



containercon

CHINA 中国



THINK OPEN

开放性思维

# Microservices, Service Mesh, and CI/CD Pipelines: Making it All Work Together

Brian Redmond, Microsoft

# Who am I?

## Brian Redmond

- Cloud Architect @ Microsoft (17 years)
- Azure Global Black Belt Team
- Live in Pittsburgh, PA, USA
- Avid marathon runner and outdoors enthusiast
- World traveler



DO WHAT IS  
**GREAT.**

LOVE



# Microservices

The answer to all problems.



# Containers

The answer to all problems.



# Kubernetes

The answer to all problems.











CRYO-TRANS

DEFACE





CAI

MA CO

SVETRUCK

33 1103

www.veco.cz  
1203 1103

**I DON'T ALWAYS TEST MY CODE**

**BUT WHEN I DO, I DO IT IN  
PRODUCTION**





**KEEP  
CALM  
AND  
CROSS YOUR  
FINGERS**

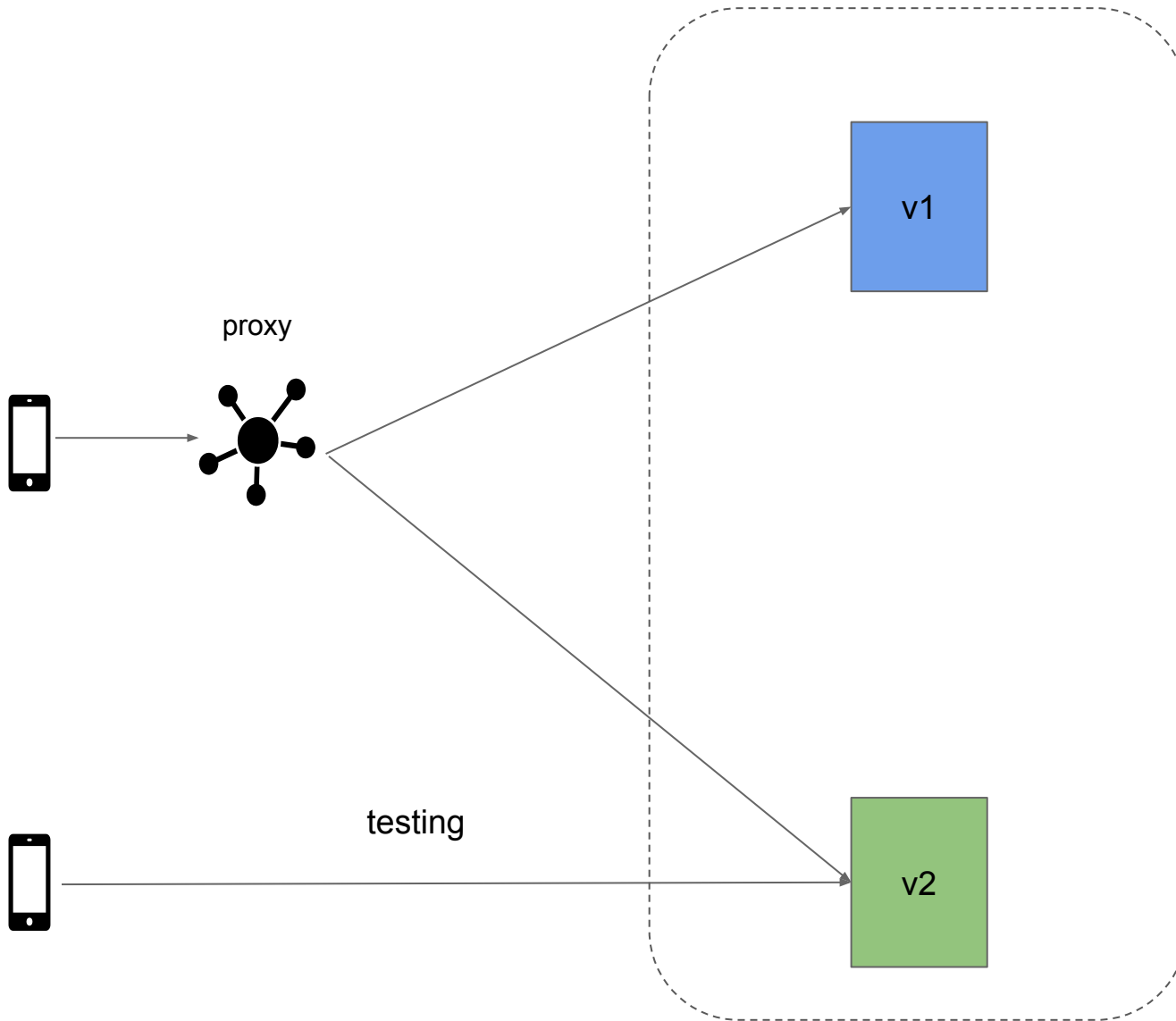


# Deployment Strategies

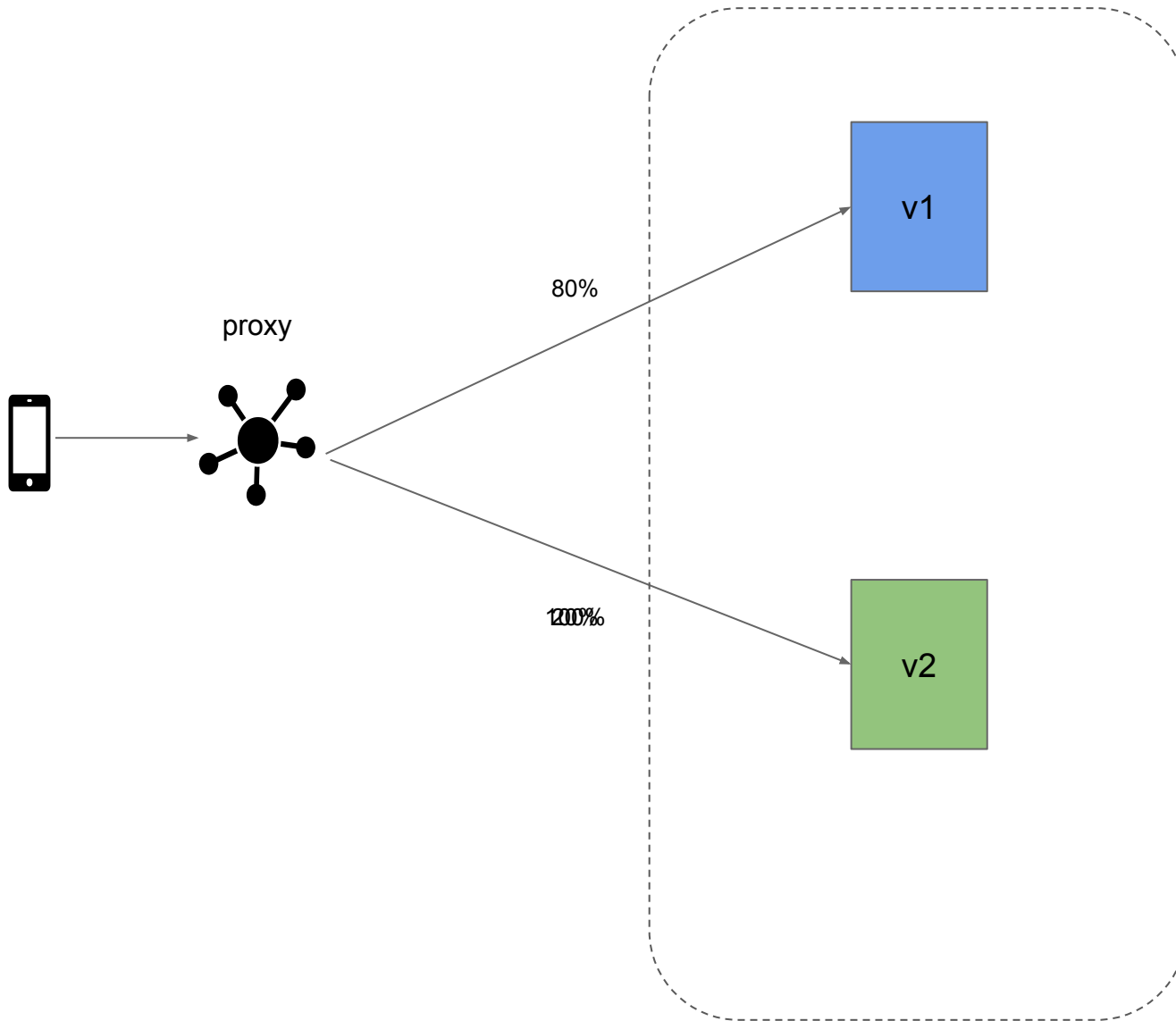
- Container Native Development
- Continuous Integration
- Continuous Deployment
- Blue/Green Testing
- Canary Testing
- A/B Testing



# Blue / Green Testing

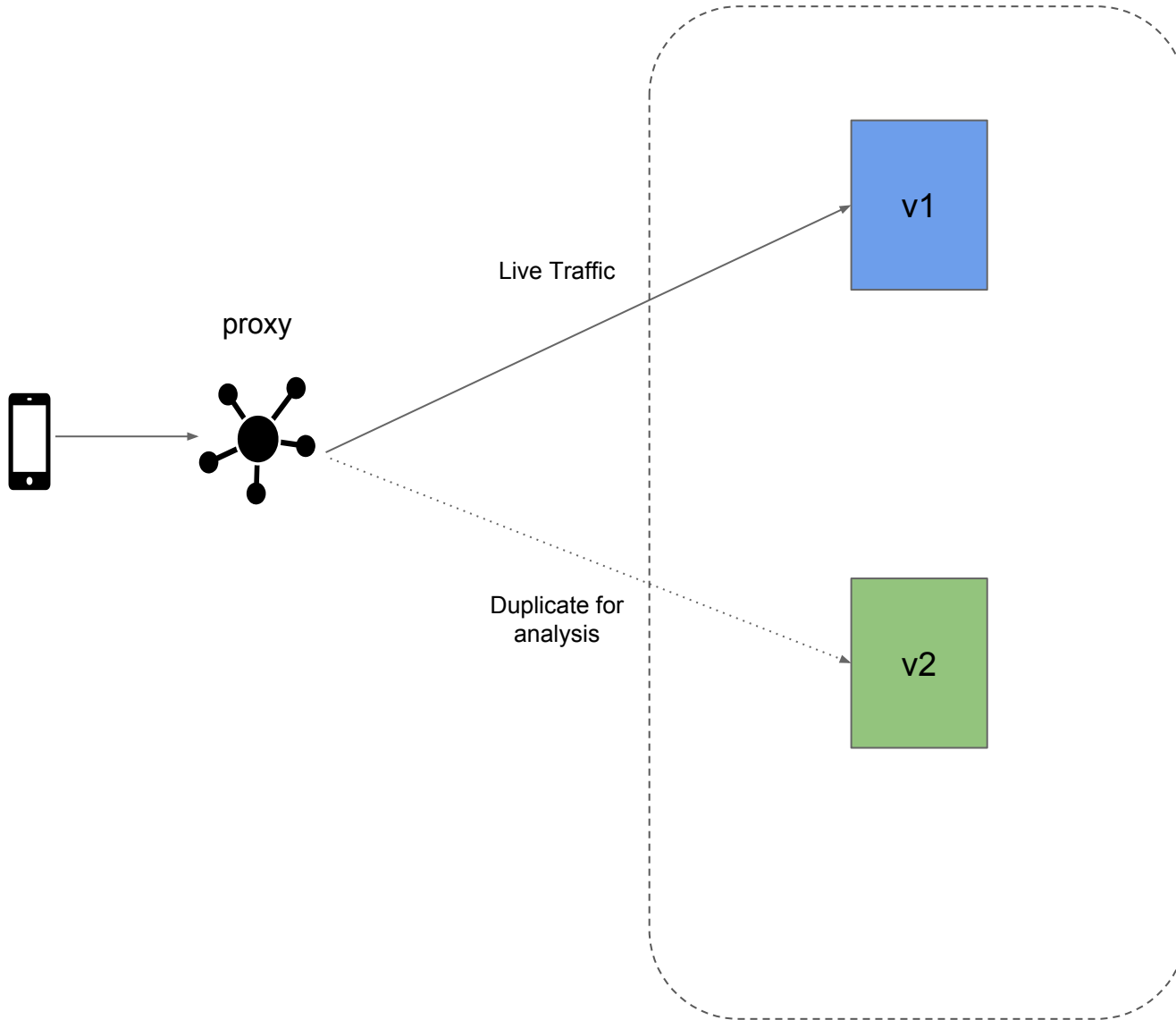


# Canary Testing

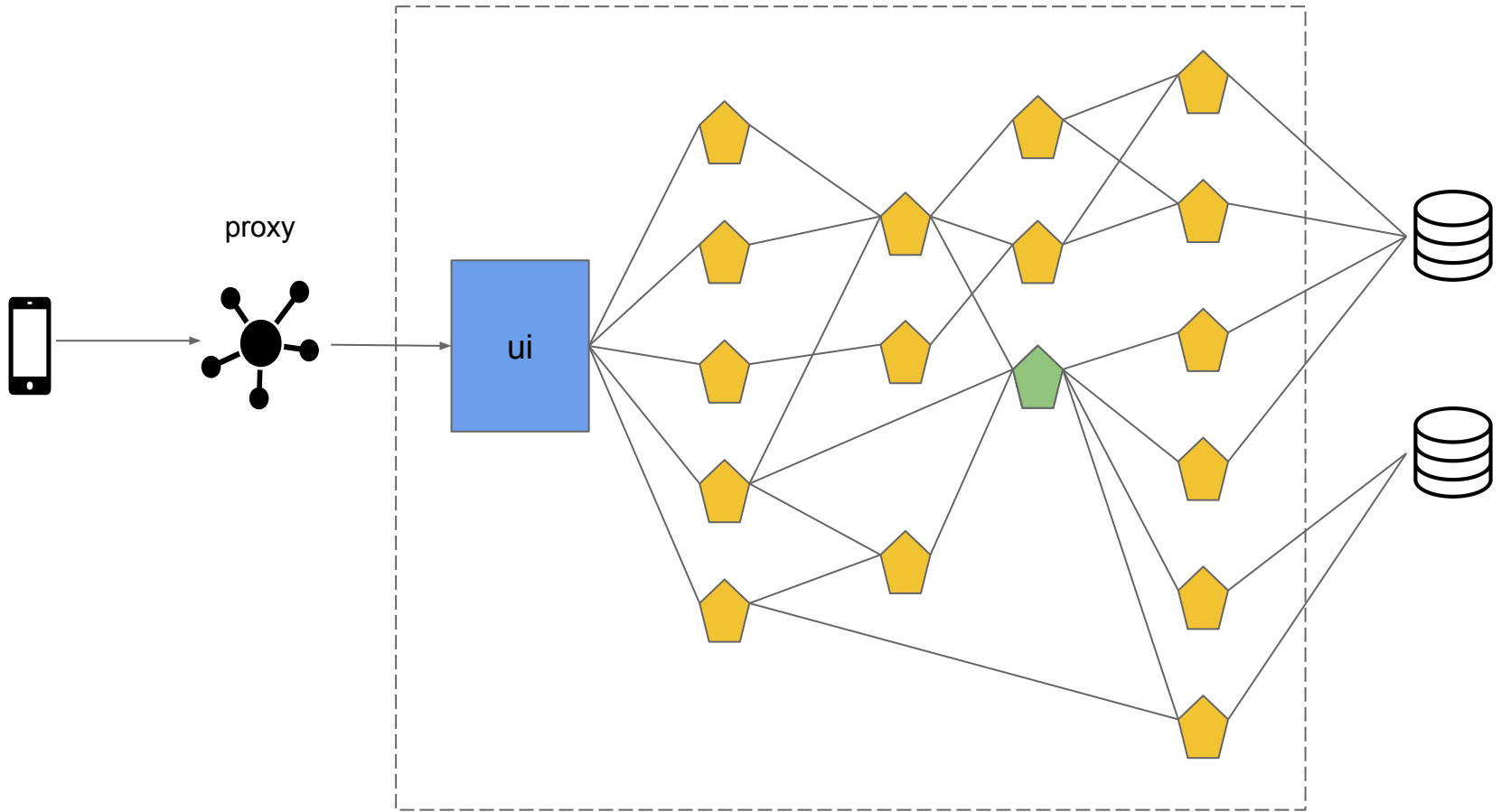




# A / B Testing



# Microservices Deployment



What's  
missing?







**advanced routing**





**observability**



**chaos testing**

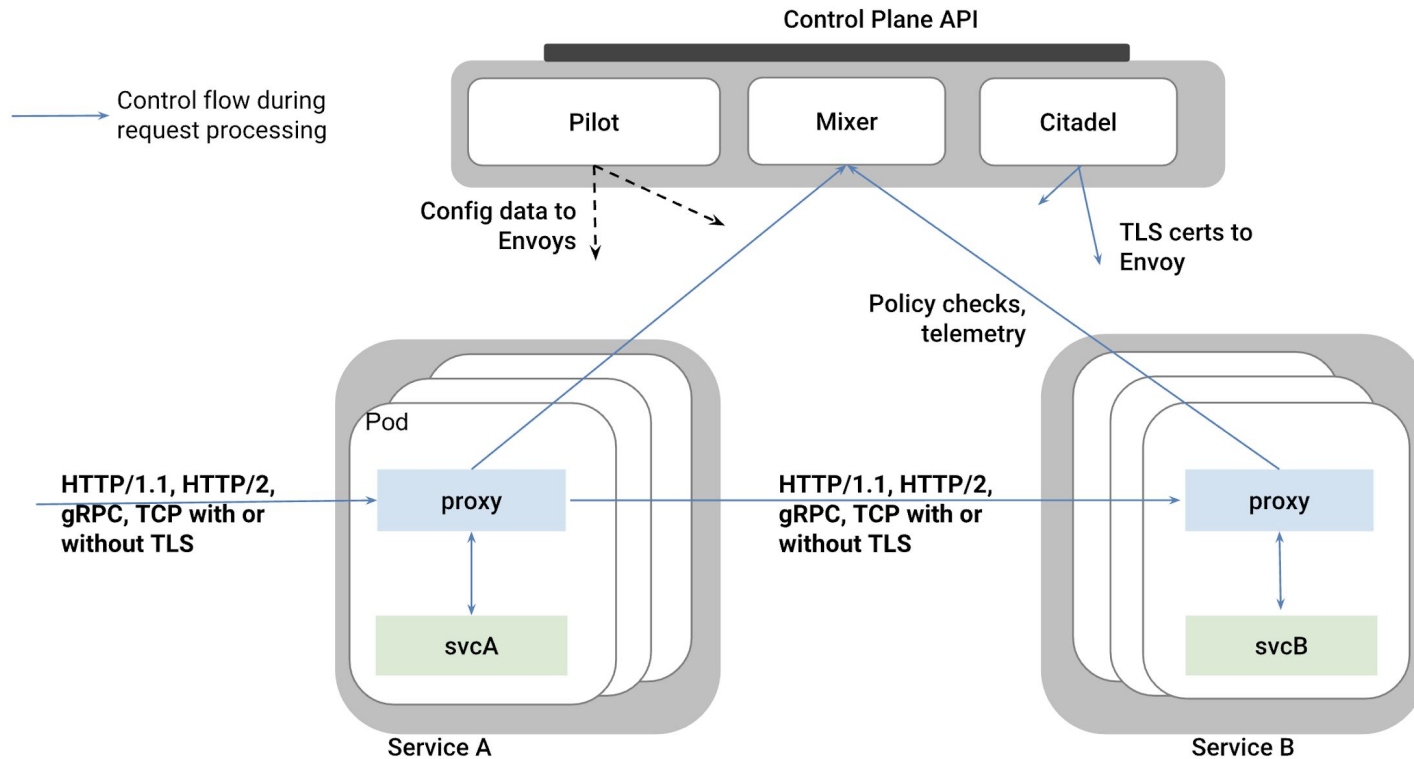




# Enter Istio

- Service discovery and routing
- Health checking
- Observability
- Authentication and authorization
- Resiliency
- Policy enforcement





# What can I do with Istio?

advanced routing → route rules, traffic shaping

observability → metrics, logs, and tracing

chaos testing → fault injection (delays, faults)



What about a  
CI/CD tool?

**I SEE YOU'RE CREATING A PIPELINE**



**LET ME HELP YOU WITH THAT**

imgflip.com



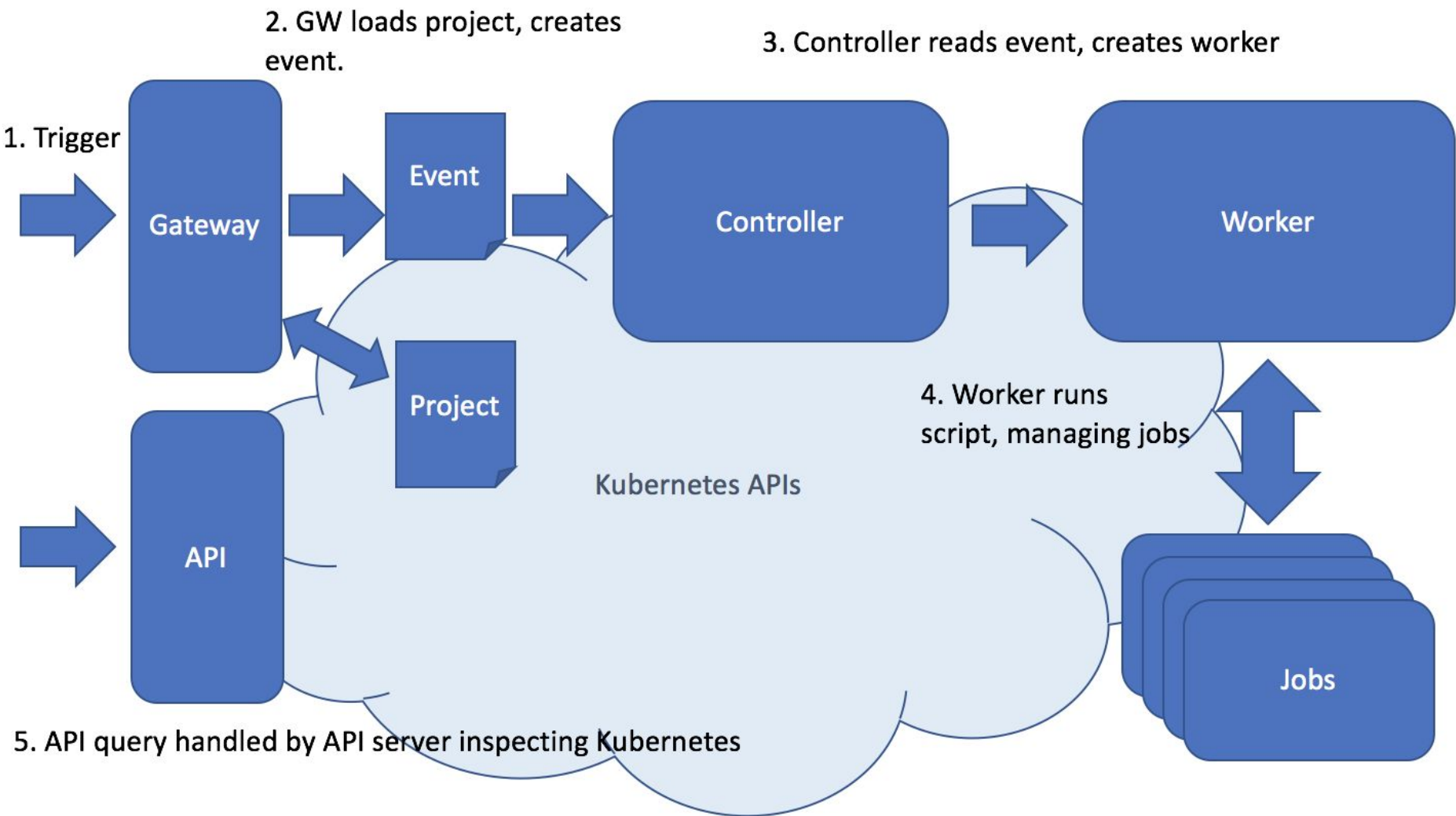
# What is brigade?

brigade = event-driven scripting for kubernetes

- Encapsulate functions in containers
- Run in parallel or serial
- Trigger workflow from Github, Docker registry, etc.
- Javascript (pipeline as code)
- Project config stored as secrets
- Well suited for CI/CD pipelines







# Demo Time

```
11 ^e^e<83>=!^_^e^et
12 H<89>B 1ã c^l^e^e<8>^fYl/^e<84>À^0<85>T
13 ^e^eI<89>
14 <8b>sHè
15 ^e^e^eè
16 ^e^e^eè
17 ^e^e^eè
18 /^e^At^E
19 ^N/^eH<8b>
20 t^TH<8b>
21 ^e^e^eè
22 H<8d>55-
23 ^e^e^e10
24 ^e^e^eè
25 -&^eH<8b>
26 (&^eH<8b>
27 Ç^E<90>^
28 Ç^E}^A/^e^A^e^e<80>=w^H/^e^et^G<80>^M¶ i &^e^Aö^E<86>¶ .^e^AtCH<8b>^Eus .^eH<85>
29 ^C^e¿ ^A^e^e^eè (i^D^eH<8d>=}+ .^e¿ ^e^B^e^eè <97>M^e^eH<8d>=$ò .^e¿ <80>^e^e^eè A
30 ^e^e^e^eè } f^D^eH<8d>5w^H^e^e^e^eè -f^D^eH<8d>53^l^e^e^e^eè ^e^e^e^eè <8b>
```

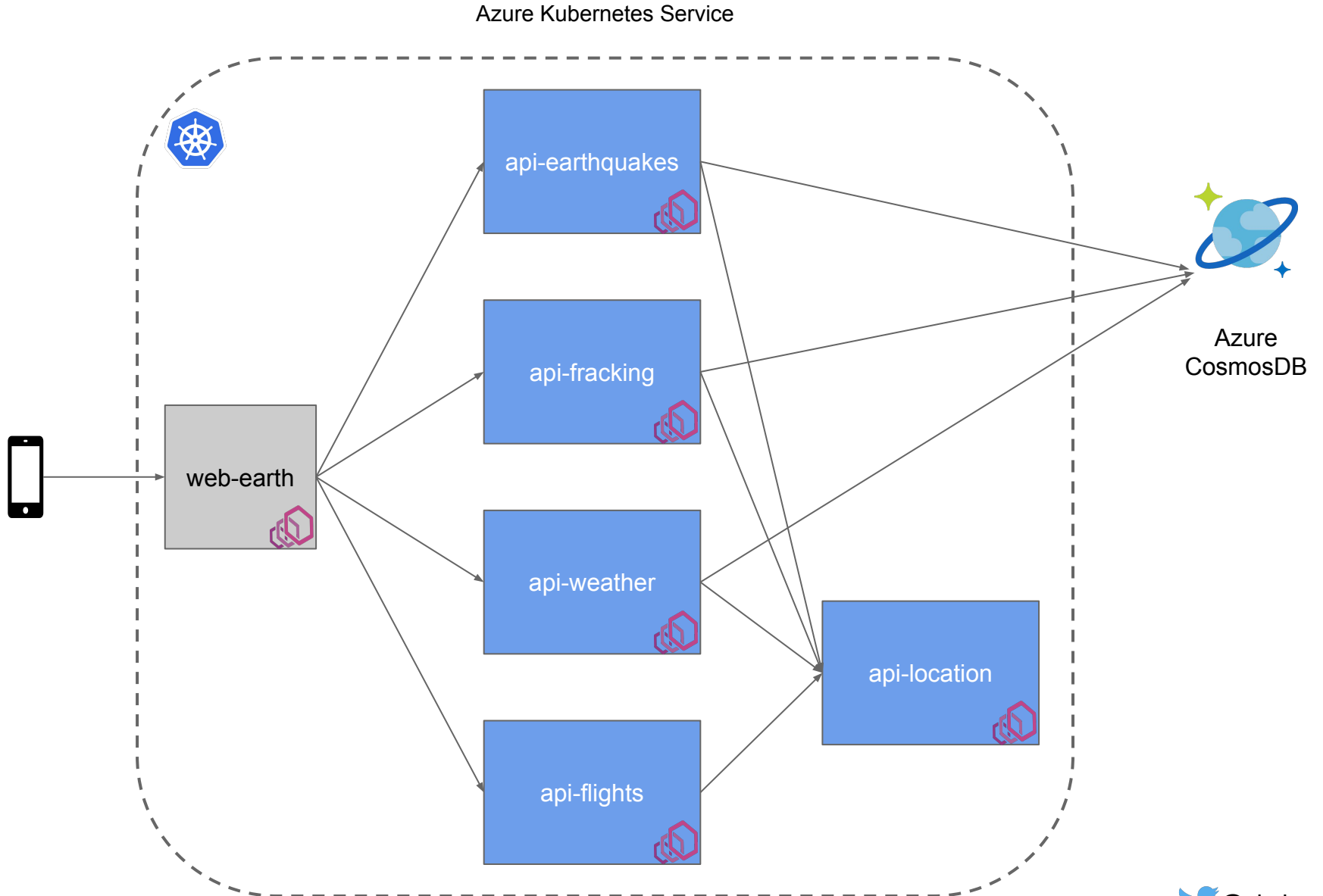
## CATASTROPHIC ERROR

User attempted to use program in the manner  
program was meant to be used.

Options:

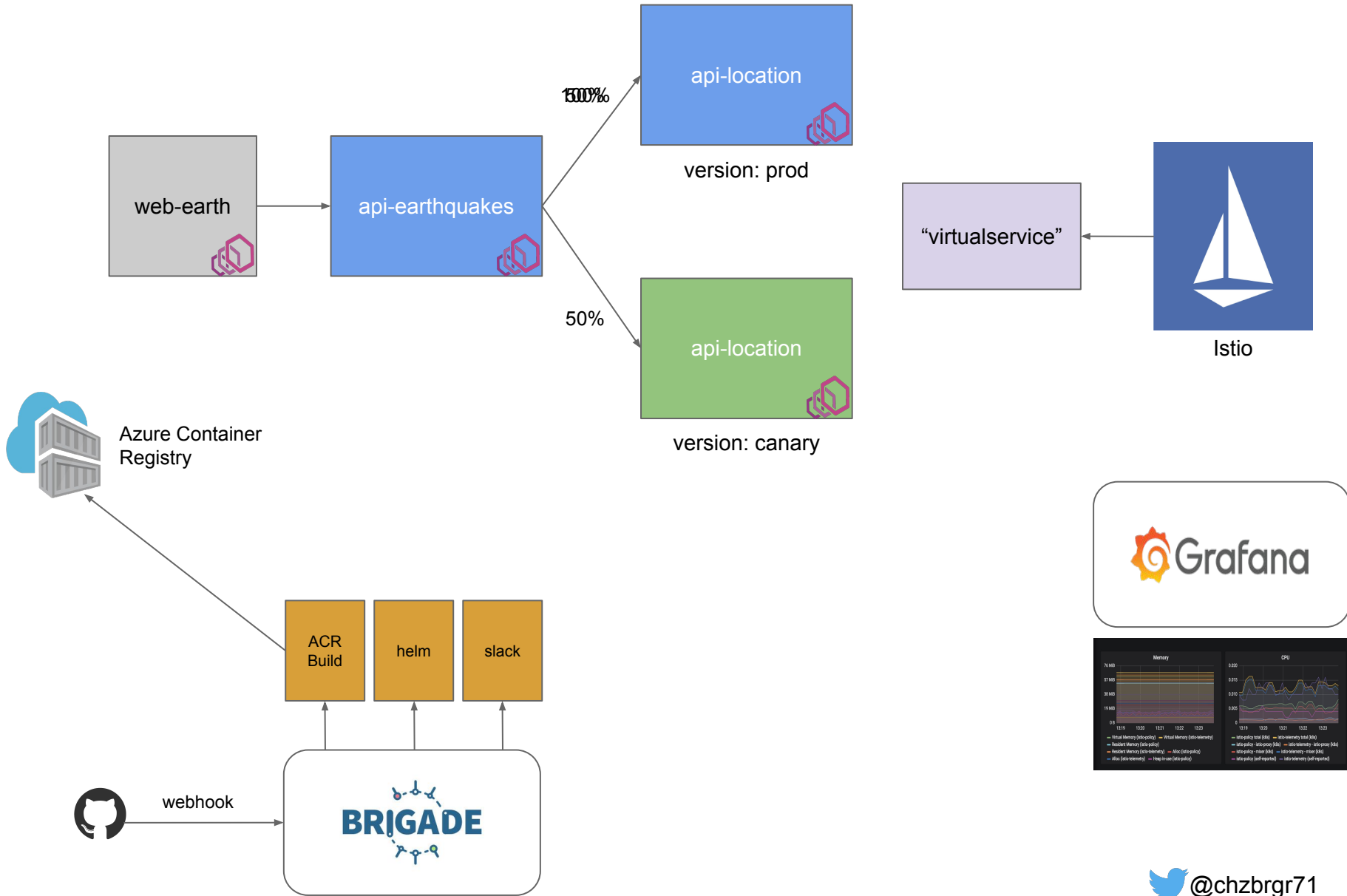
- 1) Erase computer
- 2) Weep

# Demo App Architecture





# Demo - What you will see



# Summary

- Microservices and containers bring added challenges for deployment/testing
- Testing in production is a good idea (with canary)
- Service Mesh solutions help with:
  - Observability
  - Advanced Routing
  - Chaos Testing
- CI/CD can automate the process





# PADOVA MARATHON

42,195

AIGS TIMING  
21,221

AIGS TIMING  
52:53

21,097

Polaroid  
polaroidswear.com

UniCredit

ASSINDUSTRIA  
SPORT PADOVA

La Nuova  
Provincia di Padova

Comune  
di Padova

Polaroid  
polaroidswear.com

UniCredit

ASSINDUSTRIA  
SPORT PADOVA

La Nuova  
Provincia di Padova

NIKE RUNNING

POLIZIA



# Questions?

you can find me at:

- Twitter, Github: @chzbrgr71
- [brian.redmond@microsoft.com](mailto:brian.redmond@microsoft.com)
- Demo code: <https://github.com/chzbrgr71/os-summit-tokyo>
- Slides:



LINUXCON

containercon



CLOUDOPEN

CHINA 中国

THINK OPEN

开放性思维