Critical Path Analysis

Prioritizing what matters

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Introduction

- Grab was growing really fast!

- Needed something light-weight to force good design
A subset of services that ensure the main parts of our application are running

Is it possible? What’s our main part?
Critical Path Definition

Any impact on our systems that impacts the ability of a passenger to get a car to get safely from Point A to Point B.
Critical Path Definition Trade-Offs

Any impact on our systems that impacts the ability of a passenger to get a car to get safely from Point A to Point B.

● Fares
● Cashless Payments
● Promotions
● Safety
Validating the Critical Path

- Tests on staging environment
- Very simplistic tests
Validating the Critical Path in Prod

- Confidence can only be obtained by validating in production

- Get executive approval to run these tests

- Communicate in advance to all of the local teams about the tests
Validating the Critical Path in Prod

- Tested 50+ services over 8 hours across 2 nights
Fixing a service that didn’t conform

Graceful Degradation

- Involve product teams early on in the decision making

- Use Circuit Breakers to fail fast
  - Golang - [https://github.com/afex/hystrix-go](https://github.com/afex/hystrix-go)
  - Ruby - [https://github.com/orgsync/stoplight](https://github.com/orgsync/stoplight)
Graceful Degradation - Caching

- Cache for
  - Geofences
  - City Details
  - Country Details
  - Vehicle Type Metadata
Graceful Degradation - Caching

- Frequently/Recently Used POIs
- Active Vehicle Types
Graceful Degradation - Fallbacks

● Multiple Routing Providers

● Falling back to straight line distance
Graceful Degradation - Retries & Queues

- Enqueue the job if it fails
- Retry it when the dependant service is back up
- Commission deductions on booking completion
- Allocation of Reward Points
Graceful Degradation - It’s OK to fail

- Rating a driver
- ETA
Additional benefits

- Critical Services weren’t the only ones to benefit
- Queues for Deployment Pipelines
- Highlighting Recent Changes
- Architectural changes for critical services
What would we have differently?

- Naming
- Only Two Tiers
- Build the automation earlier
- Keeping track of new services
- Working closely with mobile developers
What can you take away from this?

1) Make sure you define your critical path ensuring you are working with your business / product teams.

2) Ensure that you test your assumptions on a regular cadence.

3) Every 6 months or so re-evaluate your definition to make sure it aligns with your business goals.
Thank You!

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