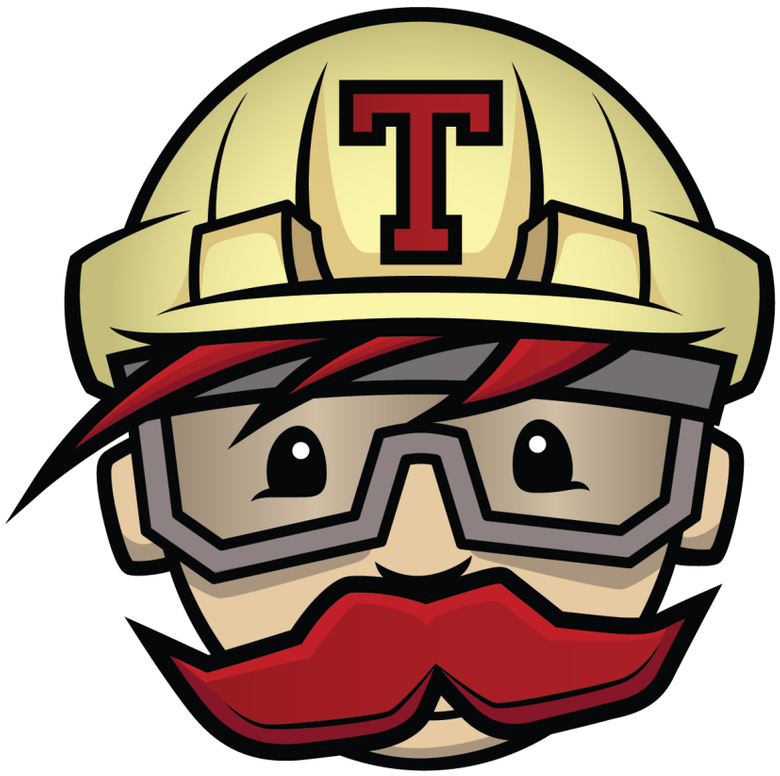
HOW DEVOPS HELPS SHAPE SMALL TEAMS AND ARCHITECTURE

MATHIAS MEYER, @ROIDRAGE



Travis CI

DEVOPS

PRODUCTION AND CULTURE

PRODUCTION = ARCHITECTURE

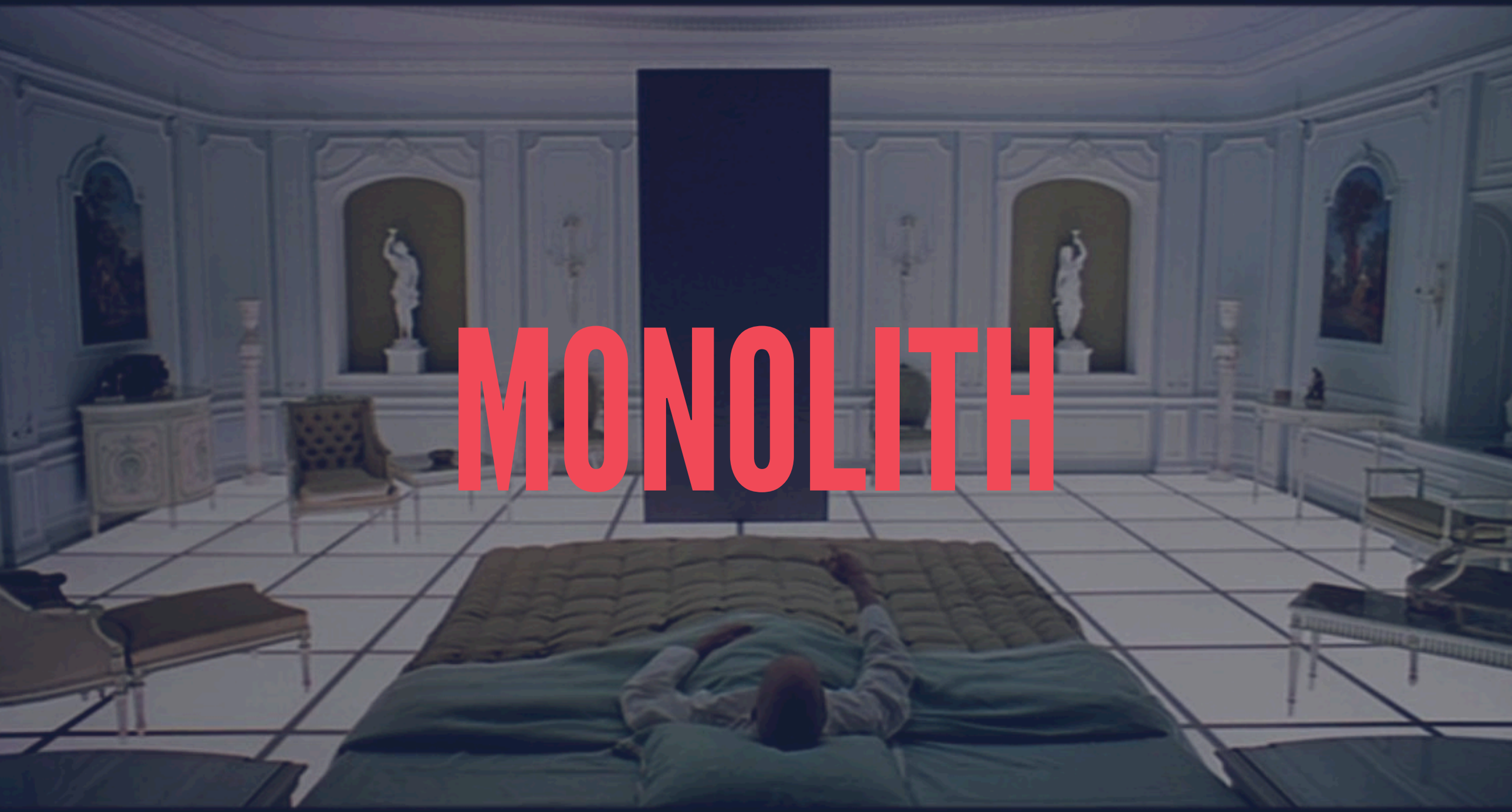
PRODUCTION =
ARCHITECTURE + OPERATIONS(PRODUCTION)

$$P = A + O(P)$$

ARCHITECTURE

&

OPERATIONS


MONOLITH

BIG BALL OF MUD

TWO PARTS

WEB FRONTEND

HUB

(WORKER)

HUB'S TODO LIST

- Create Builds
- Talk to GitHub API
- Schedule Builds
- Process Build Results
- Process Log Updates
- Send Build Notifications

hub

logs

notifications

builds

github

pusher

sync

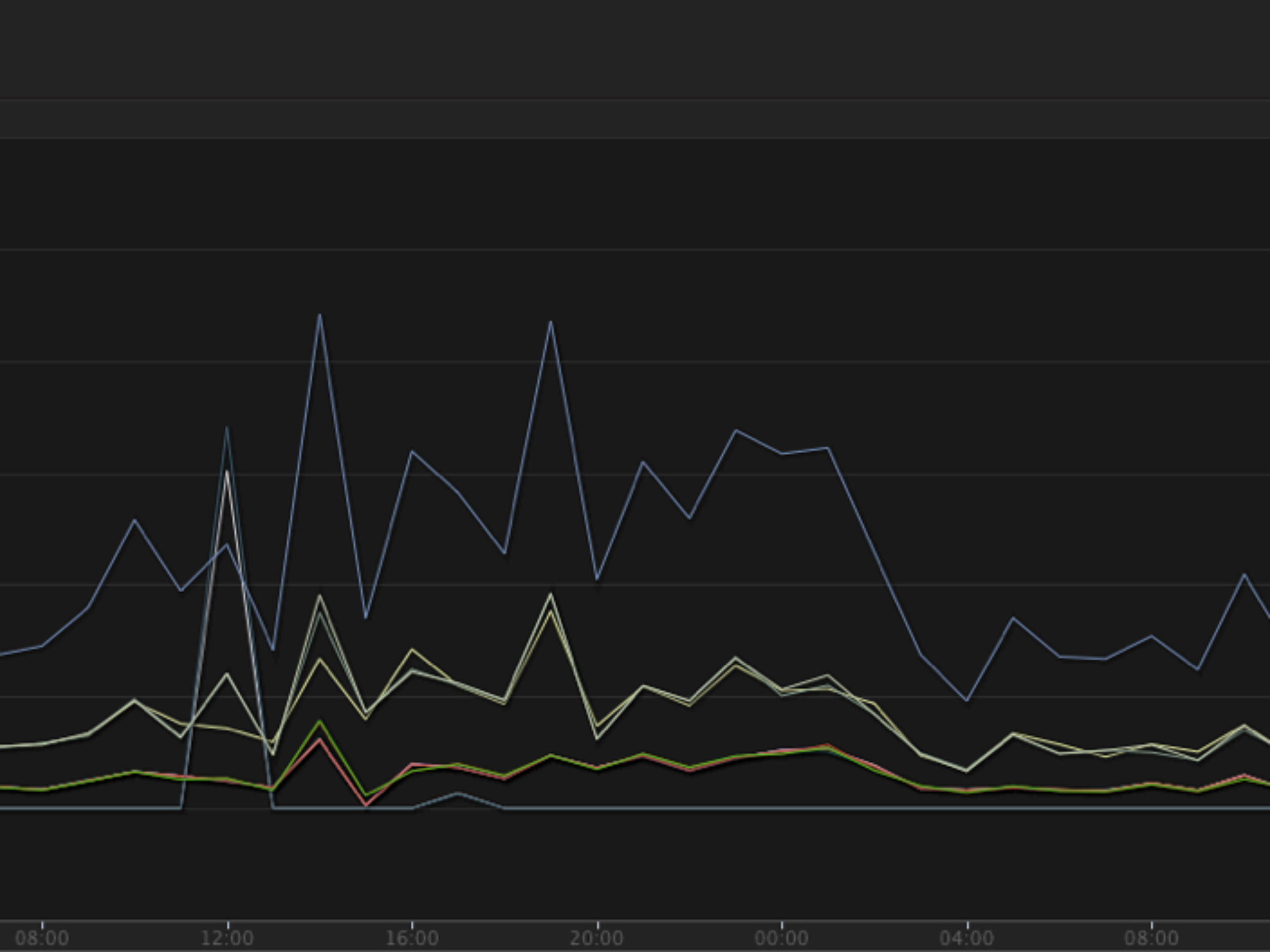
HUB BROKE

A LOT

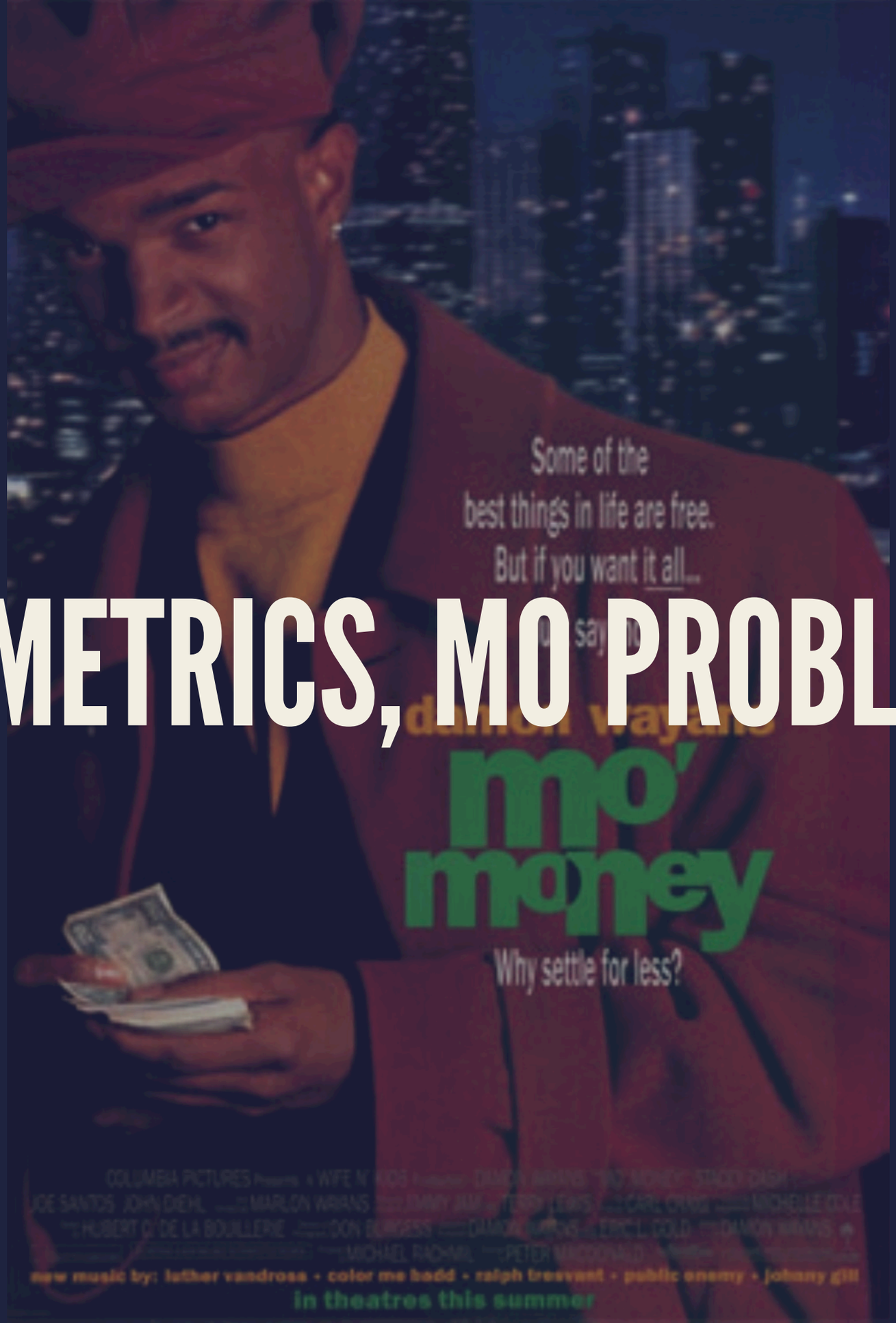
SCALE
Gifsforum.com

THE PROFESSIONALIZATION OF TRAVIS CI

METRICS


08:00
12:00
16:00
20:00
00:00
04:00
08:00

By adding just a few metrics, you get a better idea what you need to track.



MO METRICS, MO PROBLEMS

THE BIG TRAVIS CI OUTAGE OF 2012

PULL REQUESTS

Temporary fix to use Gravatar URL #143

Open **roidrage** wants to merge 2 commits into `master` from `mm-fix-gravatar-url`

Conversation 0 | Commits 2 | Files changed 1

roidrage commented 3 minutes ago — Owner

This pulls avatars from Gravatar until we've fixed our sync.

roidrage added some commits 28 days ago

- `Fix gravatar_id to use email.` ··· ✔ `d181e89`
- `Merge branch 'master' into mm-fix-gravatar-url` ✔ `b1c0b7e`

Add more commits by pushing to the **`mm-fix-gravatar-url`** branch on **travis-ci/travis-api**.

✔ **All is well** — The Travis CI build passed · Details

This pull request can be automatically merged.

You can also merge branches on the command line.

Merge pull request

PROBLEMS

- Minor changes in the GitHub API
- Liberal timeouts
- Serial processing
- Bug in JRuby

Because failure requires multiple faults, there is no isolated 'cause' of an accident.

– Richard Cook, How Complex Systems Fail

Each of these faults is necessary insufficient, only jointly are these causes sufficient to create an accident.

– Richard Cook, How Complex Systems Fail

WHAT DID WE LEARN?

TREAT EXTERNAL APIS LIKE FOES
RATHER THAN FRIENDS.

Fail gracefully.

Fail fast.

HOW YOU HANDLE FAILURES IS A BUSINESS DECISION.

Simplify, simplify, simplify.

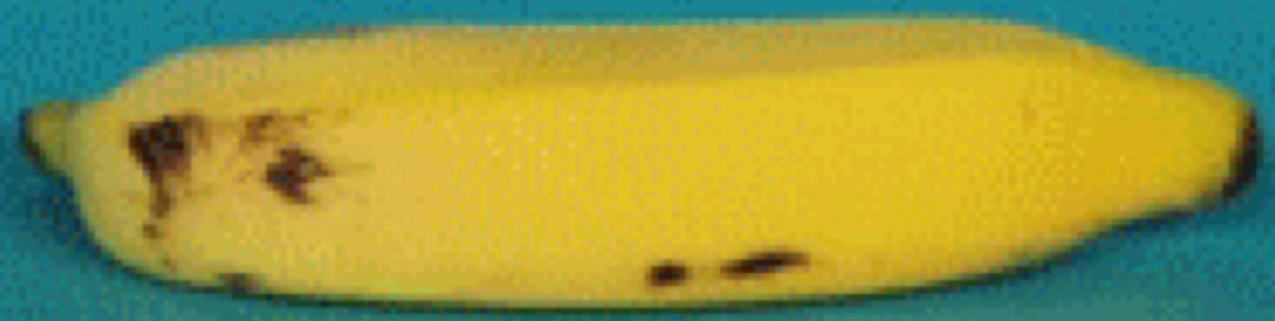
– Henry David Thoreau

Simplify.

– Paraphrased

SINGLE RESPONSIBILITIES

SEPARATE PROCESSES



pusher

github

builds

sync

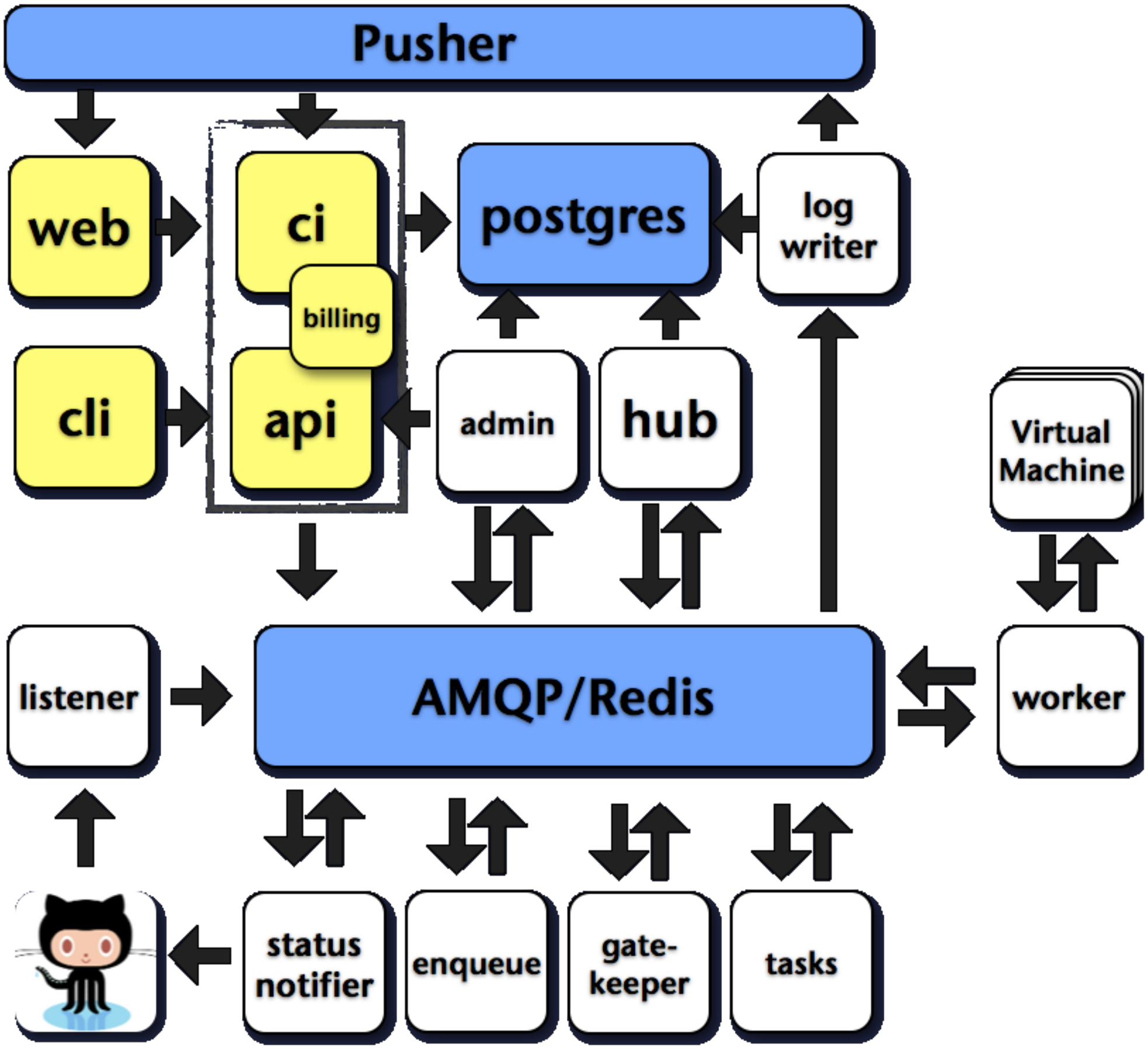
pusher

logs

pusher

notifications

hub


Pusher
web
ci
billing
postgres
log writer
cli
api
admin
hub
Virtual Machine
listener
AMQP/Redis
worker
status notifier
enqueue
gate-keeper
tasks

INCREASED COMPLEXITY
AND
INCREASED VELOCITY

A complex system is shaped more by its behaviour in production than its initial design.

COMPLEX ≠

COMPLICATED

THE TRUTH LIES ONLY IN PRODUCTION

ALERTING

BYOC

BUILD YOUR OWN COLLECTOR

Every organization running a software system in production is bound to implement their own monitoring system around it.

— Mathias' 1st Law of Monitoring

Every custom monitoring solution is bound to implement cycle checks.

– Mathias' 2nd Law of Monitoring

SMALL SERVICES LOOSELY JOINED

SIMPLIFICATION IS THE HALLMARK OF SCALABILITY

MORE COMPONENTS

MORE RESPONSIBILITIES

WHO YOU GONNA CALL?

THE GOAL OF ALERTING ISN'T TO WAKE PEOPLE UP, IT'S TO MAKE SURE THEY CAN SLEEP

Any new alert will wake people up more often than necessary initially.

— Mathias' 3rd Law of Monitoring:

GIVE ROOM TO IMPROVE

Any organization that designs a system will produce a design whose structure is a copy of the organization's communication structure.

– Conways' Law

BIG TEAMS

BIG SYSTEMS?

DISTRIBUTED TEAMS

DISTRIBUTED SYSTEMS?

ASYNCHRONOUS COMMUNICATION

—

ASYNCHRONOUS SYSTEMS?

FLEXIBILITY

+

ADAPTABILITY

CONTINUOUS IMPROVEMENT

EVERYONE'S ON CALL

Any alert that triggers more than once a week will become part of normal procedure.

– Mathias' 4th Law of Monitoring

MONITORING IS A PROCESS NOT A FEATURE

OUR ALERTING IS FAR FROM IDEAL

LEARN FROM UNEXPECTED EVENTS

ANDON CORD

BLAMELESS POSTMORTEMS

DEVOPS?

PRODUCTION IS A SHARED RESPONSIBILITY

You build it, you run it.

– Werner Vogels

FOCUS ON

CONTINUOUS LEARNING

DEVOPS DIDN'T SHAPE OUR TEAM

OUR TEAM EVOLVED INTO SOMETHING THAT LOOKS LIKE DEVOPS

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TRAVIS