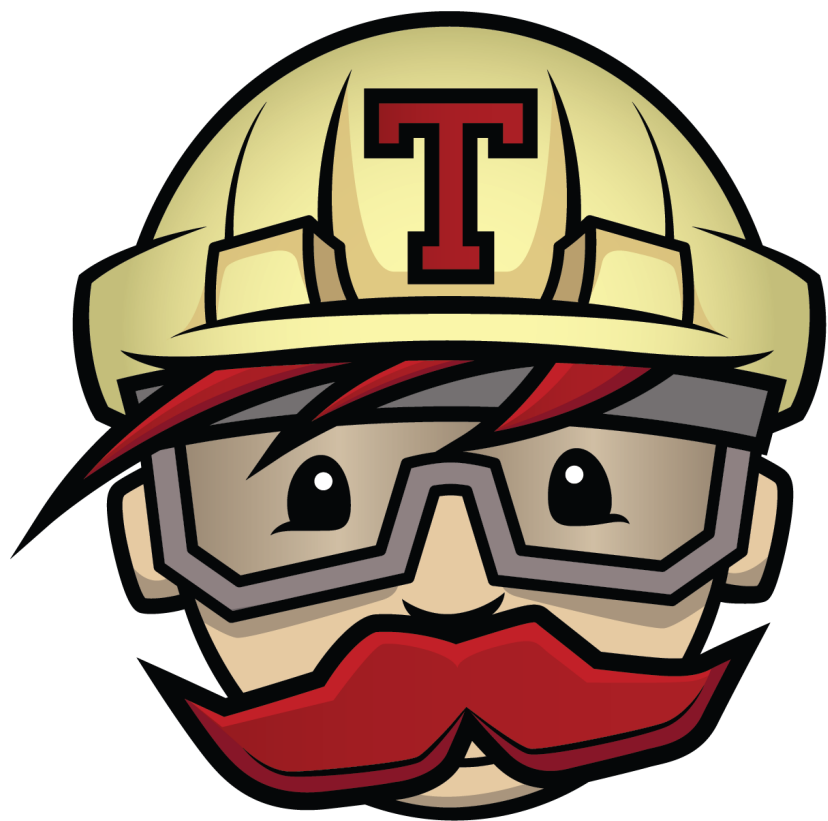


# HOW DEVOPS HELPS SHAPE SMALL TEAMS AND ARCHITECTURE

MATHIAS MEYER, @ROIDRAGE







# Travis CI

**DEVOPS**



# PRODUCTION AND CULTURE

**PRODUCTION = ARCHITECTURE**





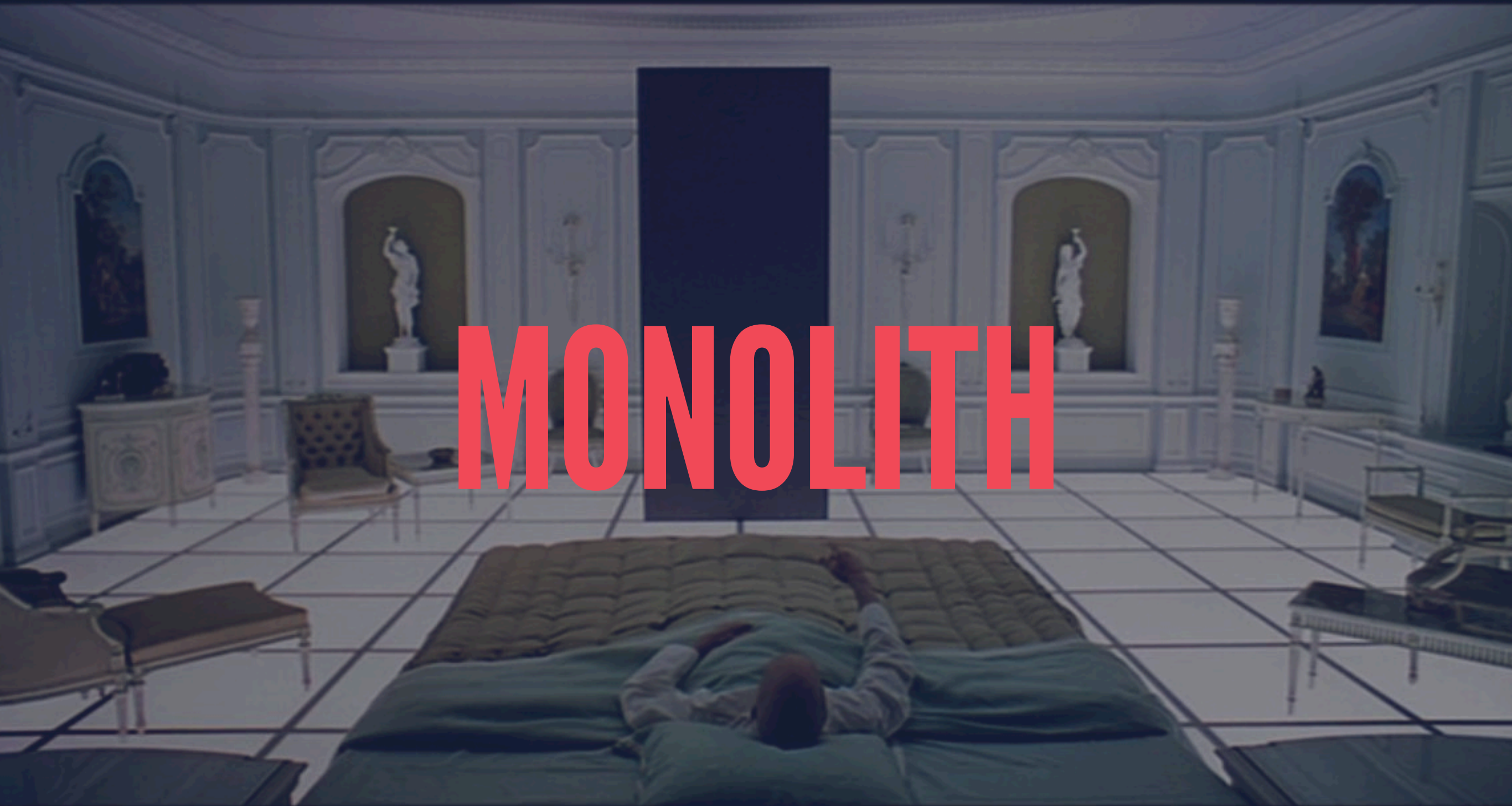
**PRODUCTION =  
ARCHITECTURE +  
OPERATIONS(PRODUCTION)**

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

# 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

notification

builds

github

pusher

sync

**HUB BROKE**



**A LOT**





A white model airplane is shown from a top-down perspective, positioned on a grey surface with white dashed lines. The plane has a high-wing configuration, two engines mounted on the wings, and a tail section with a propeller. The word "SCALE" is written in large, bold, red capital letters across the center of the image, partially obscuring the plane. The background shows a dark, industrial-looking structure, possibly a hangar or workshop.

# SCALE

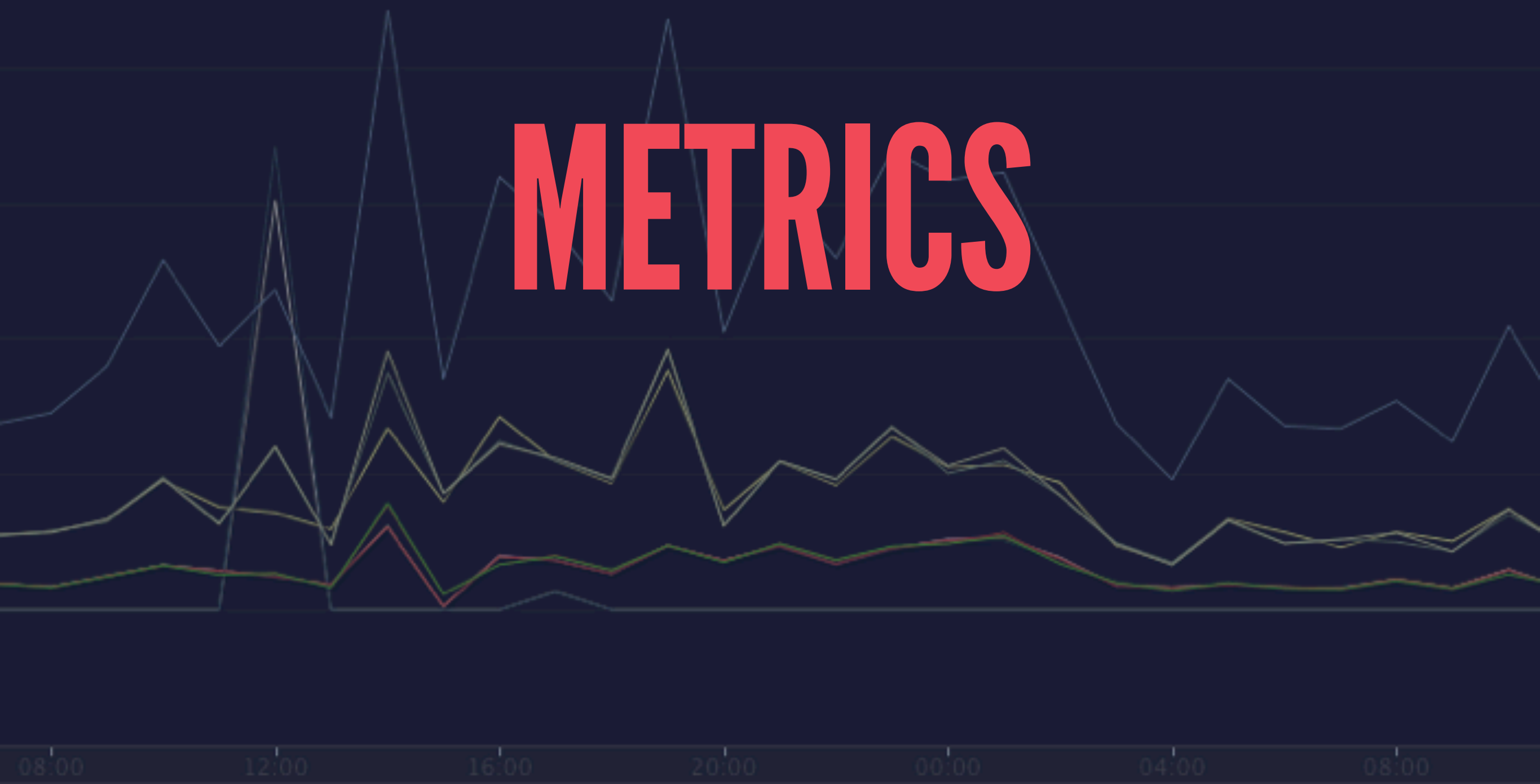


**THE**

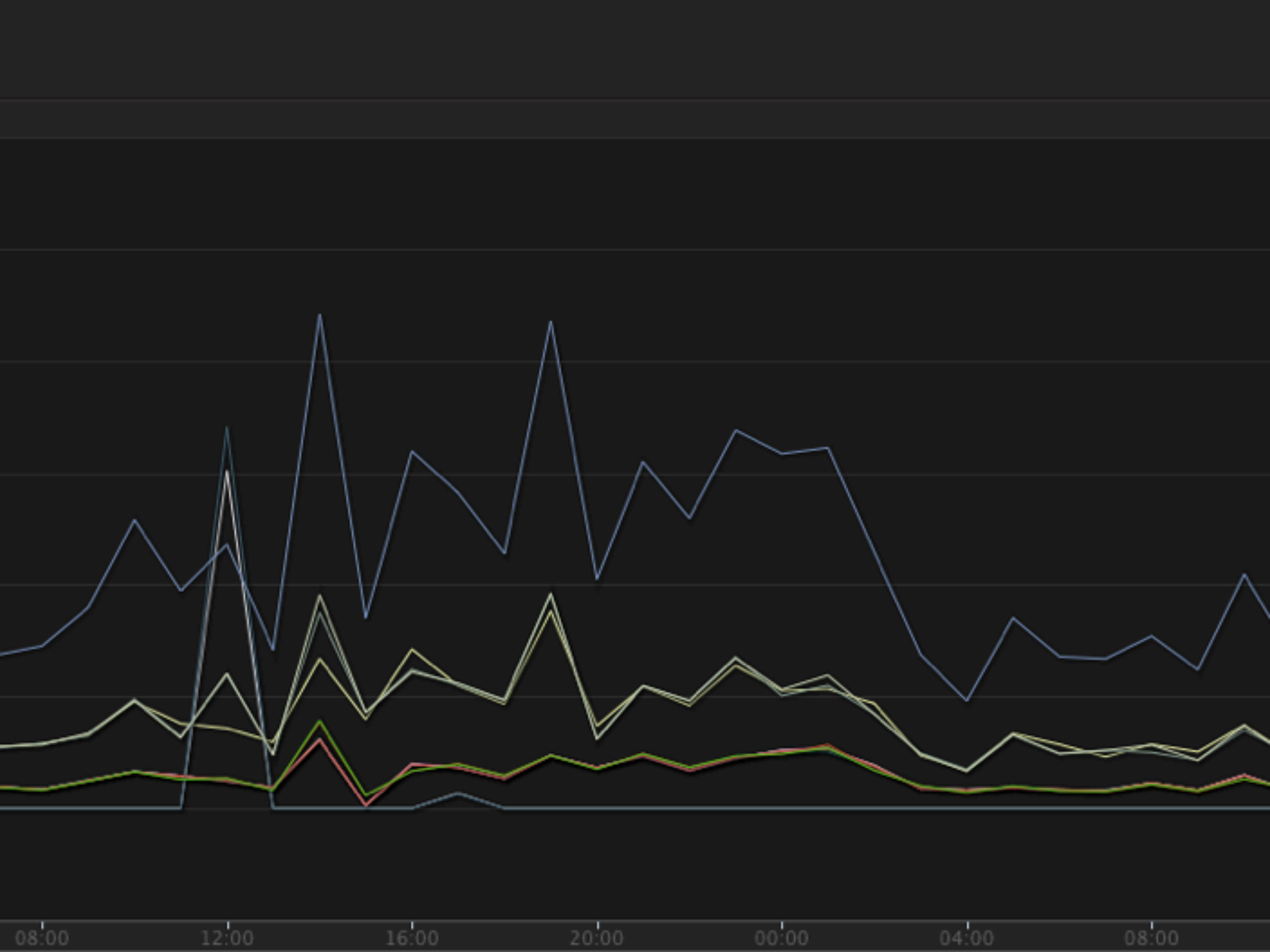
**PROFESSIONALIZATION**

**OF TRAVIS CI**

# METRICS

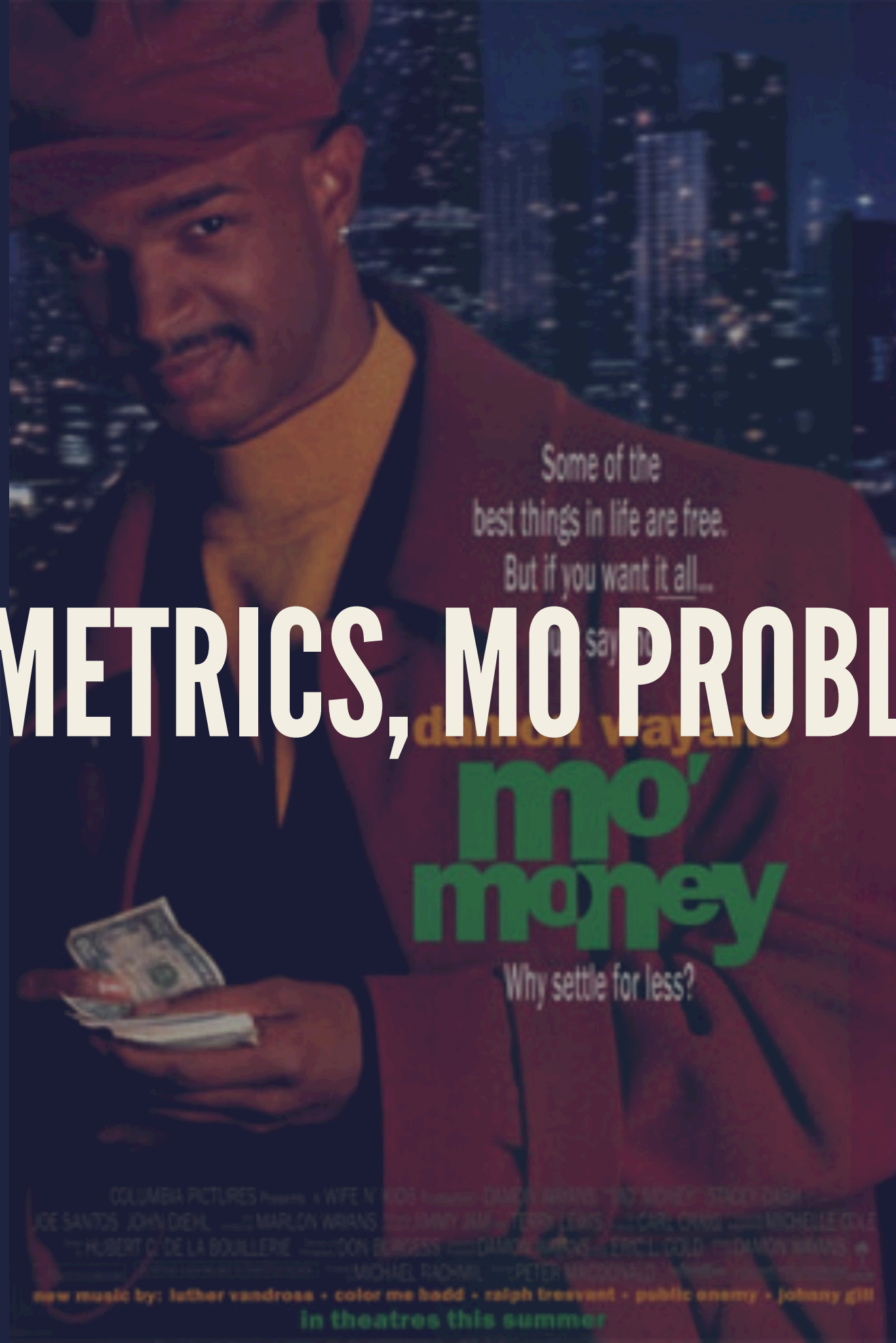






*By adding just a few metrics,  
you get a better idea what you  
need to track.*

# 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**

A man in a dark suit, white shirt, and dark tie is pointing his right index finger towards a chalkboard. The chalkboard has handwritten text in white chalk. The text is arranged in three lines: "A always A" on the top line, "B be B" on the middle line, and "L learn." on the bottom line. The man is looking towards the camera with a slight smile. The background is a dark chalkboard with white chalk writing.

**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.*

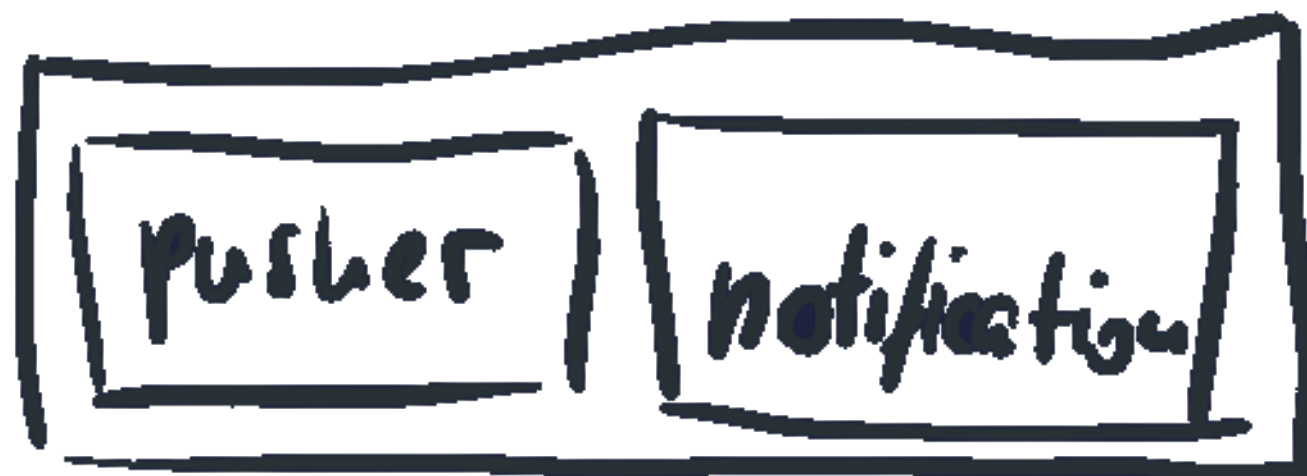
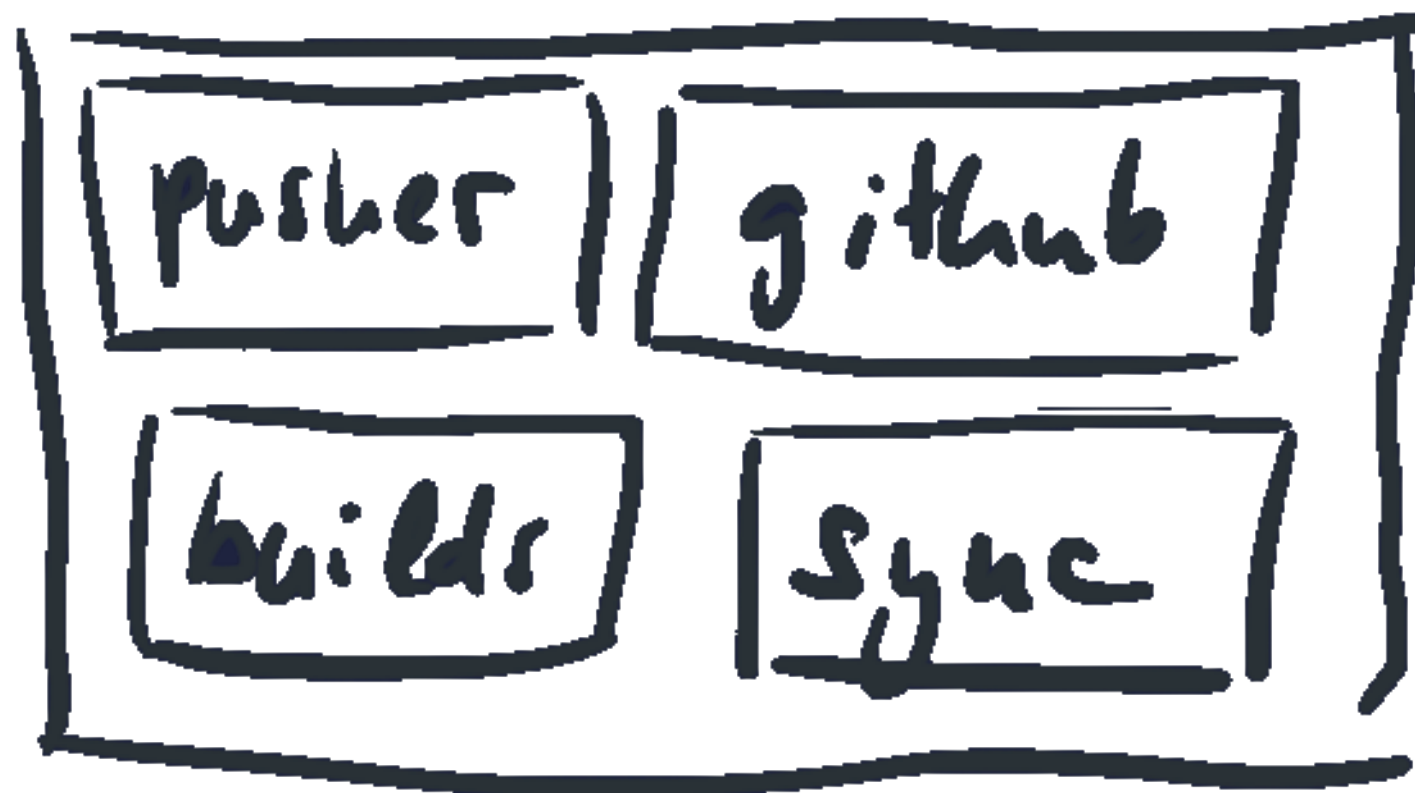
— Paraphrased

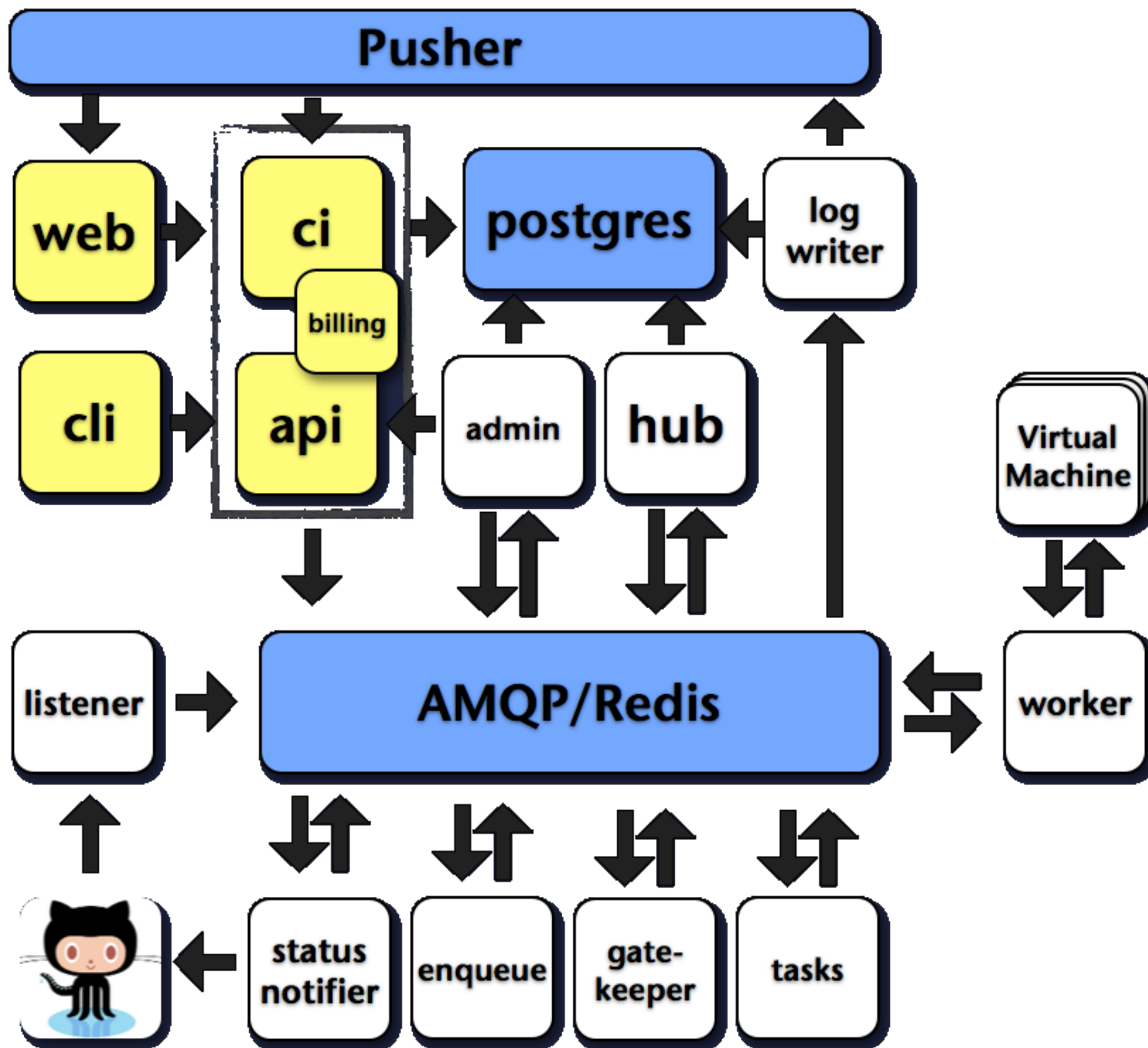




**SINGLE RESPONSIBILITIES  
SEPARATE PROCESSES**







**INCREASED COMPLEXITY**  
**AND**  
**INCREASED VELOCITY**



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

**COMPLEX  $\neq$   
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



A close-up photograph of a hand holding a black, rectangular digital call timer. The timer has a small LCD screen displaying the number '1:23' in red. The hand is positioned on the left side of the frame, with fingers gripping the device. The background is a plain, light-colored surface. Overlaid on the image is the text 'EVERYONE'S ON CALL' in a large, bold, red, sans-serif font.

**EVERYONE'S ON CALL**

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

**– Mathias' 4th Law of Monitoring**

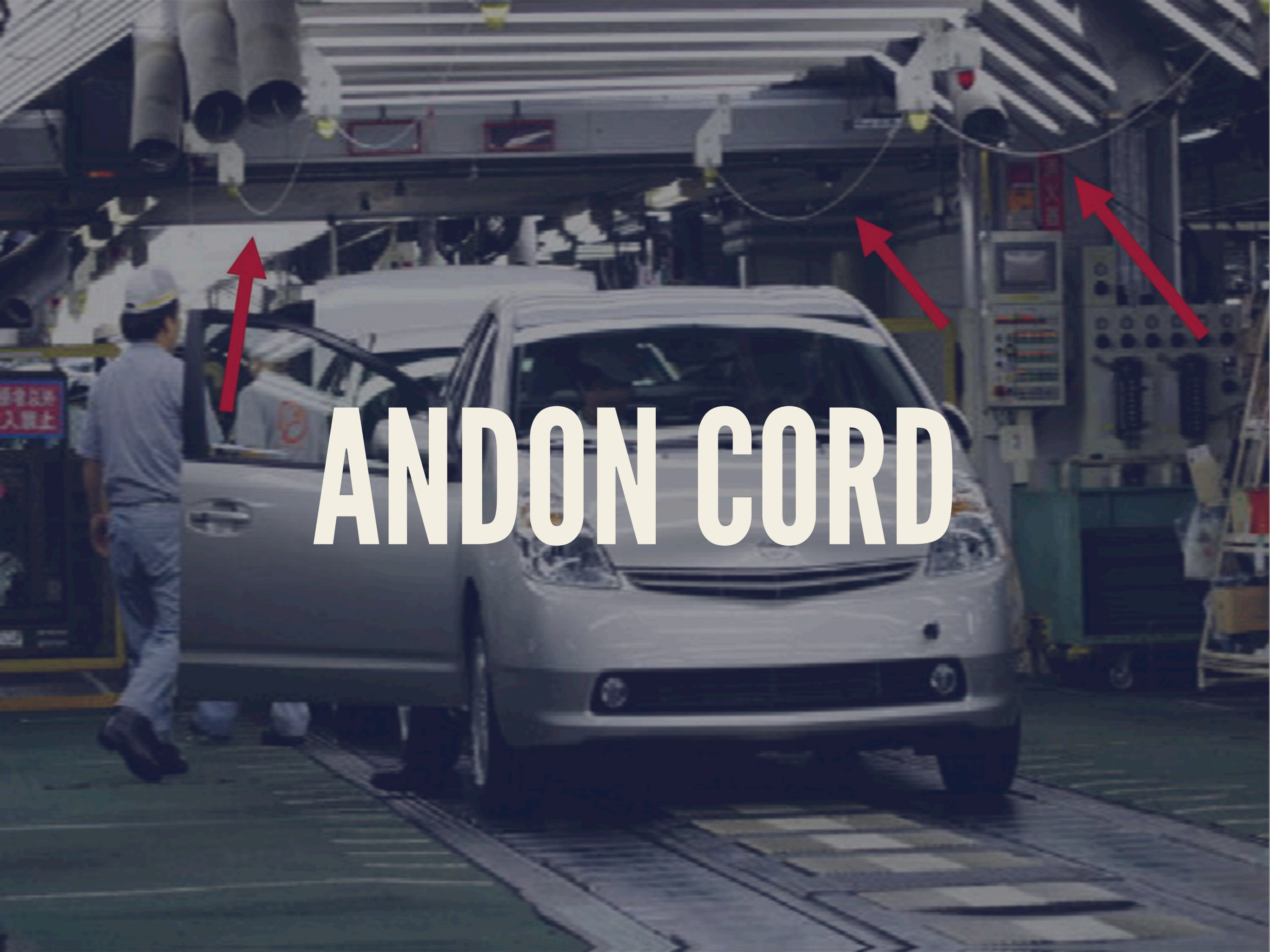
**MONITORING IS A  
PROCESS NOT A  
FEATURE**

**OUR ALERTING IS FAR FROM IDEAL**

**LEARN FROM**  
**UNEXPECTED EVENTS**



# ANDON CORD





A photograph of a car on an assembly line. A worker in a light blue uniform and cap is walking past the car on the left. The car is silver and is positioned on a conveyor belt. In the background, there are various mechanical components and equipment. Three red arrows point from the text towards different parts of the car and the assembly line: one points to the front left side, another points to the front right side, and a third points to the rear right side. The text "BLAMELESS POSTMORTEM" is overlaid in the center in a large, white, sans-serif font.

# BLAMELESS POSTMORTEM

# 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**



TRAVIS