A Holistic Approach to Testing in Continuous Delivery

Lisa Crispin

TESTINGSTAGE

With material from Abby Bangser, Ashley Hunsberger, Lisi Hocke, Janet Gregory, & more

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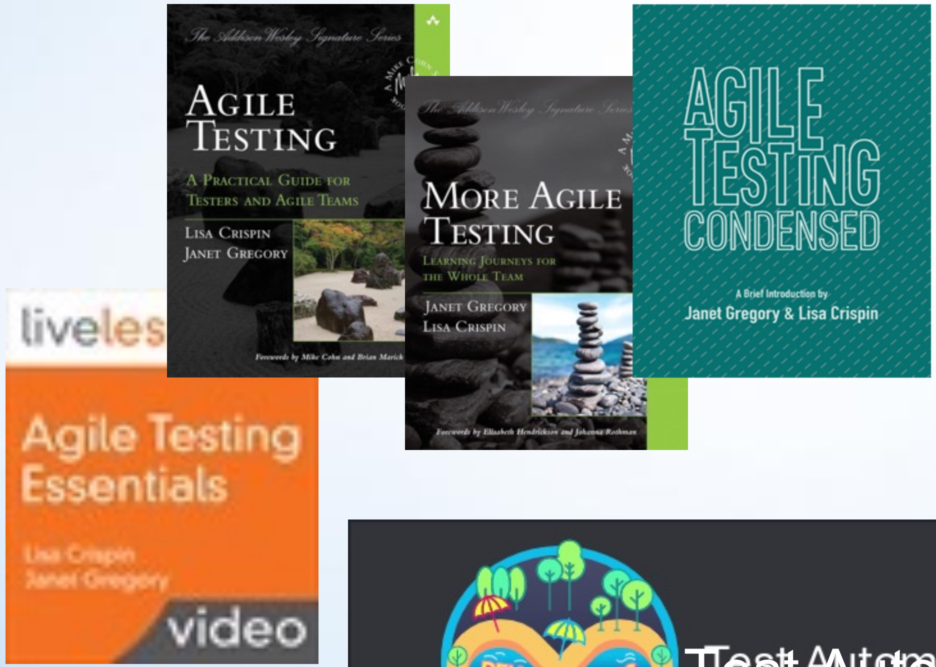
HOLISTIC TESTING

A little about me


The Addison-Wesley Signature Series
AGILE TESTING
A Practical Guide for Testers and Agile Teams
Lisa Crispin
Janet Gregory
Forewords by Mike Cohn and Brian Marick

The Addison-Wesley Signature Series
MORE AGILE TESTING
Learning Journeys for the Whole Team
Janet Gregory
Lisa Crispin
Forewords by Elisabeth Hendrickson and Johanna Rothman

AGILE TESTING CONDENSED
A Brief Introduction by
Janet Gregory & Lisa Crispin

liveles
Agile Testing Essentials
Lisa Crispin
Janet Gregory
video

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Holistic Testing: Strategies for Agile Teams
Holistic Testing for Continuous Delivery
AgileTestingFellow.com

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Today I'm talking about:

- Building confidence for continuous delivery/deployment (CD)
- Guiding conversations about risk & test coverage
- Quality – a whole team responsibility

Image from meet.google.com

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Some journeys go wrong

- Slow feedback loops
- Regression failures
- Unexpected impacts
- Technical & testing debt

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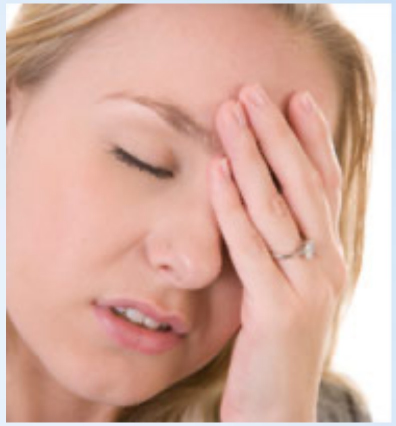
One example from my experience

- Team embraced XP practices – TDD, refactoring, pairing, continuous integration, …
- Thousands of automated regression tests at every level
- Reliable deployment pipelines, app in cloud, blue/green deploy

But…

- Too few testers
- Still had manual release regression checklist
- No time for sufficient exploratory testing



What gets in your team's way?

Stop and think for a minute. What's the biggest obstacle for your team being successful with continuous delivery?

Photo by Matthew Hamilton on Unsplash

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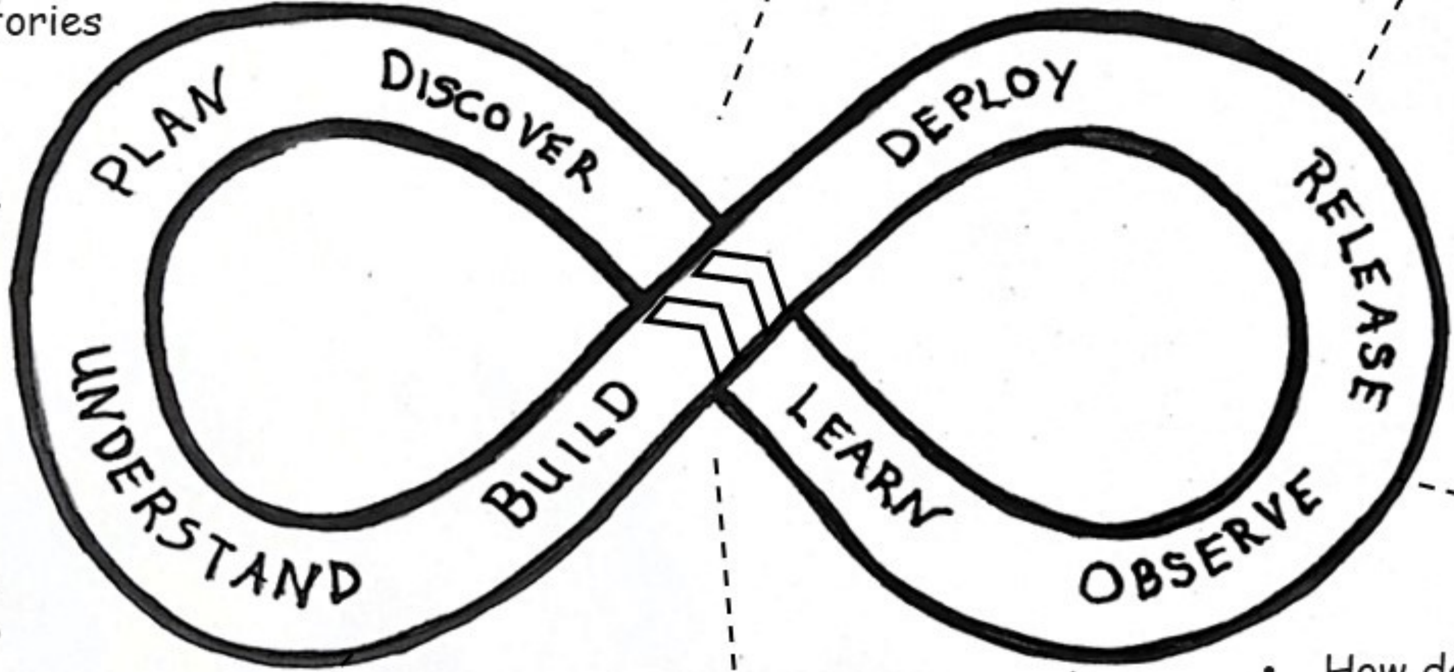
Making frequent small changes confidently takes:

- Collaboration
- Continuous improvement
- Continuous learning

Holistic Testing



- Identify risks
- Test assumptions
- Create testable stories

- Test the ideas
- Determine value

- Test infrastructure
- Run automated tests
- Test the pipeline
- Test quality attributes
- Test the system

- Test in production
- Use feature toggles or blue/green env

- How do customers use the product
- Monitor for warnings and errors

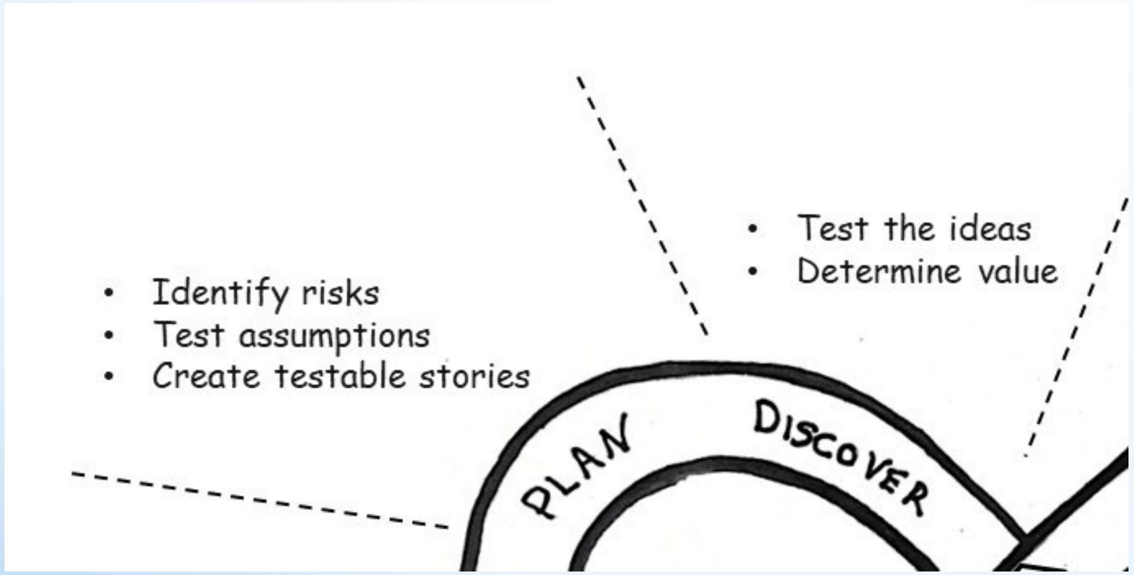
- Hypothesize and adapt

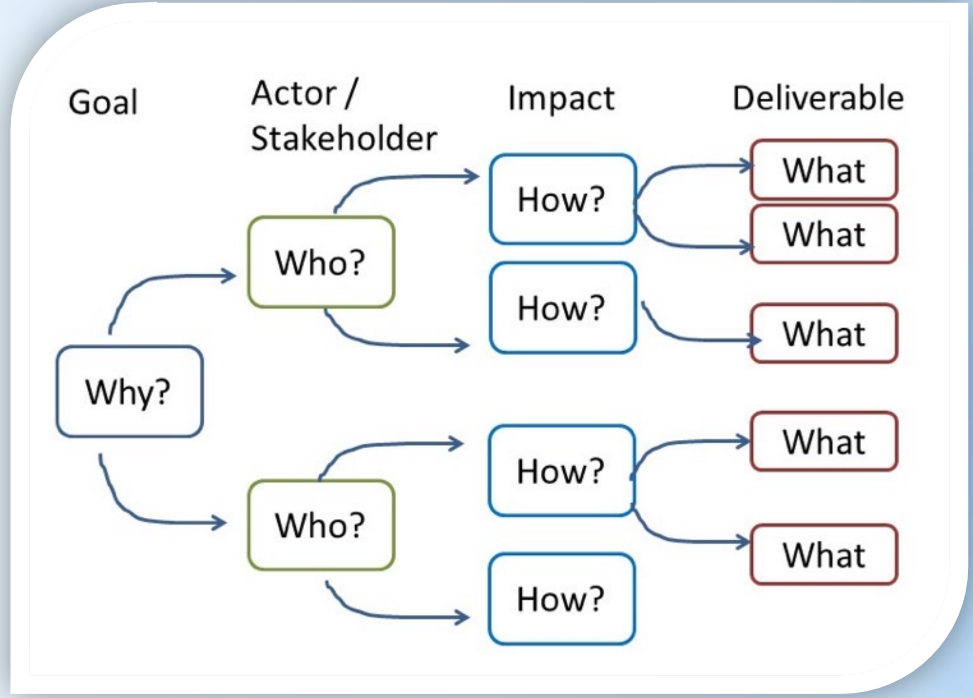
- Automate tests
- Instrument the code
- Test stories and features

- ATDD / BDD
- Example mapping
- Prototypes
- Determine what to observe or monitor

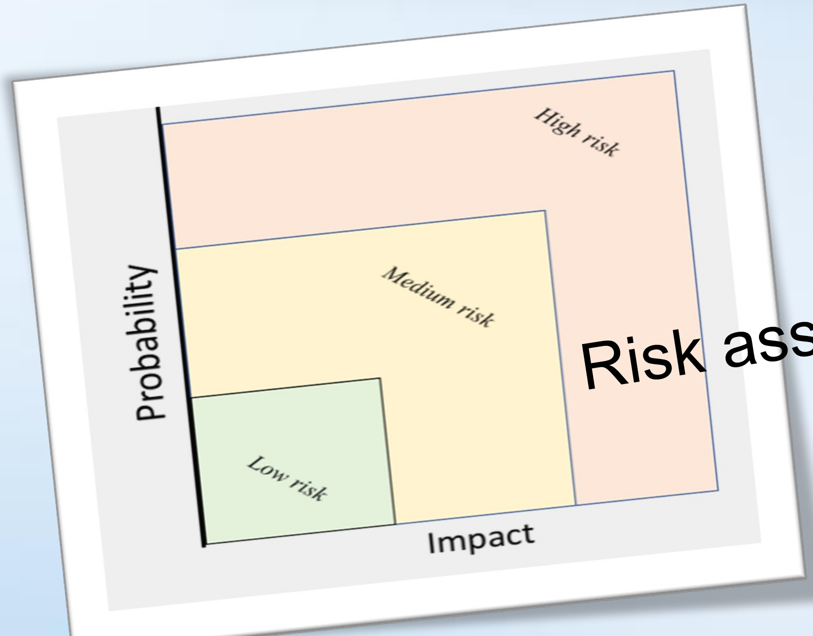
Janet Gregory
https://janetgregory.ca/testing-from-a-holistic-point-of-view/

Discover and plan





Impact mapping



Risk assessment

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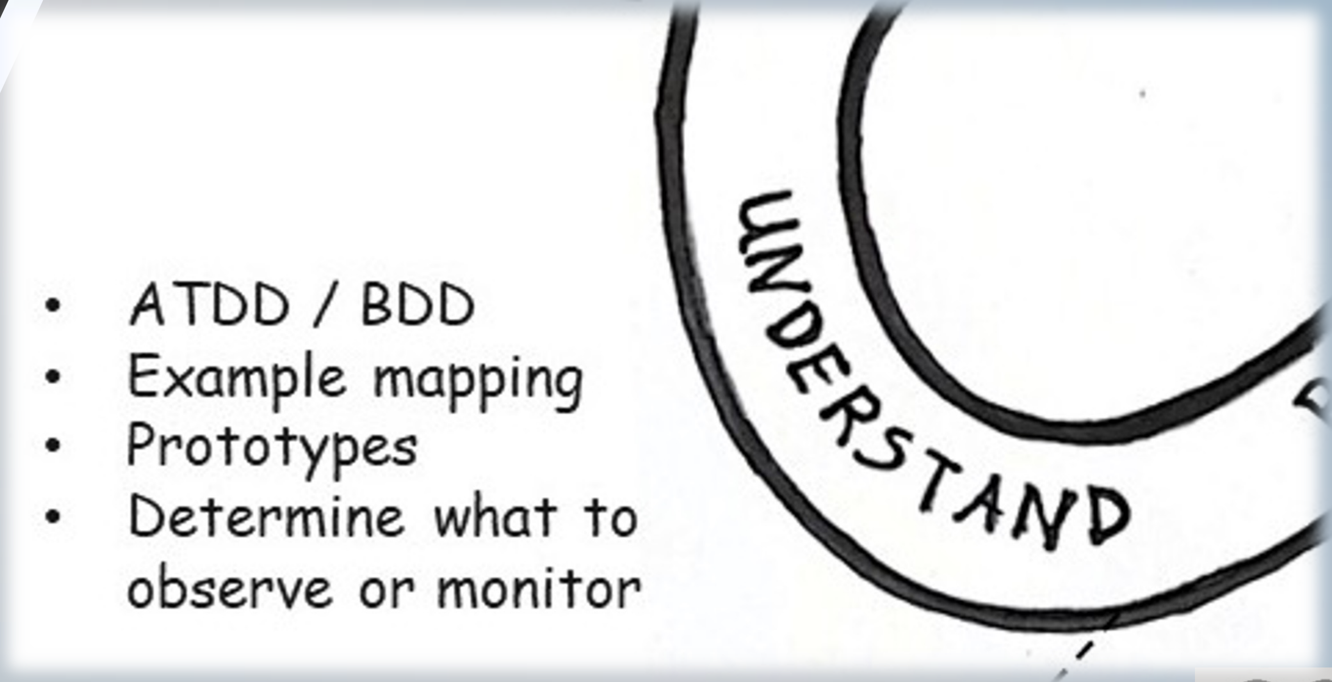
Test early
– test our understanding

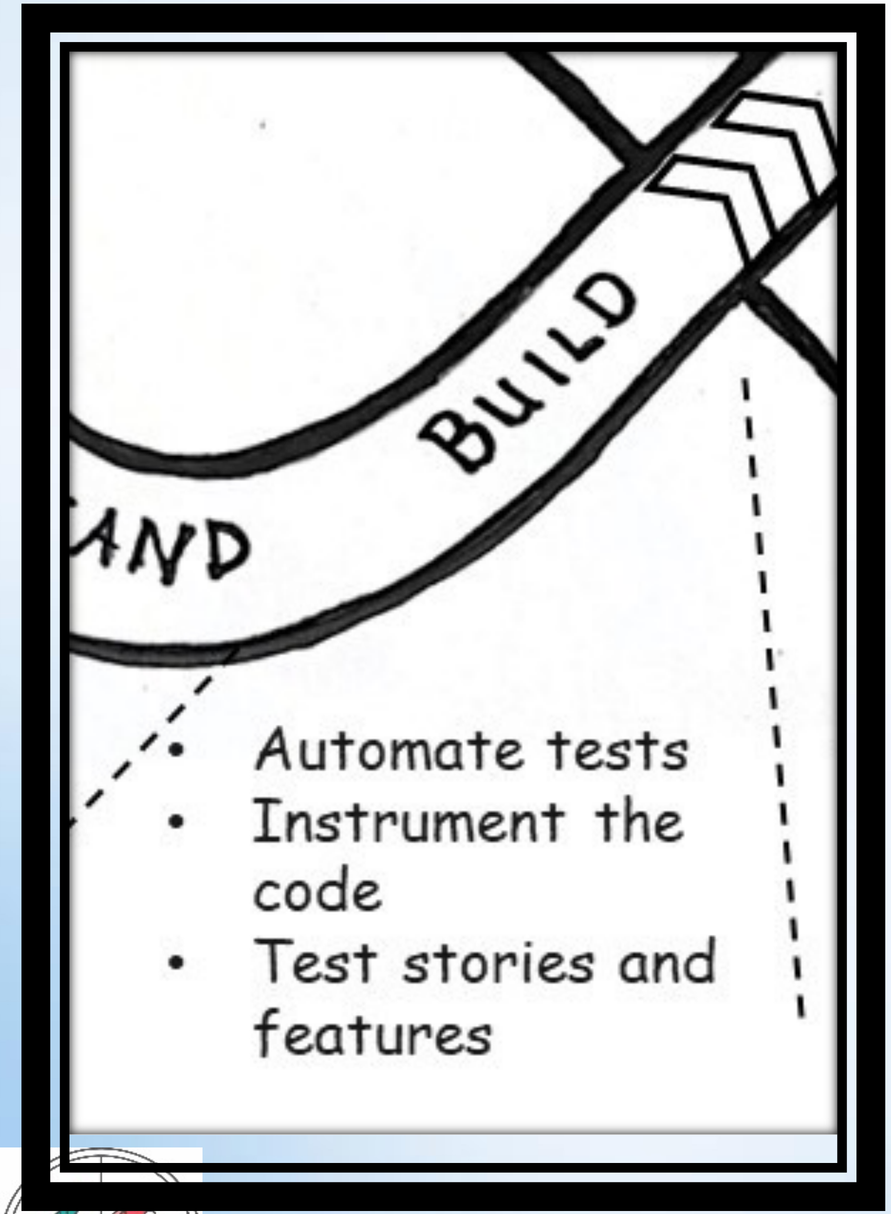
- Ask questions
- Uncover hidden assumptions
- Clarify needs (ATDD / BDD)
- Think about testing first
- Give tests to the programmers – before coding happens

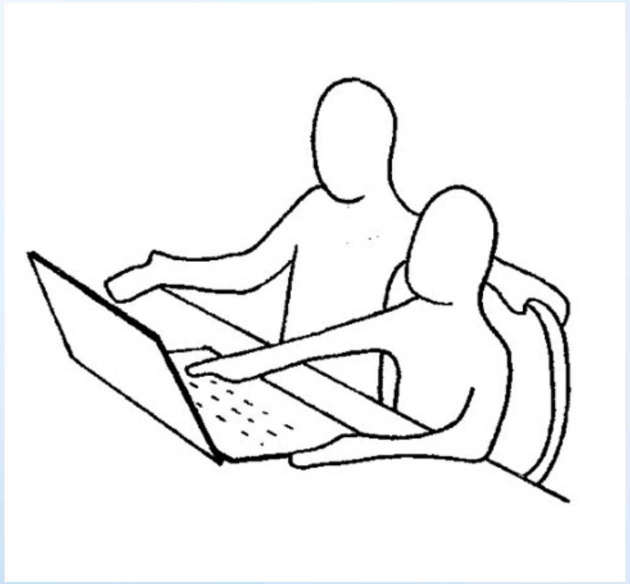


- ATDD / BDD
- Example mapping
- Prototypes
- Determine what to observe or monitor

Testing activities while we build

- TDD (test-driven development)
- Code analysis
- “show me”
- Exploratory testing
- Test automation
- User acceptance testing





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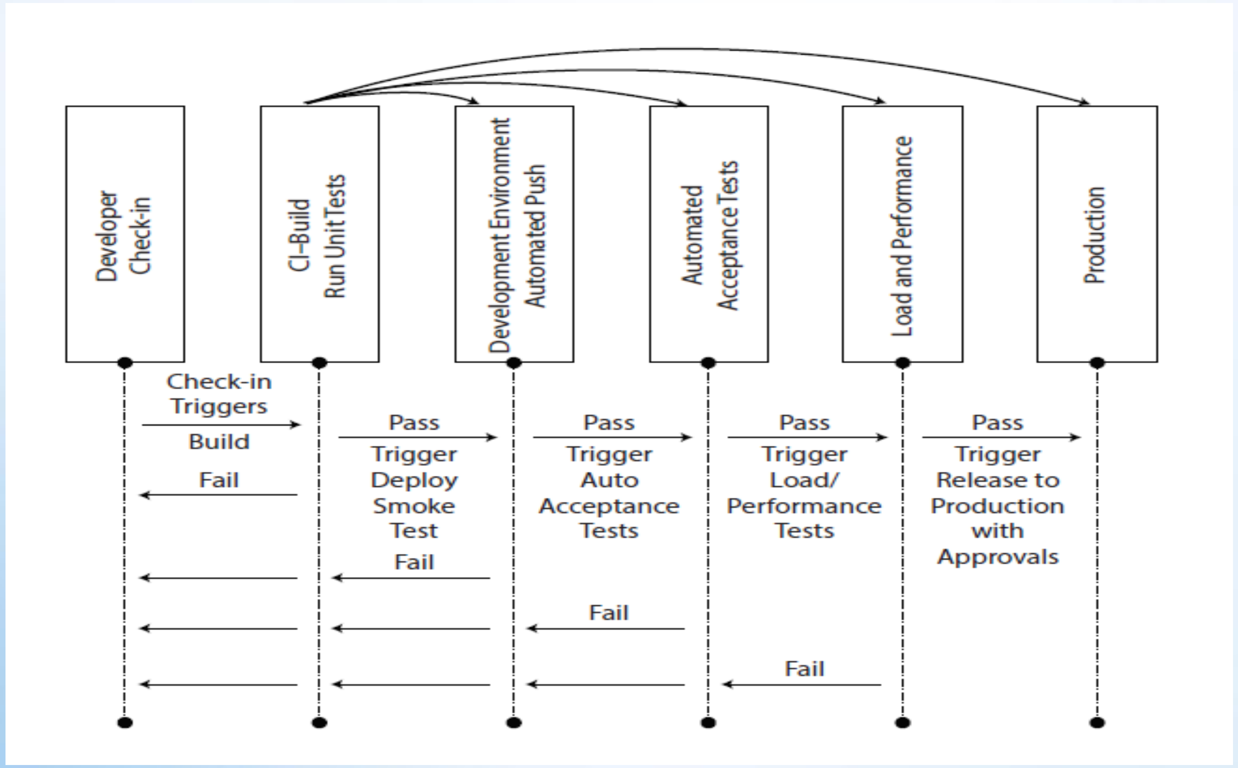
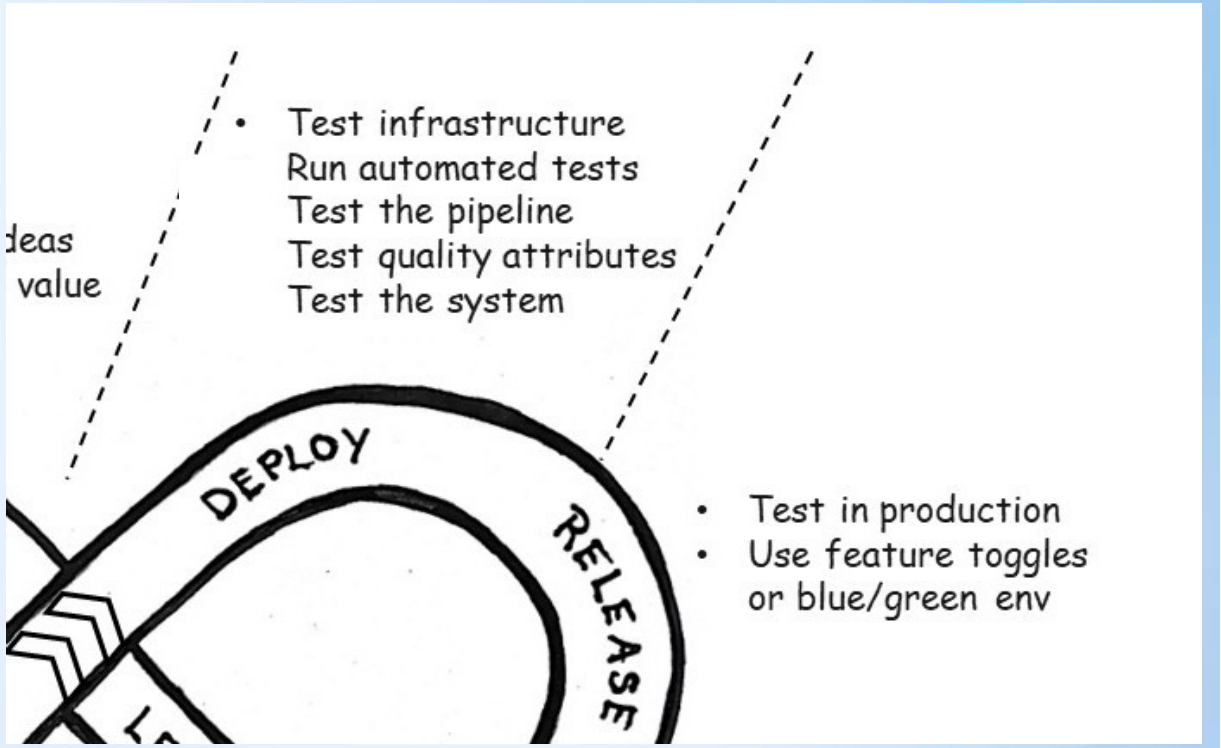
The shift right half of the infinity loop



Developer Check-in
CI-Build Run Unit Tests
Development Environment Automated Push
Automated Acceptance Tests
Load and Performance
Production
Check-in Triggers
Build
Fail
Pass
Trigger Deploy Smoke Test
Fail
Pass
Trigger Auto Acceptance Tests
Fail
Pass
Trigger Load/ Performance Tests
Fail
Pass
Trigger Release to Production with Approvals



- Test infrastructure
  Run automated tests
  Test the pipeline
  Test quality attributes
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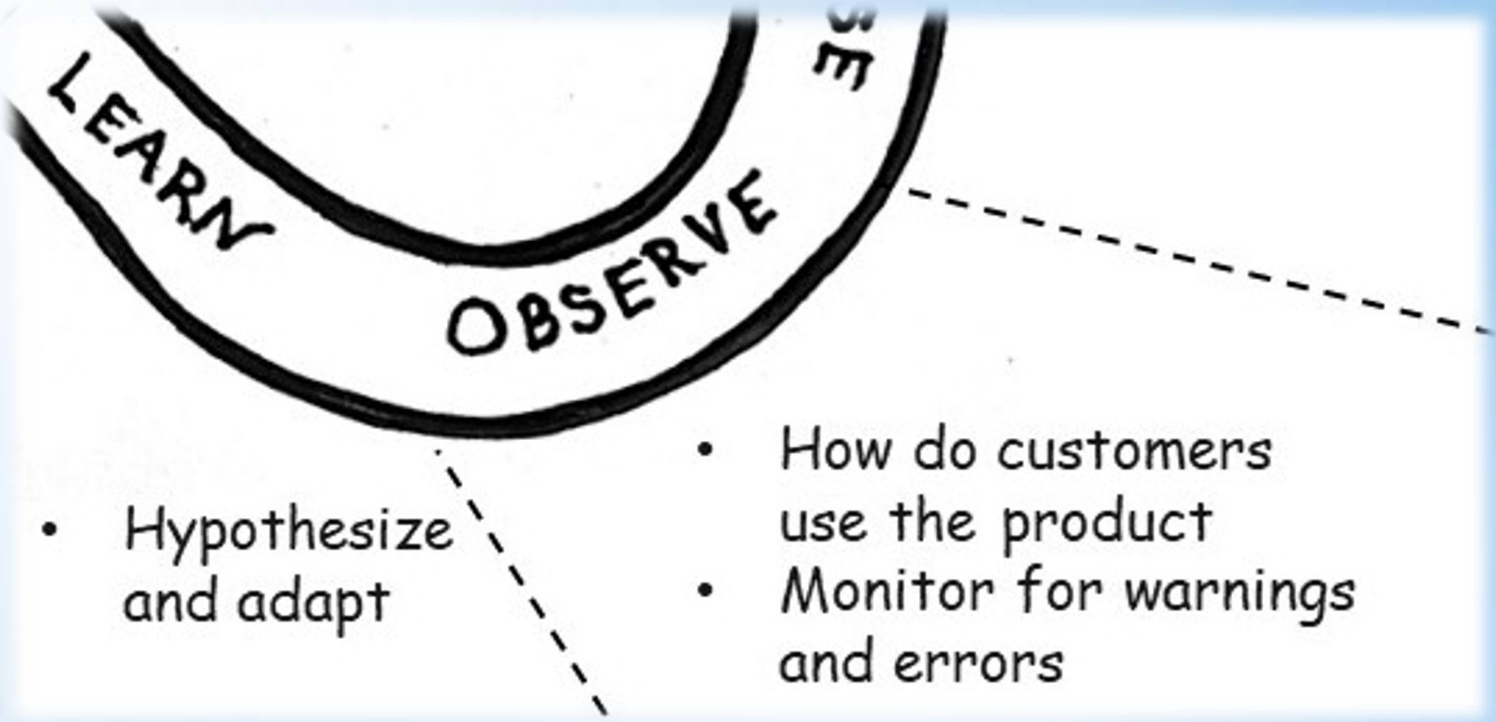
Observing and Learning



- Hypothesize and adapt

- How do customers use the product
- Monitor for warnings and errors

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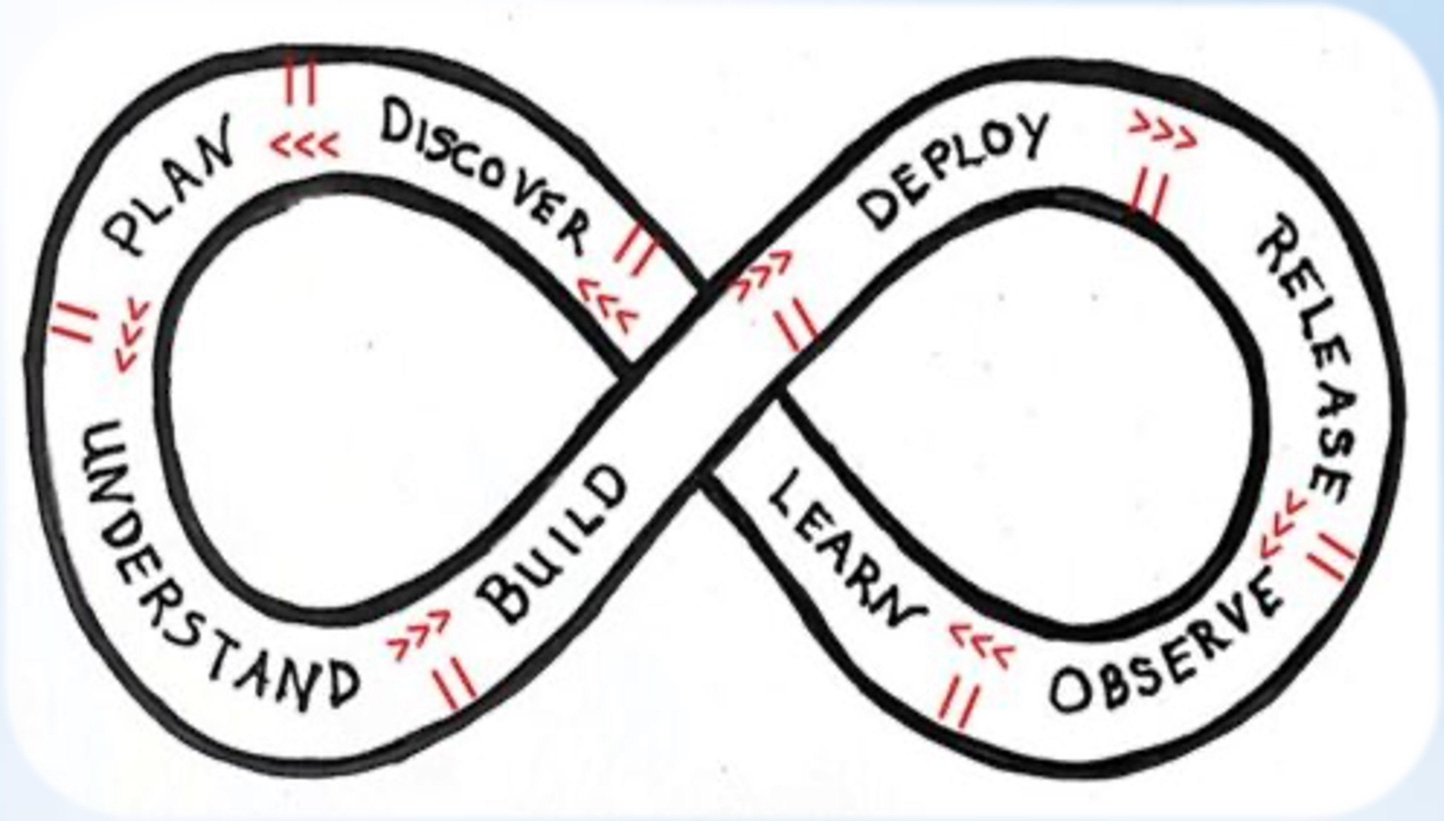
In which stages do you currently get involved?



What relationships could you build to participate in other parts of the loop?

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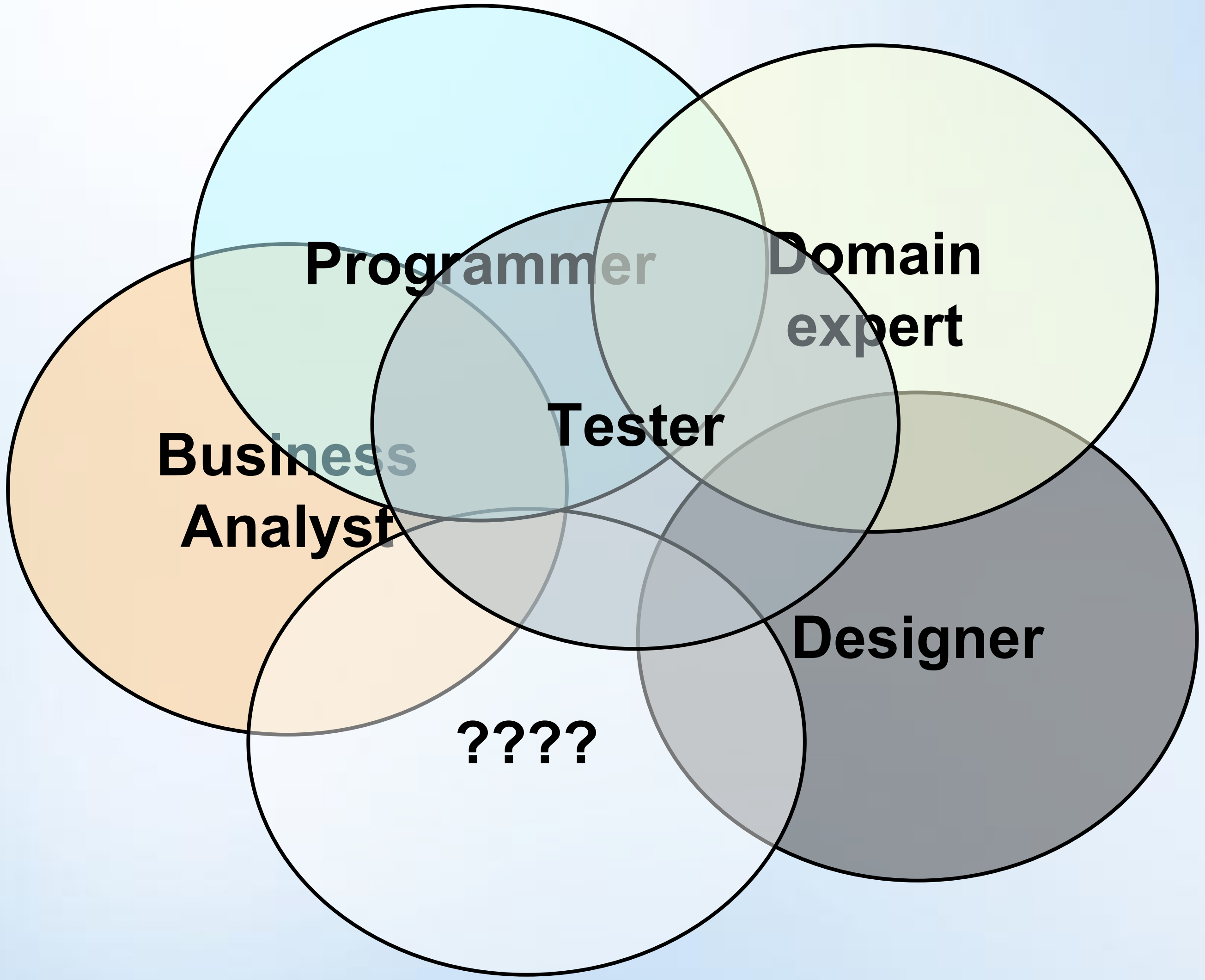
Get everyone engaged



Guiding conversations with visuals

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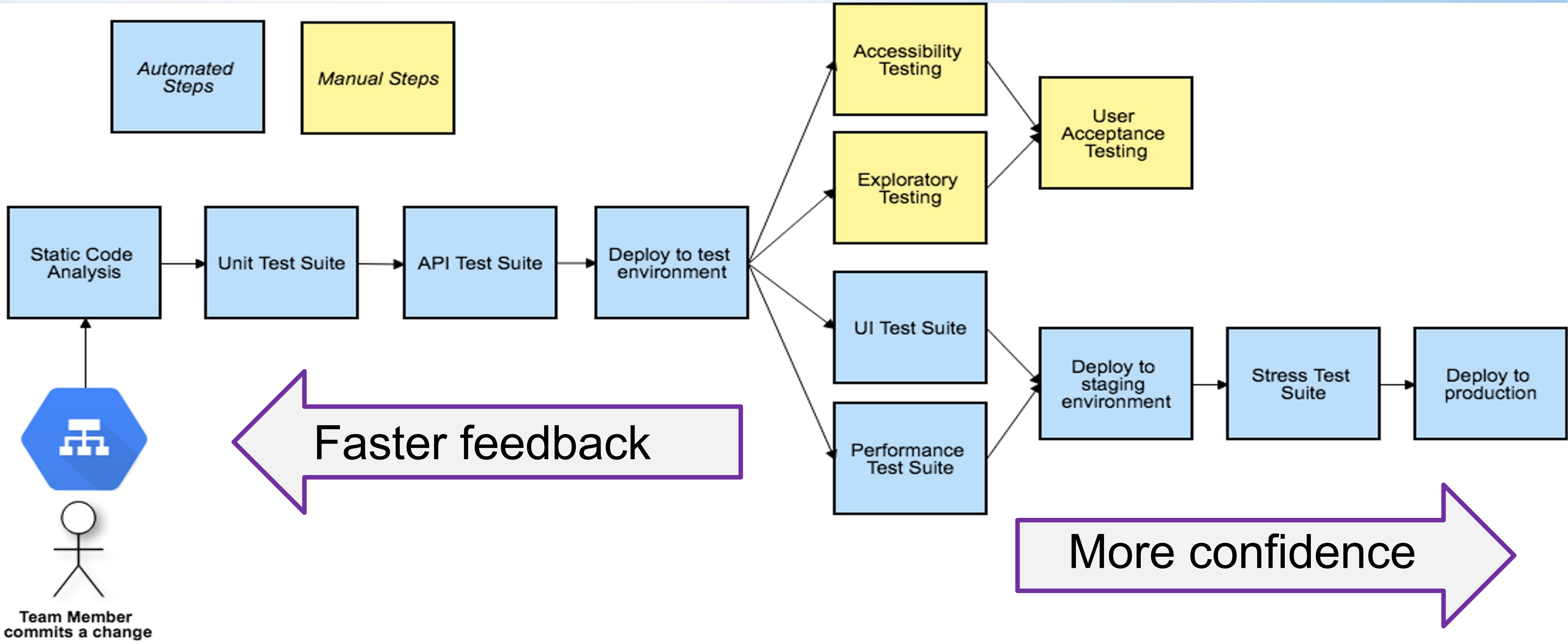
Visualize your pipeline, optimize feedback



Do your automated test suites give you confidence?

Flaky tests?

Poor coverage?

Hard to diagnose?

Hard to maintain?

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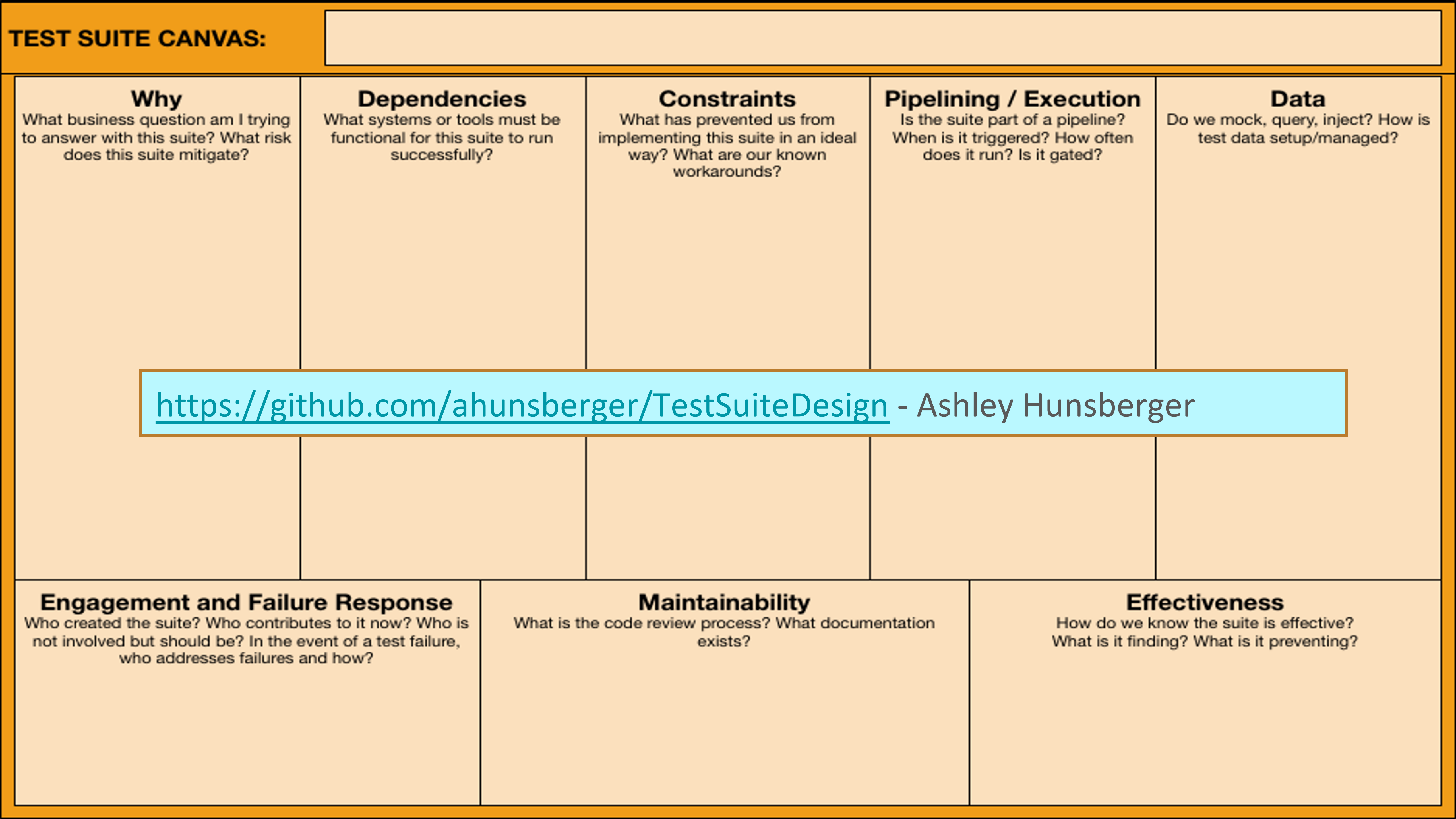


TEST SUITE CANVAS:

Why
What business question am I trying to answer with this suite? What risk does this suite mitigate?

Dependencies
What systems or tools must be functional for this suite to run successfully?

Constraints
What has prevented us from implementing this suite in an ideal way? What are our known workarounds?

Pipelining / Execution
Is the suite part of a pipeline? When is it triggered? How often does it run? Is it gated?

Data
Do we mock, query, inject? How is test data setup/managed?

Engagement and Failure Response
Who created the suite? Who contributes to it now? Who is not involved but should be? In the event of a test failure, who addresses failures and how?

Maintainability
What is the code review process? What documentation exists?

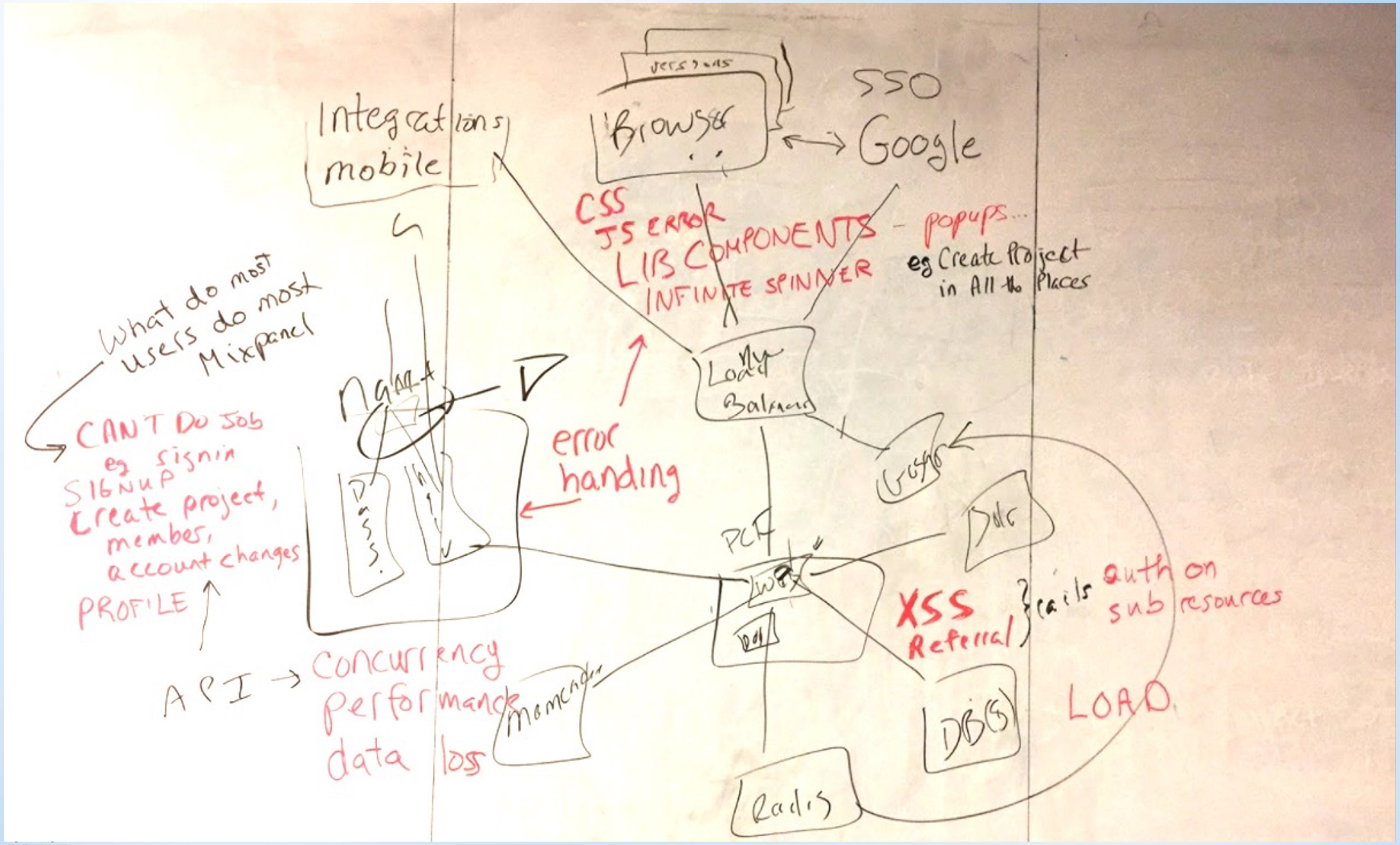
Effectiveness
How do we know the suite is effective? What is it finding? What is it preventing?

https://github.com/ahunsberger/TestSuiteDesign - Ashley Hunsberger

Some of my favorite Test Canvas questions

- What information should each suite provide? To whom? How?
- How will the team know about test failures? Who is responsible for looking into those?
- Do you pair on test automation, or do test code reviews?

Mitigating risks



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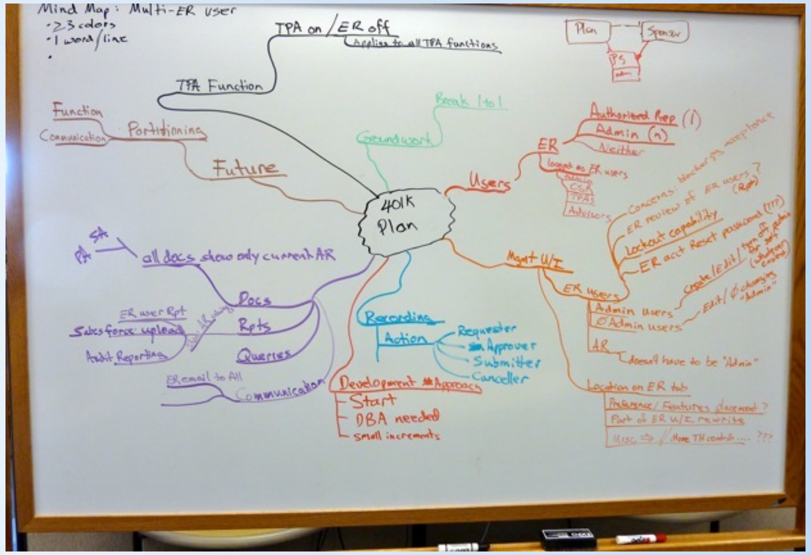
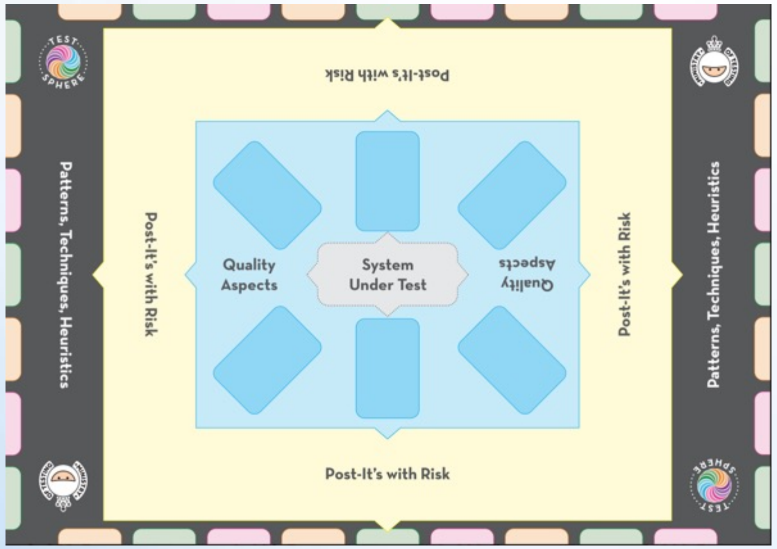
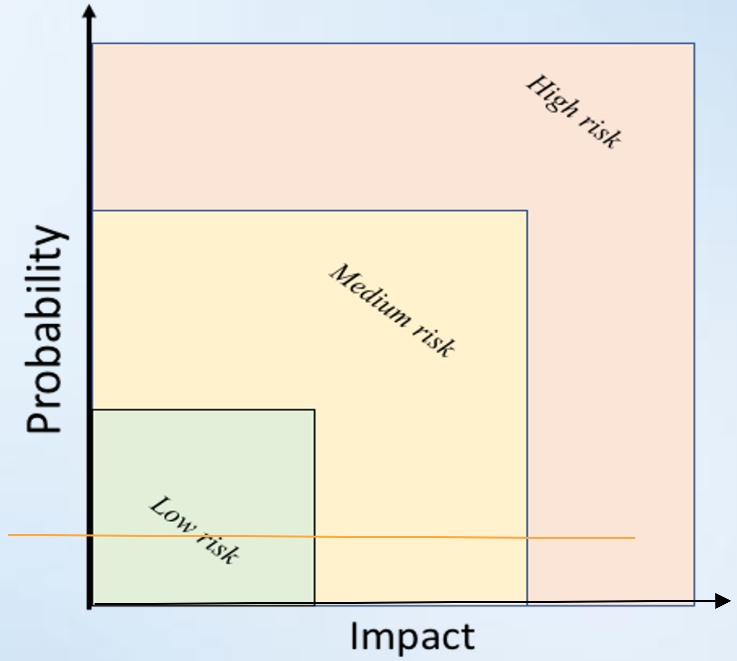
Talking about risk



Mind maps



Risk Storming (https://riskstormingonline.com)



Traditional risk analysis

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Does your team know all the possible risks?

- Customers behave in unexpected ways
- Infrastructure components may fail
- External systems can impact ours
- …

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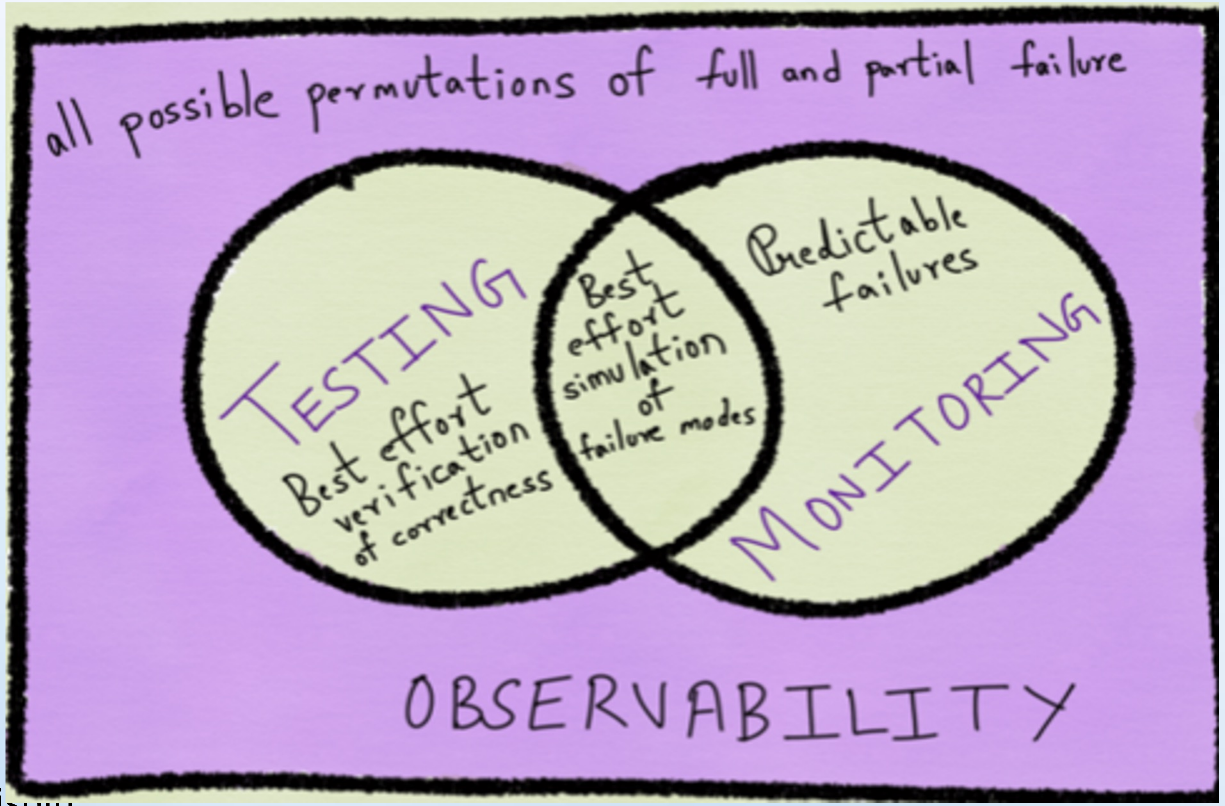
Observability

- Ask the questions you didn't know you'd need to ask - unknowns
- Complex systems fail in complex ways
- With enough information, we can respond quickly


all possible permutations of full and partial failure
TESTING
Best effort verification of correctness
Best effort simulation of failure modes
Predictable failures
MONITORING
OBSERVABILITY

Cindy Sridharan, https://medium.com/@copyconstruct/testing-in-production-the-safe-way-18ca102d0ef1

Quality – a whole team responsibility

Image from support.zoom.us

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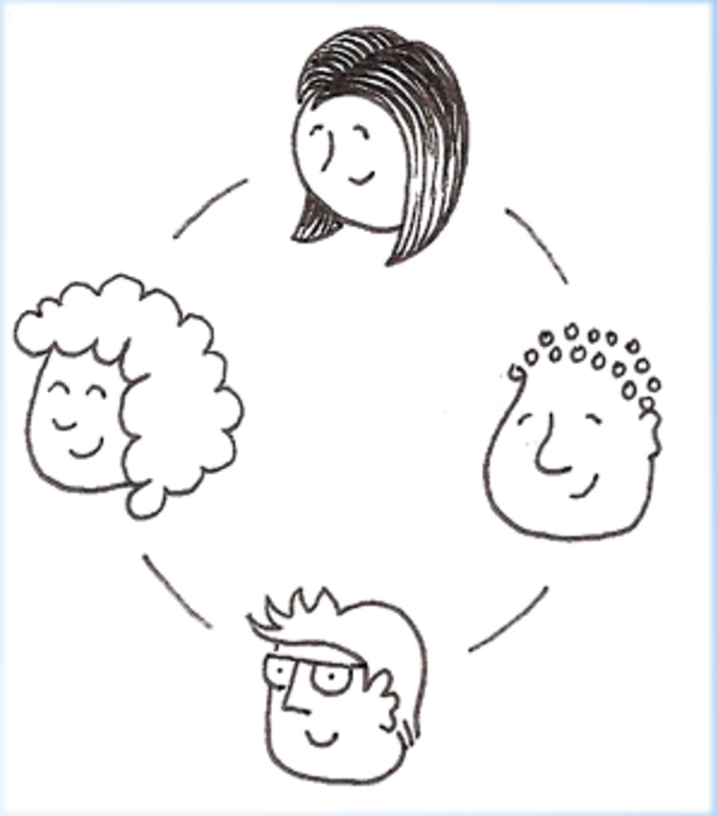
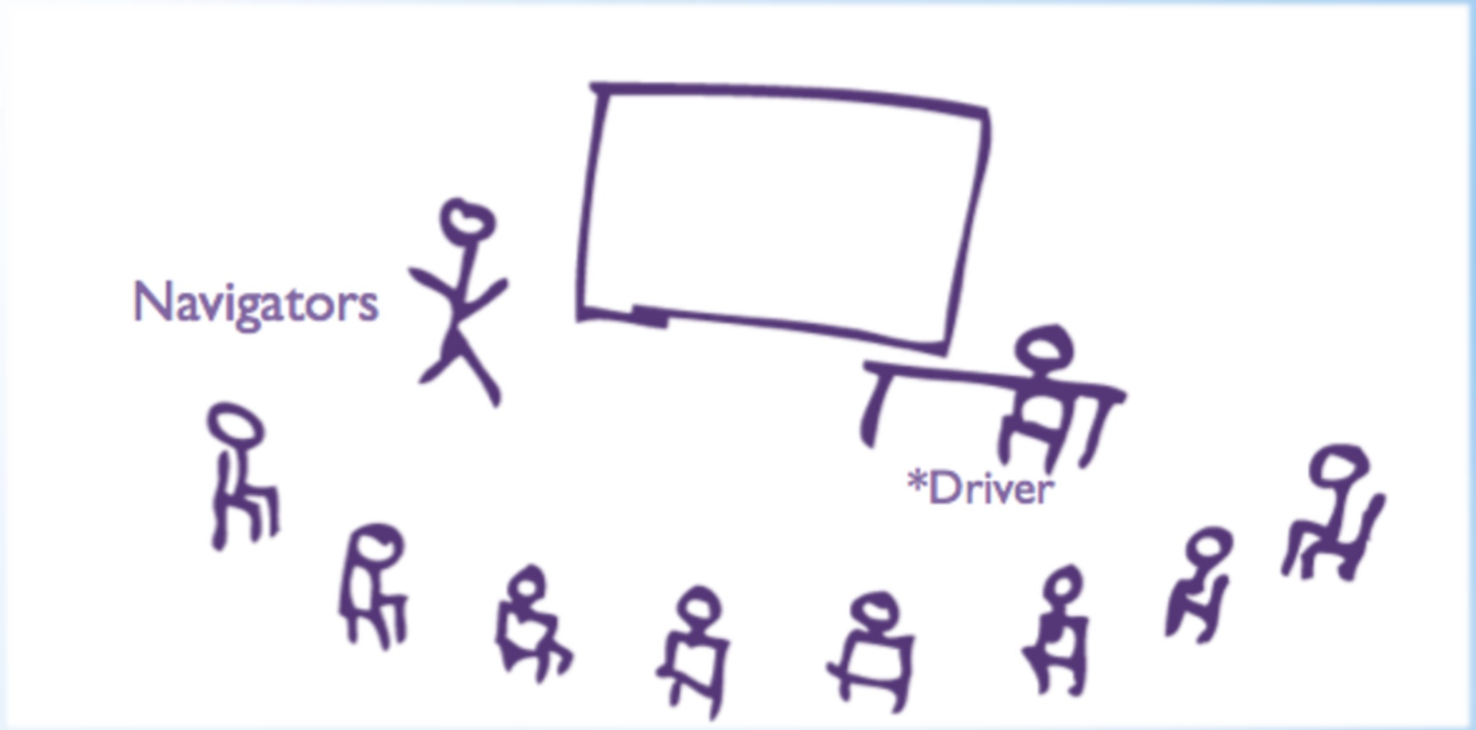
What makes it work?

- Commitment to a level of quality
  - Identifying what's valuable to customers
  - Bug prevention over bug detection
  - Fast response to prod issues
- Diverse perspectives, skill sets, biases
- Competencies > roles



Cross-discipline pairing, ensemble testing



Picture from Ensemble Programming Guidebook, Maaret Pyhäjärvi

We’re humans! (or possibly dragons, donkeys, unicorns…)

Build relationships

- Friendly conversations
- Do food
- Share something useful
- Ask for help

Katrina Clokie has excellent tips in her book*, A Practical Guide to Testing in DevOps*

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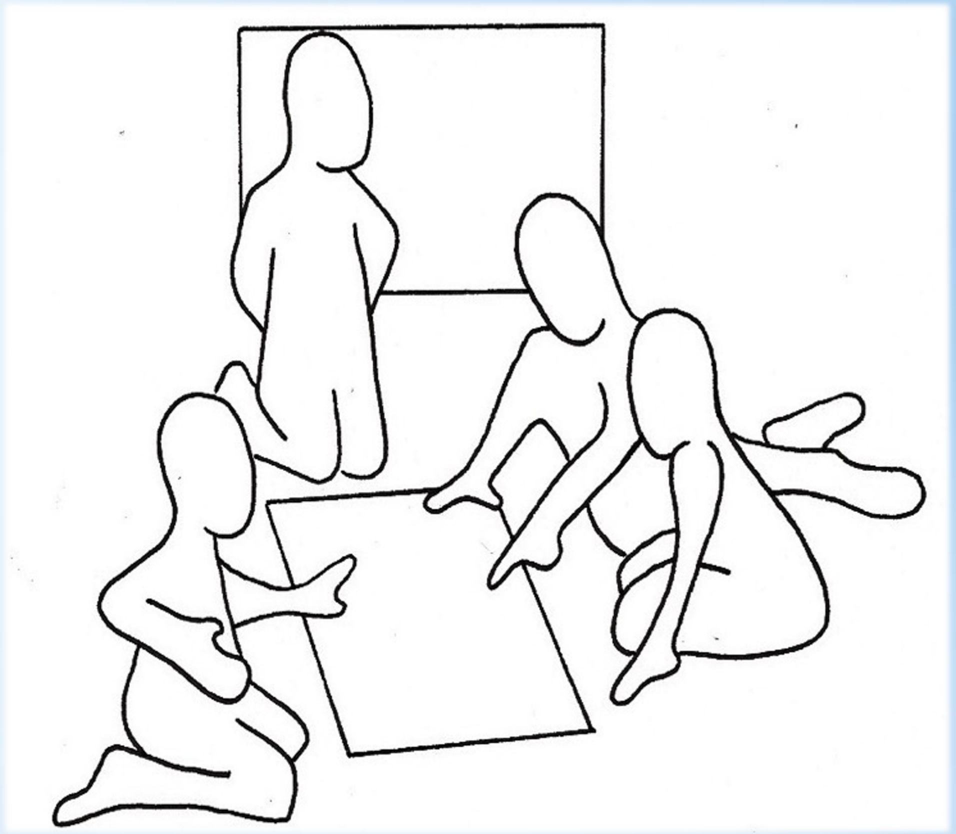
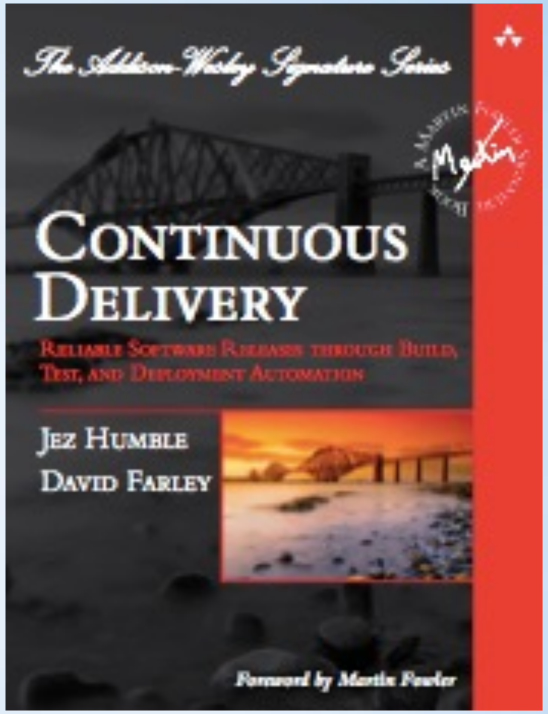
Building a quality culture

- Transformative leaders
- Trust and psychological safety
- Whole team ”owns” product
- “You build it, you run it”
- Focus on quality, not speed



Principles of CD – Jez Humble & David Farley

- Build quality in
- Work in small batches
- Computers perform repetitive tasks, people solve problems
- Relentlessly pursue continuous improvement
- Everyone is responsible


The Addison-Wesley Signature Series
Continuous Delivery
Reliable Software Releases through Build, Test, and Deployment Automation
Jez Humble
David Farley
Foreword by Martin Fowler

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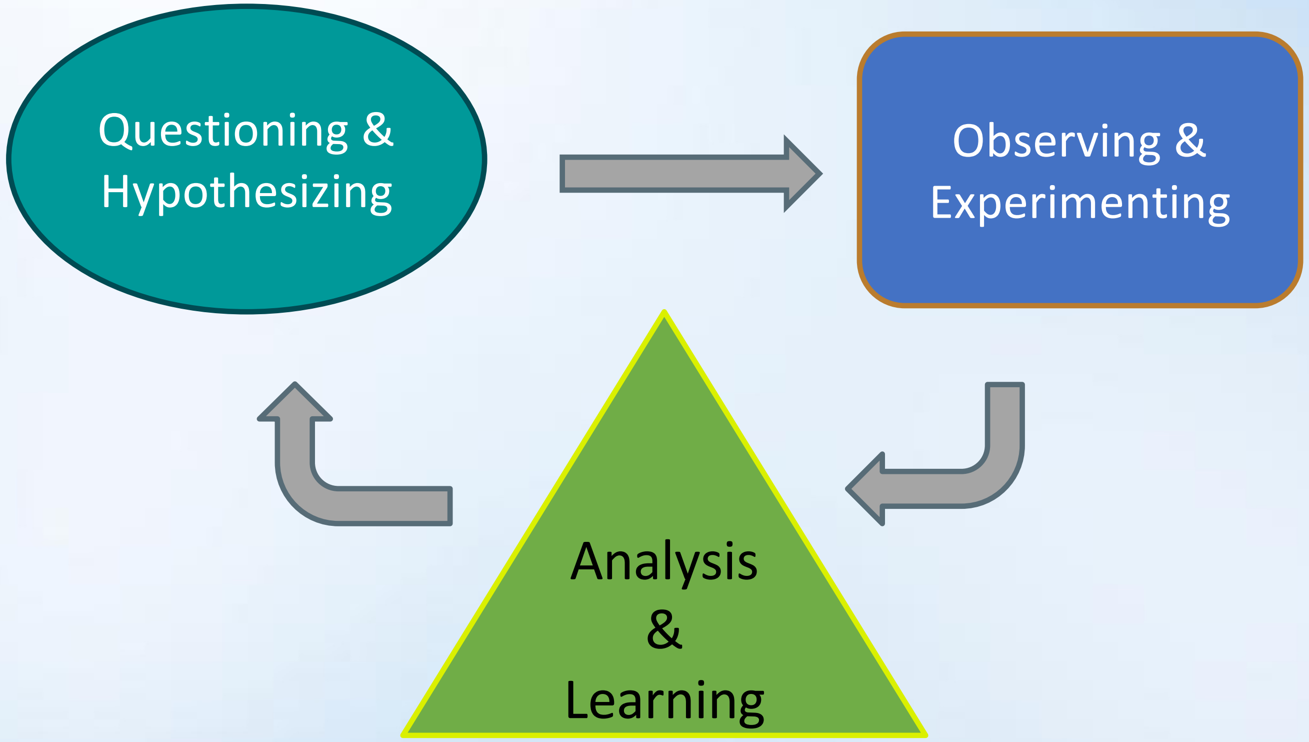
One small step at a time

- Use retrospectives to identify the biggest impediment
- Design small experiments to make that less bad



Get your team together and talk

How to fit testing activities into continuous delivery/deployment?

How to get the whole team engaged in building quality in, continuously testing?

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A few resources

- ”Agile Testing for the Whole Team” training course, https://agiletestingfellow.com
- *Agile Testing Condensed, Agile Testing* and *More Agile Testing*, Lisa Crispin and Janet Gregory, https://agiletester.ca
- “Test Automation in DevOps”, A Test Automation U course by Lisa Crispin https://testautomationu.applitools.com/test-automation-in-devops/
- *Continuous Delivery* by Jez Humble and David Farley, https://continuousdelivery.com
- *A Practical Guide to Testing in DevOps* by Katrina Clokie https://leanpub.com/testingindevops
- *Accelerate* by Dr. Nicole Forsgren, Jez Humble, Gene Kim
- Ashley Hunsberger’s Test Suite Canvas https://github.com/ahunsberger/TestSuiteDesign
- *https://lisacrispin.com/observability-continuous-delivery-devops-related-resources/*
- *ExploreIt!* Elizabeth Hendrickson

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