

Continuous Delivery



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About Me

- J. Michael (Mike) McGarr
- Excella Consulting, Arlington VA
- Lead of Excella's Java Center of Excellence
- Java Developer for over 11 years
- Interests:
 - Developer Productivity
 - XP & Agile
 - Automation
 - Testing
 - Polyglot Programming

Agenda

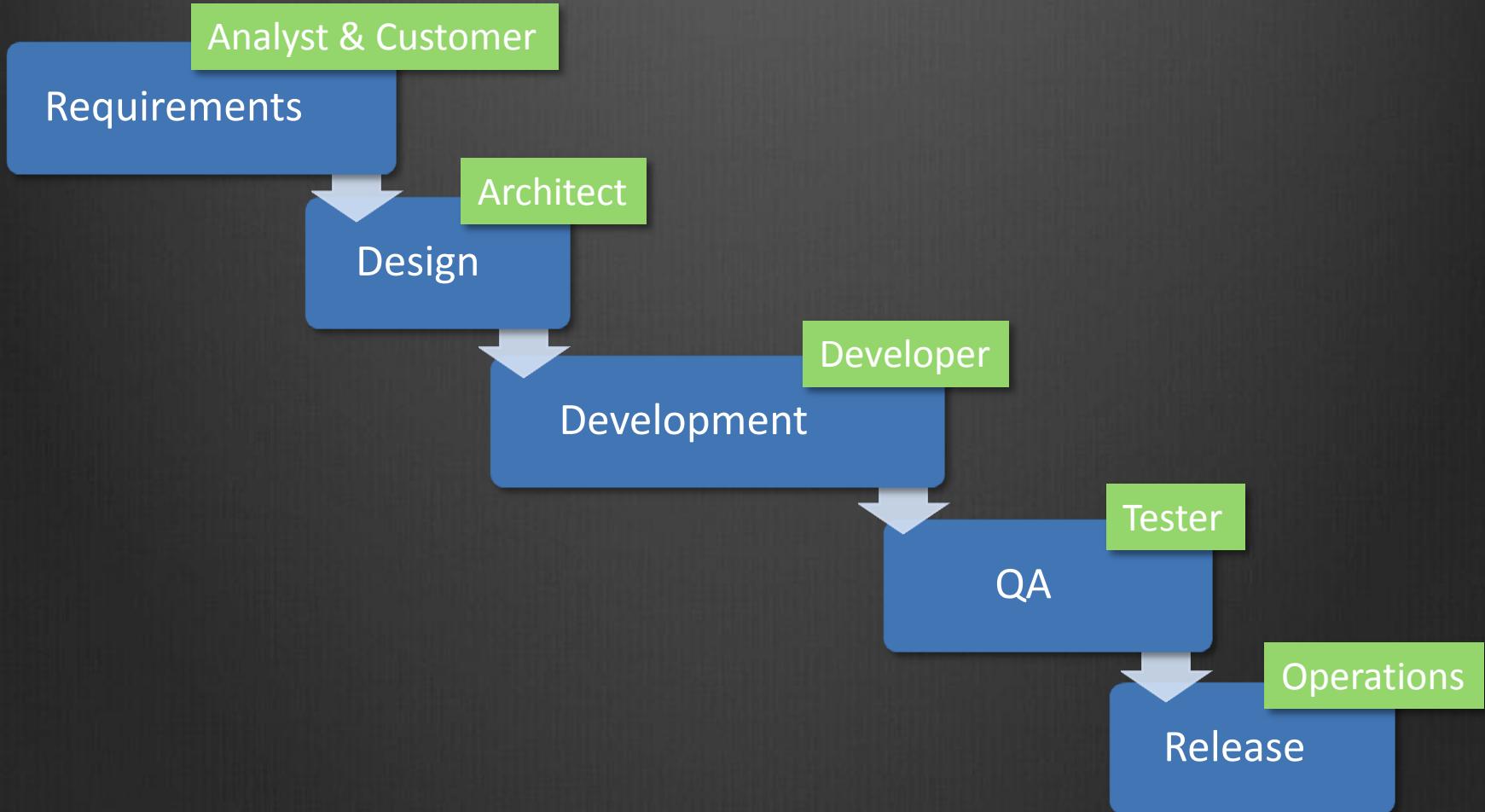
Story

What is Continuous Delivery?

Core Practices

Tools

Typical Project



Waterfall



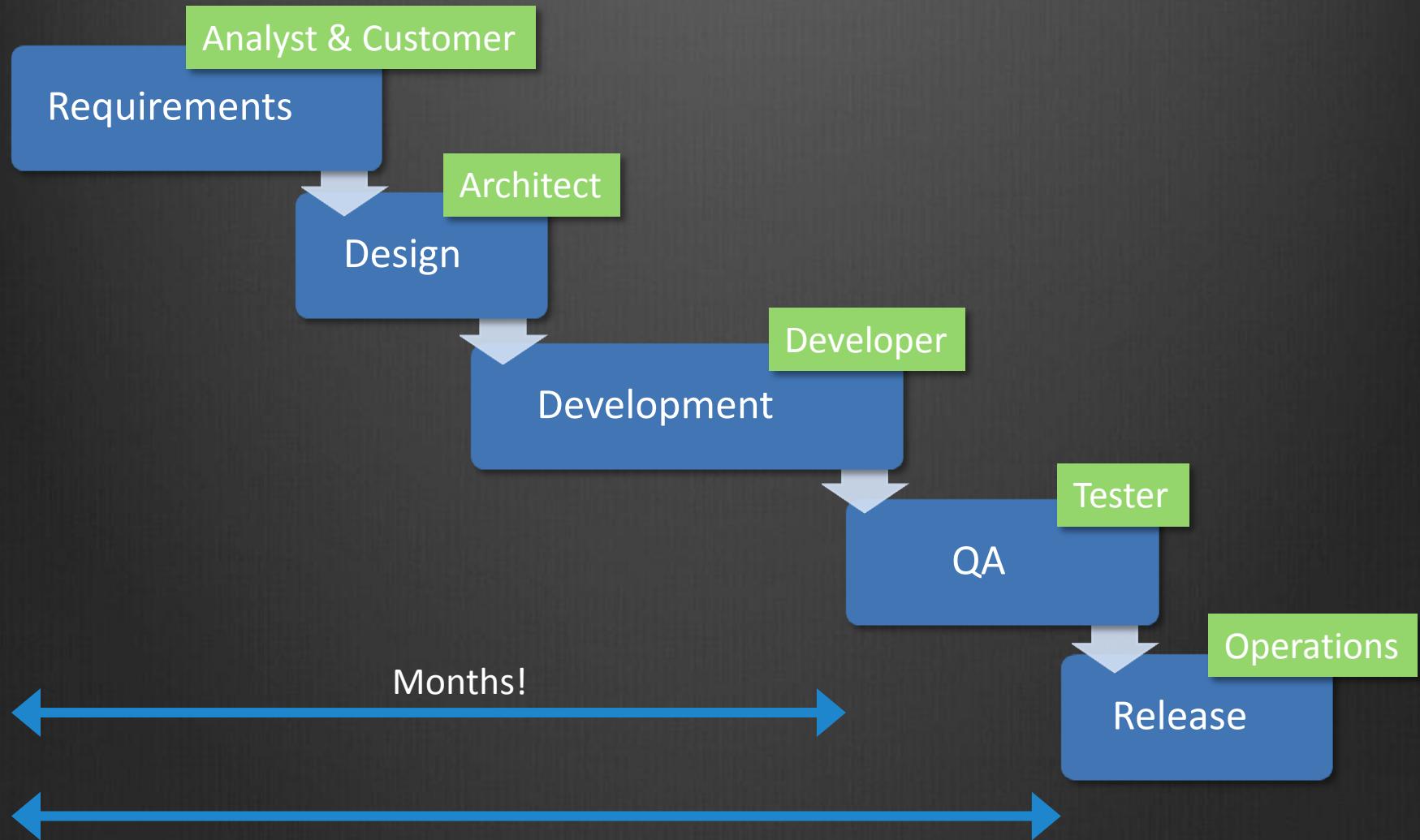
Problems with Waterfall

Long QA feedback loop

Lack of collaboration

Inability to change direction

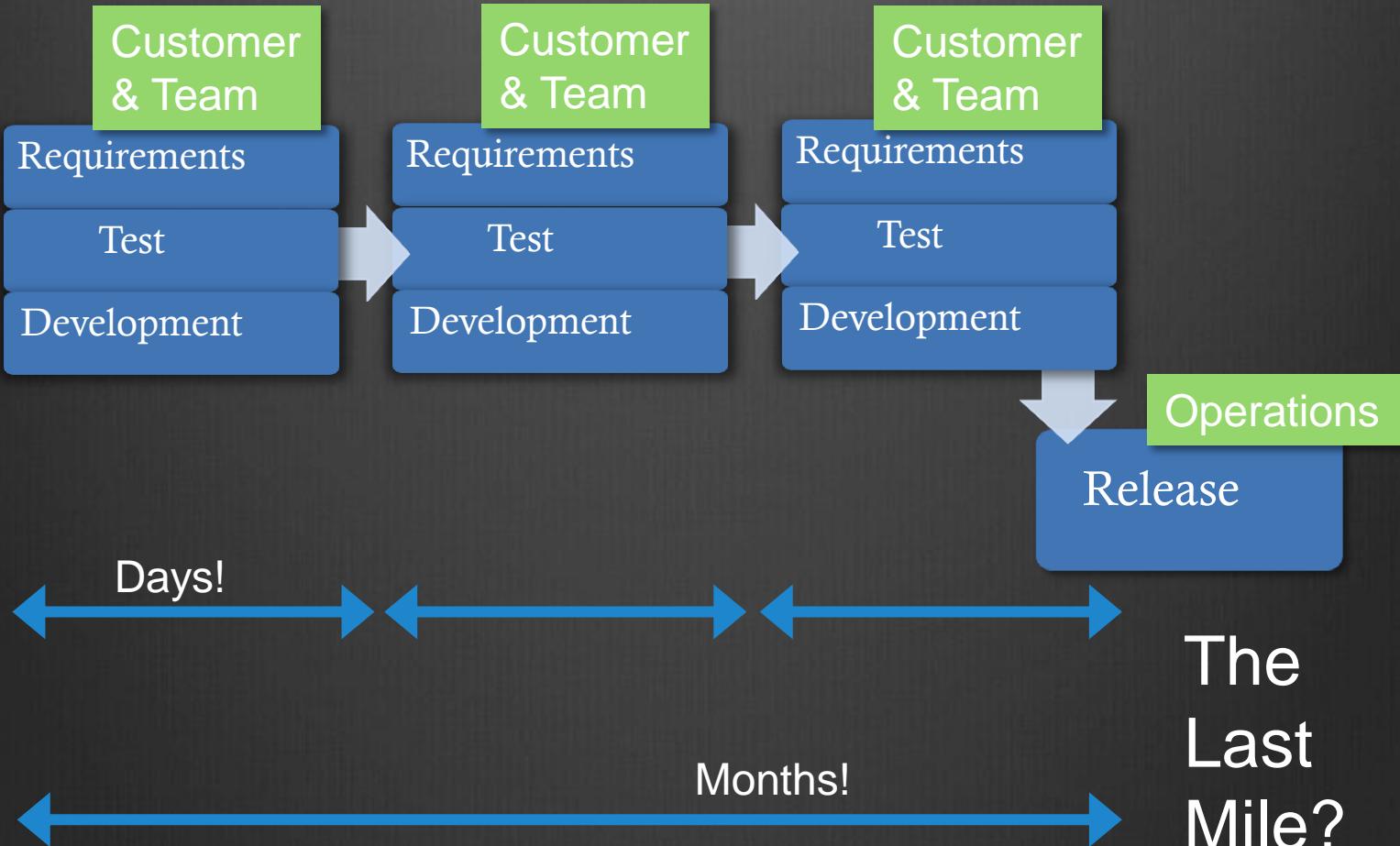
WaterFall Project



Agile



Agile Project



The Last Mile

Manual Deployments

Insufficient Configuration Management

Infrequent, Error Prone Deployments

Stressful Releases



Agenda

Story

What is Continuous Delivery?

Core Practices

Tools

What is Continuous Delivery?

The Addison-Wesley Signature Series



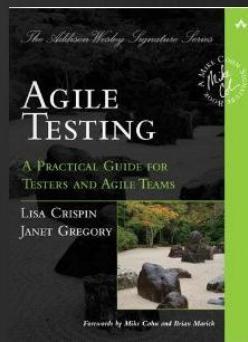
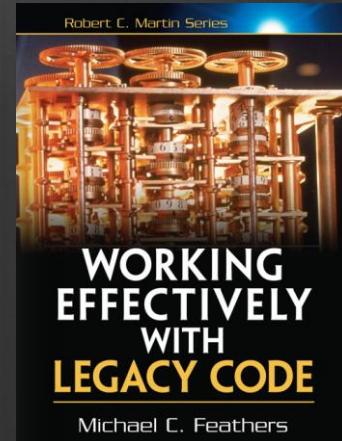
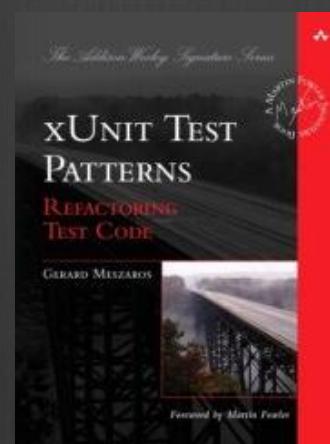
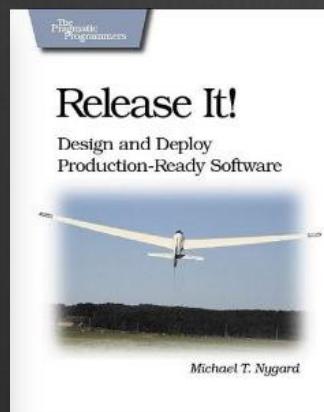
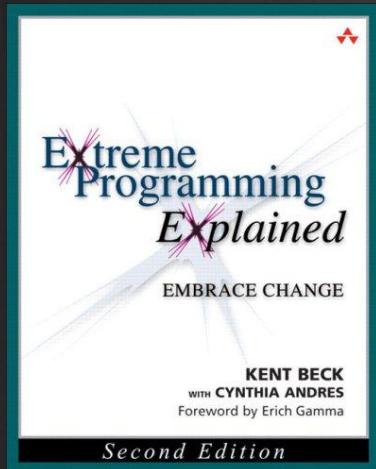
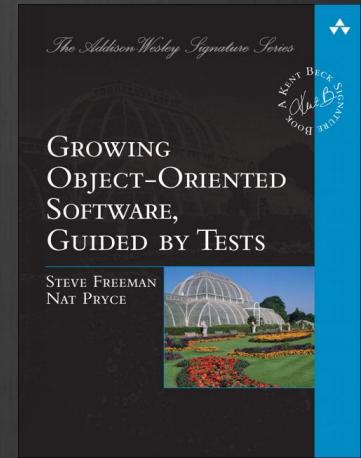
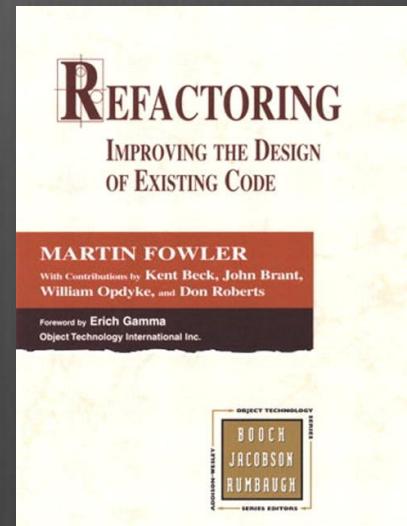
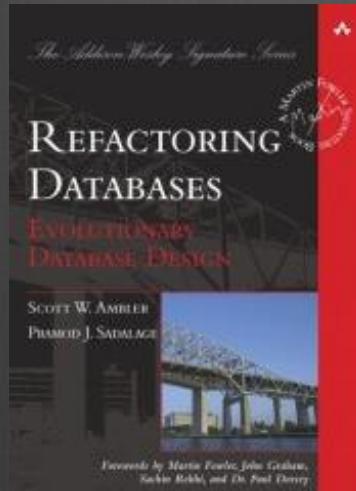
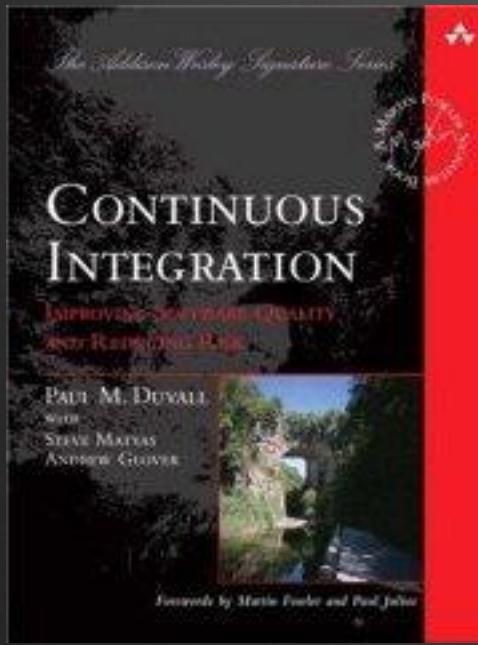
A MARTIN FOWLER SIGNATURE
BOOK

CONTINUOUS DELIVERY

RELIABLE SOFTWARE RELEASES THROUGH BUILD,
TEST, AND DEPLOYMENT AUTOMATION

JEZ HUMBLE,
DAVID FARLEY





Continuous Delivery is...

...a set of practices and principles aimed at,
building, testing, and releasing software
faster and more *frequently*.

“Our highest priority is to satisfy the customer through early and *continuous delivery* of valuable software.”

- First of the Twelve Principles behind the Agile Manifesto

Goals



Quality

Cycle Time



Cycle Time

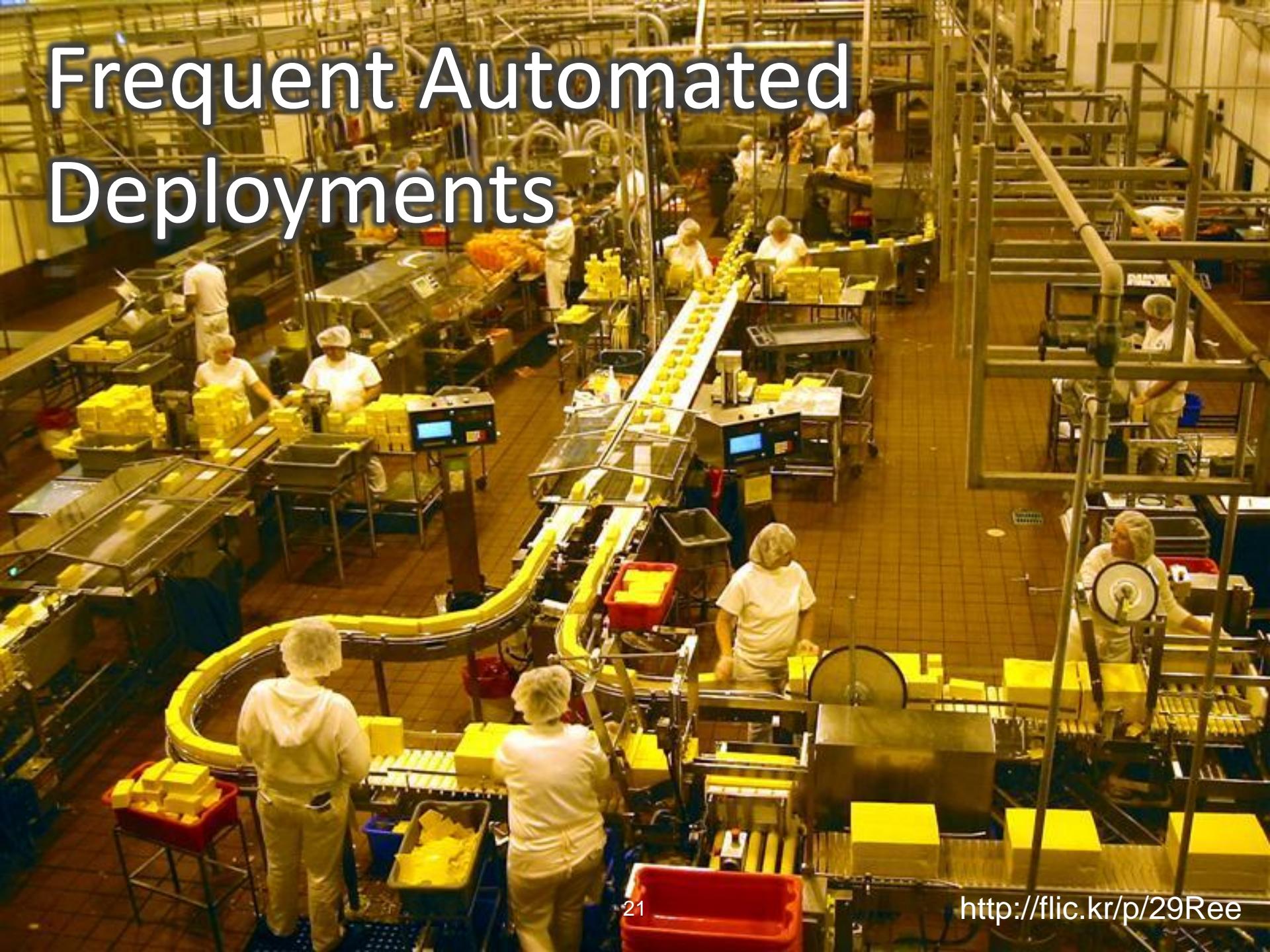
“How long would it take your organization to deploy a change [to production] that involves just one single line of code? Do you do this on a repeatable, reliable basis?”

- *Mary and Tom Poppendieck,
Implementing Lean Software Development*

Done
means
Released

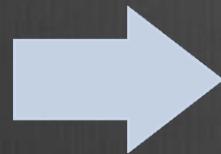


Frequent Automated Deployments

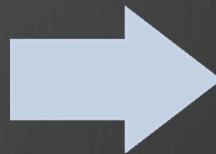


Continuous what?

Continuous
Integration



Continuous
Delivery



Continuous
Deployment

Agenda

Story

What is Continuous Delivery?

Core Practices

Tools

Core Practices

Continuous Deployment

Build Pipelines

Deployment Automation

Configuration
Management

Continuous
Integration

Testing

Agile

Configuration Management

Version Everything!

Single Identifier

Dependencies

App Configurations

Data

Environments

Continuous Integration



Continuous Integration

Check-in Daily

Commit to Trunk

Automate the Build

Keep the Build Fast

Every Commit results in Build

Test in Clone of Production

Automate Deployment

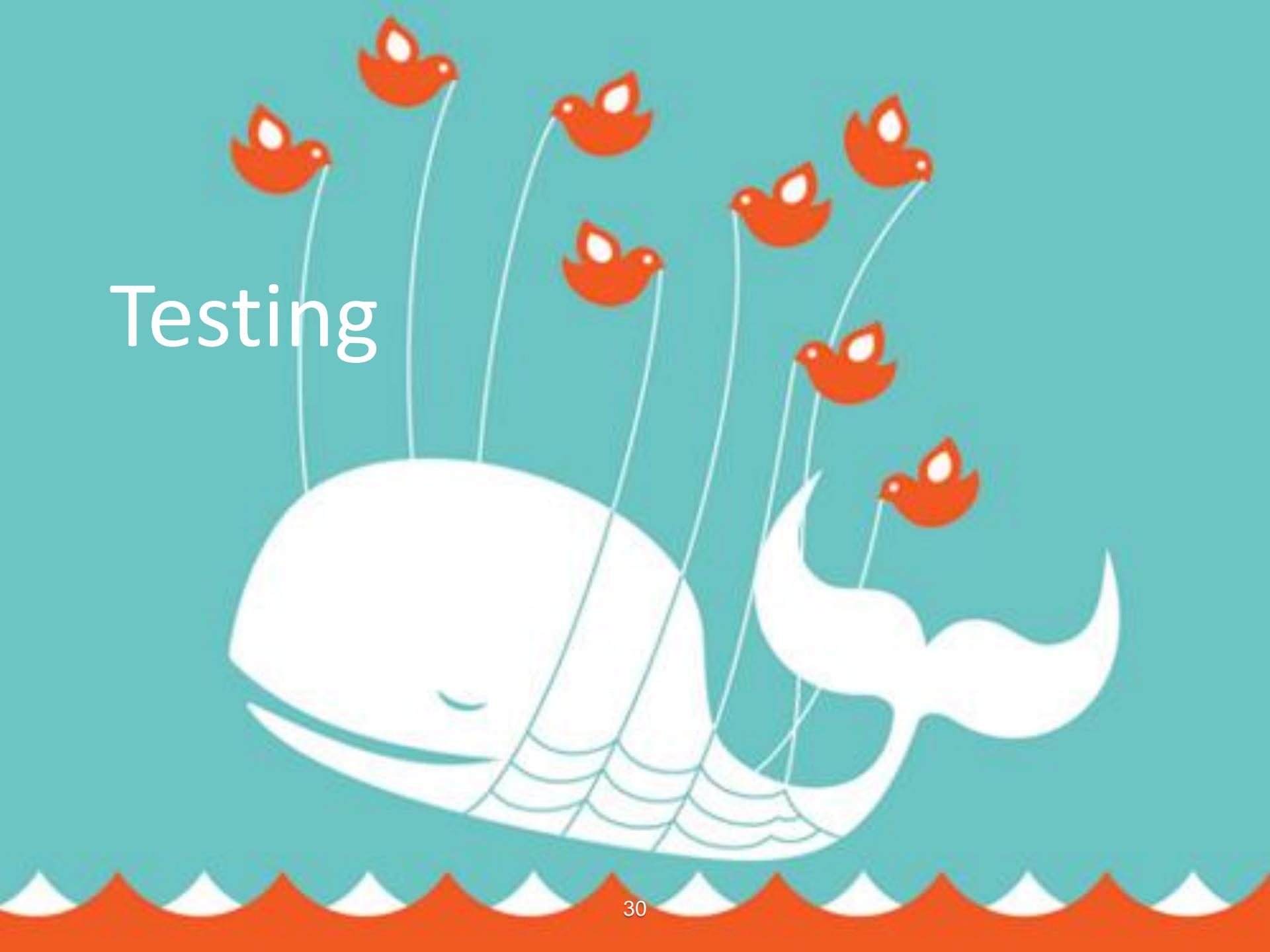
Recommended Practices

Extreme Programming (XP)

Fail a Build for Design Breaches

Fail a Build for Slow Tests

Fail a Build for Warnings & Code Style
Breaches



Testing

Kinds of Tests

Unit Tests

Integration Tests

Functional/Acceptance Tests

Performance & Load Tests

Penetration Tests

Exploratory Tests

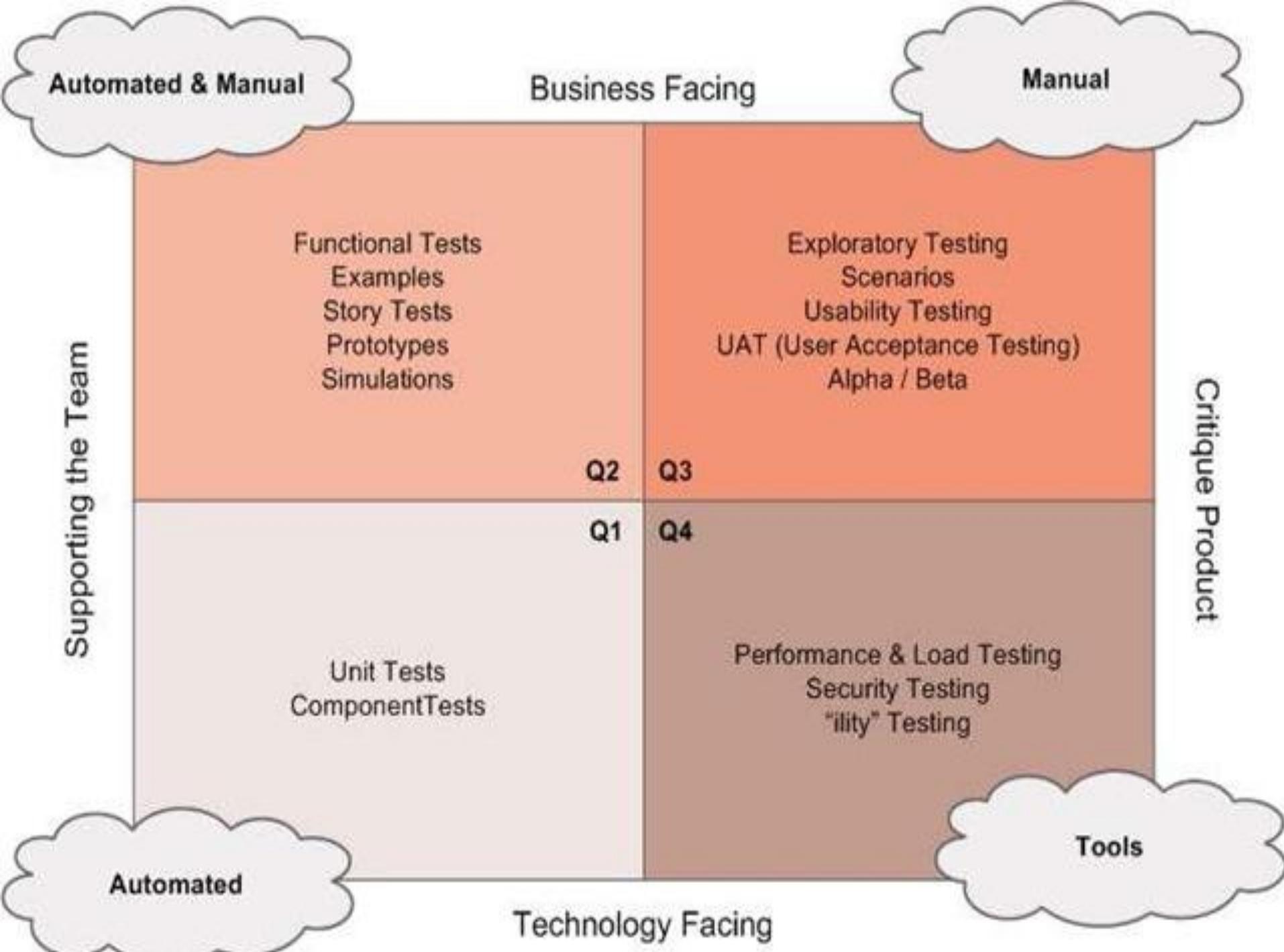
Testing Strategy

Identify and Prioritize Project Risk

Decide what Actions to Take

Tests = Executable Specifications

Confidence



Testing Recommendations

Automate your Tests

Use Fakes/Mocks

Automated Acceptance Testing

Automated Acceptance Tests

Fast Feedback

Reduce Tester workload

Testers can do Exploratory Testing

Regression Tests

Requirements can be generated from Tests

Acceptance Test Approaches

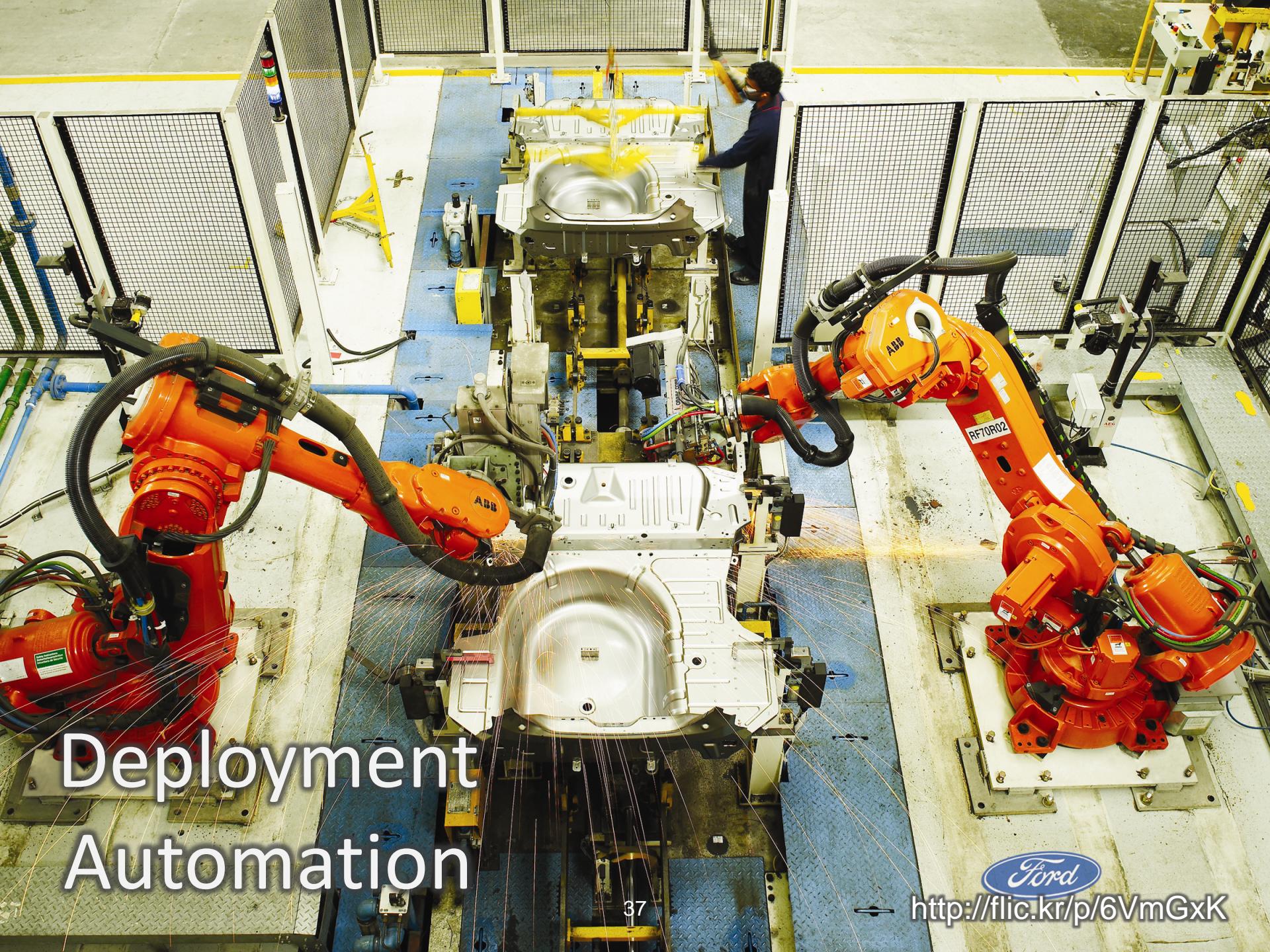
Acceptance Test Driven Development (ATDD)

Behavior Driven Development (BDD)

Given [*some precondition*]

When [*some event*]

Then [*some result*]

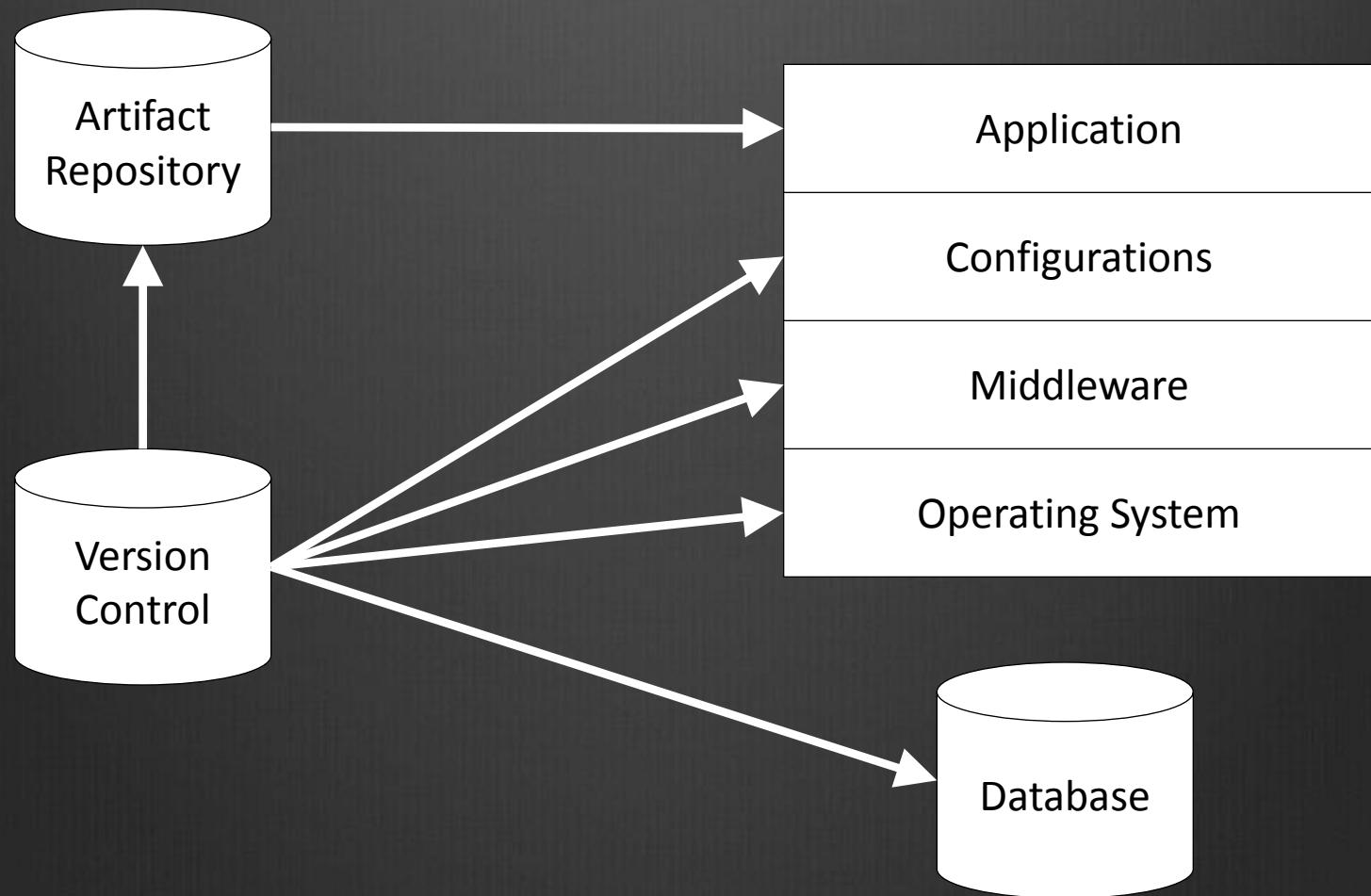


Deployment Automation

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 <http://flic.kr/p/6VmGxK>

Deployment Automation



Use Appropriate Technology

Scripting Approaches

1. Script logs into each box and runs deployment script commands
2. Script runs locally, each remote machine has agent execute script
3. Package app using platform's packaging technology, and use infrastructure management tools push new versions

Database Deployments

Version your Database

Evolve Your Database Incrementally

Environment Management

Version your Application Configuration

Version your Operating System

Deploying to the Cloud



<http://flic.kr/p/4R35Dd>

Build Pipelines



Build Pipelines

A Build Pipeline is an automated manifestation of your process for getting software from version control into the hands of your users.

Synonyms

Build Pipeline

Deployment Pipeline

Continuous Integration Pipeline

Deployment Production Line

Living Build

Build Pipelines

A Chain of Jobs

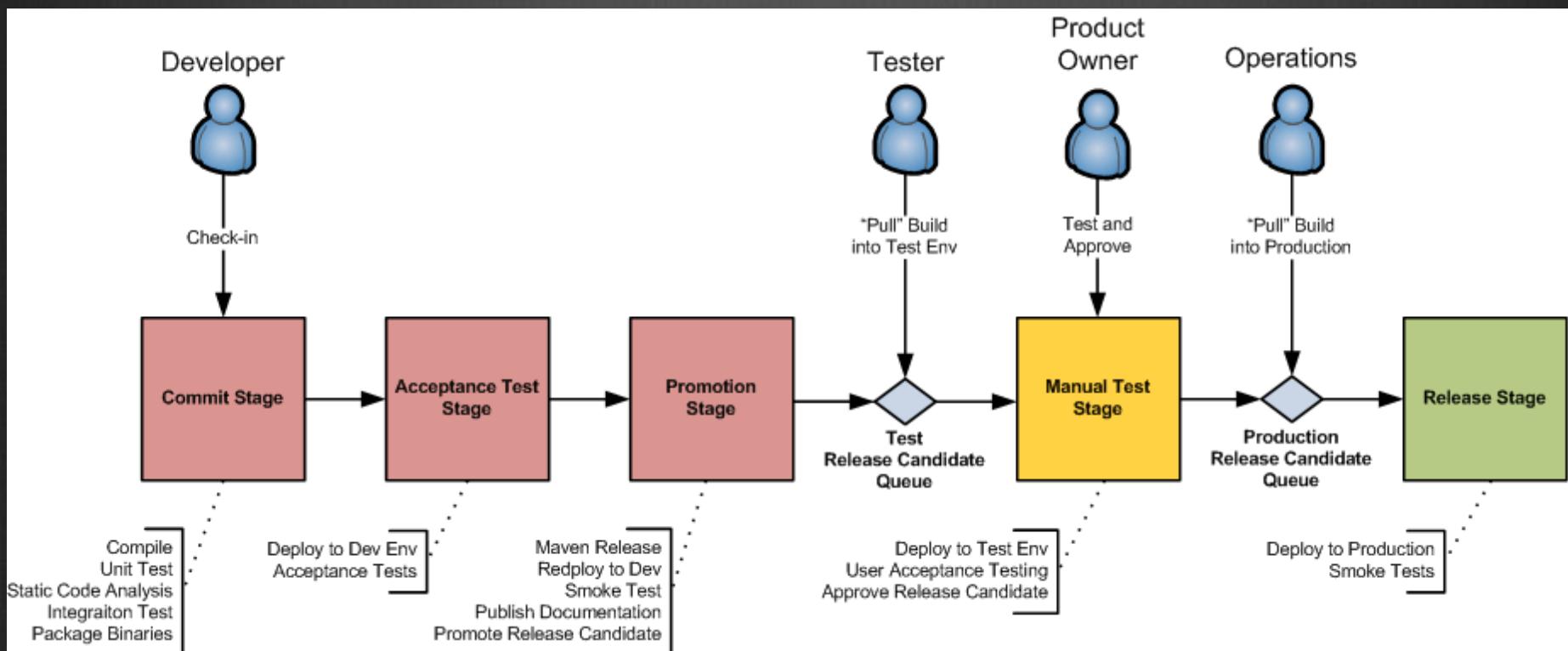
Early Jobs run Fast

Every Check-in creates a new Pipeline

When a Job Fails, the Pipeline fails

Keep Code Production Ready

Stages of a Pipeline



Pipeline Practices

Build Once, Deploy Many

Deploy the Same Way to All Environments

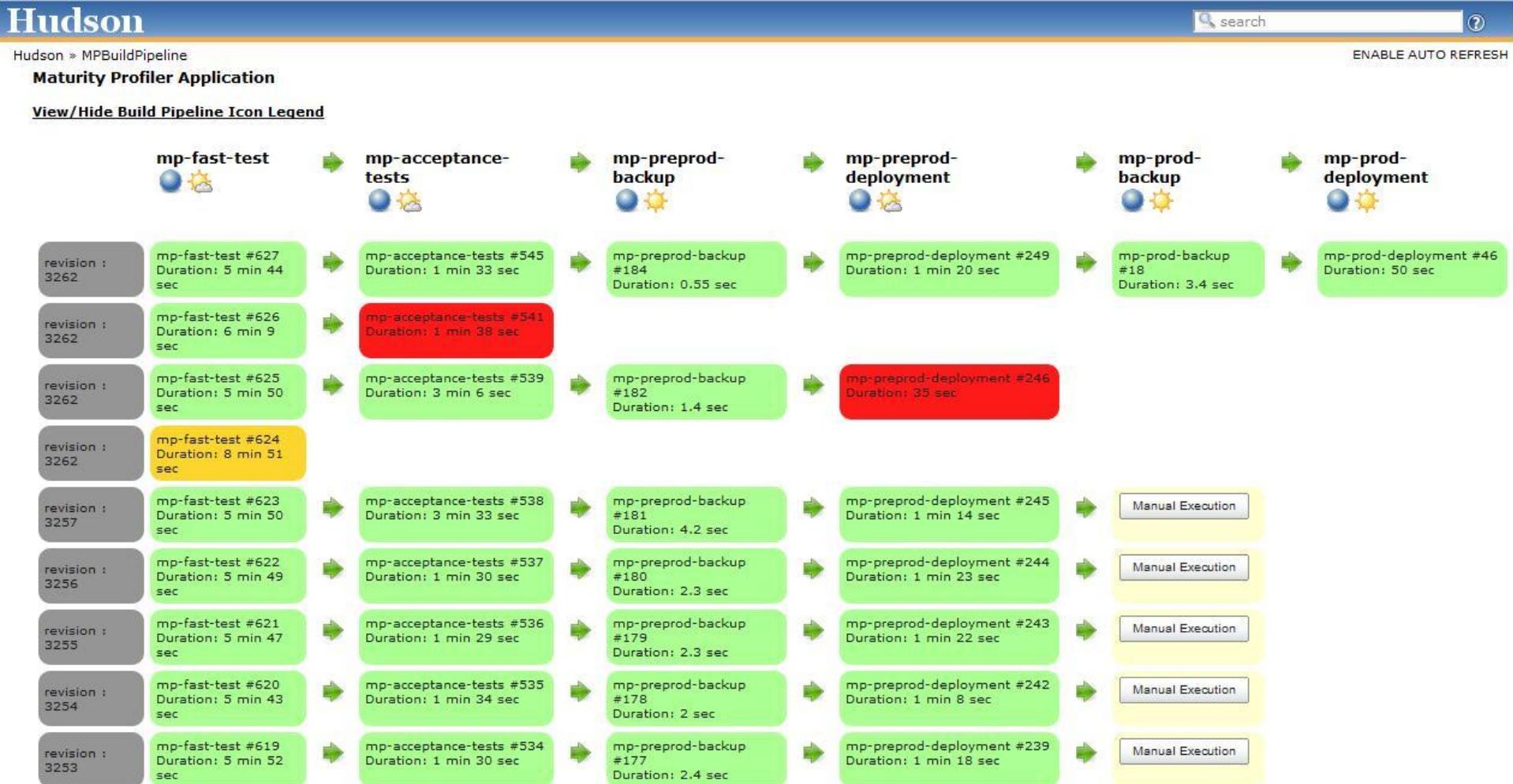
Smoke Test your Deployments

Deploy into a Copy of Production

Each Change should Propagate Instantly

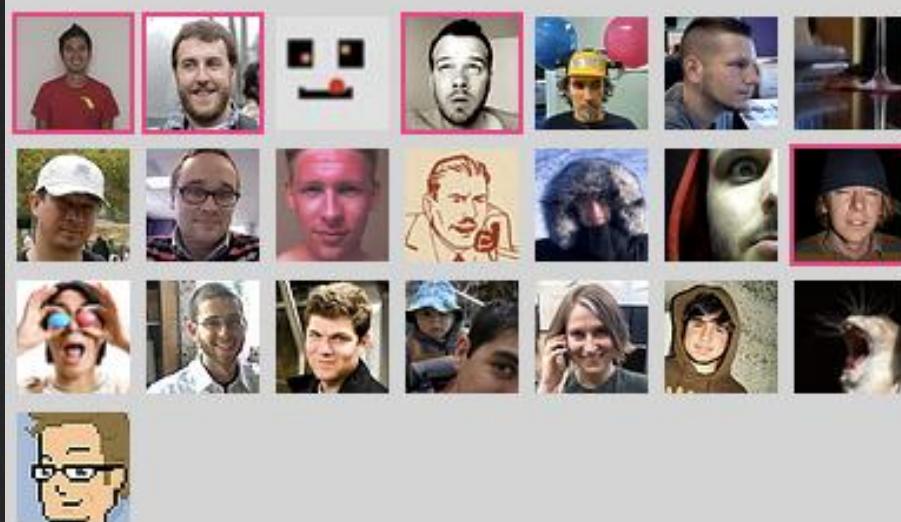
If any part fails, Stop the line

Pull System



Continuous Deployment

FEATURING



Flickr was last deployed 1 day ago, including 24 changes by 4 people.

In the last week there were 70 deploys of 521 changes by 23 people.

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Agenda

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What is Continuous Delivery?

Core Practices

Tools

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Kawasaki

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Tools

ARMSTRONG
Made in USA

5/8 — ARMALOY — 5/8

EISEMANN

REINWAGNER

11/16

J

S

B

13/16

Version Control



Dependency Management



Database Management



Infrastructure Management



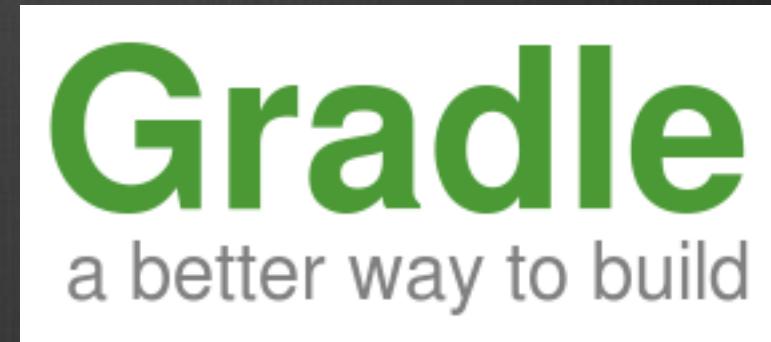
Continuous Integration



Jenkins



Build Automation



Testing Tools



Acceptance Test Tools



Questions

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