

# Full Cycle Developers at Netflix

Greg Burrell  
QConSF 2018

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A world map composed of a dense grid of small squares. The squares are mostly grey, but several are colored red, scattered across the map. The background is black.

**#netflix** everywhere

# Who is Greg Burrell?

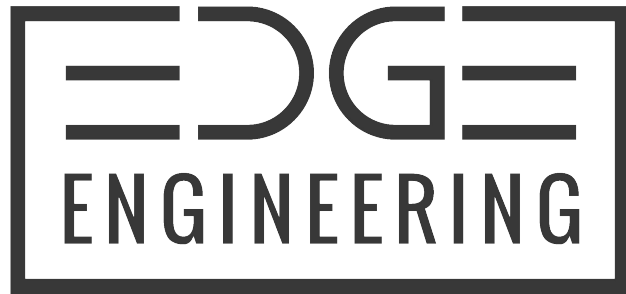


- 13 years at Netflix
- 7 years streaming on-call
- Senior Reliability Engineer (SRE) in Edge Developer Productivity Team



@gburrell\_greg

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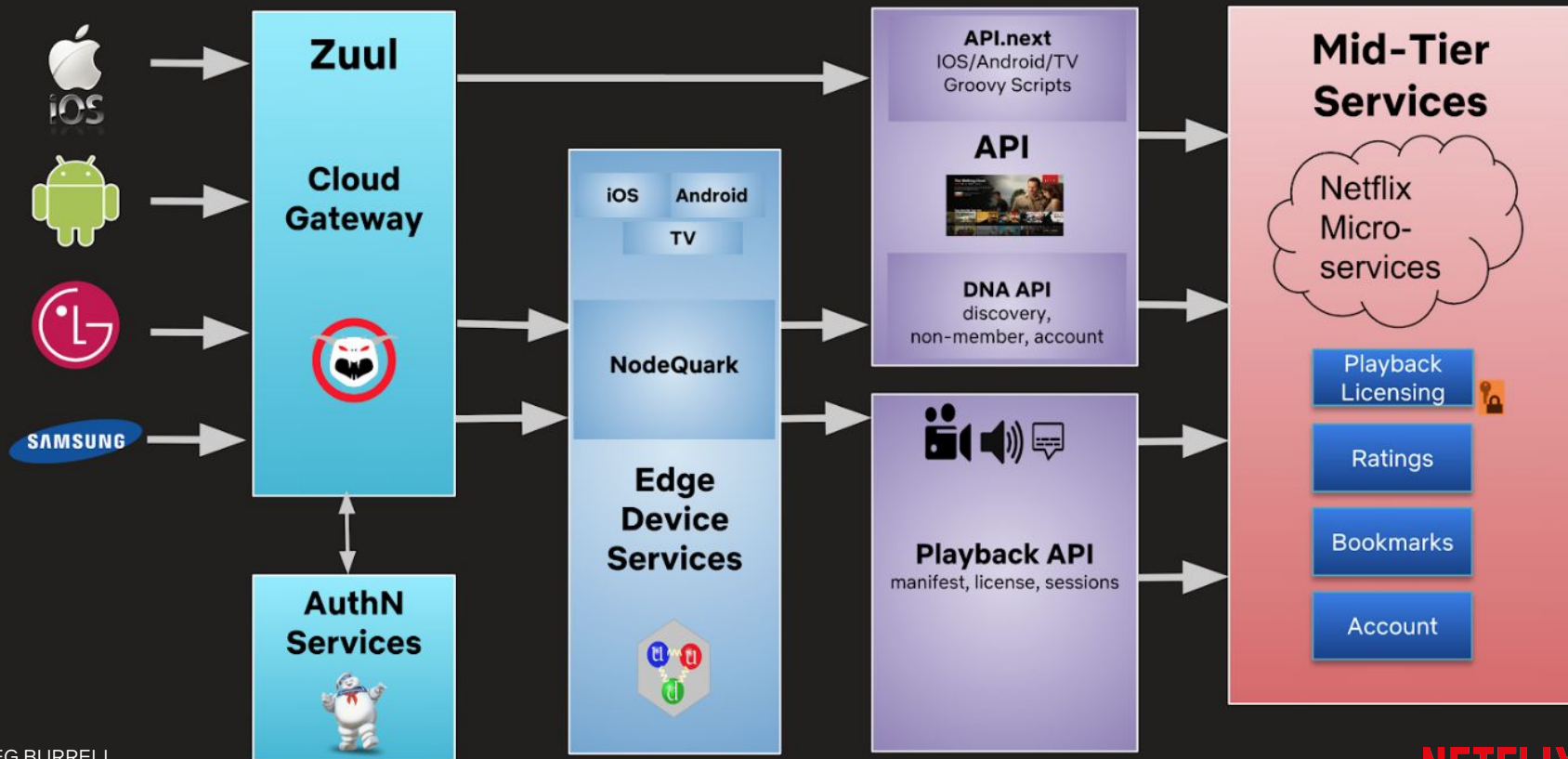


- Sign Up
- Discovery / Browse
- Playback

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# Netflix Edge Architecture



# Our Journey Begins



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## Watch Movies Instantly On Your PC

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

## Suggestions For You

Sherrybaby



Play



America: Freedom to Fascism



Play



Enron: The Smartest Guys in the Room



Play



Super Size Me



Play

[More Suggestions For You >](#)

## Your Video Quality



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

12 Monkeys



Play



Black Rain



Play

[More From Your DVD Queue >](#)

## Drama

## Action &amp; Adventure

## Independent

## Comedy

Doctor Zhivago



The World's Fastest Indian



Amadeus

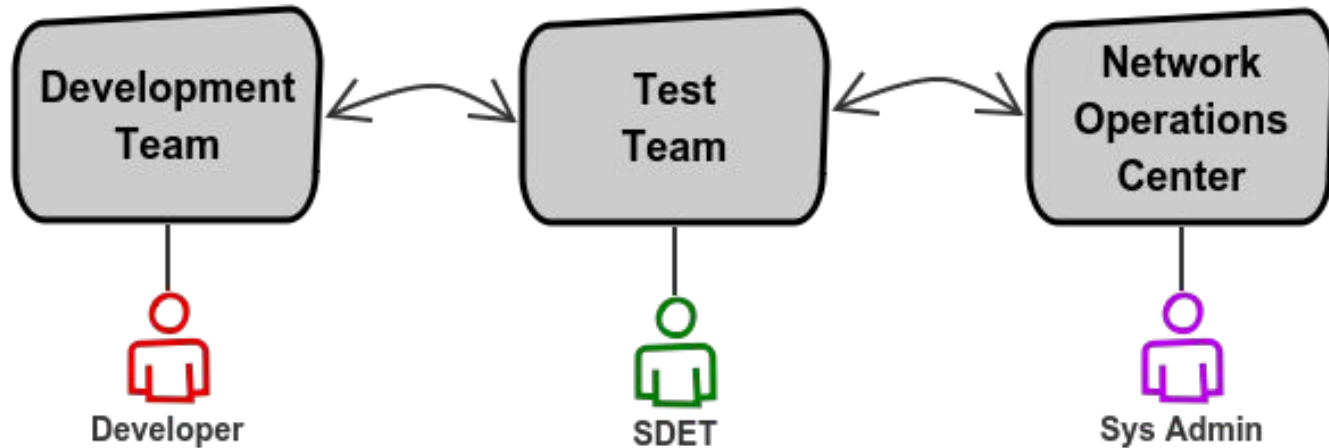


Chariots of Fire

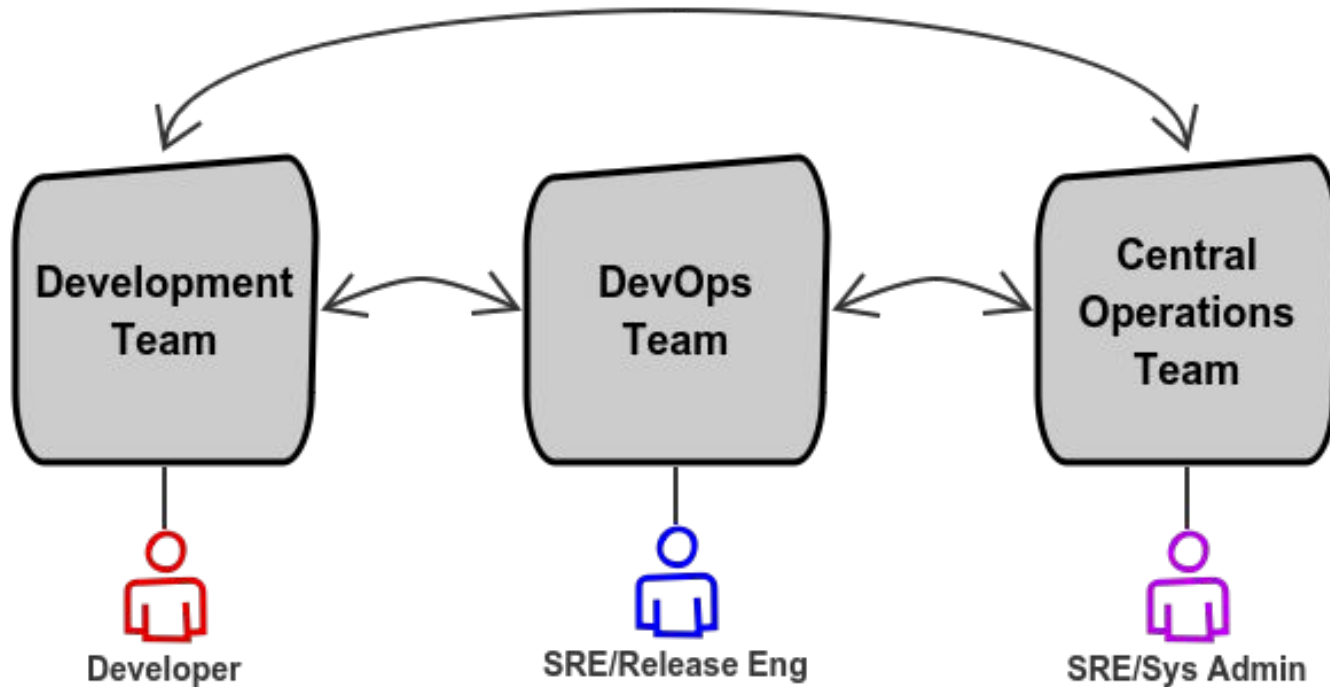




# The Specialized Teams Model



# The Hybrid Model



# Pain Points of These Models

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EMPLOYEES AND  
AUTHORIZED PERSONNEL ONLY  
LAW ENFORCEMENT OFFICIALS FOLLOW POSTED DIRECTIONS  
INMATE VISITORS USE MAIN ENTRANCE  
BE PREPARED TO SHOW IDENTIFICATION  
ALL PACKAGES ARE SUBJECT TO INSPECTION



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# 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

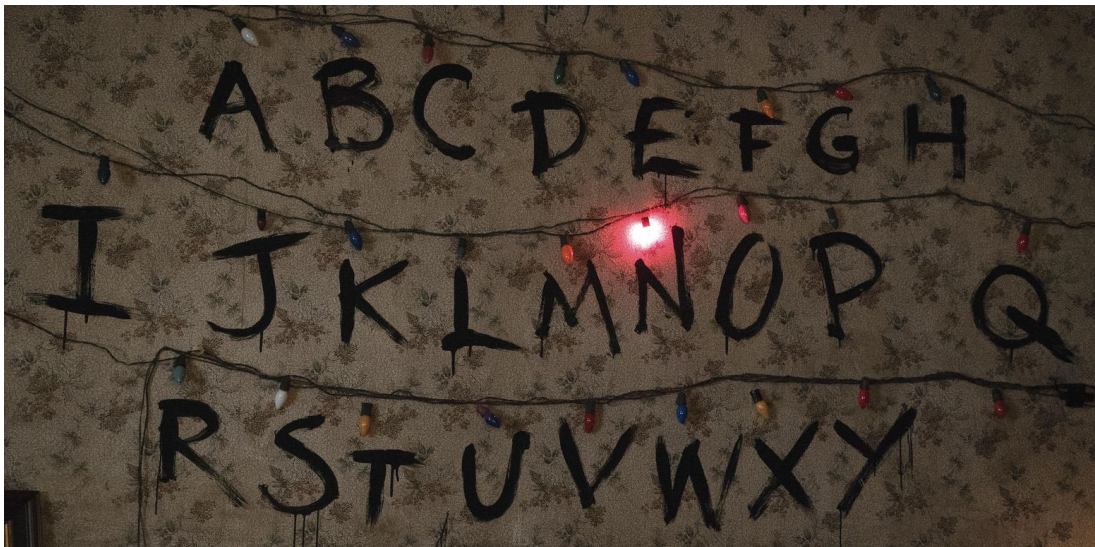
- People moved cautiously due to lack of familiarity with applications, systems, and current state.
- Fixing production was a lot of back-and-forth over the phone.

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



# Lossy Feedback Cycle

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



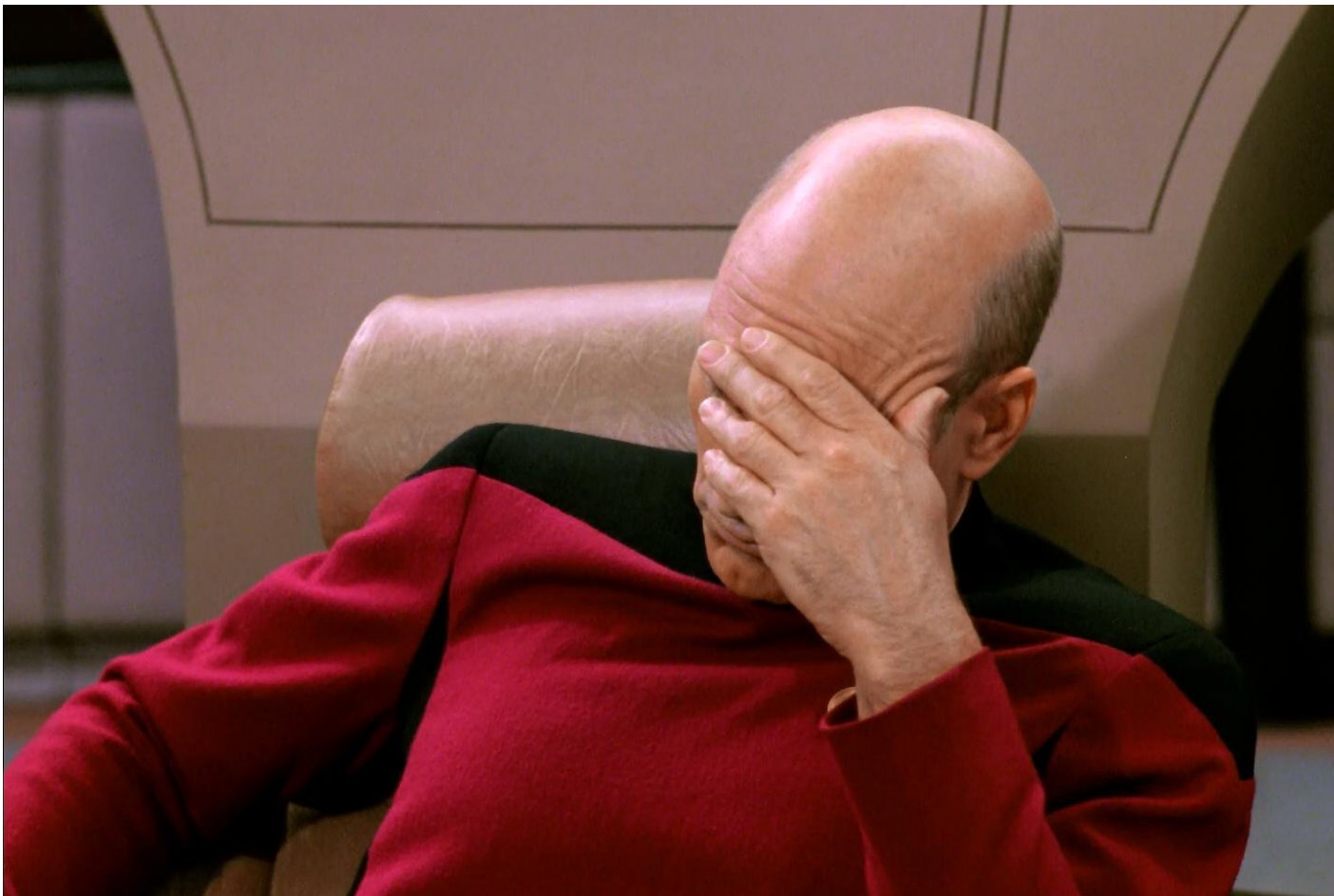
“This graph changed  
after the deployment.  
Can somebody  
Take a look?”

# 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

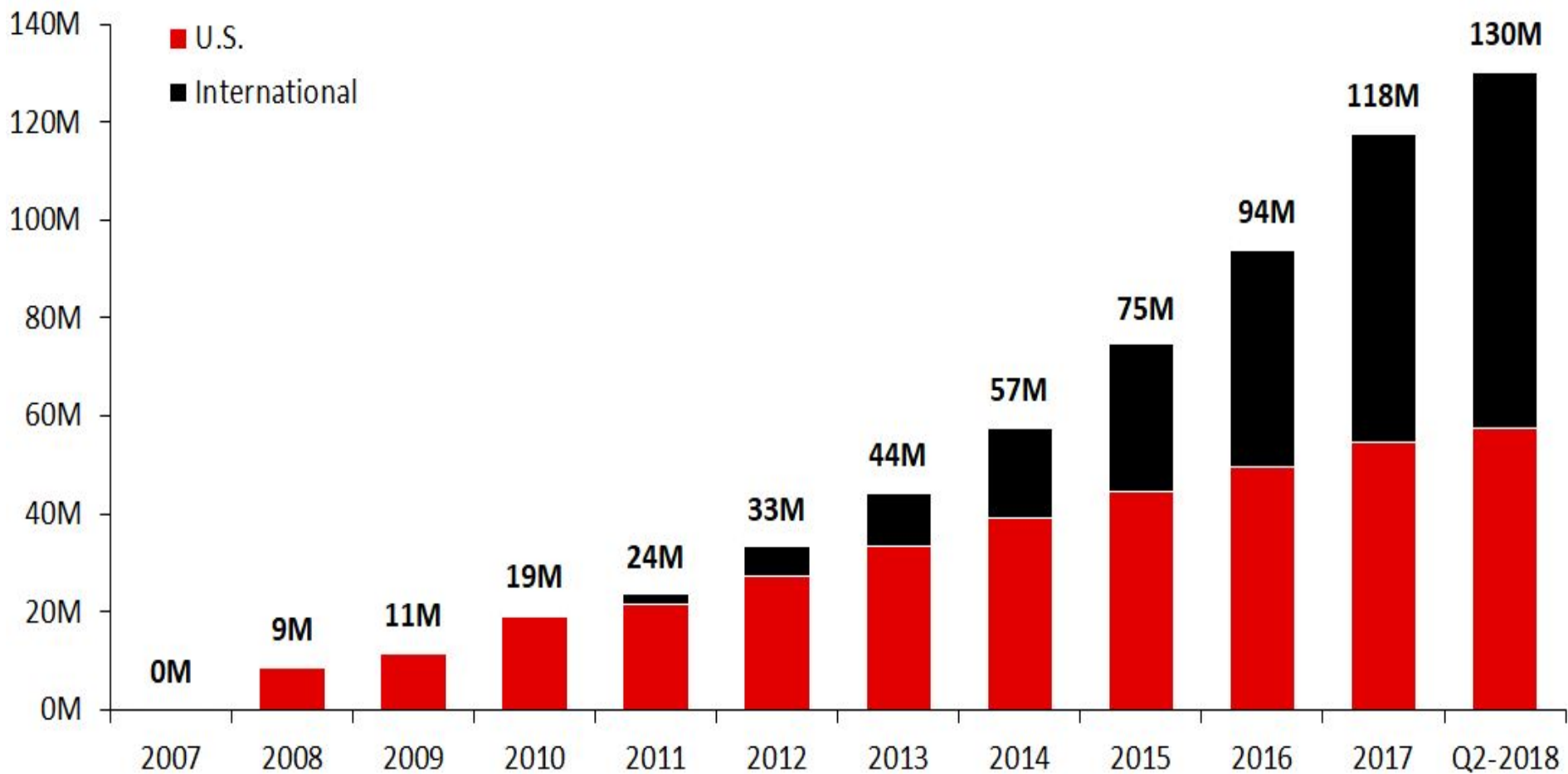
MATT MURDOCK  
SAYS HE'S  
TOTALLY FINE



18

MATT MURDOCK  
IS 100% NOT FINE





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S4:E1 "USS Callister"



1:15:47

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Episodes



Audio & Subtitles



Next episode

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# First Principles

A man in a blue polo shirt is leaning on a concrete ledge, looking out over a dense urban landscape. The view is from a high vantage point, showing a vast expanse of buildings, including many high-rise apartment complexes. The sky is overcast.

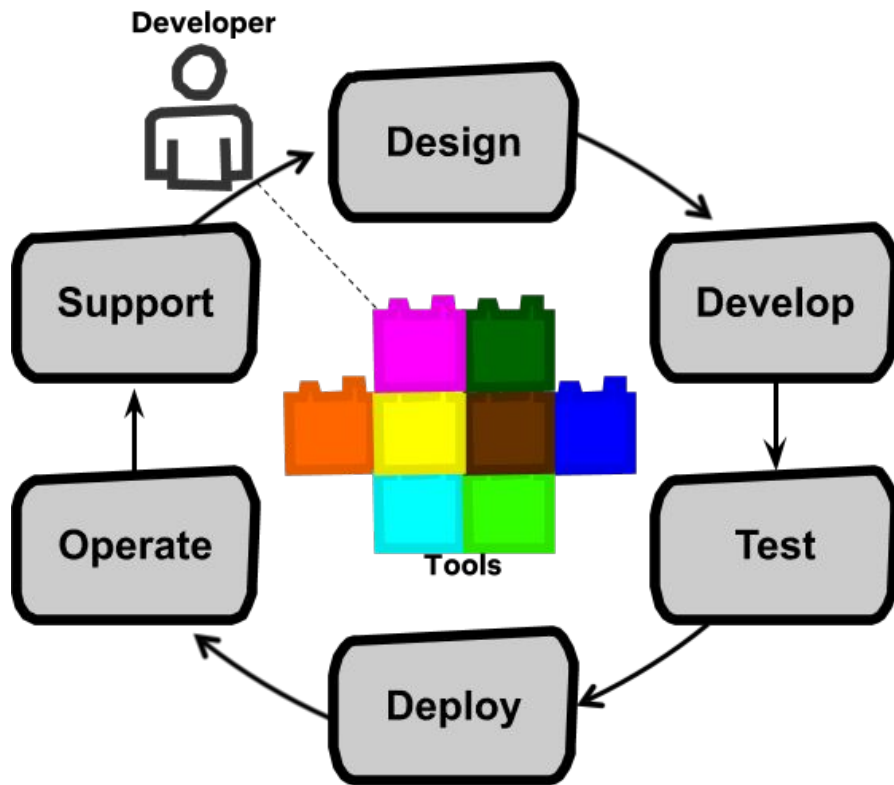
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# Operate What You Build



# The Full Cycle Developer



# What's Needed?

How do we make this work?



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# Mindset Shift

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# Good Tools are Key!





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```
1. Default
gregburrell@lqml-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
bec70beba0: Pull complete
0631d5e4e56d: Pull complete
e23cf7e63b70: Pull complete
bf9d1bb88bbd: Pull complete
484411d6138: 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 image displays several screenshots of the Spinnaker CI/CD platform interface. The top-left screenshot shows the main dashboard for the 'gregbnewservice' application, highlighting the 'PIPELINES 1' and 'INFRASTRUCTURE' sections. The top-right screenshot shows a navigation menu with options like 'DELIVERY 1', 'INFRASTRUCTURE', 'TIMELINE', 'TASKS', 'PIPELINES 1', 'CANARY CONFIGS', and 'CANARY REPORTS'. The middle-left screenshot shows a 'CLUSTERS' view for the 'gregbtest' application, displaying 'PROD' and 'TEST' environments across various regions (US-EAST-1, EU-WEST-1, US-WEST-2, EU-WEST-1) with build progress indicators. The middle-right screenshot provides a detailed view of a pipeline execution, showing a 'BUILD #1 MANUAL START' in a 'RUNNING' state and a 'BUILD #1 TRIGGERED BUILD' in a 'SUCCEEDED' state.



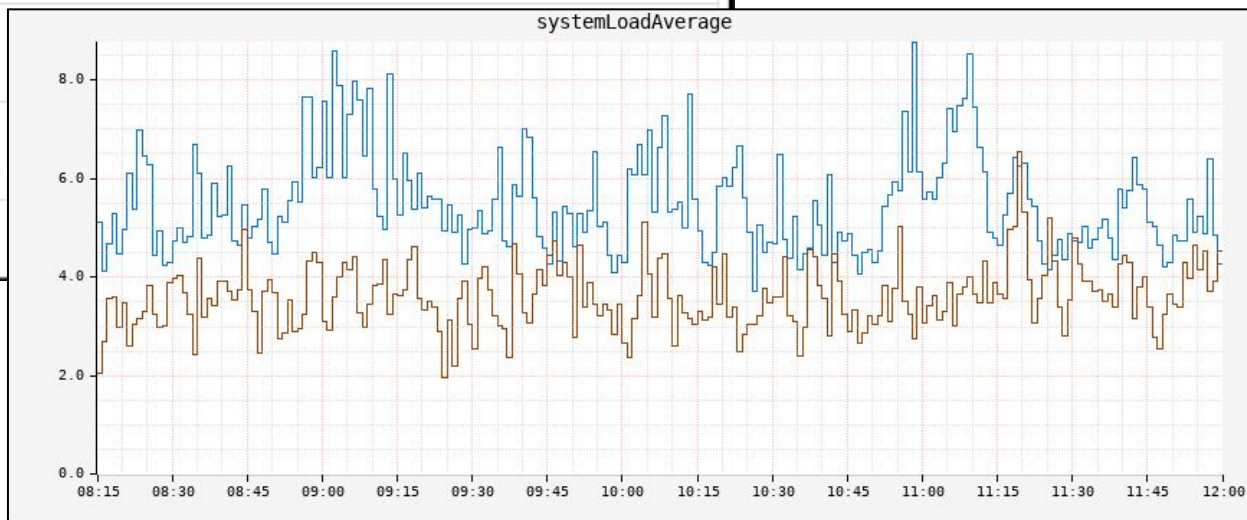
ALERT UI

Alert Groups Wizard Alert Templates Atlas UI Lumen Dashboards More Insight Sup

# Template Packs

Create Pack

- System Metrics
- Critical KPIs
- Customer Errors
- CPE\_Alerts





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



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- 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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# Our Journey Continues

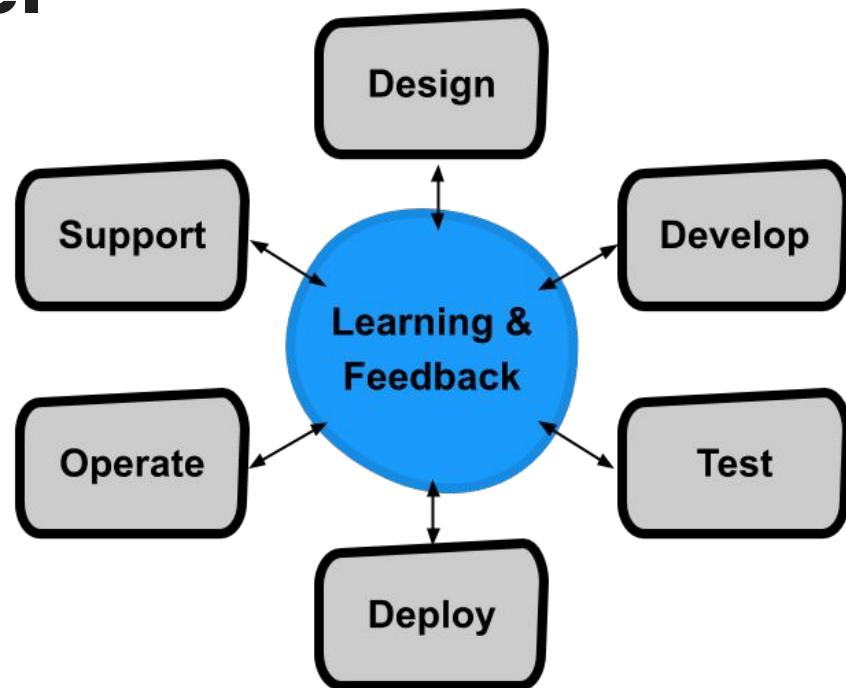


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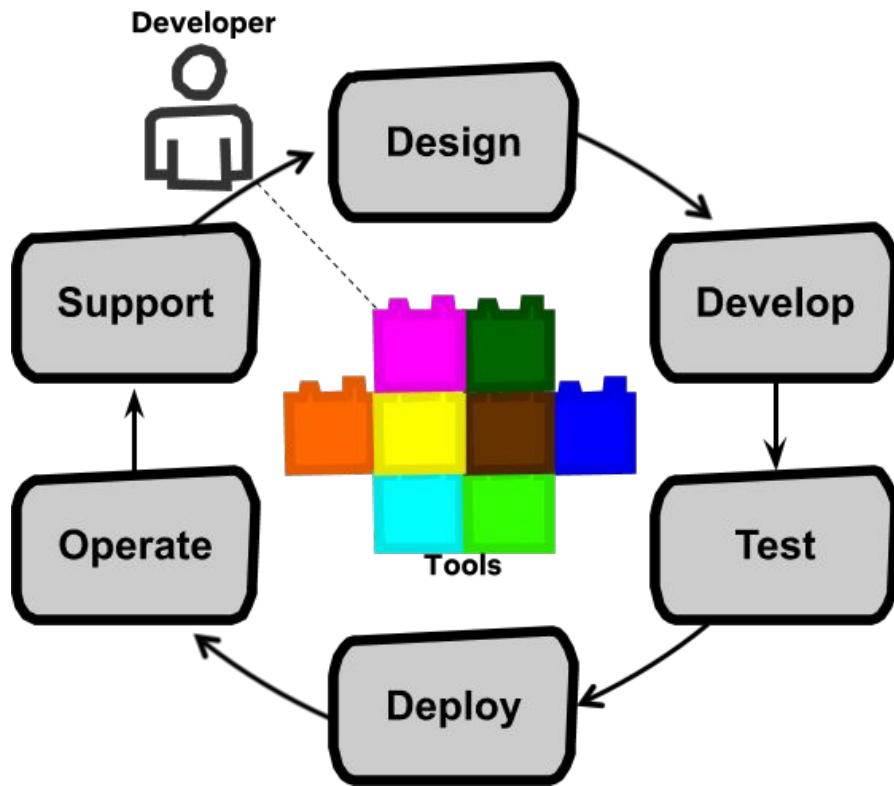
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# Improving on this Model

- 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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