

Full Cycle Developers at Netflix

Greg Burrell
QConSF 2018





#netflixeverywhere

Who is Greg Burrell?



- 13 years at Netflix
- 7 years streaming on-call
- Senior Reliability Engineer (SRE) in Edge Developer Productivity Team



@gburrell_greg

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EDGE

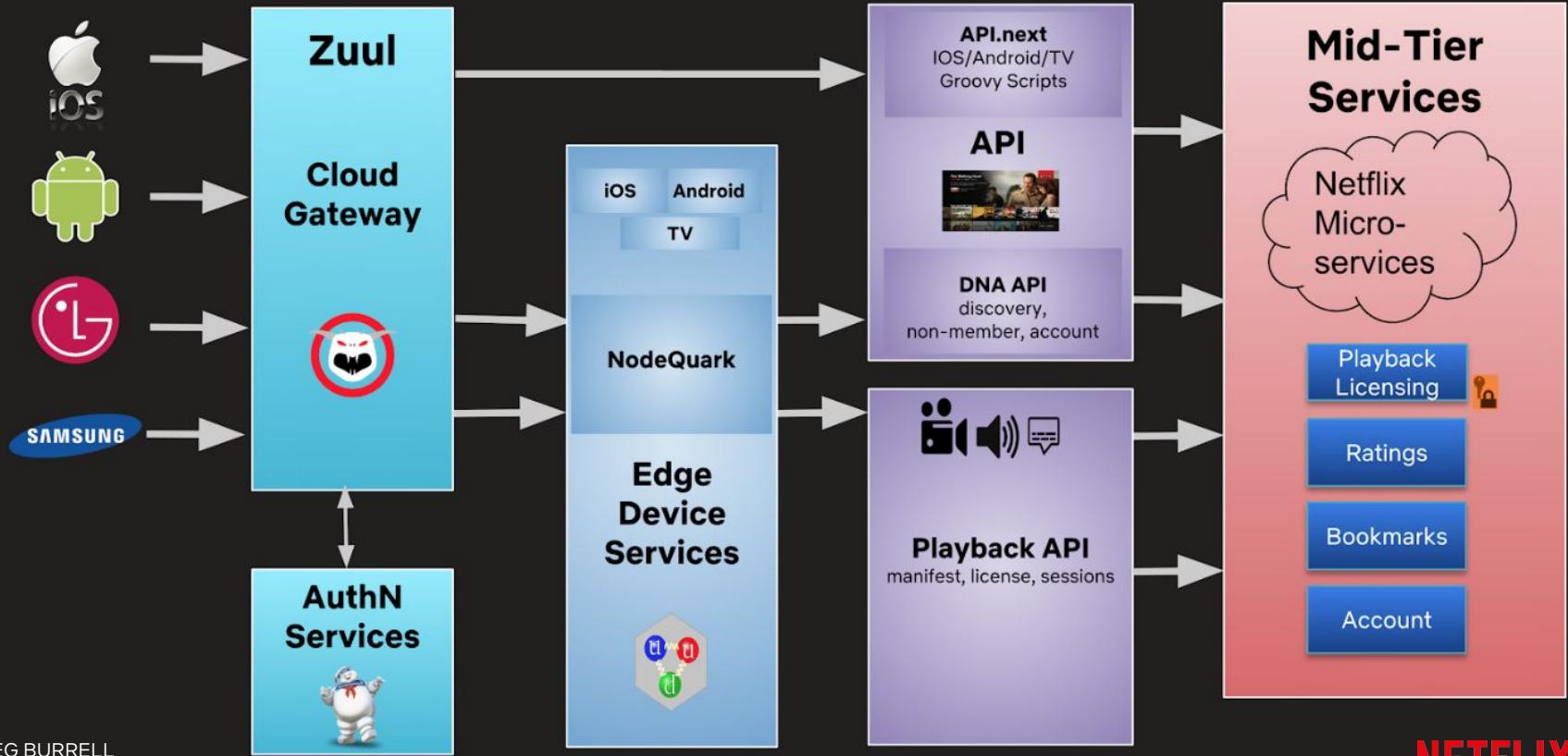
ENGINEERING

- Sign Up
- Discovery / Browse
- Playback

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Netflix Edge Architecture



Our Journey Begins





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Browse

Movies You'll Love

Friends

Queue

DVD Sale \$5.99+

Watch Now

Movies, actors, genres, directors

Search

Home

Genres

Top 25

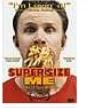
Recent Additions

Help

Watch Movies Instantly On Your PC

Instant Viewing • Full-length Movies and TV Series • Included in Your Membership

Suggestions For You

[Play](#)[America: Freedom to Fascism](#)[Play](#)[Eron: The Smartest Guys in the Room](#)[Play](#)[Play](#)

Your Video Quality



Good

[How your Internet speed affects video quality >](#)

Browse

All Watch Now by:

Title

Star Rating

Favorite Genres:

Action & Adventure

Comedy

Drama

Independent

Sci-Fi & Fantasy

Thrillers

Other Genres:

Anime & Animation

Children & Family

Classics

Documentary

Gay & Lesbian

Horror

Romance

Sports & Fitness

Television

Guides:

By Studio

By Television Network

Recently Viewed

Auschwitz: Inside the Nazi State:
Episode 1: "Surprising Beginnings"

[Play](#)[Your Viewing History >](#)

From Your DVD Queue

[Play](#)[Play](#)[More From Your DVD Queue >](#)

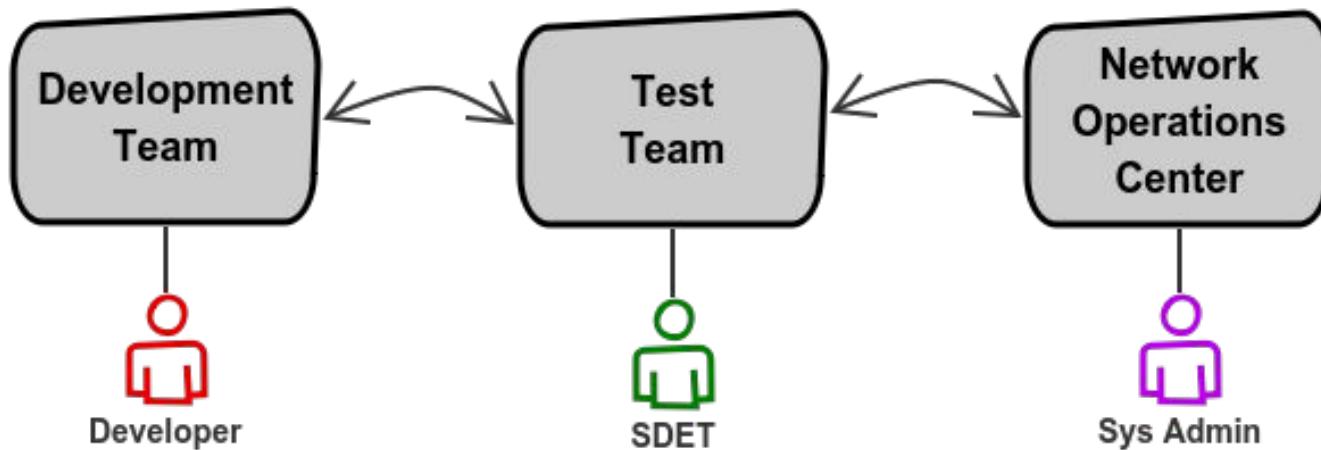
Drama

Action & Adventure

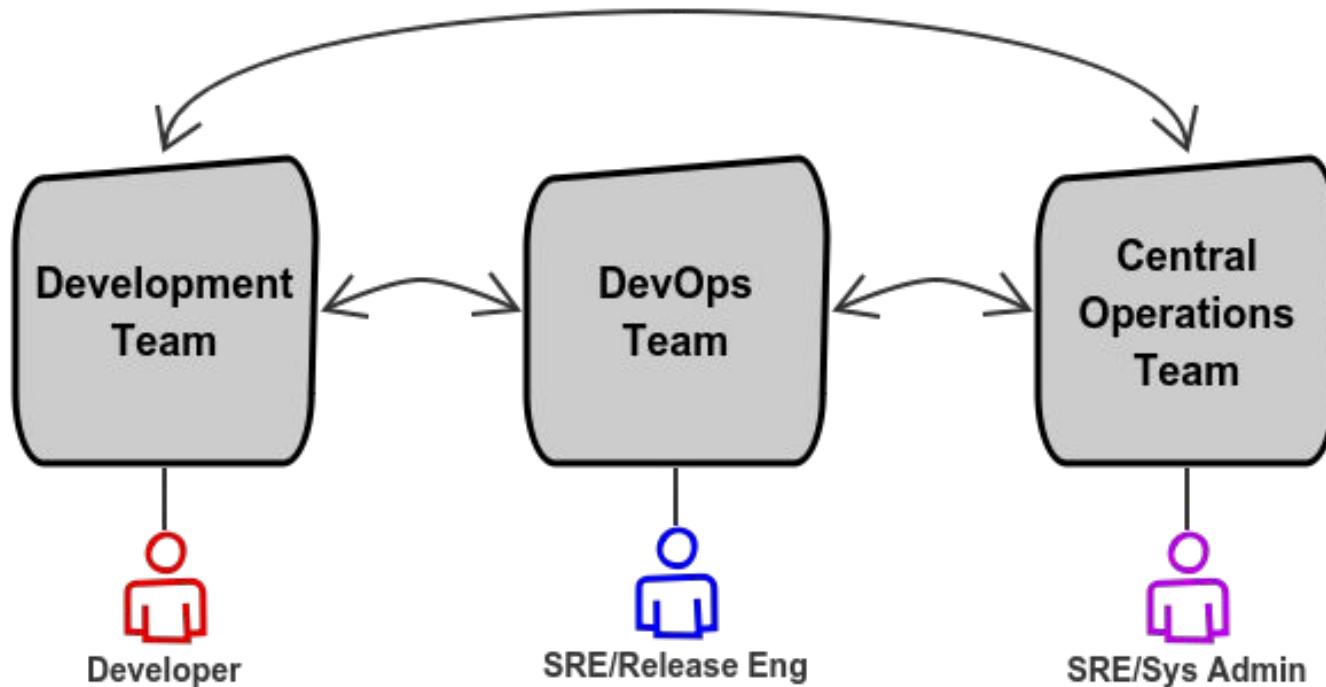
Independent

Comedy

The Specialized Teams Model



The Hybrid Model



Pain Points of These Models



Lack of Context

- Developers & Testers didn't know the production systems.
- Devops & NOC/CORE didn't know the apps.
- High communications overhead.



“Let’s find somebody who knows...”

Lengthy Troubleshooting and Fixing

- People moved cautiously due to lack of familiarity with applications, systems, and current state.
- Fixing production was a lot of back-and-forth over the phone.

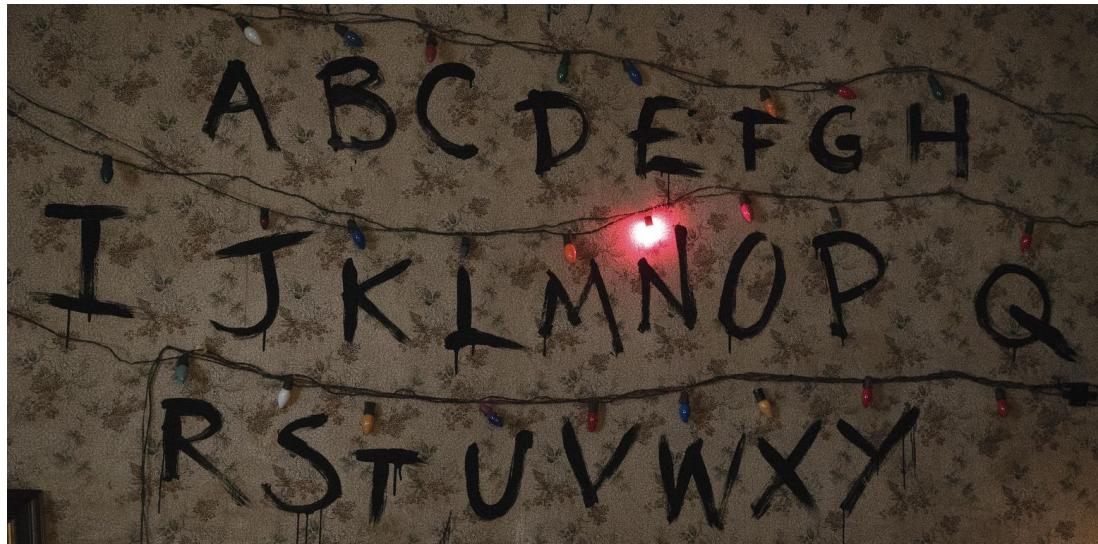
“Let’s get everybody on the conference call and all talk at once.”



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Lossy Feedback Cycle

- Developers stayed away from production unless something was on fire.
- Operations teams would band-aid over problems.



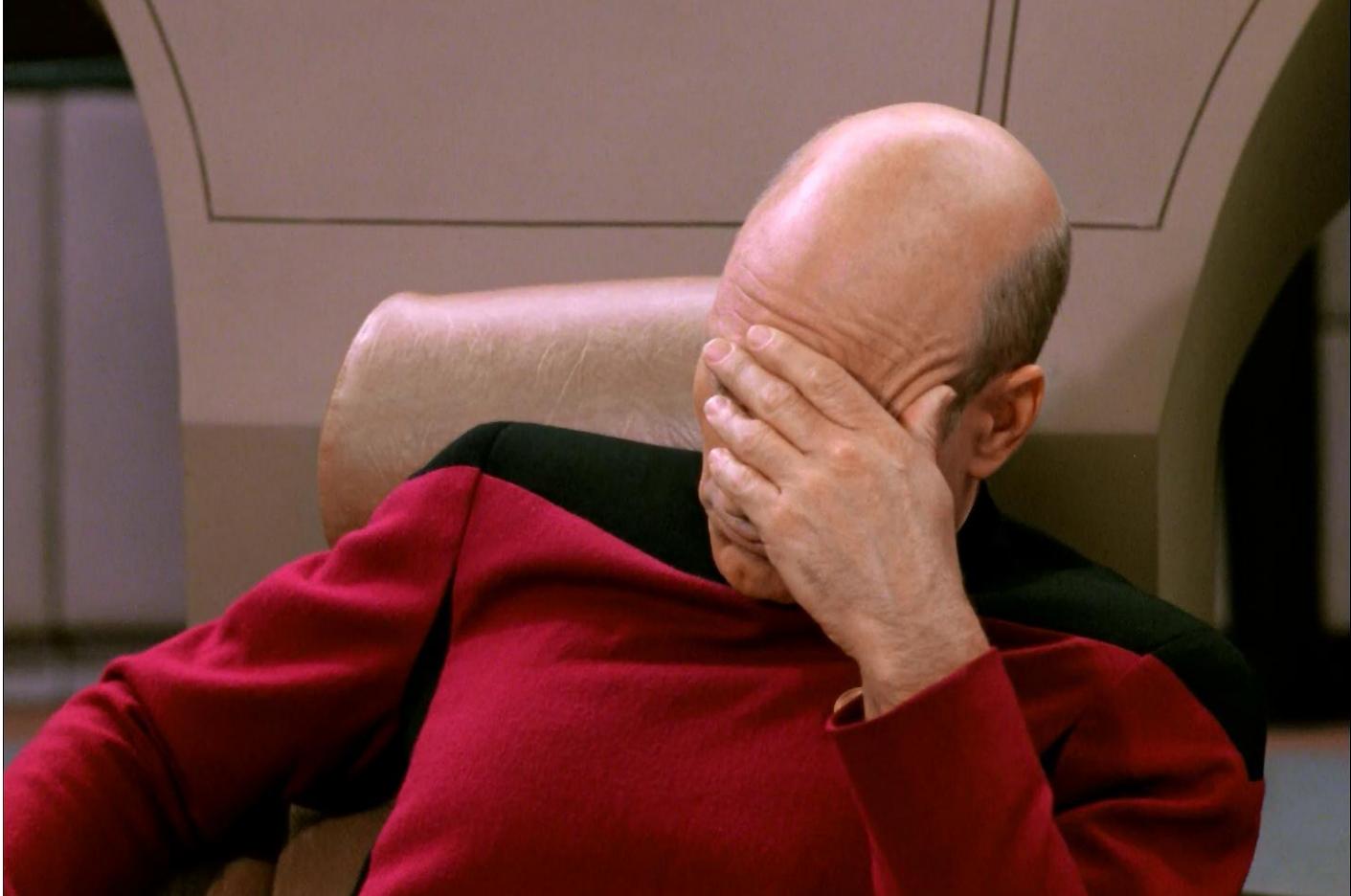
“This graph changed
after the deployment.
Can somebody
Take a look?”

Silos

- Coordination across multiple teams.
- Understaffed team = bottleneck.

“I’m not sure what’s going
on with the release,
I think we’re waiting on
somebody...”





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THE DAREDEVIL PAIN SCALE

1

IT MIGHT
BE AN ITCH



2

I JUST NEED A
BANDAID



5

BEES? BEES!



7

THIS IS
CONCERNING BUT
I CAN STILL WORK



8

I CAN'T MOVE IT
HURTS SO BAD



9

MAULED BY A
BEAR OR
NINJAS



10

UNCONSCIOUS



15

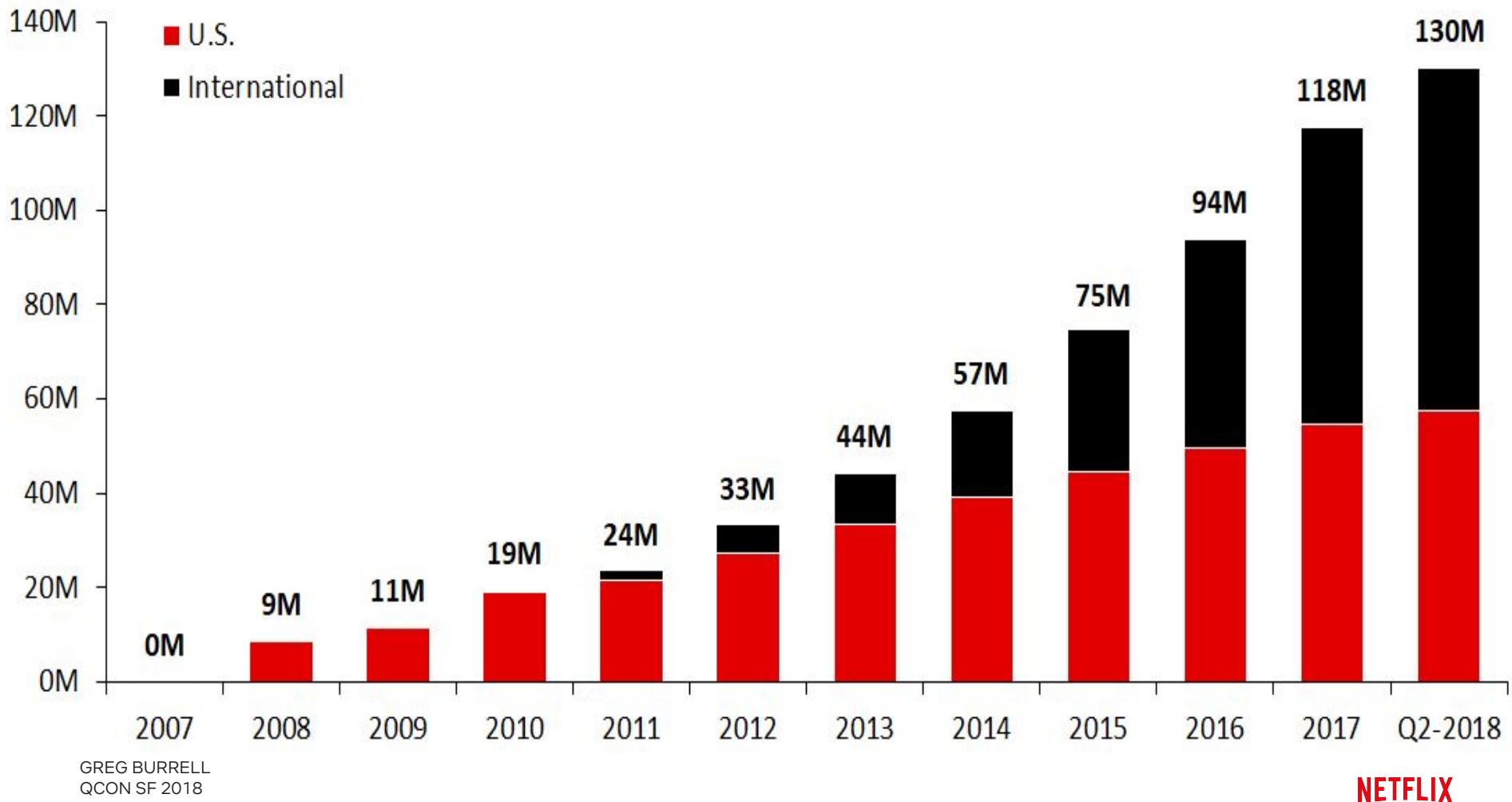
MATT MURDOCK
SAYS HE'S
TOTALLY FINE



18

MATT MURDOCK
IS 100% NOT FINE







S4:E1 "USS Callister"

10

||

10



1:15:47

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Episodes



Audio & Subtitles



Next episode

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First Principles



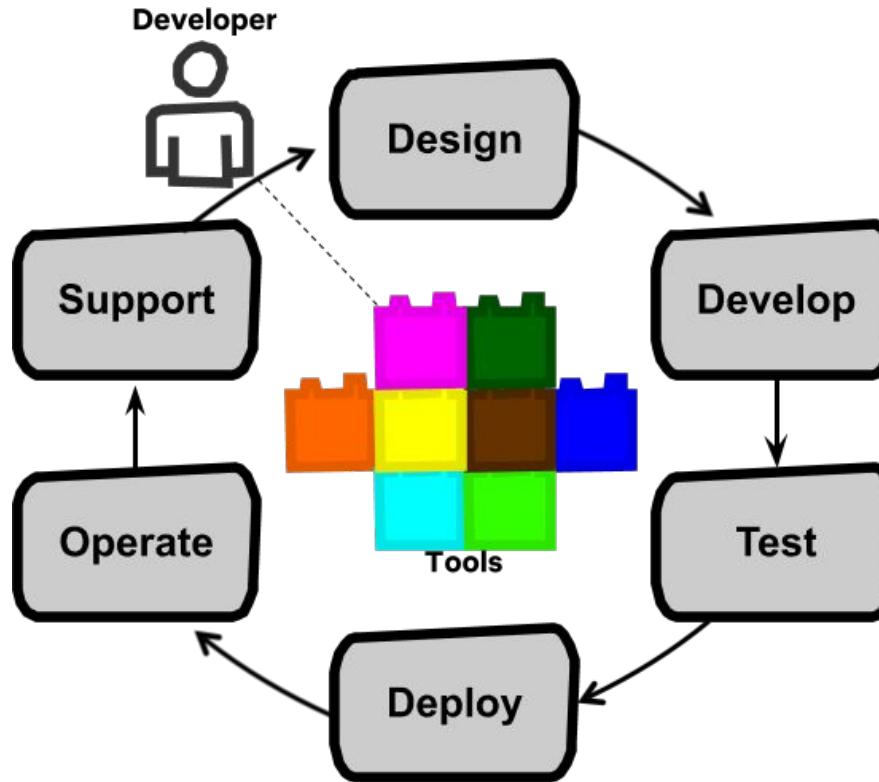
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Operate What You Build



The Full Cycle Developer



What's Needed?

How do we make this work?

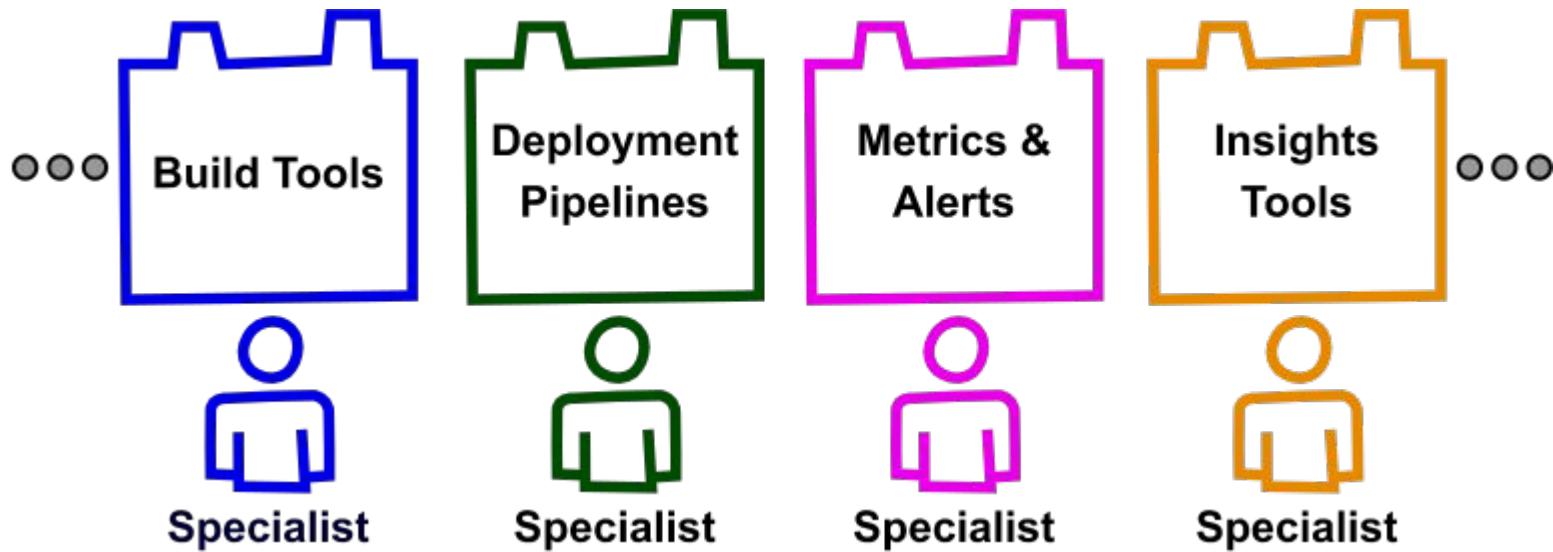


Mindset Shift

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Good Tools are Key!





1. Default

```
gregburrell@lgml-gburrell:~/Dev/gregb-new-service$ newt init --app-type java-project
```

NEWT

NEtflix Workflow Toolkit (v 0.0.594)

```
+=====
| Using 'java-project' app-type...
|
| Generates a PAVED ROAD project supported for ALL uses:
| ✓ Customer Facing - Streaming Path
| ✓ Customer Facing - Non-Streaming Path
| ✓ Employee Facing - Internal Tools
|
+=====
```

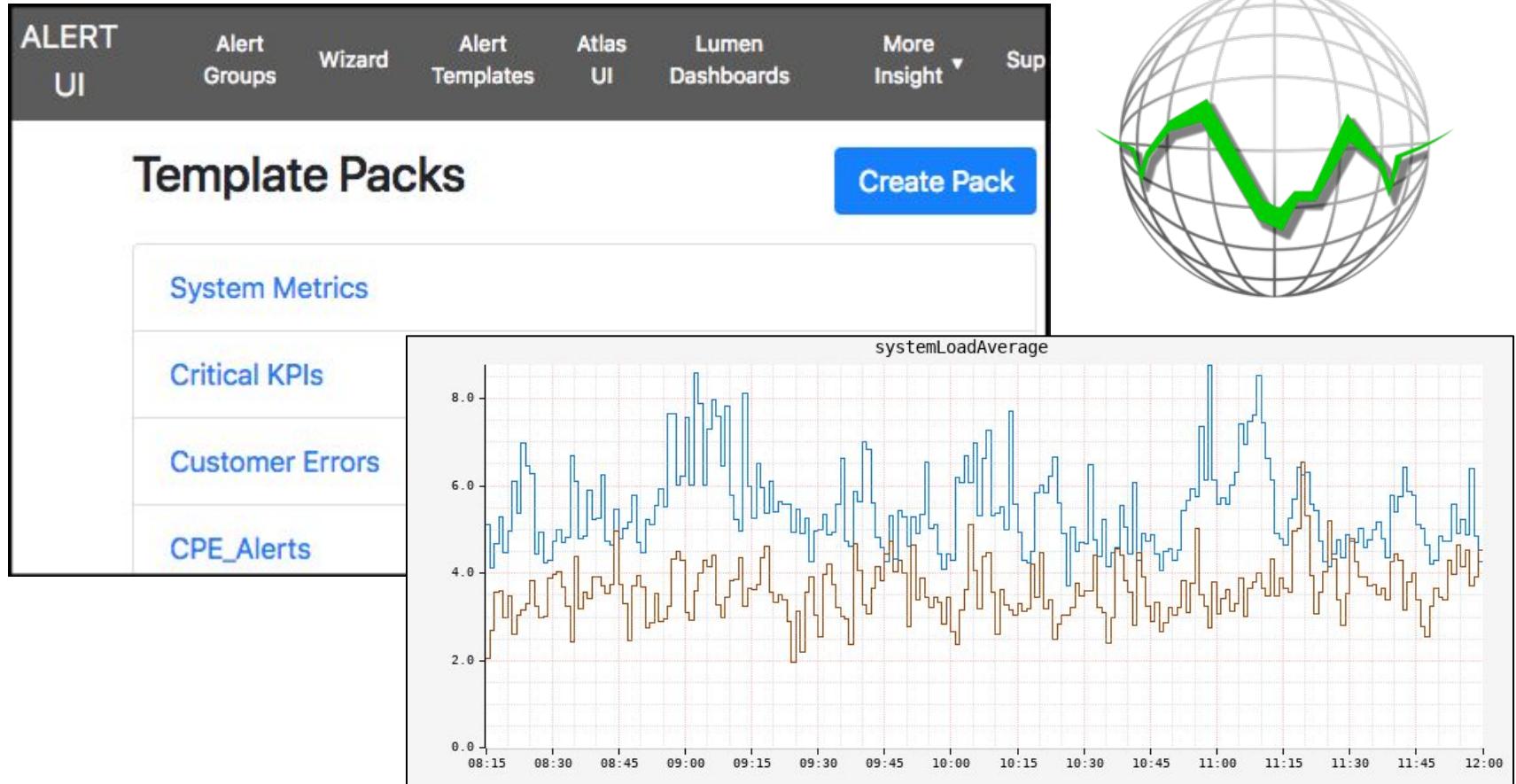
? Initialize which directory for java-project project? .
? Would you like me to set up a Stash repo? Yes
? Enter the name of your Stash project (the parent group for the repo), ~gburrell for personal project: ~gburrell
? Enter the name of the Stash repo: gregb-new-service
NOTICE Found xcode: /Library/Developer/CommandLineTools
NOTICE Found metatron: 1.186.0
latest: Pulling from cpie/generator
bebc70bebaf0: Pull complete
0631d5e4e56d: Pull complete
e23cf7e63b70: Pull complete
bf9d1bb88bbd: Pull complete
4844111d6138: Pull complete
Digest: sha256:3b8e1e73cf2e6be1b6fa59f27fc8ab74cd1970e9ed7dd32e849e2ef1582f79bf
Status: Downloaded newer image for dockerregistry.test.netflix.net:7002/cpie/generator:latest

```
Welcome to the Netflix Java Project generator
```



The Spinnaker UI interface showing cluster and load balancer status. The left sidebar lists 'CLUSTERS' and 'LOAD BALANCERS'. Under 'CLUSTERS', there are sections for 'PROD' (US-EAST-1, EU-WEST-1) and 'TEST' (EU-WEST-2). Each section displays a summary card for 'Build: #21' with a green progress bar at 100%. Under 'LOAD BALANCERS', there are sections for 'PROD' (US-EAST-1, EU-WEST-1) and 'TEST' (EU-WEST-1), each also showing a summary card for 'Build: #21' with a green progress bar at 100%.

Spinnaker



A promotional image for the TV show 'Stranger Things'. Four young boys, dressed in 1980s-style clothing, are riding their bicycles away from the viewer down a two-lane road. The sky is filled with dramatic, fiery orange and red clouds, suggesting either a sunrise or sunset. To the right, a lightning bolt strikes in the distance. A sign on a post reads 'WELCOME TO HAWKINS'.

WELCOME
TO
HAWKINS

Staffing

- Isn't this just squeezing more work out of developers?
- Teams must be staffed to manage deployments, production issues, and support requests.



Training

- Developers have to expand skill sets.
- Training needs dedicated focus and resources.



Commitment and Prioritization



- Managers must be willing to invest in staffing, training, and tools.
- Prioritize testing, operations automation, and support alongside feature development.

Trade-offs

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Not For Everyone



- Not for every team.
- Some developers just want to develop.
- Change is scary.

Increase in Breadth

- Additional cognitive load increases risk of burnout.
- More interruptions.
- Need to balance more priorities.



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MARVEL

DAREDEVIL



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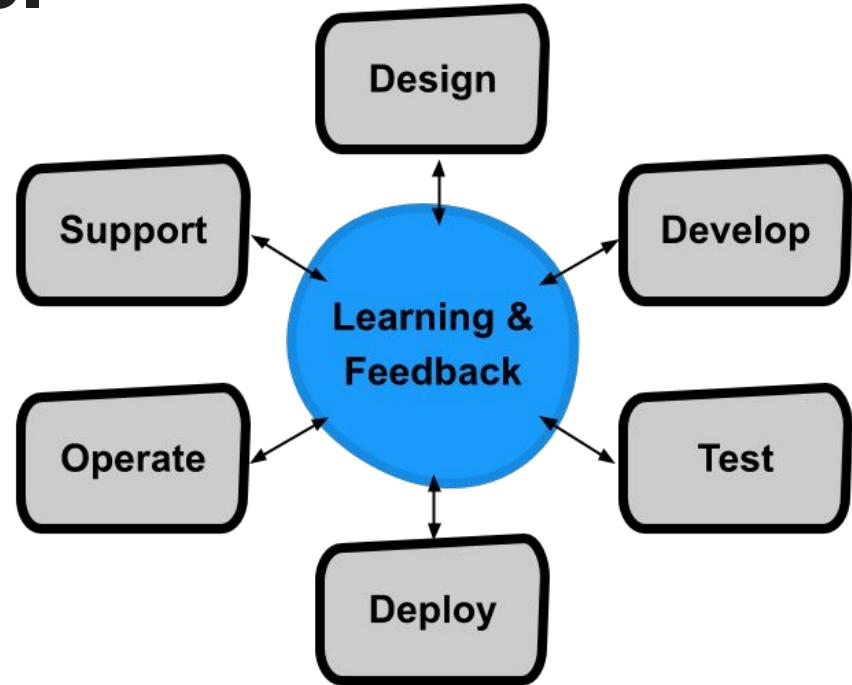
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Our Journey Continues

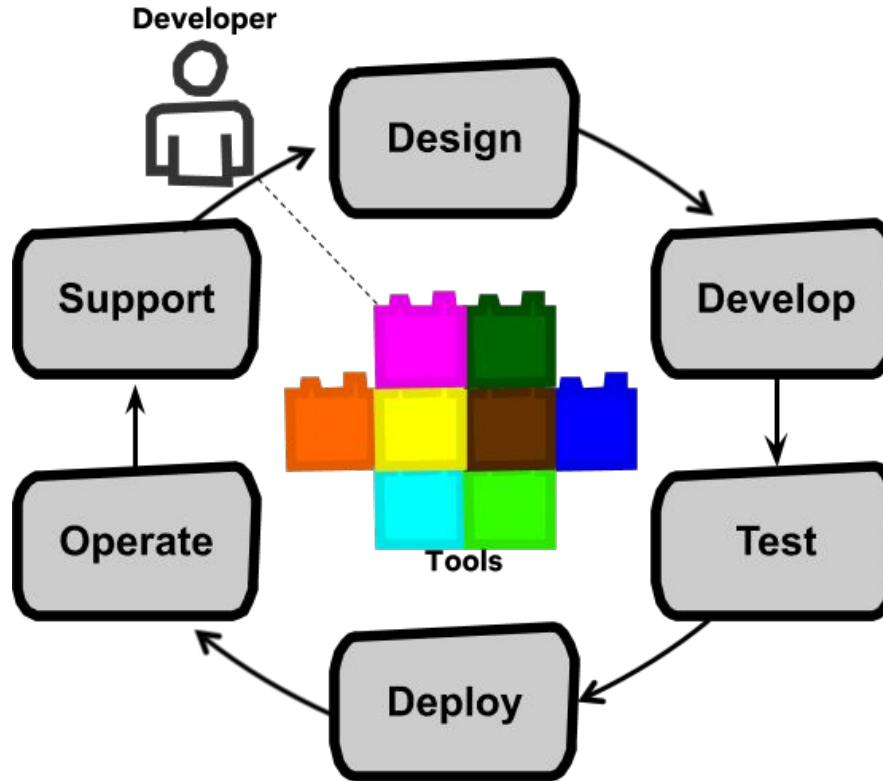


Improving on this Model

- Tooling! Tooling! Tooling!
- Metrics to measure each aspect of the software life cycle.
- Metrics to measure ourselves.



The Full Cycle Developer





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