


# Experiments for SRE



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SRECon'21

**What** are experiments?

# Ideation, Trial, Launch

## Ideation

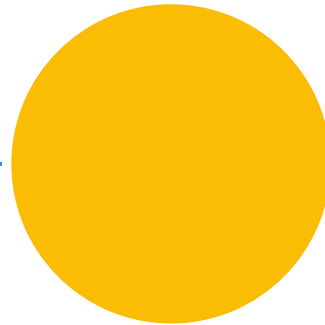
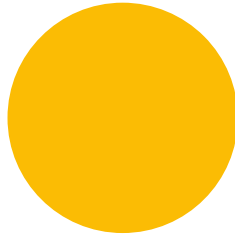
Will my new feature increase app usage?

## Trial

New feature rolled out to 10% of the population.

## Launch

New feature saw increased app usage :)



# Ideation, Trial, ~~Launch~~

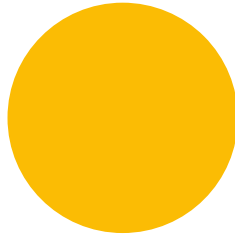
## Ideation

Is the new feature **reliable**?



## Trial

New feature rolled out to 10% of the population.



## ~~Launch~~

New feature saw increased crashes :(



**How** can SRE use experiments?

# SRE best practices

## Gradual Rollouts

Ramp **experimental** features

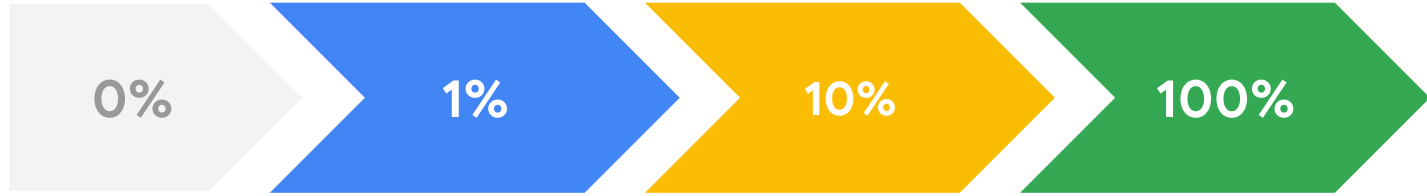
## Change Attribution

Find changes associated with **experiments**.

## Controlled Mitigation

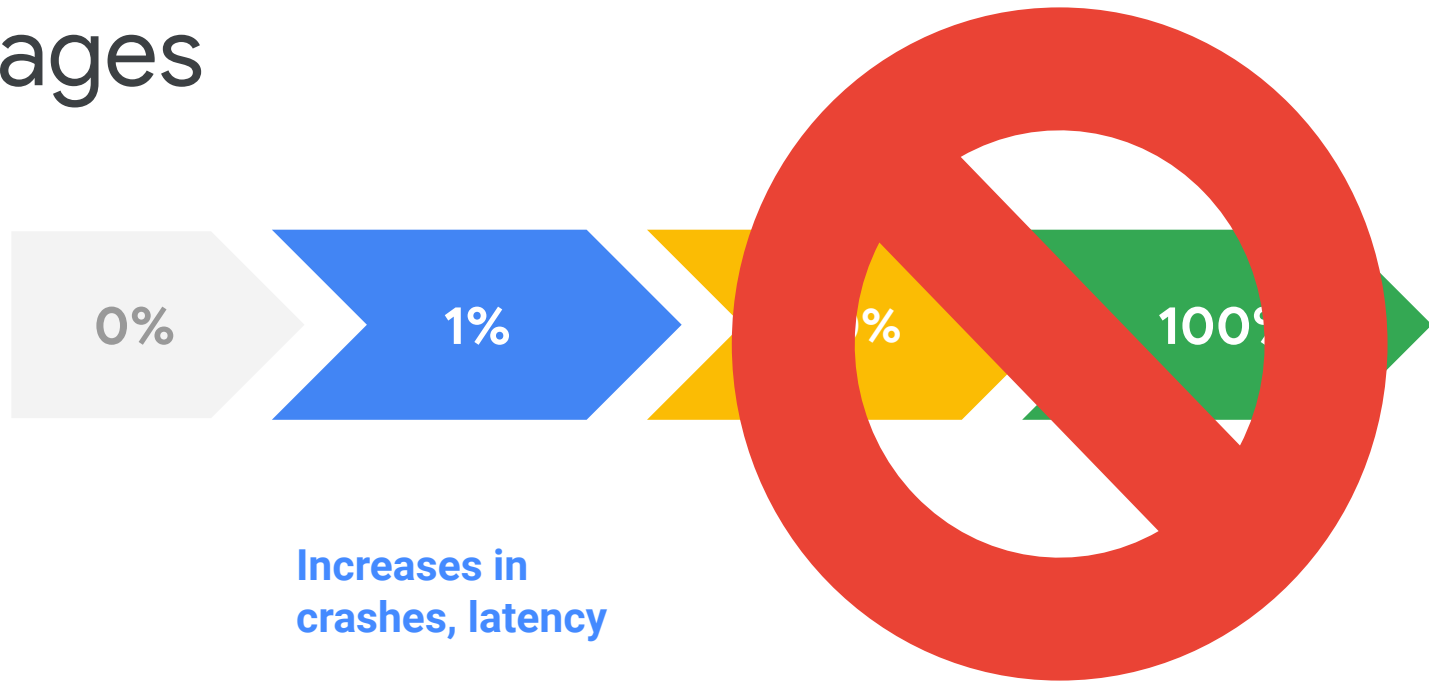
Rollback **experiments** guarding new code paths

# Reduce the impact of outages



**Increases in  
crashes, latency**

# Reduce the impact of outages





# Root cause outages

- Experiment guarded features launched to production
- Experiment ID associated with unhealthy metrics

# Mitigate outages



**Increases in  
crashes, latency**

**"Rolling back the feature flag is as simple as ramping the launch back down to 0%, instead of rebuilding an entire binary with the fix to release to the world."**

- *Engineering Reliable Mobile Applications*



# Enforcing reliability with experiments

# Reliable production changes

- Ramp changes in **stages**
- Ramp up only if the experiment is **healthy**
- Transition experiment change to **permanent change**

# Engineer reliability into experiments

- Automate checks at every ramp stage
- Encode best practices into "policies"



# Experiments for SRE *tomorrow*

# Experiments as change management

- Enhance monitoring to improve **outage attribution**
- Develop more policies to **automate away decisions**
- Experiments as **part of the canonical production change management system**



# Experiment infrastructure changes for *mitigation*

- Experiment signal **speed**?
- Reduce experiment **learning curve**

Thank You