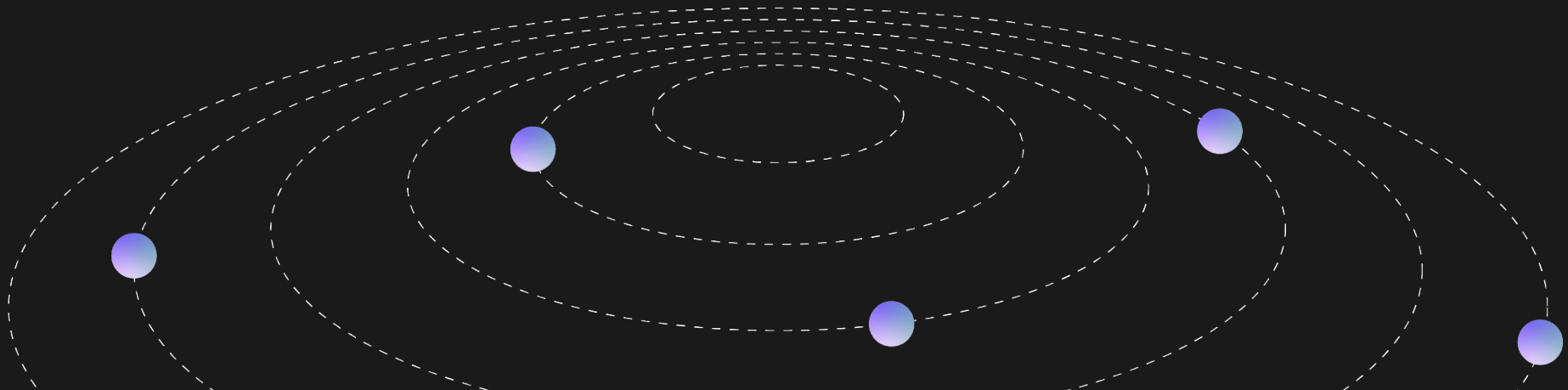
CloudBees

Future of CI/CD

Testing.next

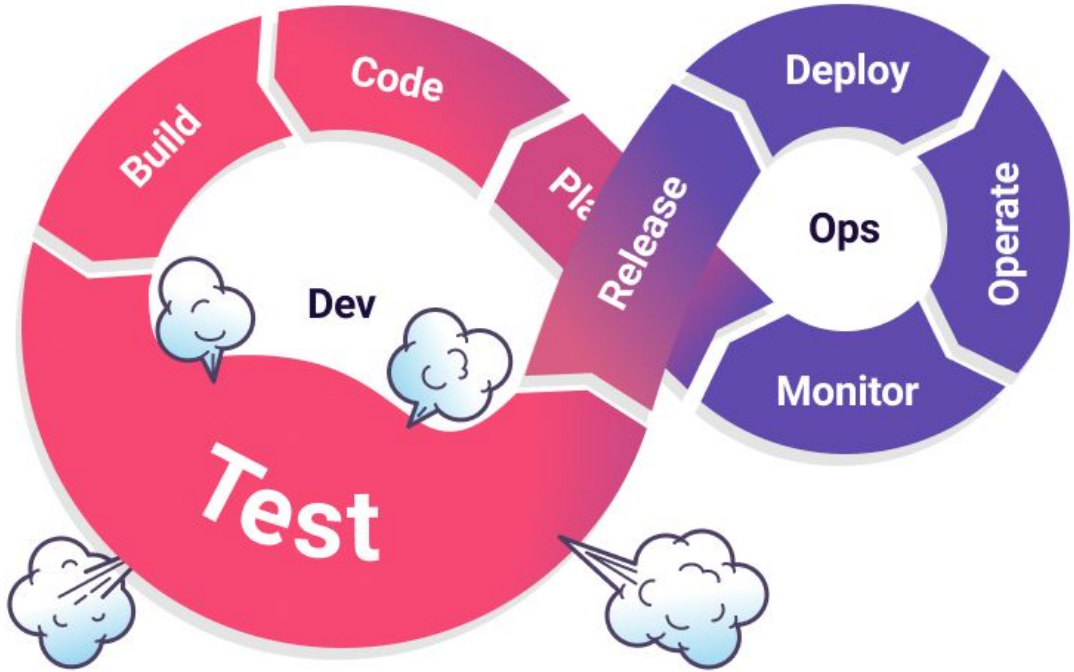


Low code / no code testing

Test generation

TDD + AI

Static code analysis + AI


Build
Code
Dev
Test
Release
Deploy
Ops
Operate
Monitor

Spread testing everywhere

Testing is in architecture

I DON'T ALWAYS TEST MY CODE
BUT WHEN I DO, I DO IT IN PRODUCTION
quickmeme.com

HALAR
2 AIM
APUNTAR
3 SQUEEZE
PRESSER
OPRIMIR
4 SWEEP
BALAYER
BARRER
STRIKE
FIRST

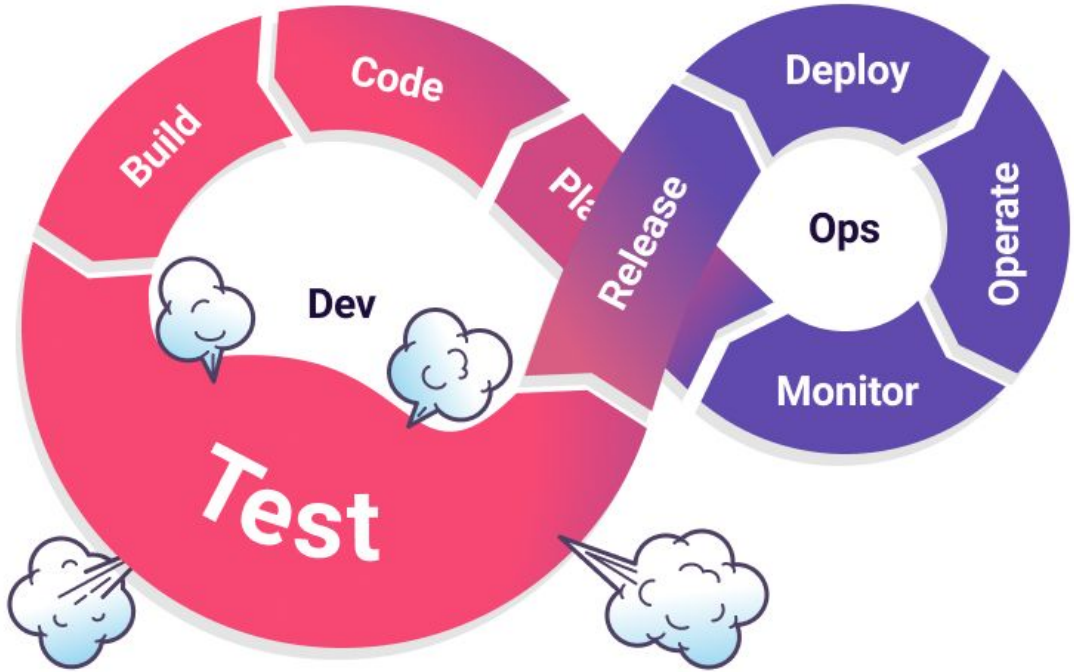
Eliminate risk → manage risk

Quality

↑

Testing

ASIA
AFRICA
North
Atlantic
Ocean
SOUTH
Indian
Ocean
AUSTRALIA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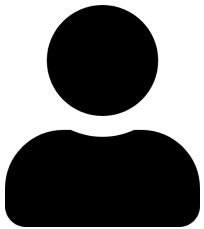
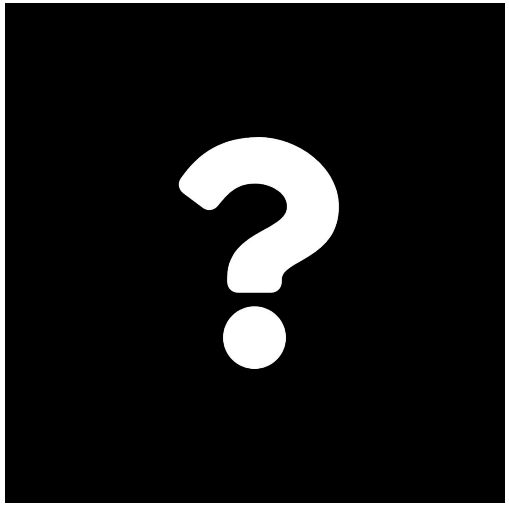
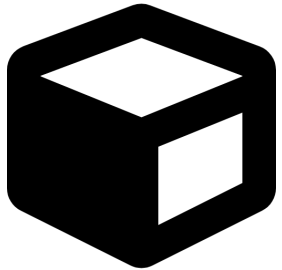


dev





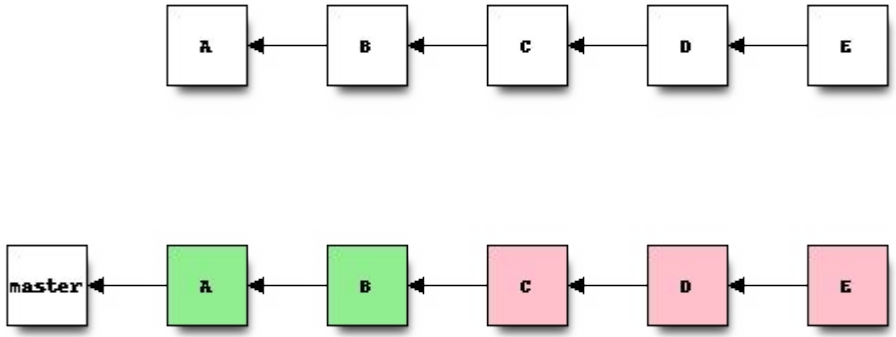
Sharding / parallelization

- Problem
  - Tests take too long to run
- Run tests in parallel to reduce turn-around time
  - Static → Adaptive
  - Amdahl's law
  - $$$

PARING KNIFE

Merge queue

- Problem
  - Pre-merge testing is adding too much workload & slowing things down
- Intelligently merge incoming changes

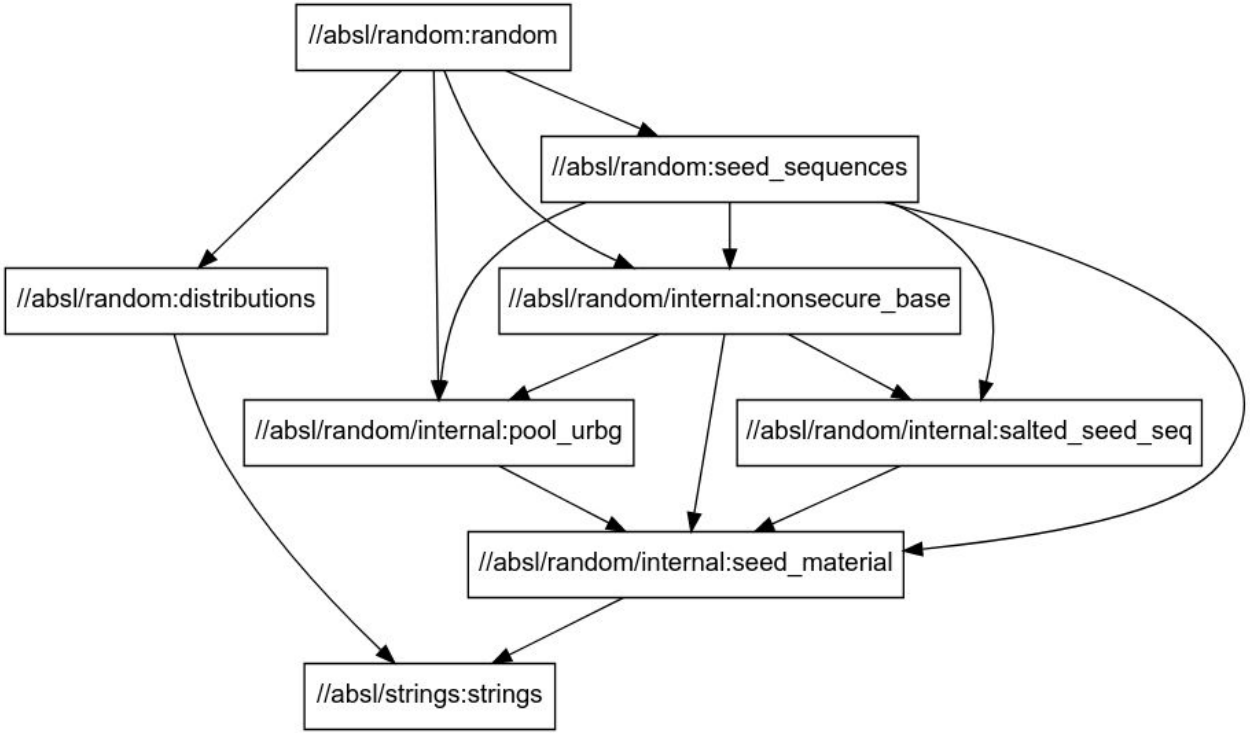


Matrix sparsening

O(MN) → O(M+N)

$$\begin{bmatrix} X & X & X & \cdot & \cdot & \cdot & \cdot \\ X & X & \cdot & X & X & \cdot & \cdot \\ X & \cdot & X & \cdot & X & \cdot & \cdot \\ \cdot & X & \cdot & X & \cdot & X & \cdot \\ \cdot & X & X & \cdot & X & X & X \\ \cdot & \cdot & \cdot & X & X & X & \cdot \\ \cdot & \cdot & \cdot & \cdot & X & \cdot & X \end{bmatrix}$$

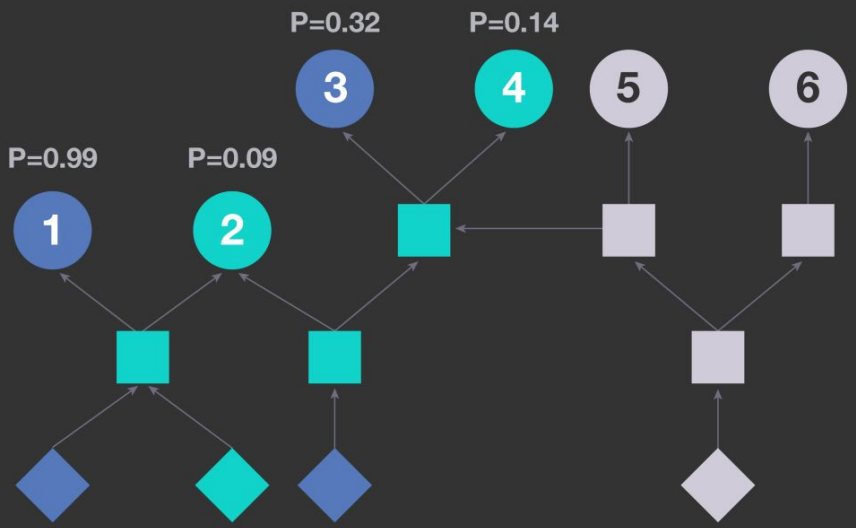
Incremental building & testing



Intelligent test selection

- Known failing tests
- Flaky tests
- Impact analysis
- Smoke tests
- Adaptive rotation

Predictive test selection

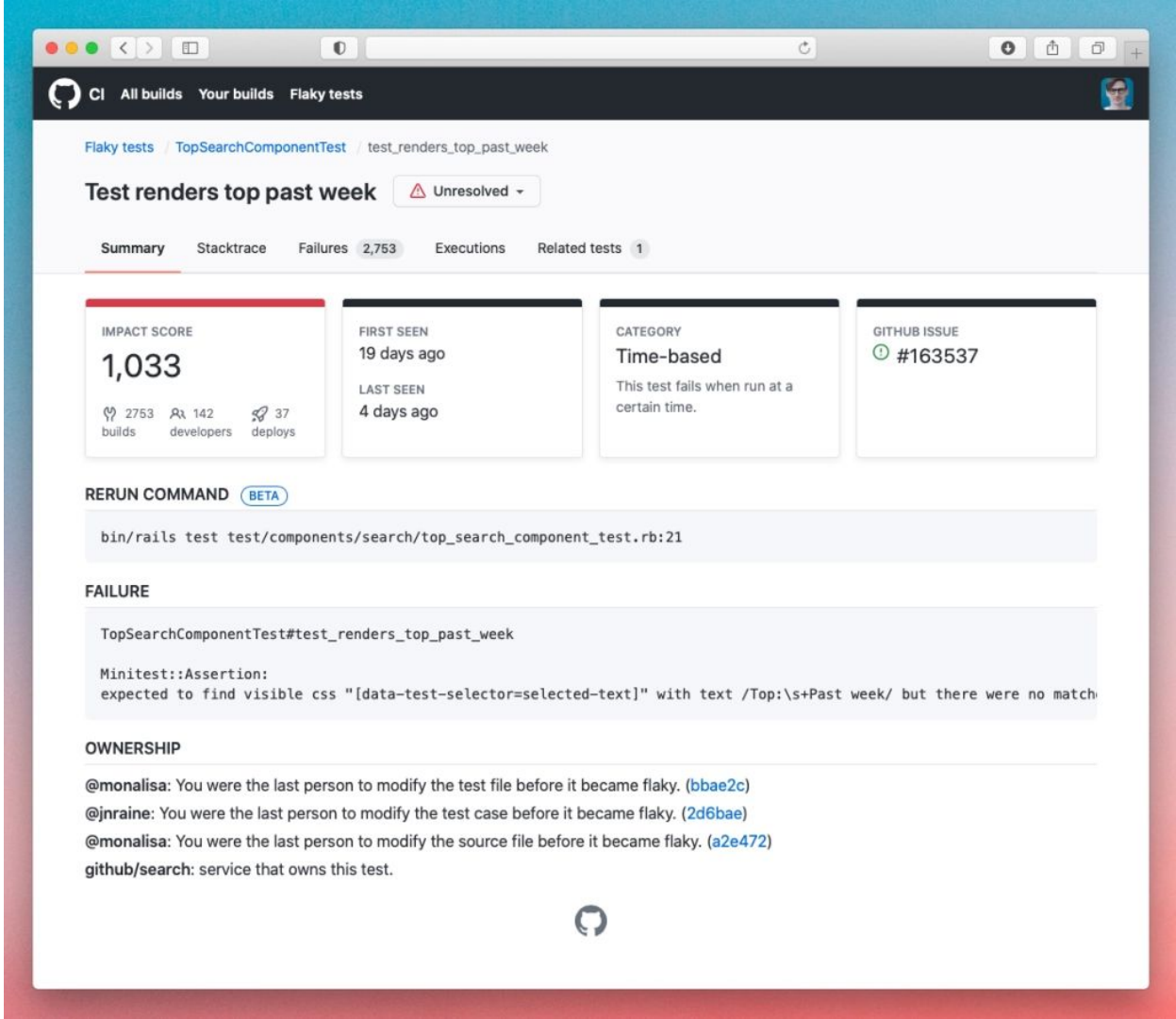


Triaging with AI

Observability in testing

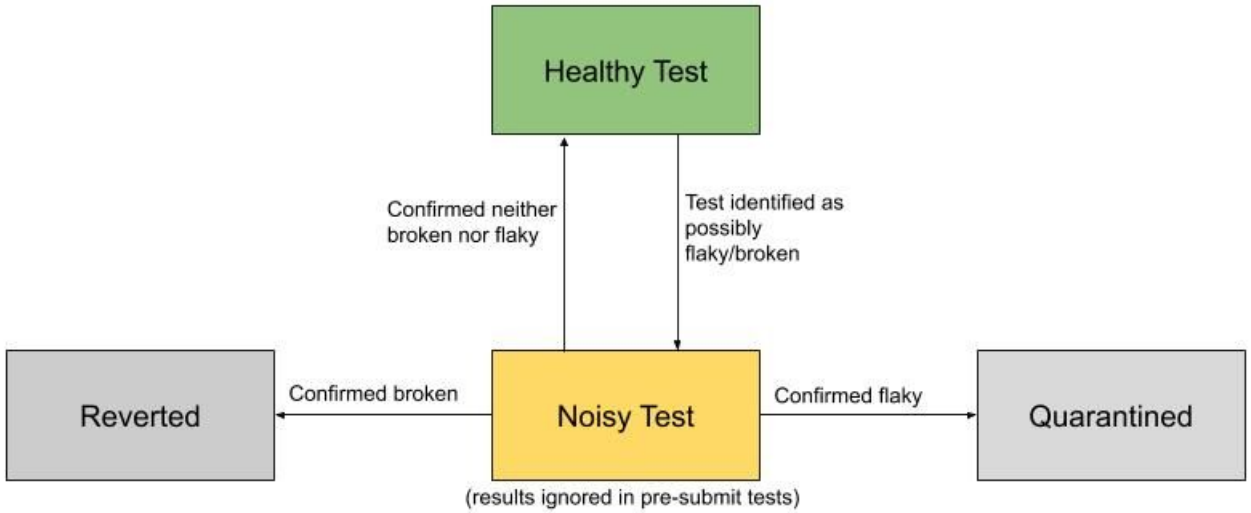
AI assisted analysis

Escalating flakiness



Escalating flakiness

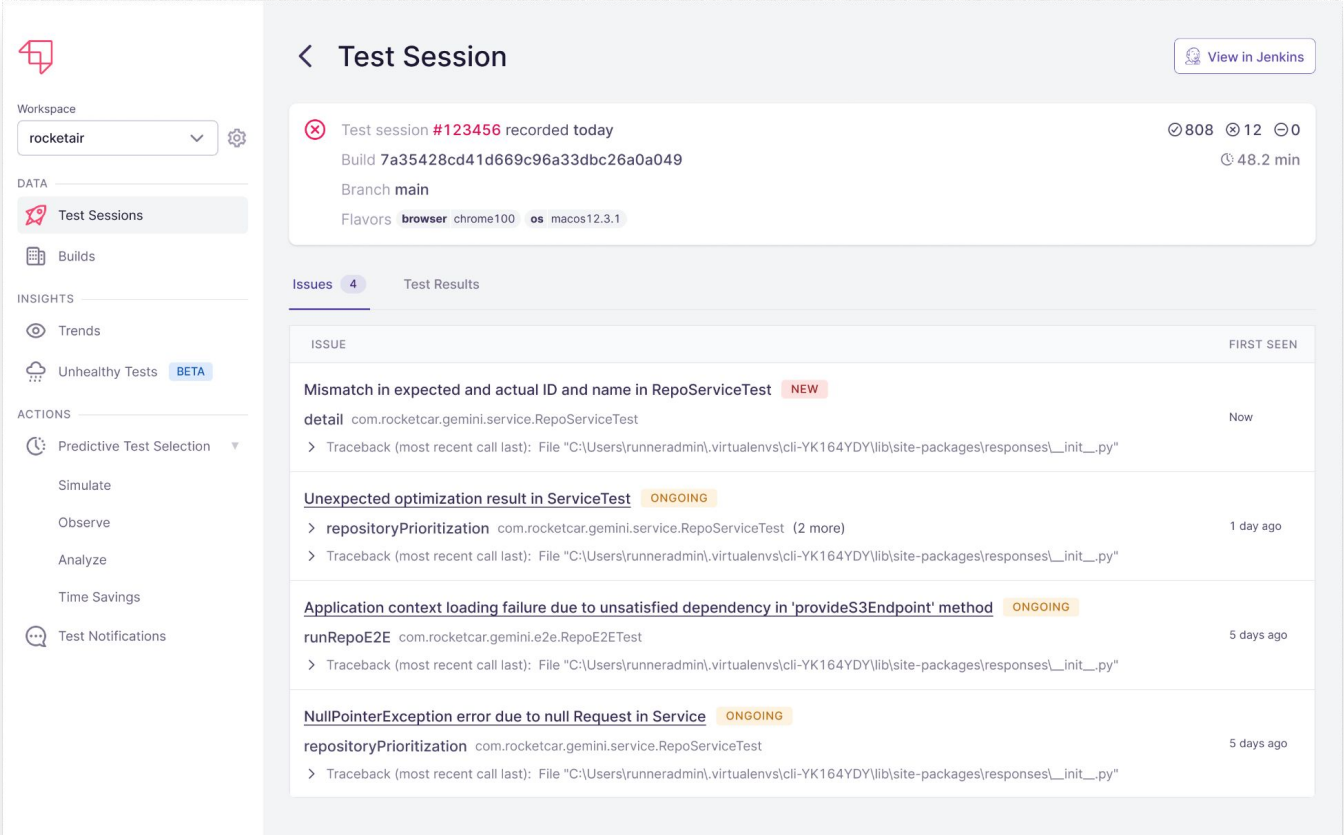
- Sophisticated automated triage system (Dropbox)
  - Combination of bisect, multiple reruns, etc



Future of CI/CD

- More sophisticated blackbox
- So many opportunities for AI
- System between you & your CI

That’s where I’m spending time -- let’s talk!



Thank you!

launchableinc.com.