
THE NEED
FOR SPEED
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Practical tips for optimising your CI/CD pipelines
(when your tests take all day)

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Hi, I’m Zan 👋

CircleCI Developer Advocate

I enable, educate, and inspire developer communities in CircleCI, DevOps, and CI/CD topics across EMEA.

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GROOT! PUT YOUR SEAT BELT ON!

Story about an
All Day Build

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Hindsight is
20/20
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CircleCI

Build pipeline defined in `.circleci/config.yml`

Workflows, Jobs, & Commands

Execution environment

```yaml
version: 2.1

# Define the jobs we want to run for this project
jobs:
  build:
    docker:
      - image: circleci/<language>:<version TAG>
        auth:
          username: mydockerhub-user
          password: $DOCKERHUB_PASSWORD  # context / project UI env-var reference
    steps:
      - checkout
      - run: echo "this is the build job"
  test:
    docker:
      - image: circleci/<language>:<version TAG>
        auth:
          username: mydockerhub-user
          password: $DOCKERHUB_PASSWORD  # context / project UI env-var reference
    steps:
      - checkout
      - run: echo "this is the test job"

# Orchestrate our job run sequence
workflows:
  build_and_test:
    jobs:
      - build
      - test
```

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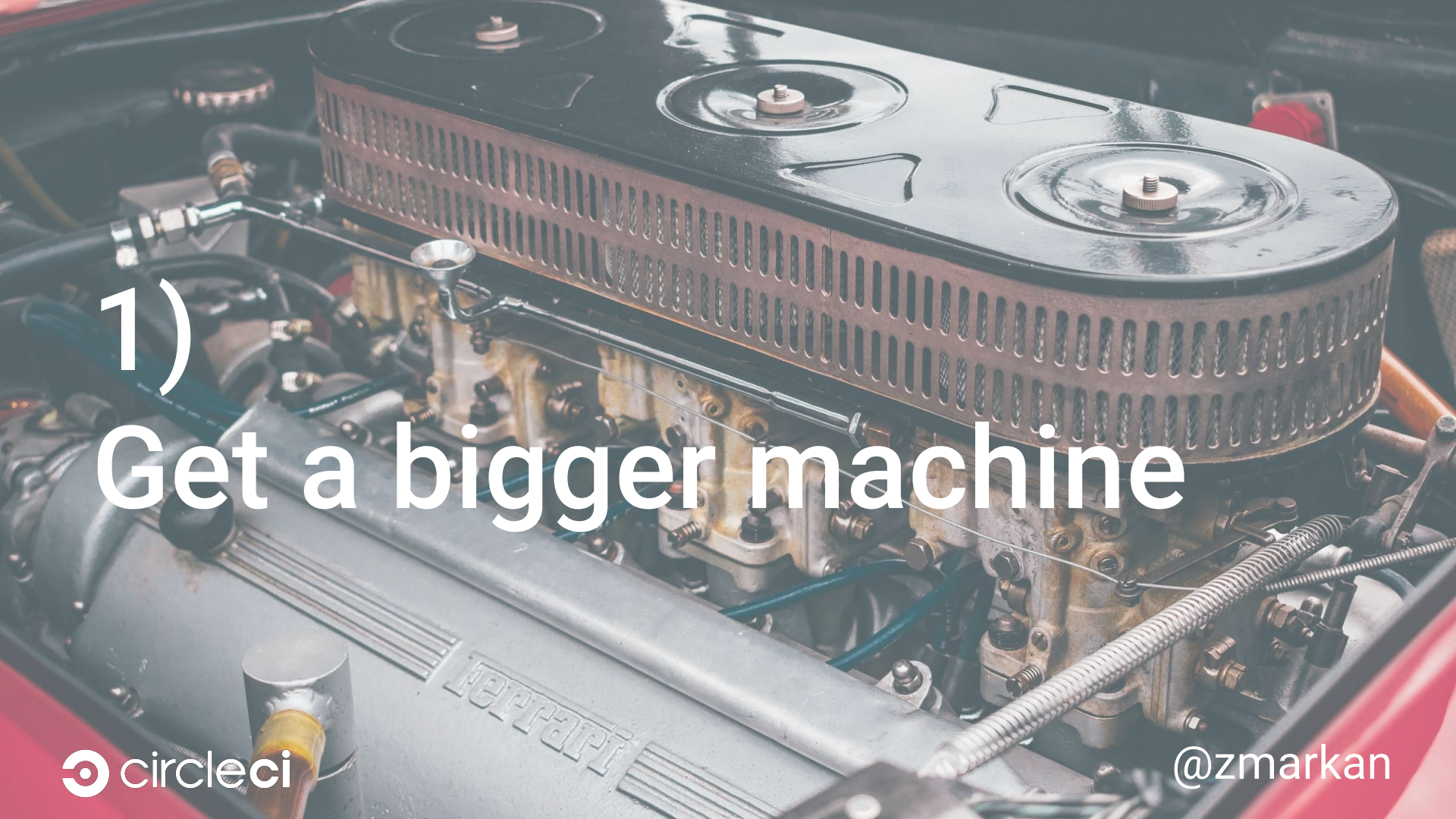

1)
Get a bigger machine

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Resource Classes

```
jobs:
  build:
    docker:
      - image: buildpack-deps:trusty
        auth:
          username: mydockerhub-user
          password: $DOCKERHUB_PASSWORD  # context / project UI env-var reference
    resource_class: xlarge
    steps:
      ... // other config
```

https://circleci.com/docs/2.0/configuration-reference/#resource_class

🚨 Diminishing returns

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2) Seek Insights

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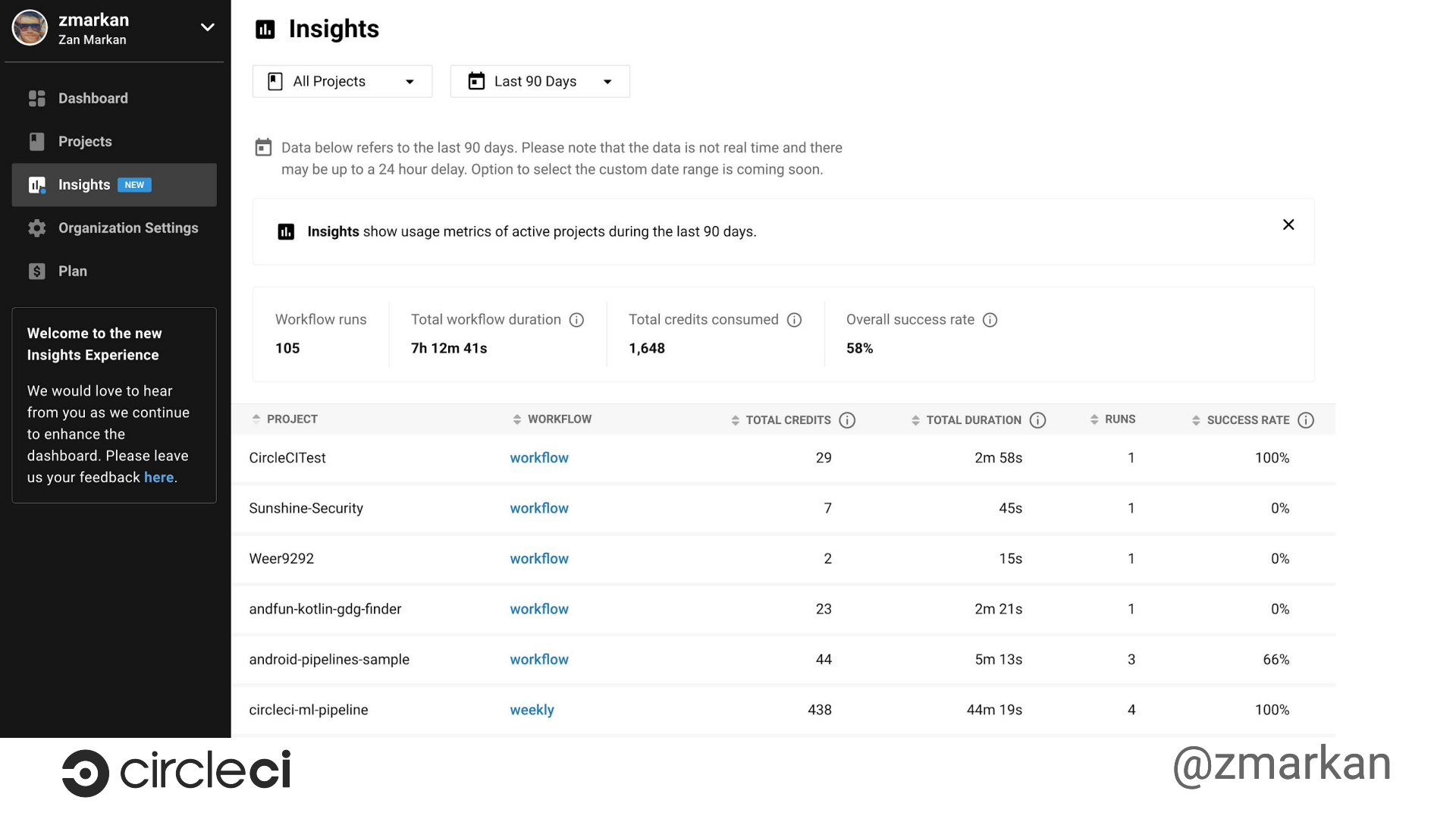

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Tuning what's running 

Run subset of build...

- on commit,
- on main branch,
- on release tag...

Skip test runs with `[skip-ci]`

3) Cache is King 👑

Caching

Dependencies

https://circleci.com/docs/2.0/caching/

Artifacts

https://circleci.com/docs/2.0/persist-data/

Git source

https://circleci.com/docs/2.0/caching/#source-caching

Docker layers

https://circleci.com/docs/2.0/docker-layer-caching/

```yaml
version: 2
jobs:
  build:
    docker:
      # DLC does nothing here, its caching depends on commonality of the image layers.
      - image: circleci/node:9.8.0-stretch-browsers
        auth:
          username: mydockerhub-user
          password: $DOCKERHUB_PASSWORD  # context / project UI env-var reference
    steps:
      - checkout
      - setup_remote_docker:
          docker_layer_caching: true
      # DLC will explicitly cache layers here and try to avoid rebuilding.
      - run: docker build .
```

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4)
Go Parallel
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Test Parallelism

Using CircleCI CLI

Split by time, name, file size

Manually

Using env vars

```
# ~/.circleci/config.yml
version: 2
jobs:
  test:
    docker:
      - image: circleci/<language>:<version TAG>
        auth:
          username: mydockerhub-user
          password: $DOCKERHUB_PASSWORD  # context / project UI env-var reference
    parallelism: 4
```

https://circleci.com/docs/2.0/parallelism-faster-jobs/


5)
Go ✂️ or go 💥
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6) Teamwork

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CI/CD IS LIKE AN AMBULANCE
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CI/CD LIKE AN AMBULANCE

Should go **fast**...

But also **reliably**!

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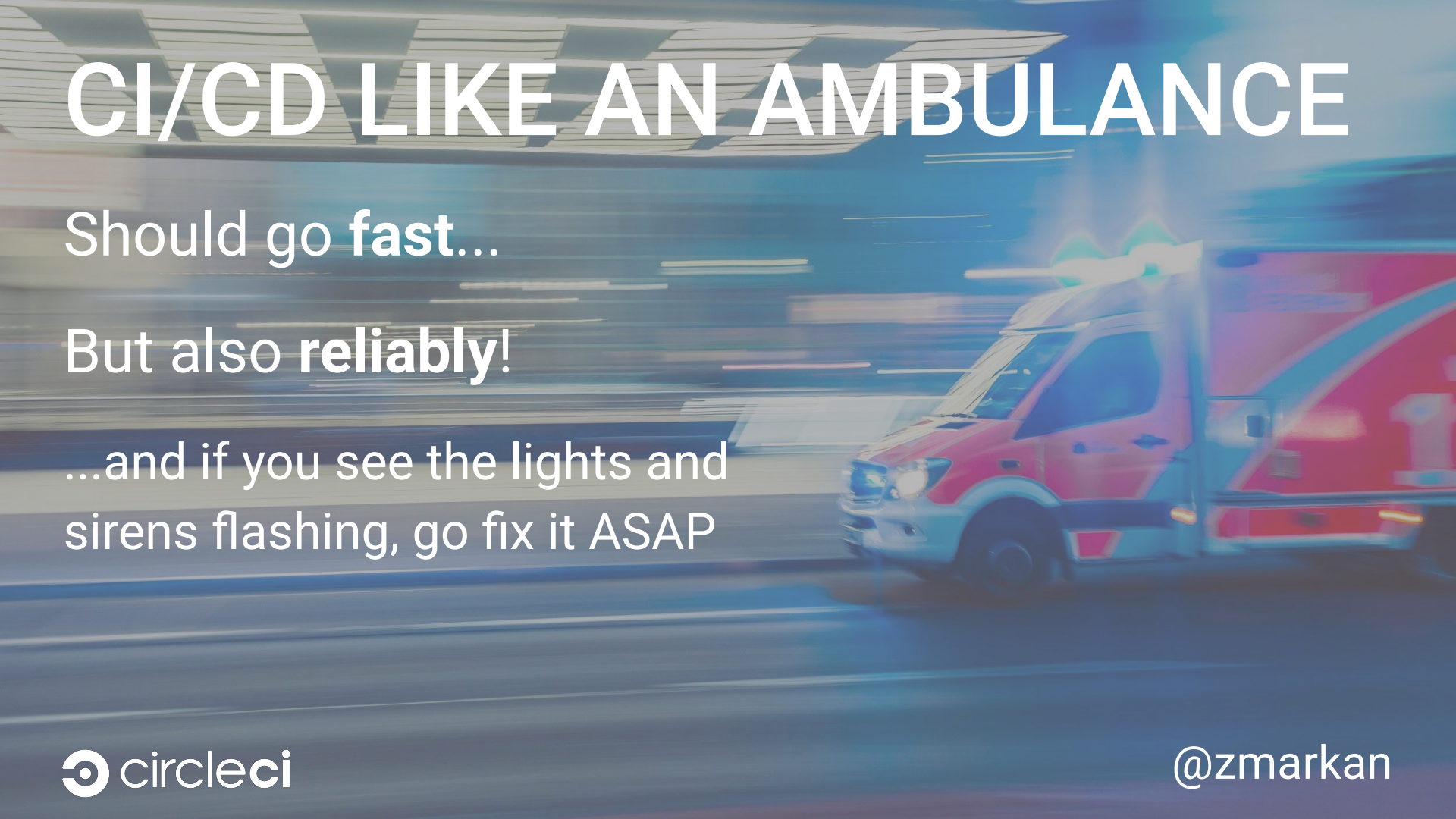
Numbers to back this up!

Data from 160k projects

- 5-10 mins for workflow run
- < 1 hr to recovery

https://circleci.com/resources/2020-state-of-software-delivery/

CI/CD LIKE AN AMBULANCE



Should go **fast**...

But also **reliably**!

...and if you see the lights and sirens flashing, go fix it ASAP

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Where to go next?

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