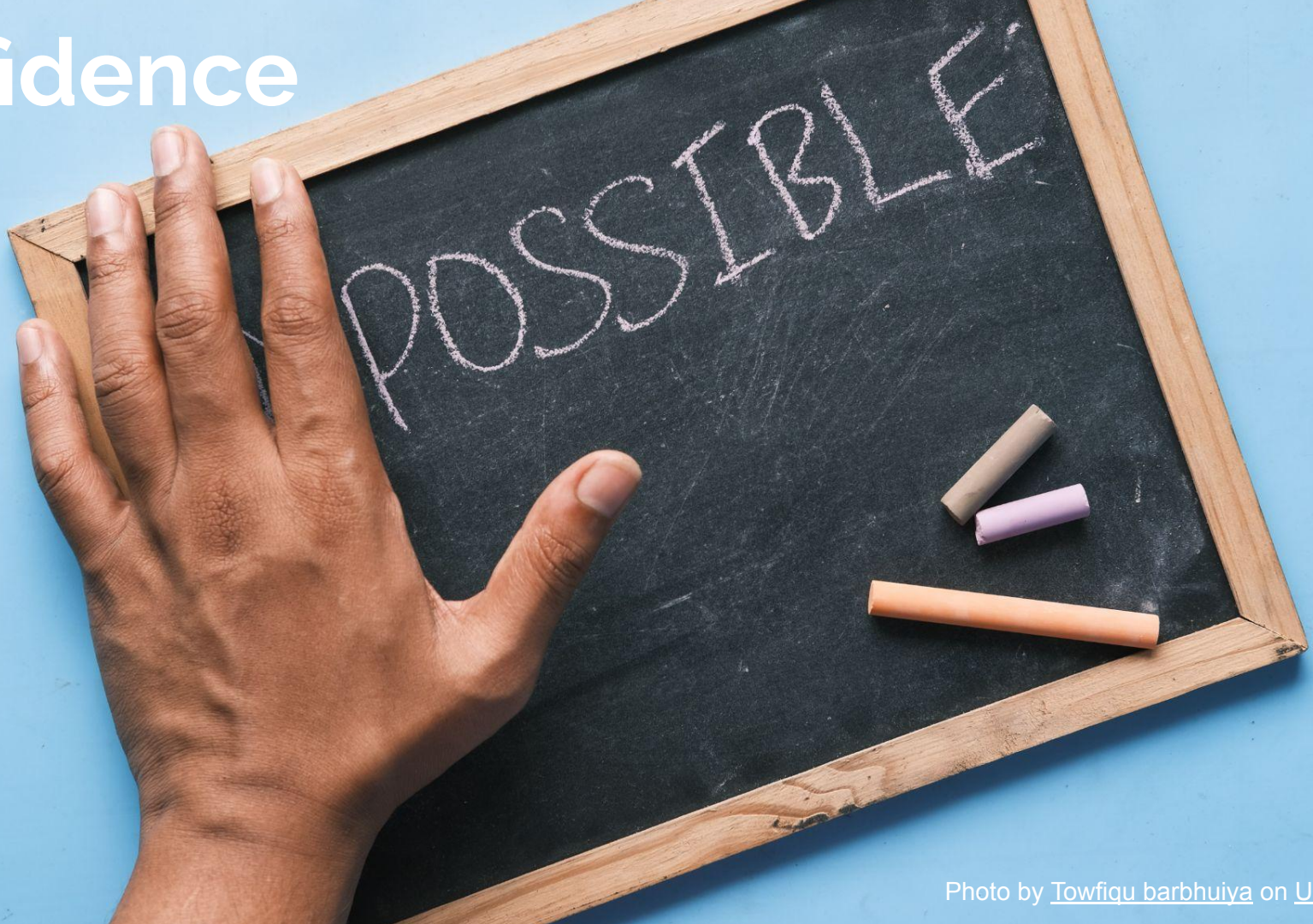


Photo by [Towfiqu barbhuiya](#) on [Unsplash](#)



Refactoring/Rewrites

Why are devs afraid of refactoring?

→ **Unexpected**

They don't know how it works.

→ **Important**

It's critical piece.



Tests

Any problems with tests?

- Data Quality
- Best Effort
- Costly
- Costly



Data

→ Inputs

Do we have enough use-cases covered?

→ Outputs

How do we know the new code is better, while still correct?

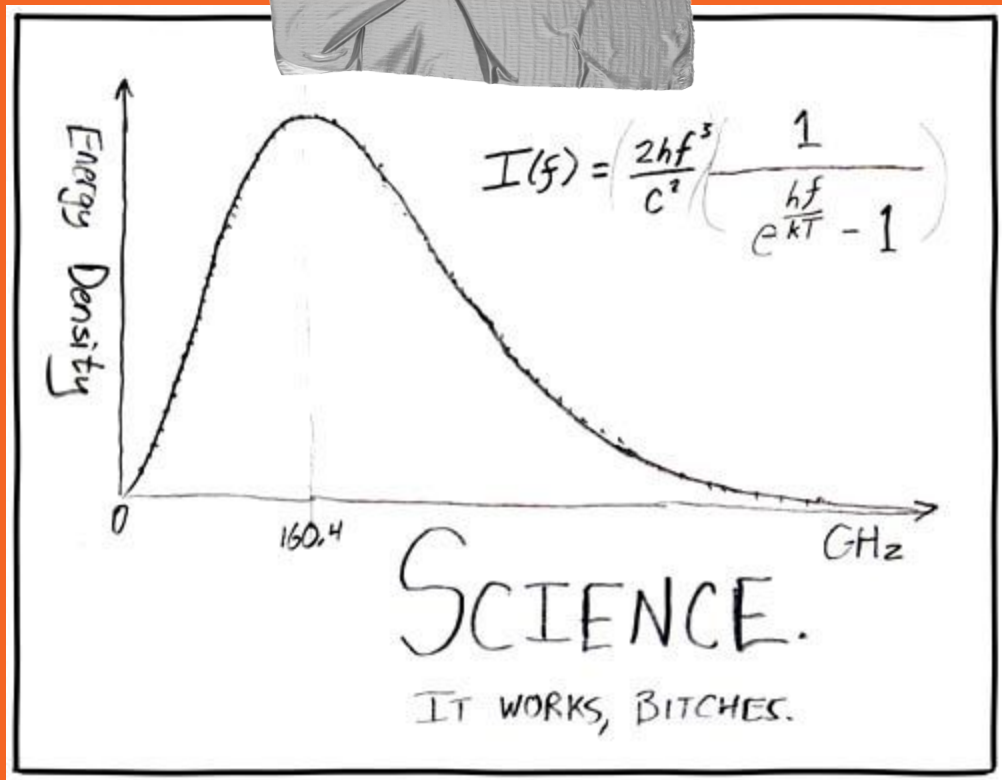
Testing in Production

is a software development practice in which new code changes are tested on live user traffic rather than in a staging environment.



Status Quo

- Feature flags
- Canary Deployments
- A/B Testing



Elements of the scientific method

- Formulation of a question
- Hypothesis
- Prediction
- Testing
- Analysis

Steps to big rewrites

new
functionality

migrate legacy
data

data will diverge
over time

migrate
again

double
write

dark
ship

find
bugs
in
the
old
system



Scientist

a Ruby library for carefully refactoring critical paths.



[github/scientist](https://github.com/github/scientist)



Code Example



Set an experiment

```
science "widget-permissions" do |experiment|  
  experiment.use { model.check_user(user).valid? }  
  experiment.try { user.can?(:read, model) }  
end
```



Users

GitHub

 **Trello**

marvel



REALGEEKS

Myths

Photo by [aisvri](#) on [Unsplash](#)

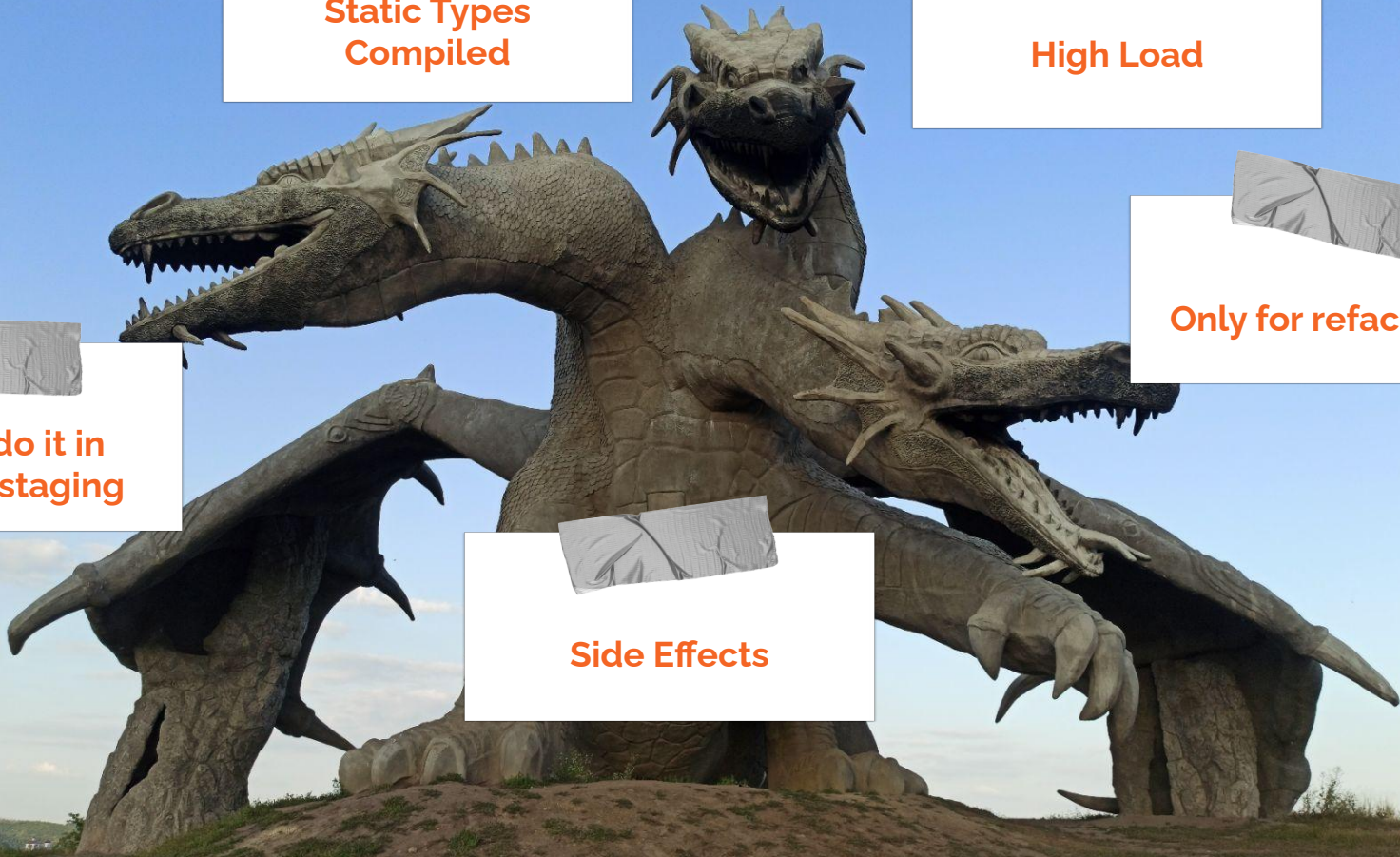
Static Types
Compiled

High Load

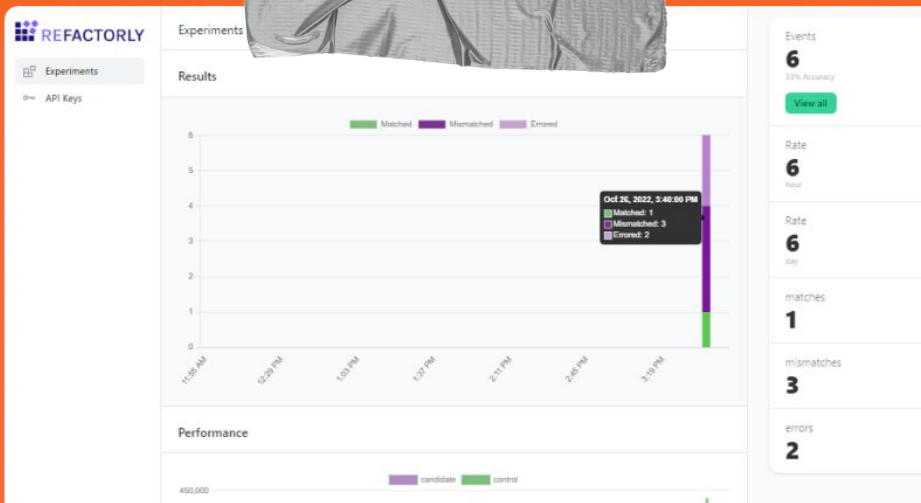
Only for refactoring

you can do it in
sandbox/staging

Side Effects



REFACTORLY



REFACTORLY

Experiments

API Keys

Event ID 01GFPM5VSAM5MKTk92HTT03Y4G Matched 7 days ago

Event ID 01GFPM5GB08V3A16D67BABDQB6 Mismatched

control	candidate
- 50 %	+ 50 Mismatched %

7 days ago

Event ID 01GFPM4PP3540GHPH7XCES381P Errored

ZeroDivisionError: ZeroDivisionError

7 days ago

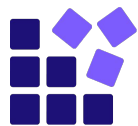
Event ID 01GFPM4GXWH7WKSyK0TGNF9FC9 Mismatched

control	candidate
- 33.33 %	+ 33.33 %

7 days ago



Igor Kapkov



REFACTORLY



refactor.ly



igas.me



[igas](https://github.com/igas)



[igasgeek](https://twitter.com/igasgeek)