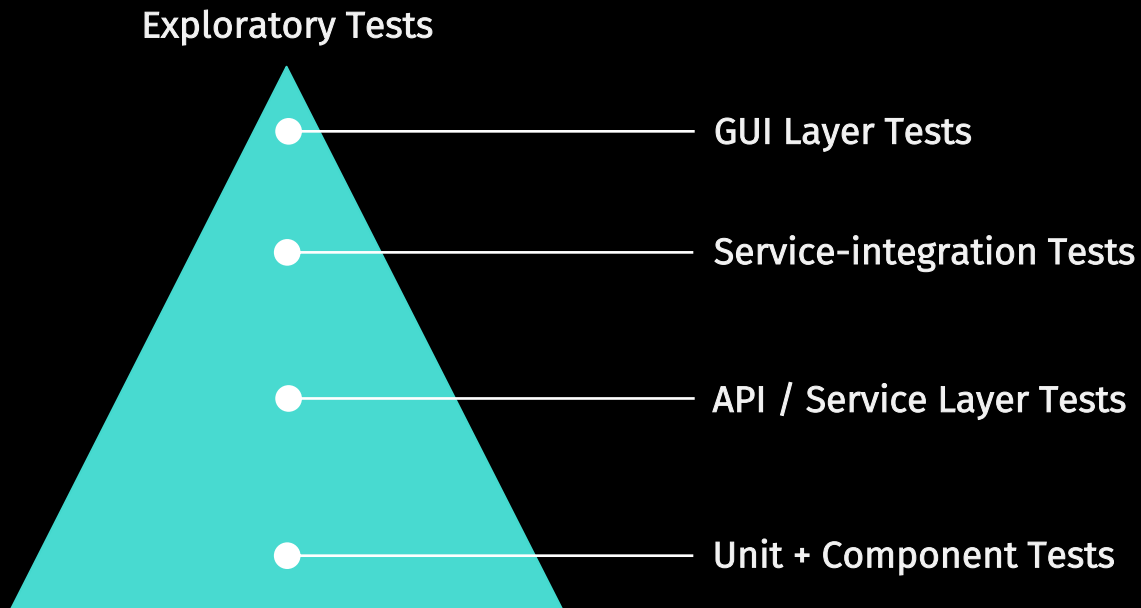
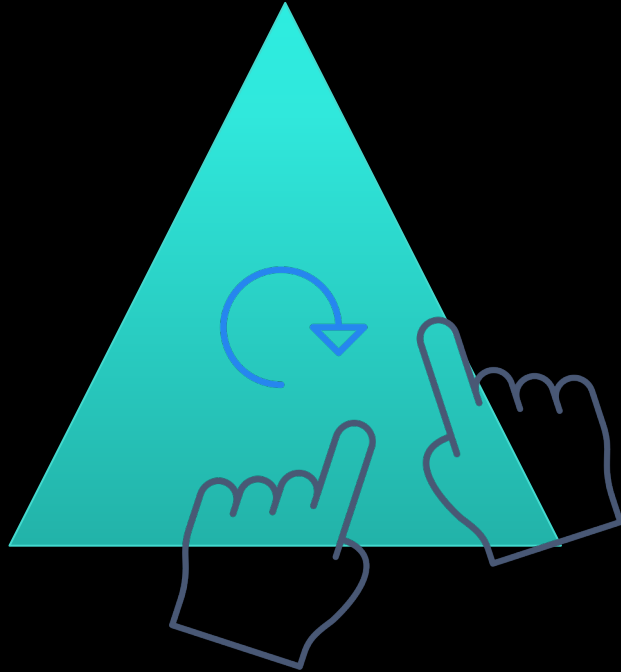


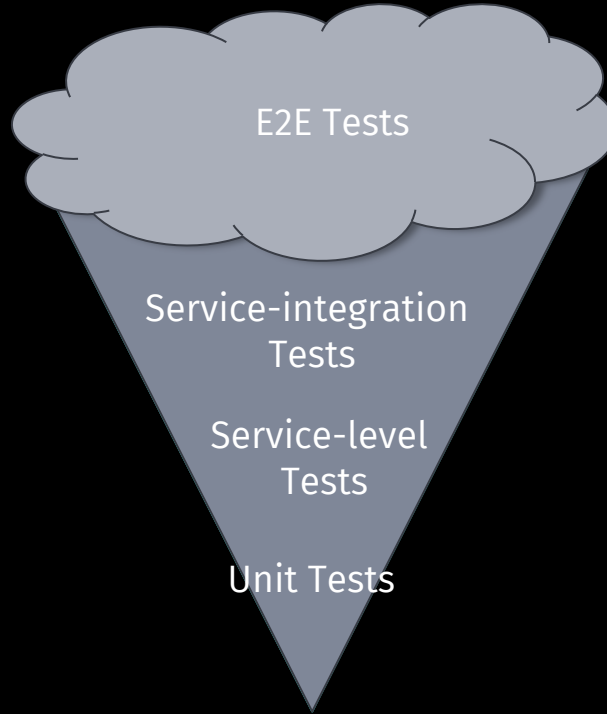
# Continuous Everything – Continuous Testing

# Test Pyramid



*Let's turn it upside down ...*







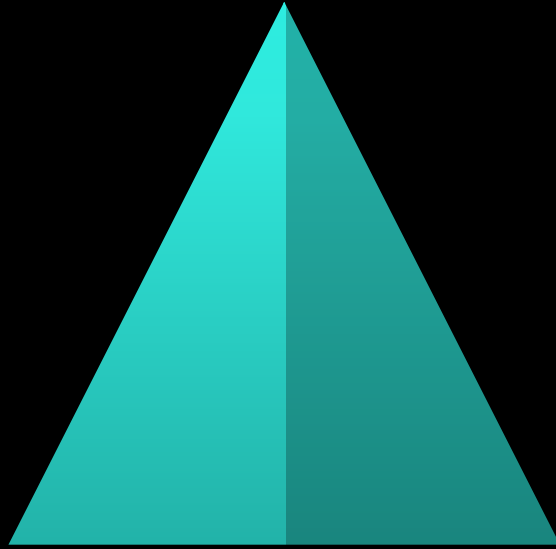
*Increased test debt ☹️*

*Test debt occurs due to shortcuts related to testing.  
It is the test dimension of technical debt.*

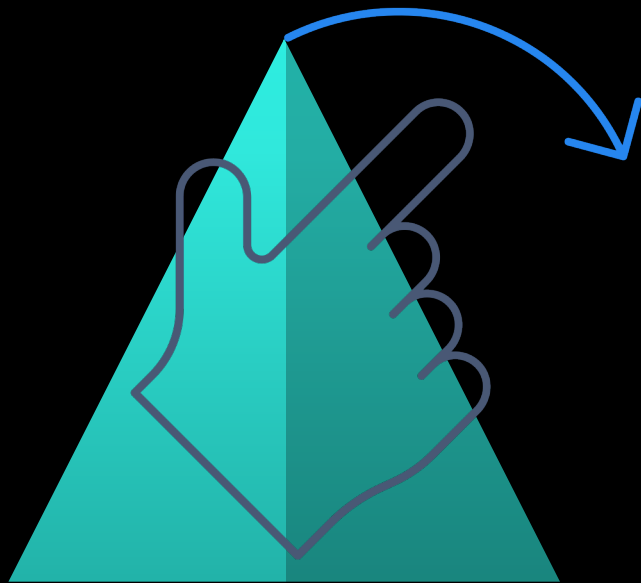
*The right ratio of tests - with many unit tests as basis - is important!*

*But how can we mature the test execution?*

*Let us return to the Test Pyramid ...*

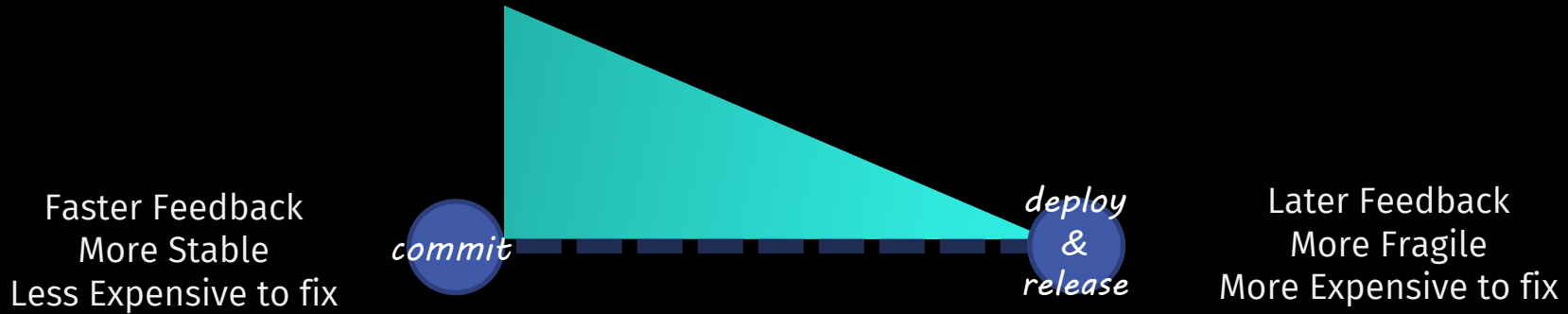


*... but let's change the Perspective*





# Continuous Integration & Continuous Delivery





*So we have shifted test to the left ...  
However, this leaves us with still quite a  
few long running tests.*

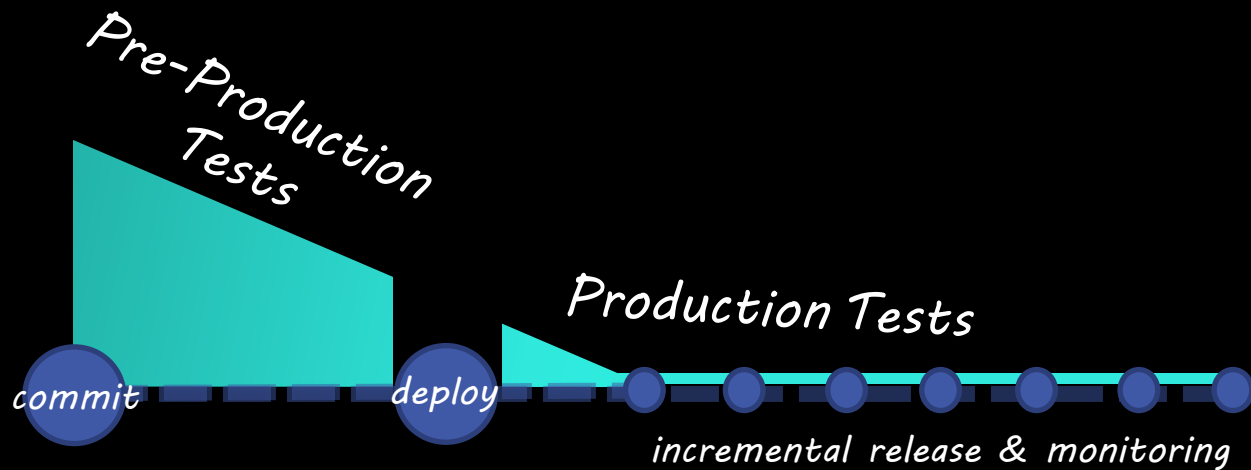
How can we reduce the test debt further? 😊

*development*  
*stable*

*increased*  
*confidence*



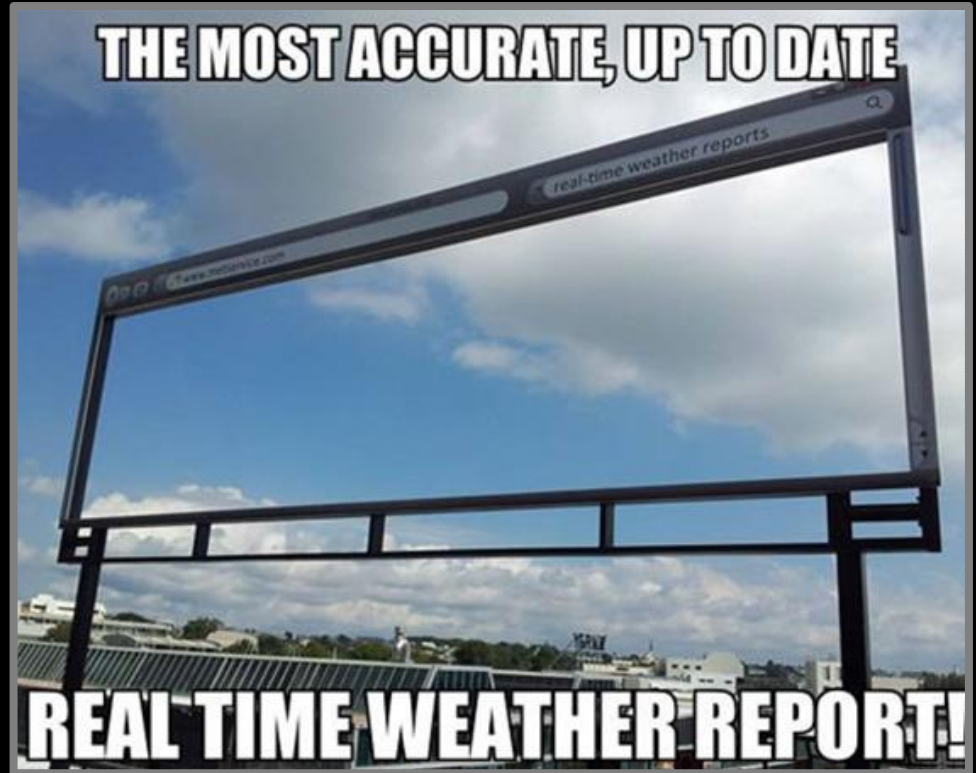
# Shift Right



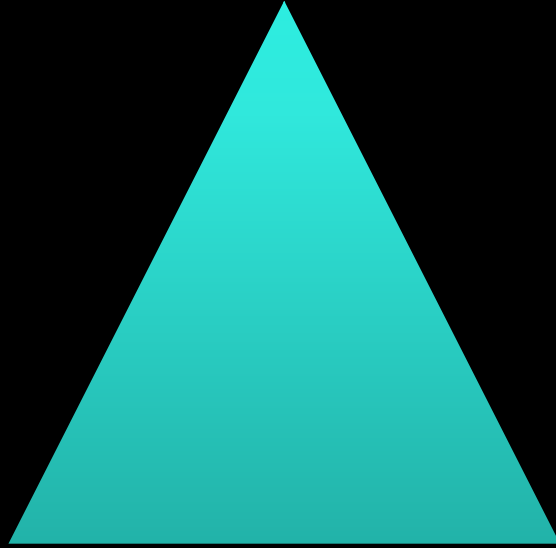
*We talked about  
Test Debt: Why  
should I test in  
Production?*



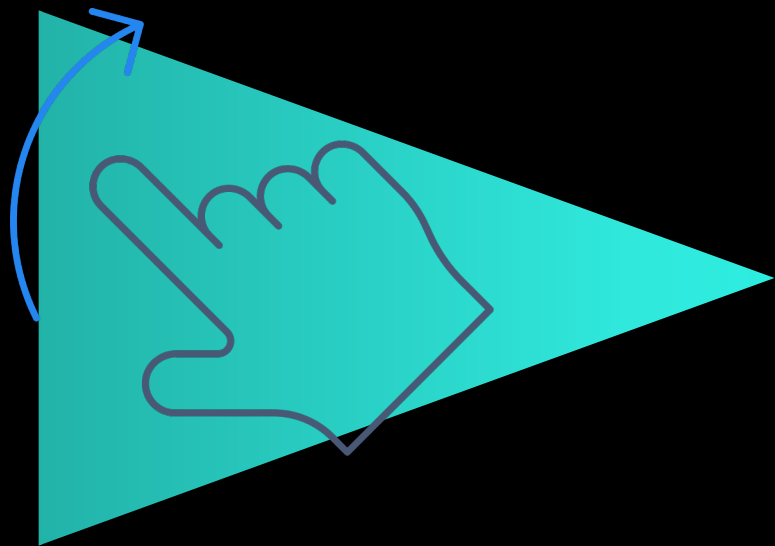
*How well can you  
predict how your  
application will be  
used in  
production?*



*Let us return to the Test Pyramid ...*



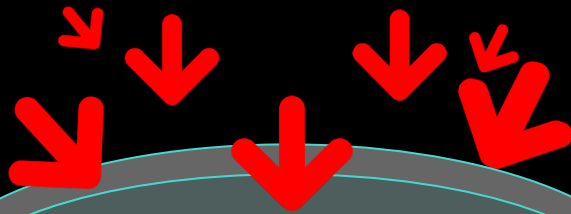
*... but let's change (again) the Perspective*





# Bug Filter

*high risk that bugs are not detected*



*Pre-  
Production  
Tests*

*Production  
Tests*

**Unit Tests!**

Acceptance Tests

Contract Tests

Some E2E Tests

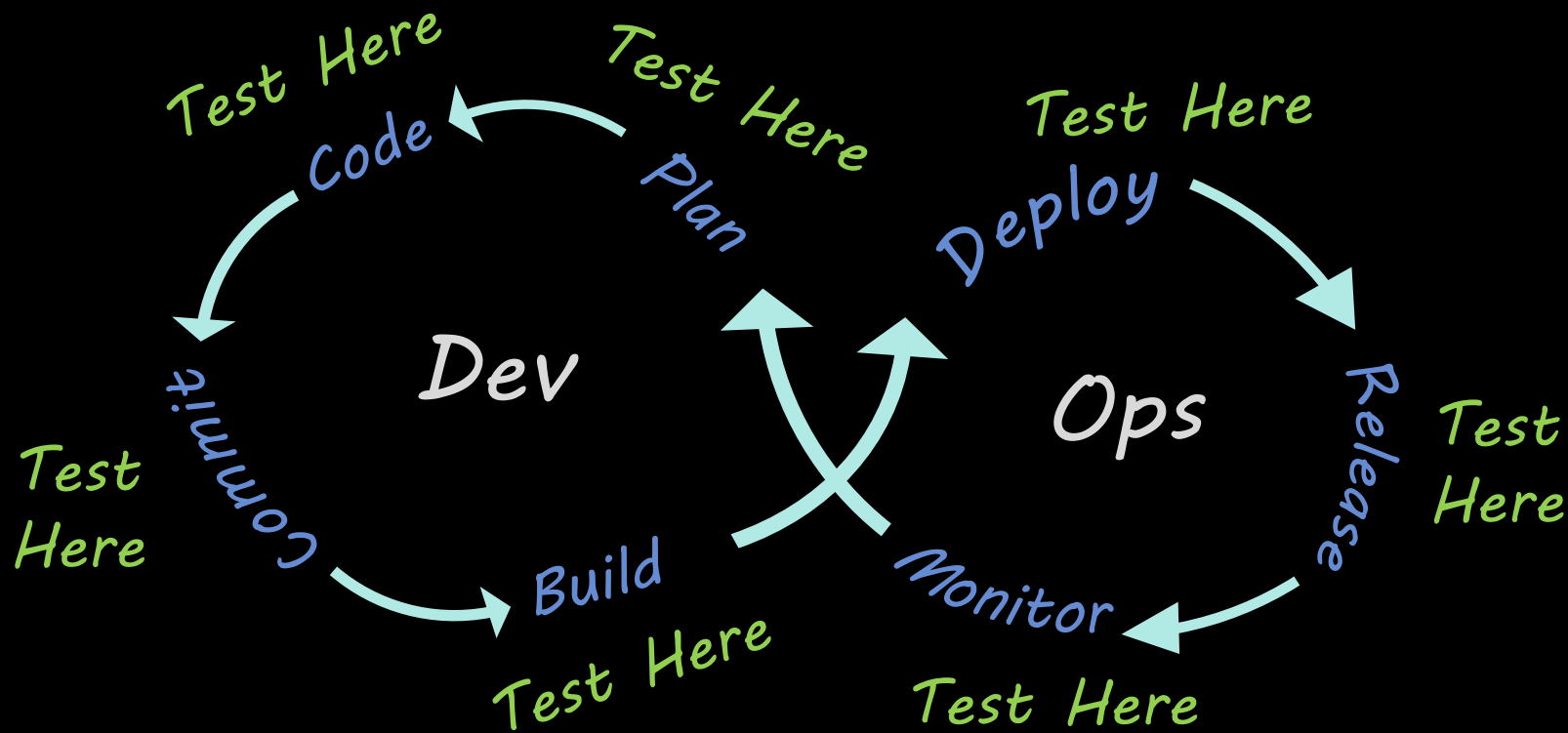
Incremental Release  
Controlled Experiments

A/B Tests

Alpha/Beta Releases

(Semantic) Monitoring

*small risk*



Based on: <https://danashby.co.uk/2016/10/19/continuous-testing-in-devops>



*That's Continuous Testing ☺*

*Pre-Release  
Production Traffic  
Tests*

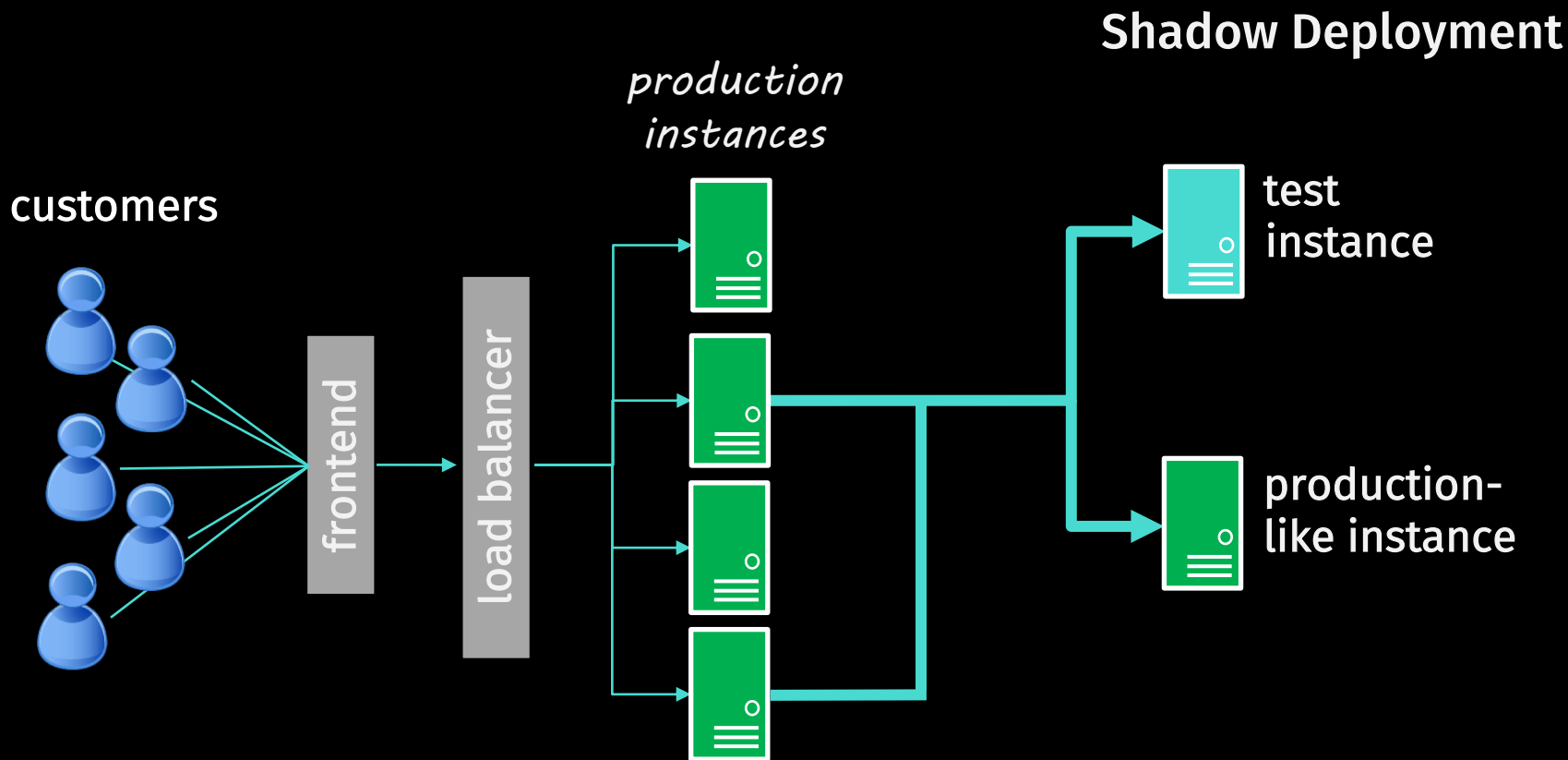
Shadow  
Deployment  
Tests\*  
Load Tests

*Release Tests in  
Production*

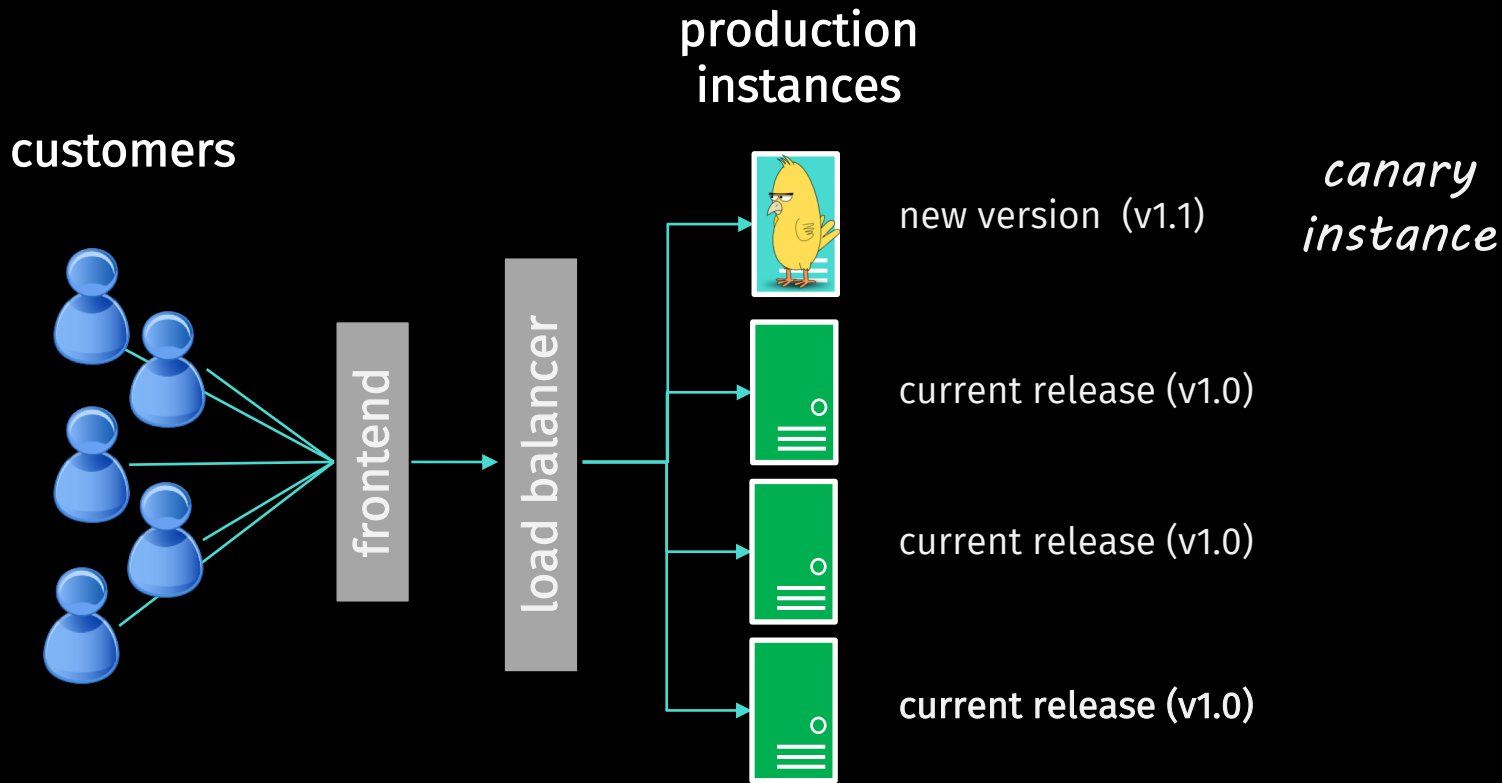
Canary Release\*  
Feature Flagging  
Monitoring

*Post-Release Tests  
in Production*

A/B Test – lean  
experimentation  
Alpha/Beta Tests  
Chaos  
Engineering  
Synthetic  
Monitoring



See: <https://www.infoq.com/articles/performance-tests>



# Shift in Mindset

## Shift Left

- Early and fast feedback.
- Comprehensive set of automated pre-production tests, i.e. low level tests.

## Shift Right

- Release often and early.
- Expose new features early and in a controlled way.
- Execute some of the tests in Production.



## *More information:*

- **Dan Ashby (3 May 2018):** A Better Testing Pyramid - <https://danashby.co.uk/2018/05/03/a-better-testing-pyramid>
- **Ham Vocke (26 Feb 2018):** The Practical Test Pyramid - <https://martinfowler.com/articles/practical-test-pyramid.html>
- **Noah Sussman (28 Feb 2017):** Abandoning the Pyramid Of Testing in favor of a Band-Pass model of risk management - <https://twitter.com/noahsussman/status/836612175707930625>
- **Katrin Clockie (2017):** A Practical Guide to Testing in DevOps. Leanpub.
- **Stefan Friese (2016):** Testing the Unexpected: A Shift Right in DevOps Testing.
- **Stefan Friese (2018):** <https://speakerdeck.com/y3key/continuous-testing>