



# Performance Engineering in Agile and Devops

**Gopal Brugalette**  
**Performance Architect**  
**SoFi**



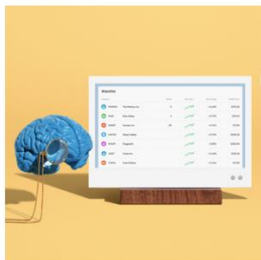
Student Loan Refi



Personal Loans



Undergrad Loans



SoFi Invest



Home Loans



SoFi Money®



**\$30 billion** in funded loans  
**700,000** members and counting  
**98%** would recommend SoFi to a friend



# Gopal Brugalette Performance Architect





# Performance Engineering in Waterfall

Design



Build



Test



Perf Test



Deploy

OR

Design



Build



Test



Deploy



Perf Test



# Performance testing challenges

## Environment

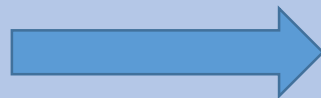
- Build/Maintain
- Deployment
- Dependencies
- External systems
- Matching Production
- Support

## Data

- Complex Models
- Volumes
- New Data
- PII/PCI

## Scripting

- What changed?
- Old scripts break
- New scripts needed
- Coverage %



Time

Reliability

# Perf as Non-Functional Requirement

Does not work

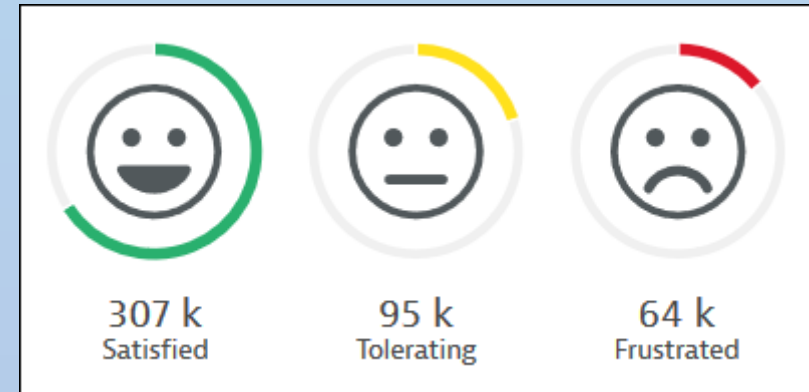
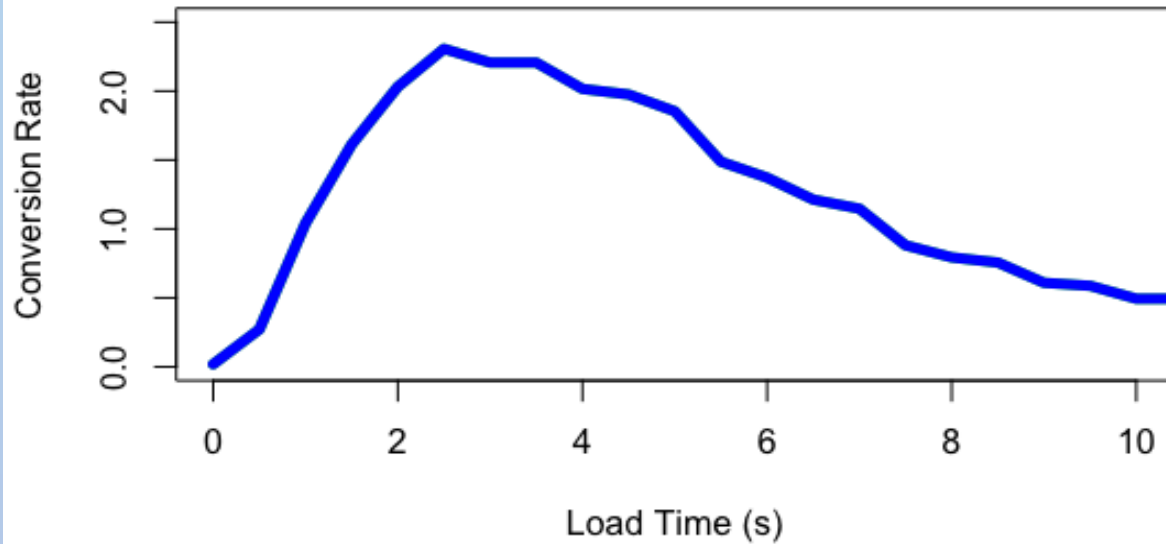
Nobody works on it

(Ignoring) doesn't work for Customer



# Performance as a Feature

Conversions Rates vs Load Times





The background of the entire image is a close-up, top-down view of numerous US coins scattered across a light-colored surface. The coins include pennies, nickels, dimes, quarters, and half-dollars, showing various designs and inscriptions like 'LIBERTY', 'IN GOD WE TRUST', and 'UNITED STATES OF AMERICA'.

# Responsibility for Performance

QA

Dev(ops)

Performance  
Engineers

(Dev)Ops

Product  
Management

Marketing/Sales



Performance early, often, everywhere

Business  
Drivers

Design

Build

Test

Prod

# Business & Marketing



Growth projections

New product launches

Marketing Campaigns

Advertising

Tie-ins and Cross Promotions

Customer Experience



# Planning and Requirements

SLA's, SLO's

User Flows, Customer Journey

Workloads

Observability

Scripting Needs



# Performance in Agile Process

Create Performance Stories & Tasks

Add a Definition of Done

Evaluate each story for performance impacts

Create/update scripts

Update the workload model

Identify/create/load data

Identify metrics

Create Monitoring dashboards/alerts



# Design

Scalability

Performance

Testability

Observability

Resiliency



# Build

## Observability

- Enumerate
- Log useful info
- Don't log useless info
- Traceability

## Resiliency

- Timeouts
- Retries
- Handle failures





# CI/CD

A person is sitting at a desk, typing on a laptop. There is a white coffee cup on the desk. The background is a window with white curtains. The image is overlaid with a blue semi-transparent layer containing text boxes.

Shift left, test Early

Quick Tests

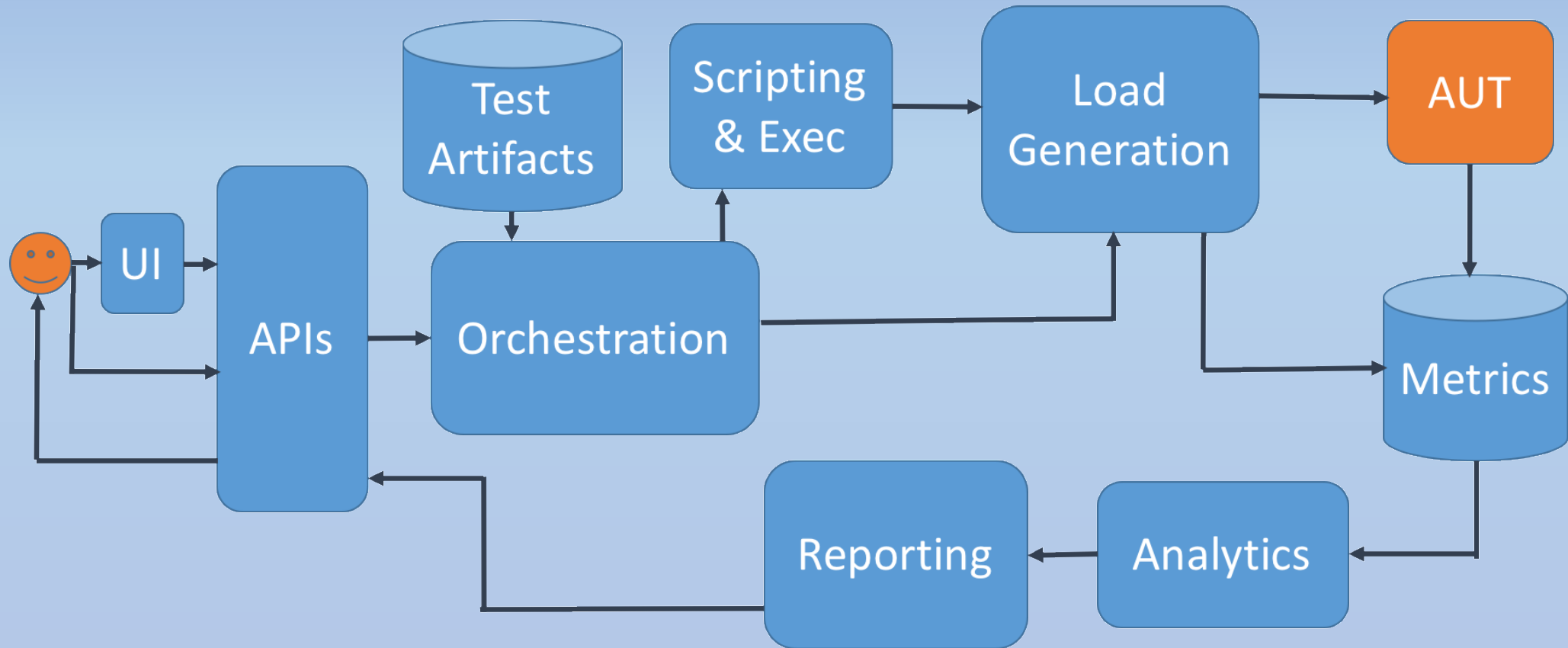
Baselines response times

Counts (Service calls, DB calls)

Catch big issues here

Catch small issues later

# Build a framework



Make it easy to script, execute, monitor and analyze



# Lab Load/Stress Testing

Growth

Endurance &  
Stability

Full Analysis

Major  
Architectural  
Changes

Unique Peak  
Events

# Test in Production

## A/B

- Run multiple versions
- Compare performance & behavior
- Informed decisions

## Canary

- Soft Launch
- Ramp Up
- Monitor

## Synthetic Load

- Full Scale Testing
- Better you than them
- Enable testability

## RUM

- Browser-based
- Real data
- All combinations & flows





# Monitoring



Customer Experience

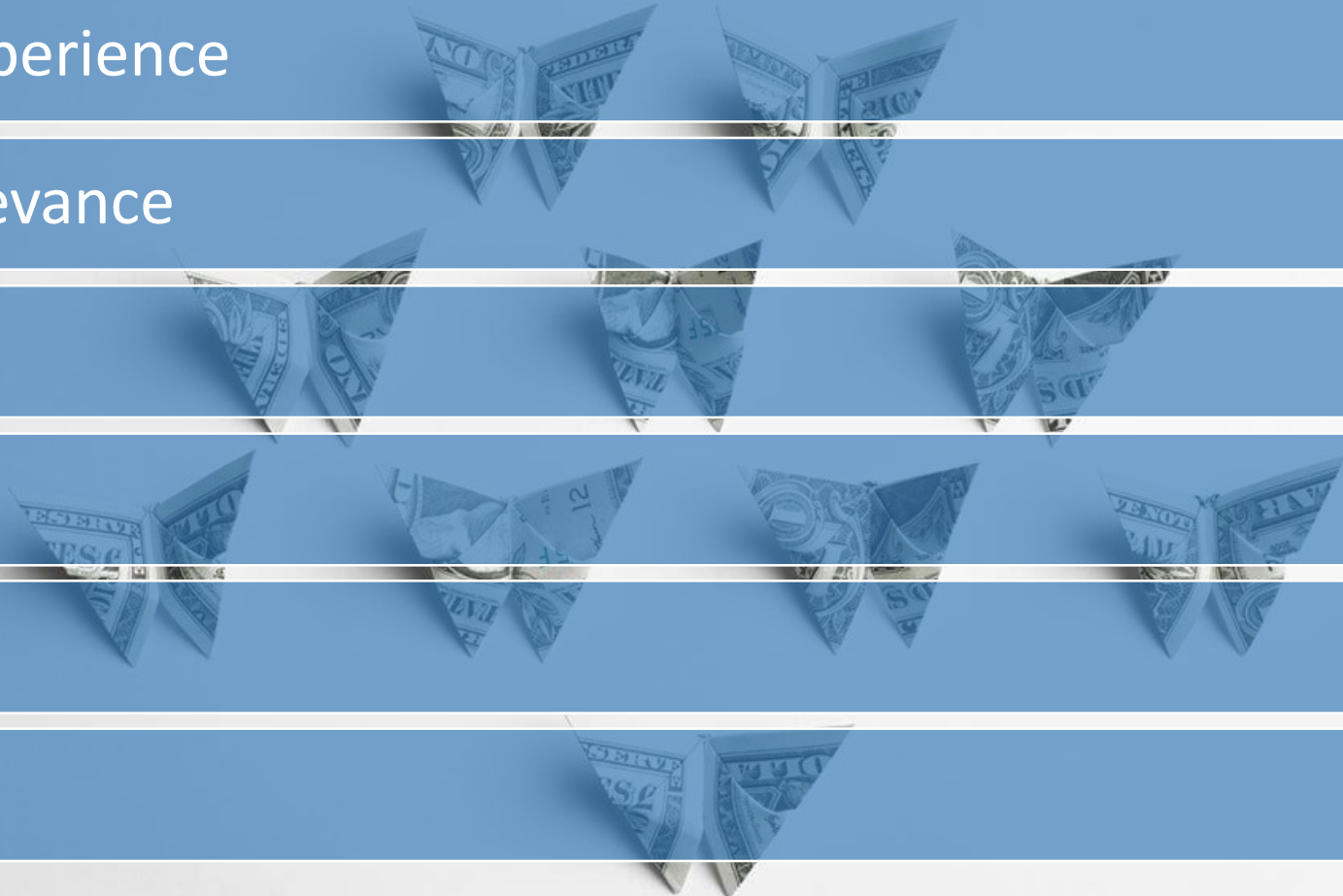
Business Relevance

Metrics

Dashboards

Alerts

Use ML



# Agile Performance Engineering

Individuals and interactions over  
process and tools



# When Scrum?

Strongly Aligned with dev

Predictable, planned work

Team that needs structure

Inexperience with managing work, agile

Company in transition/transformation stage

Keep sprints short

Consider value of activities

# Kanban for Performance

Unpredictable  
workload

Fluctuating  
priorities

Similar work  
across  
engagements

Use two levels  
(Epic/Story)

Make stories  
small

Keep  
workflow  
simple

Manage  
backlog

Manage WIP



# Swarming & Mobbing



Combine and conquer

Share expertise and knowledge

A working session – not status or a standup

Focus on one task

Expanded skillsets and backgrounds

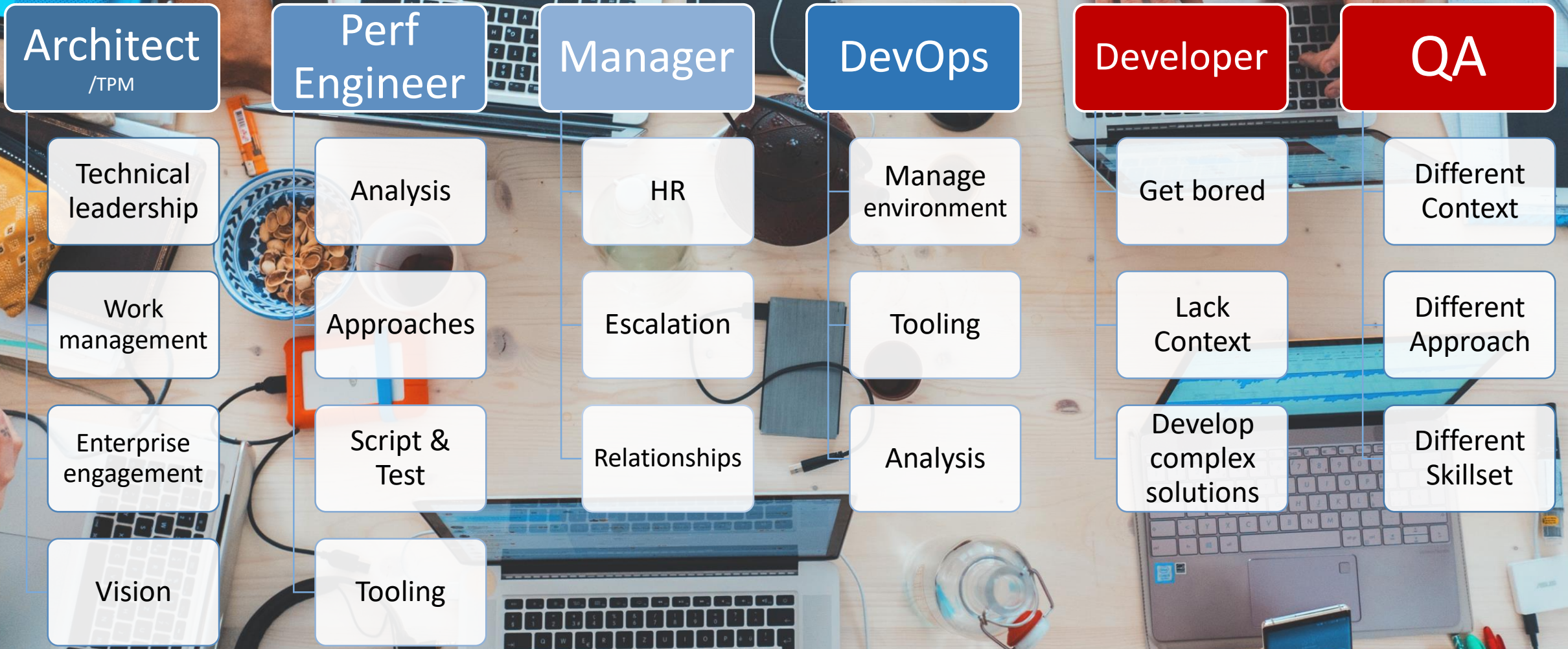
Builds team

Engage everyone

Manage your WIP



# Build a DevOps Team





# Prioritized Responsibilities



Features

Functional  
Correctness

Release  
Dates

Architecture

Security

Privacy

Outages

Performance

Availability

Resiliency





Win hearts and minds

Educate

Enable

Influence

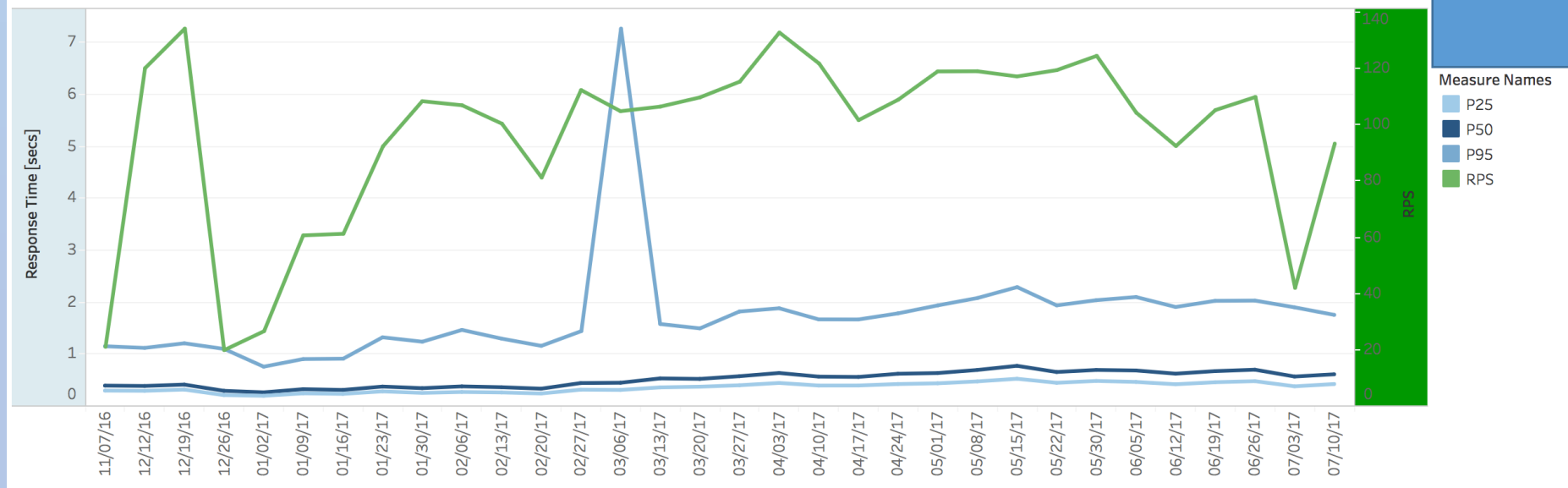


# Keep Score

- Share Interesting Metrics
- Track the P1's, P2's and P3's.
- Focus on Process Not People

Category	Issue Count	%
Configuration	2	3%
Deployment	4	5%
Feature Code	1	1%
Maintenance	1	1%
Operational	66	89%
<b>Total</b>	<b>74</b>	

Endpoint Performance Trending



# Target the right teams

Business Critical Functionality

Large Volume transactions

Architecturally Critical Components

High risk technical changes

New Technology





Get the party started



## Kickstart

- Write Scripts
- Run Tests
- Analyze reports

## Train

- Testing Tools
- APM tools
- Analysis



## Handoff







# Whitepapers and Case Studies

Tell a  
story

Make it  
relevant

Technical  
Solutions

Business  
Outcomes

Customer  
Impact

Successes

Failures



# Performance is a Feature

Business Drivers

Design

Build

Test

Prod

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Or LinkedIn