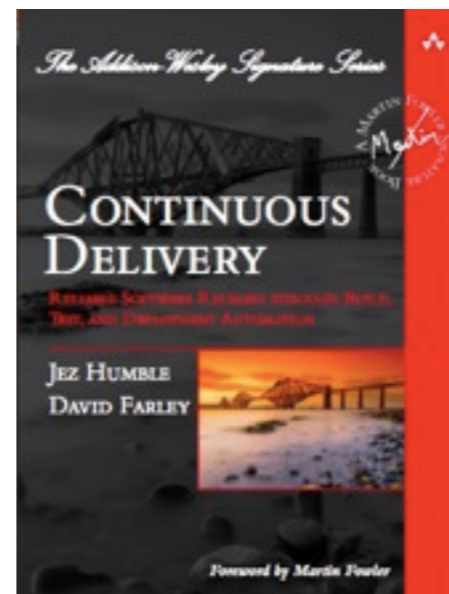


# remediation patterns

Jez Humble  
QCon London 2011



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# remediation

ITIL: “Recovery to a known state after a failed Change or Release.”

Recovery: “Returning a Configuration Item or an IT Service to a working state.”

Jez: “Fixing shit when it breaks”

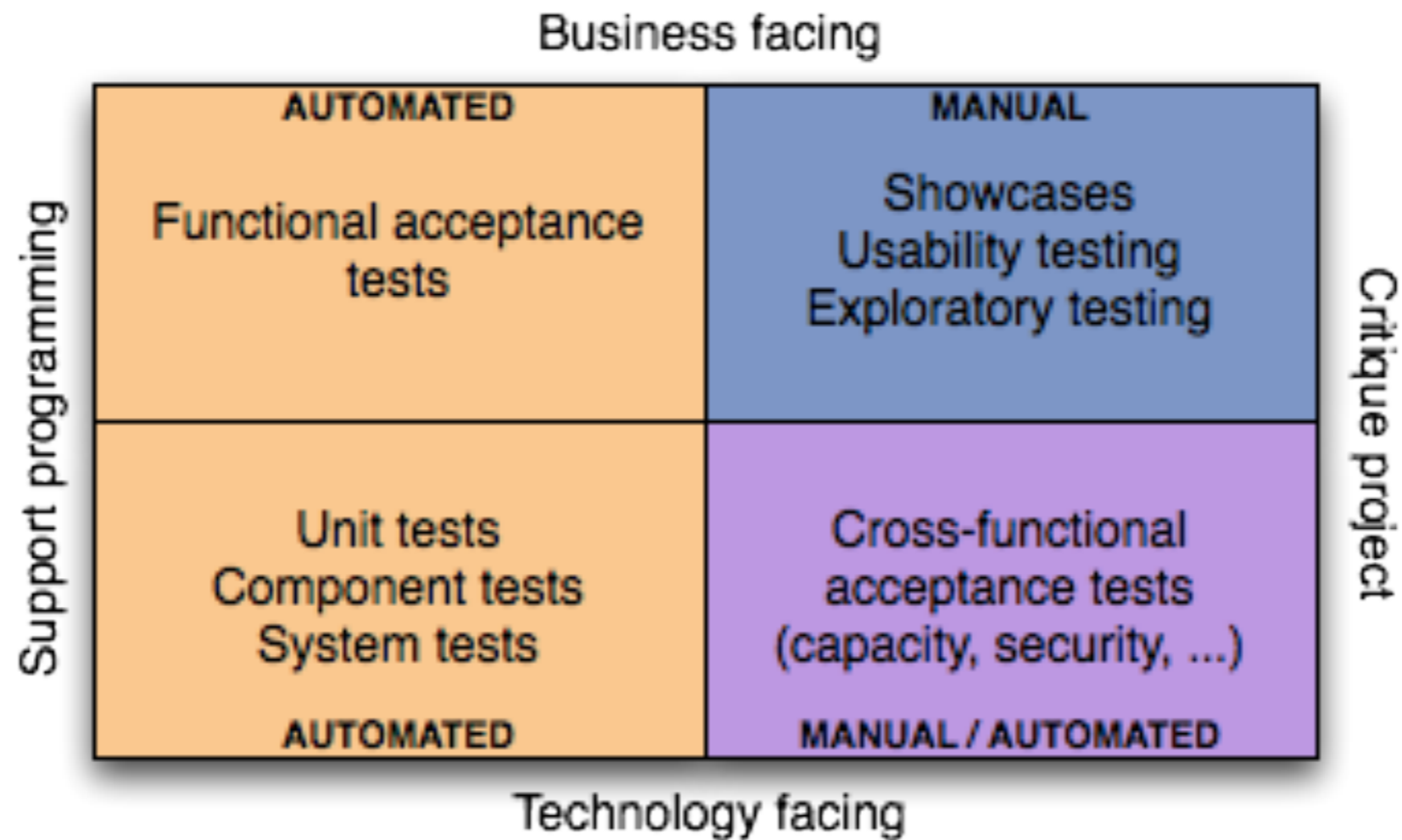
# strategies for remediation

prevention

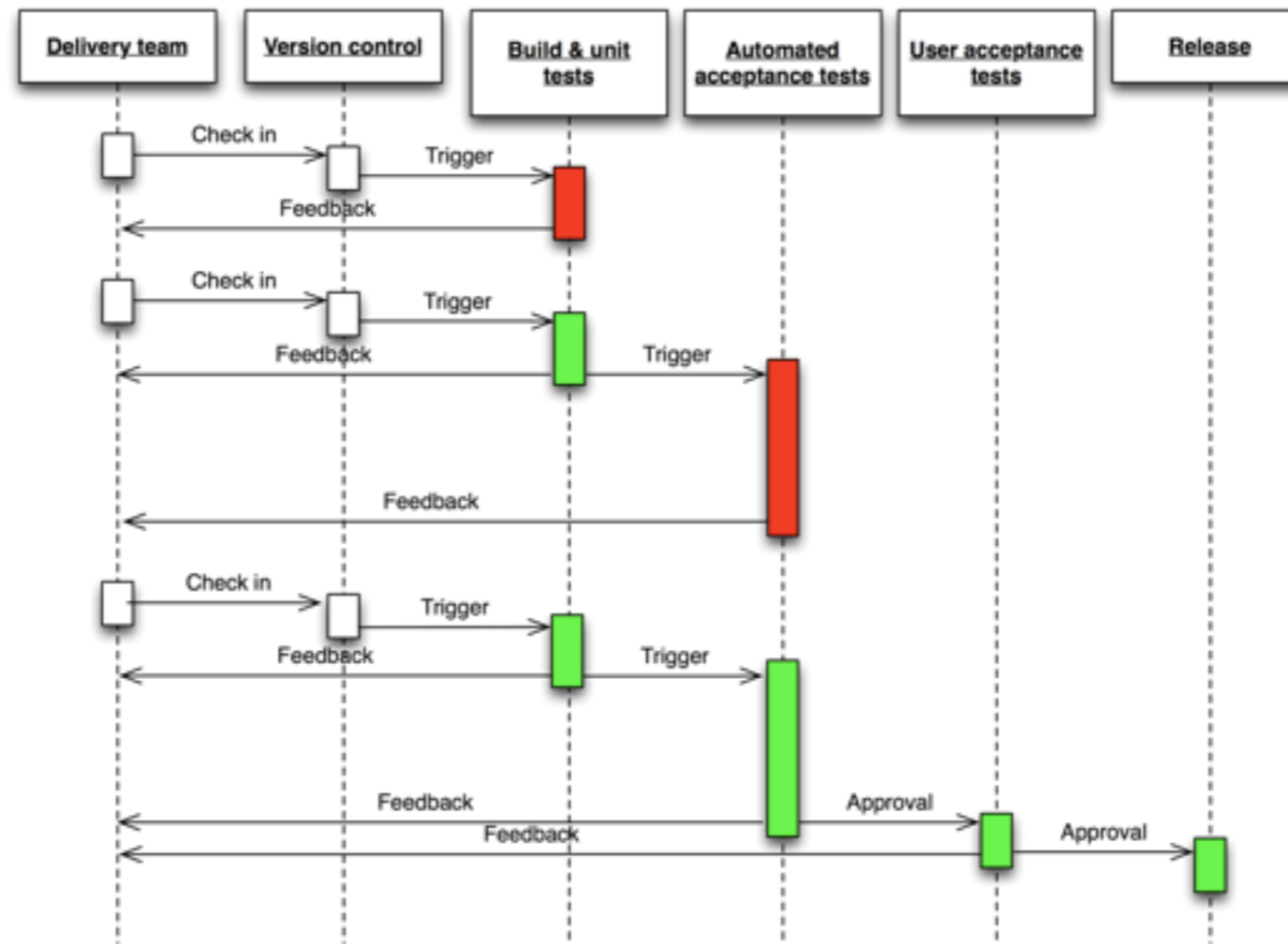
patterns for low-risk release

patterns for incremental delivery

# 1 oz of prevention



# deployment pipeline



# the hard bits

testing on production environments

creating maintainable acceptance tests

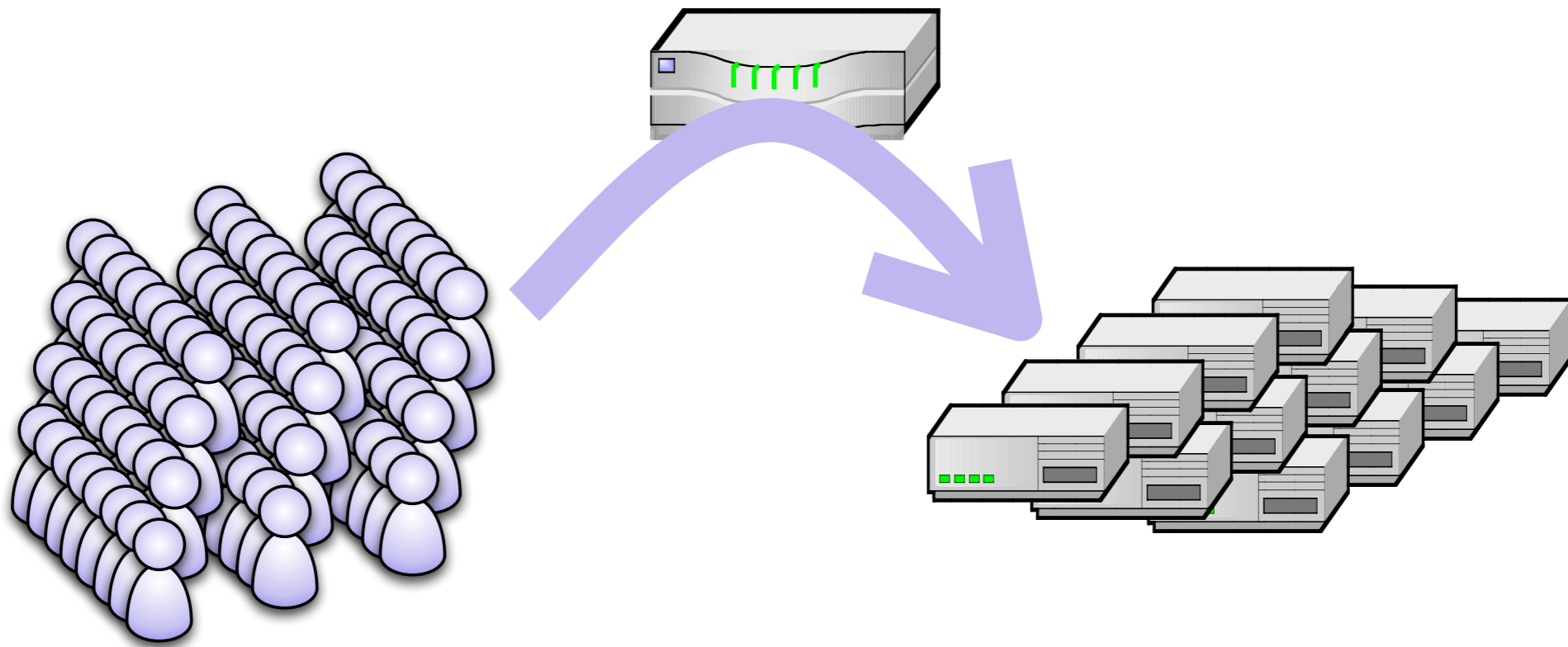
testing cross-functional requirements

# reducing release risk

automate provisioning and deployment

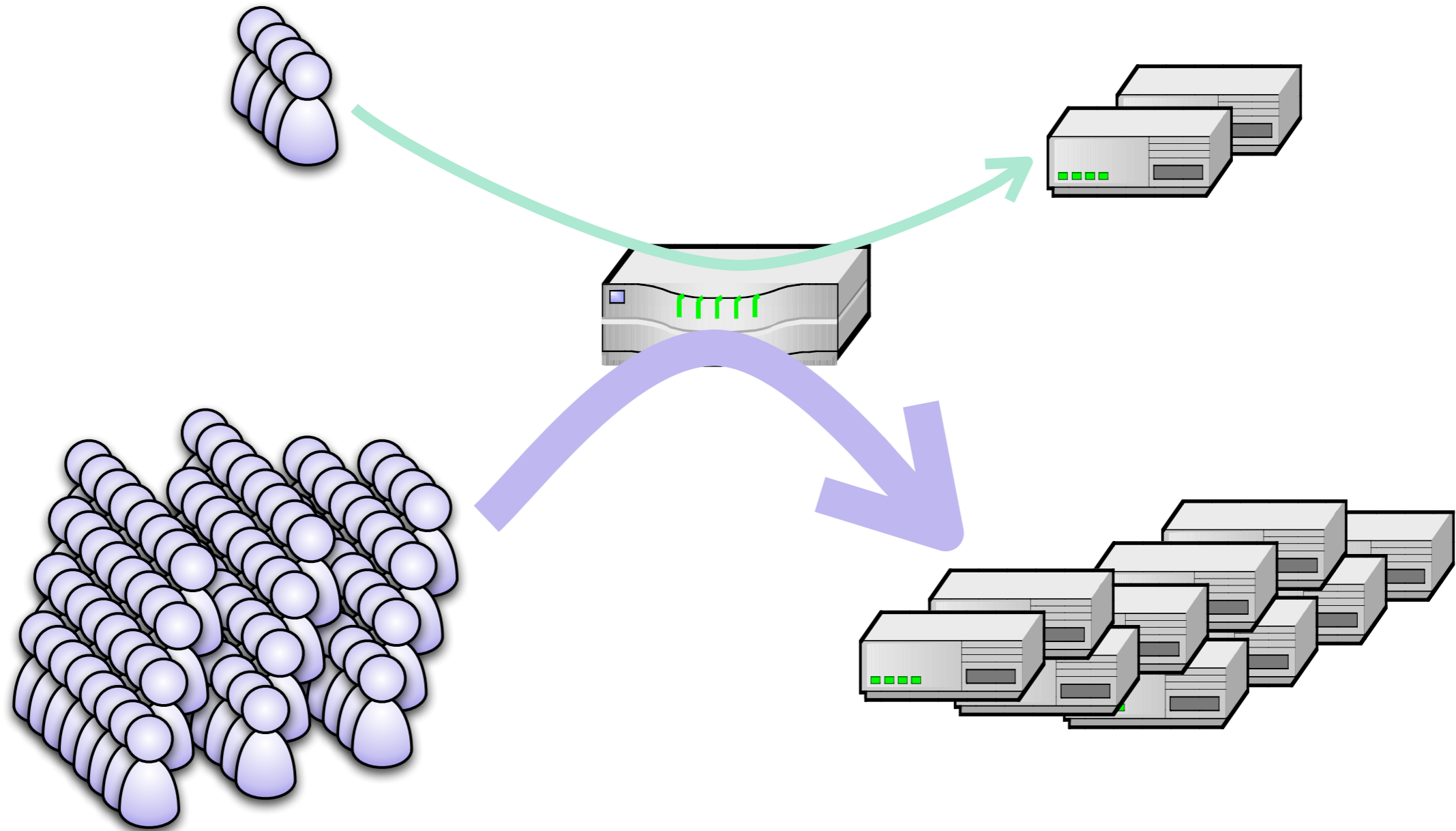
ensure devs, testers and ops collaborate  
throughout

# canary releasing





# canary releasing



# canary releasing

reduce risk of release

multivariant testing

performance testing

A fluorescence microscopy image showing a large number of T cells. The cells are stained with various fluorescent dyes, resulting in a mix of colors including blue, green, red, and yellow. The cells are scattered across the field of view, with some appearing in small clusters and others more isolated. The background is dark, making the brightly stained cells stand out.

# immune system

**what if someone replaced your  
“buy” button with spacer.gif?**

T cells <http://www.flickr.com/photos/gehealthcare/3326186490/>

# monitoring



**Business metrics - revenue, # orders, # users**

**Ops metrics - changes, incidents, TTD, TTR, TBF**

**Technical metrics - TPS, response time, hits**

<http://www.flickr.com/photos/wwarby/3296379139/>

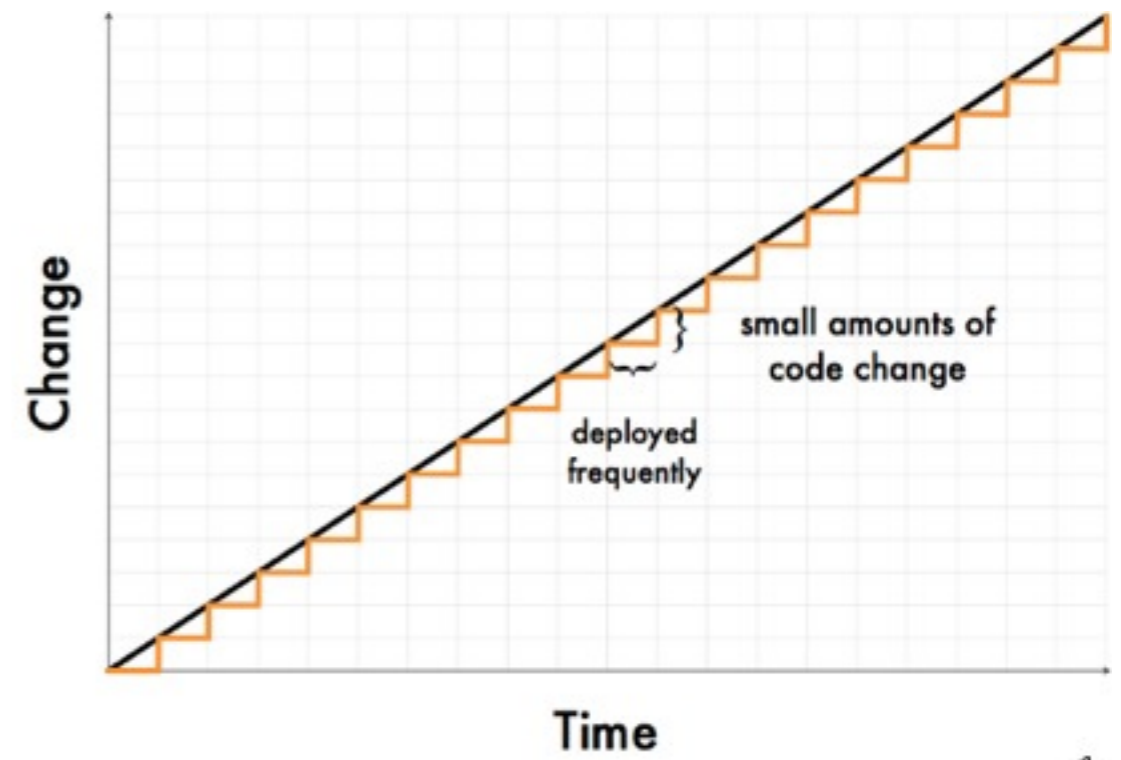
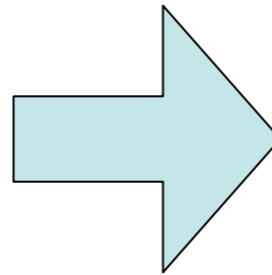
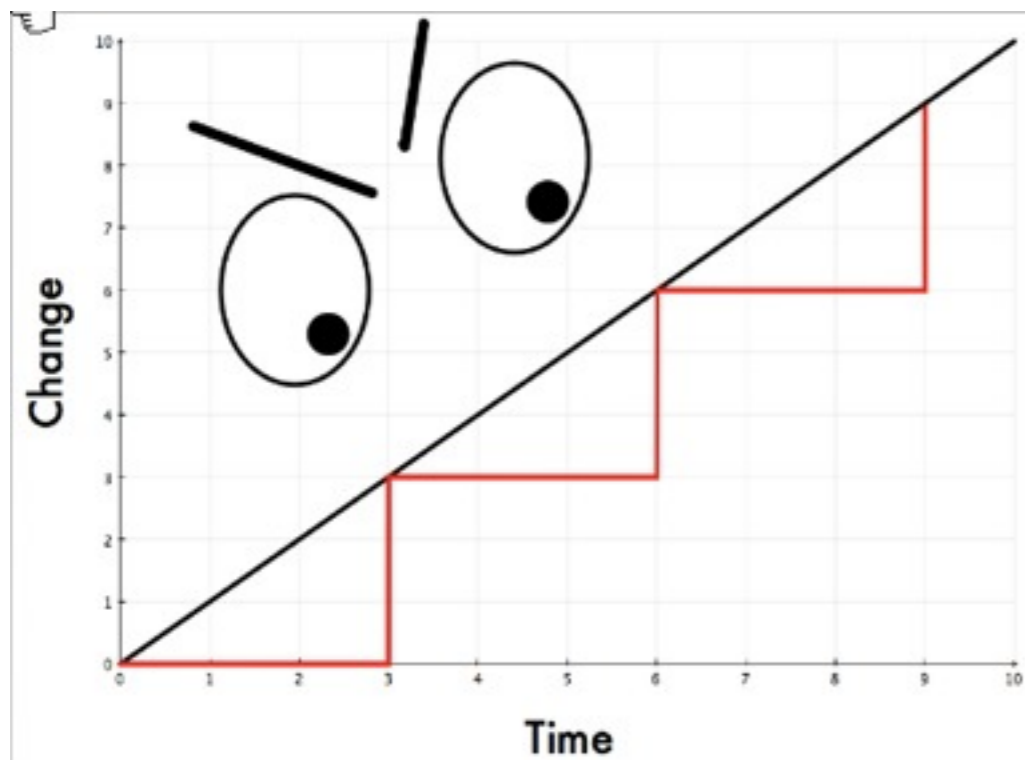
# the hard bits

root cause analysis

collaboration

data

# incremental delivery



John Allspaw: "Ops Metametrics" <http://slidesha.re/dsSZlr>

# incremental delivery

develop on mainline

feature toggles and branch by abstraction

incremental deployments

dark launching

# feature toggles

## Config File

```
[featureToggles]
wobblyFoobars: true
flightyForkHandles: false
```

## some.jsp

```
<toggle name=wobblyFoobars>
  ... various UI elements
</toggle>
```

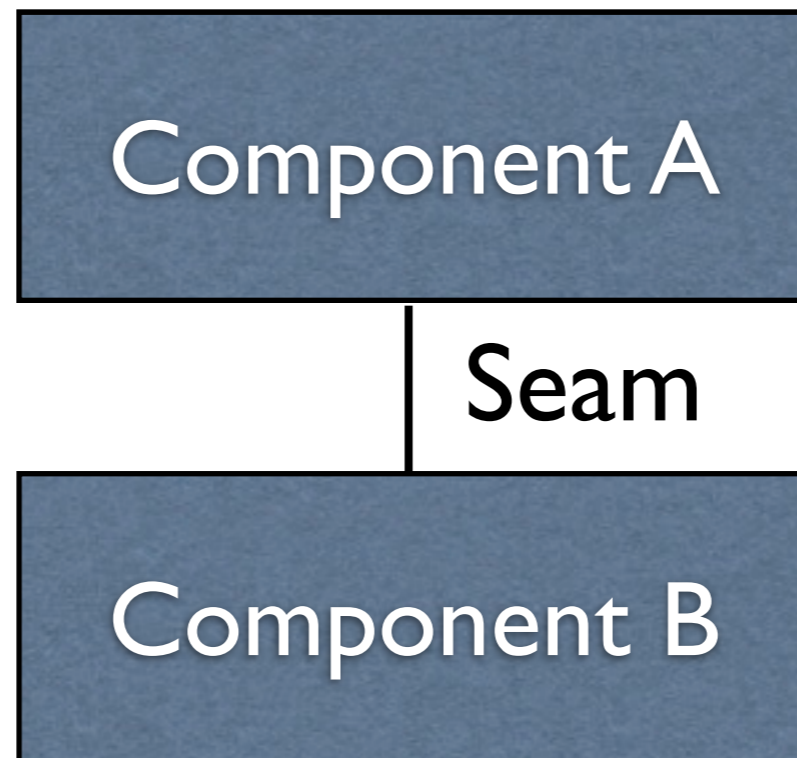
## other.java

```
forkHandle = (featureConfig.isOn('flightyForkHandles')) ?
    new FlightyForkHandler(aCandle) :
    new ForkHandler(aCandle)
```

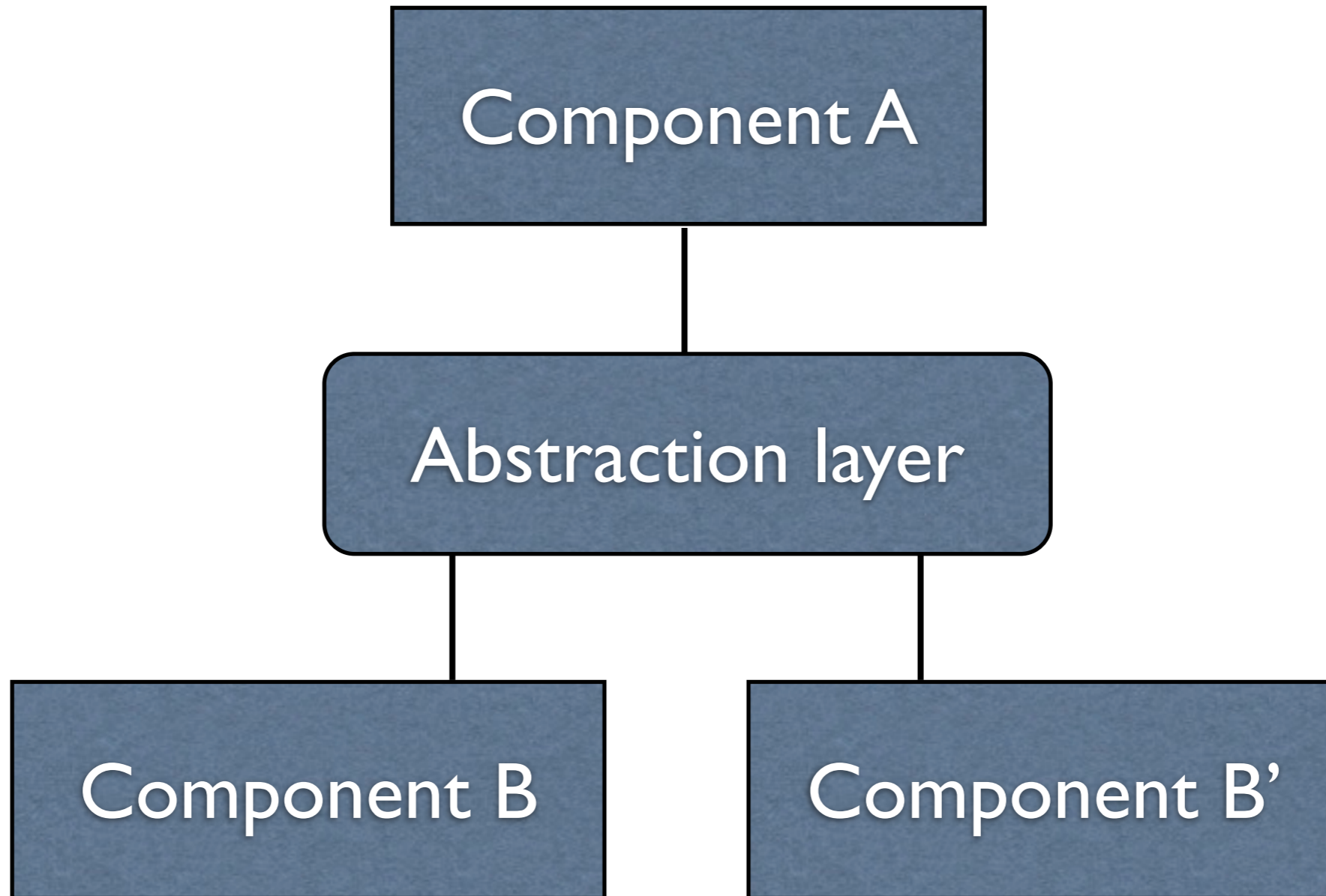
Stolen from Martin Fowler <[link to his bliki entry](#)>



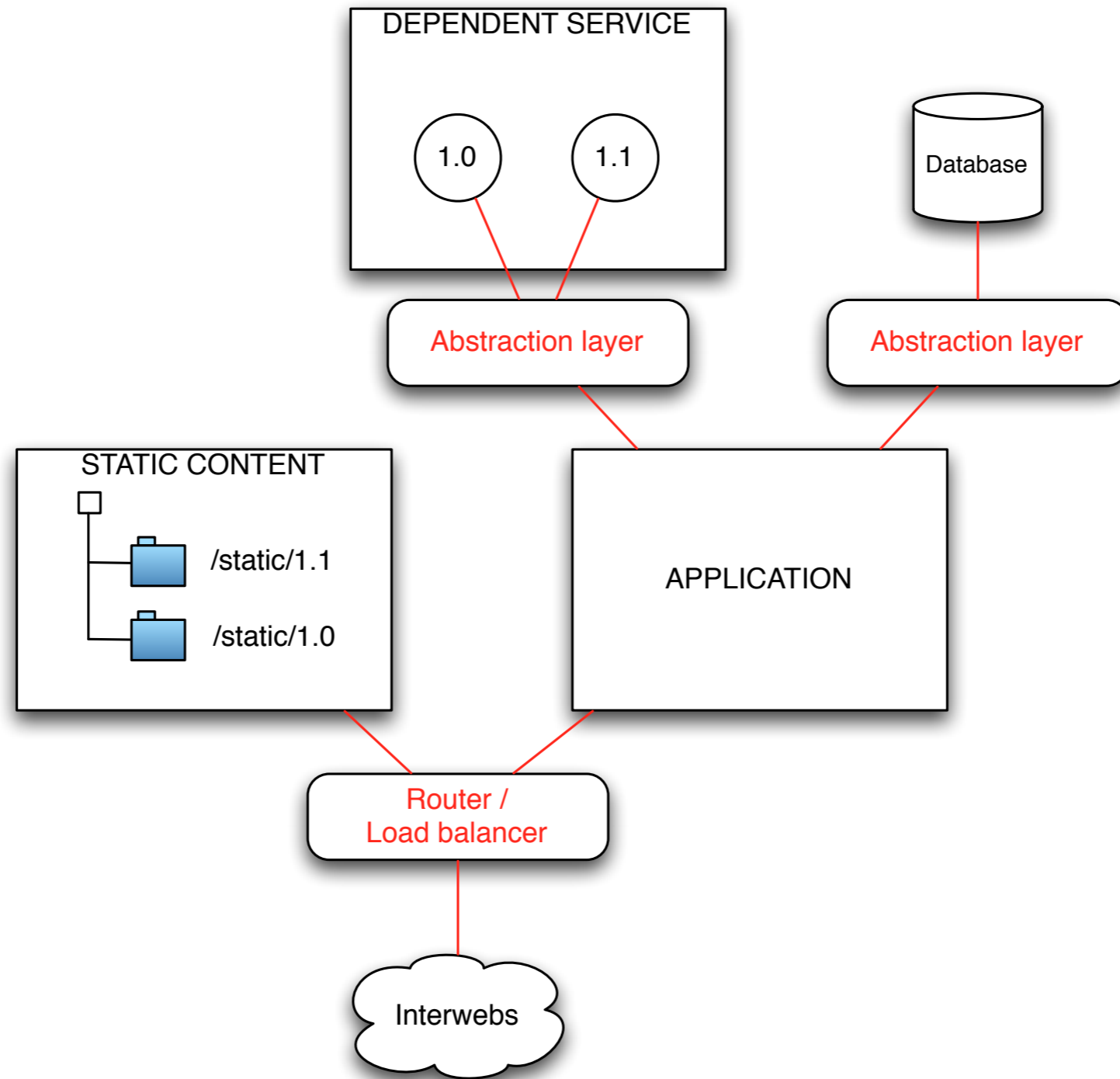
# branch by abstraction



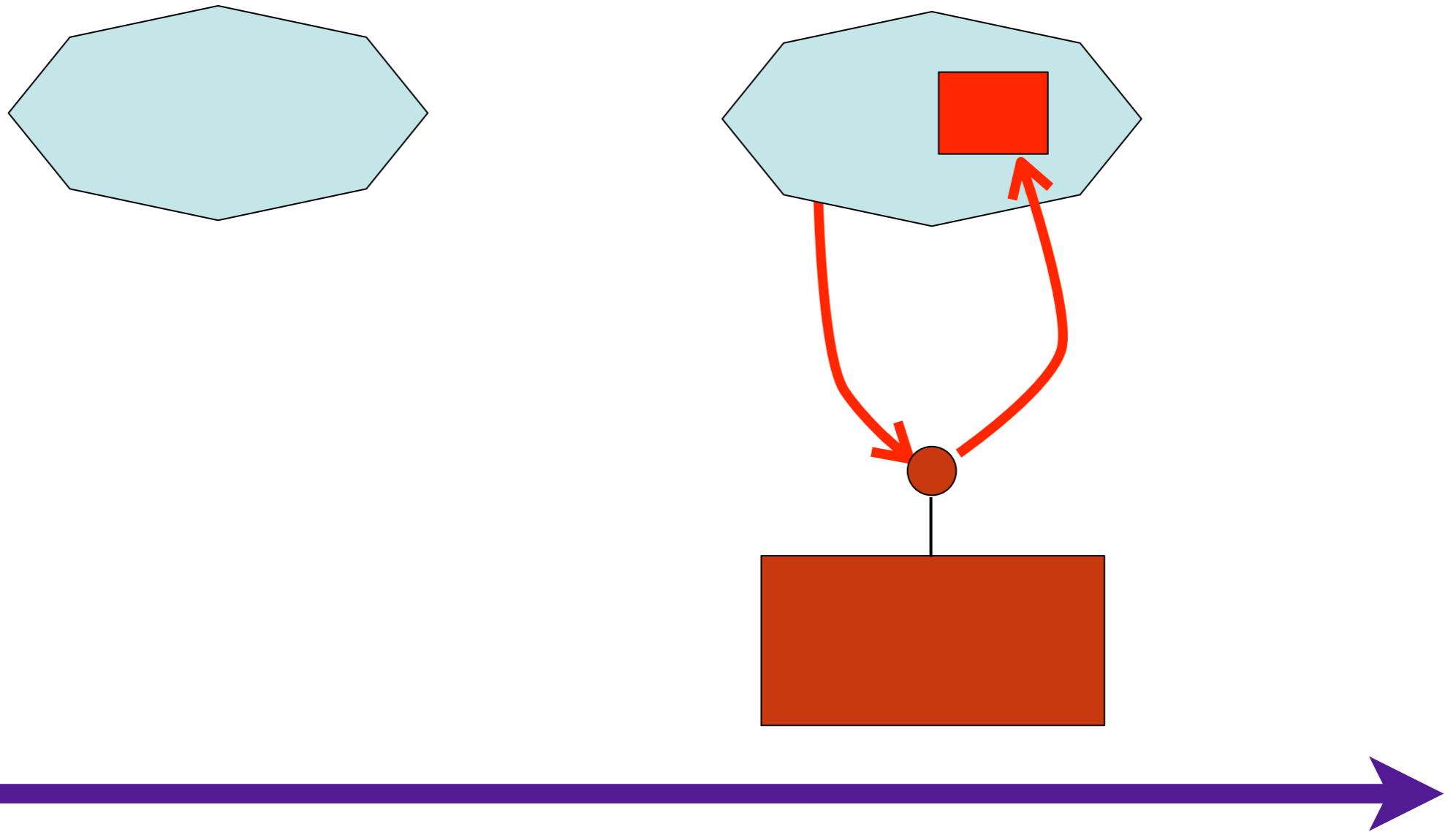
# branch by abstraction



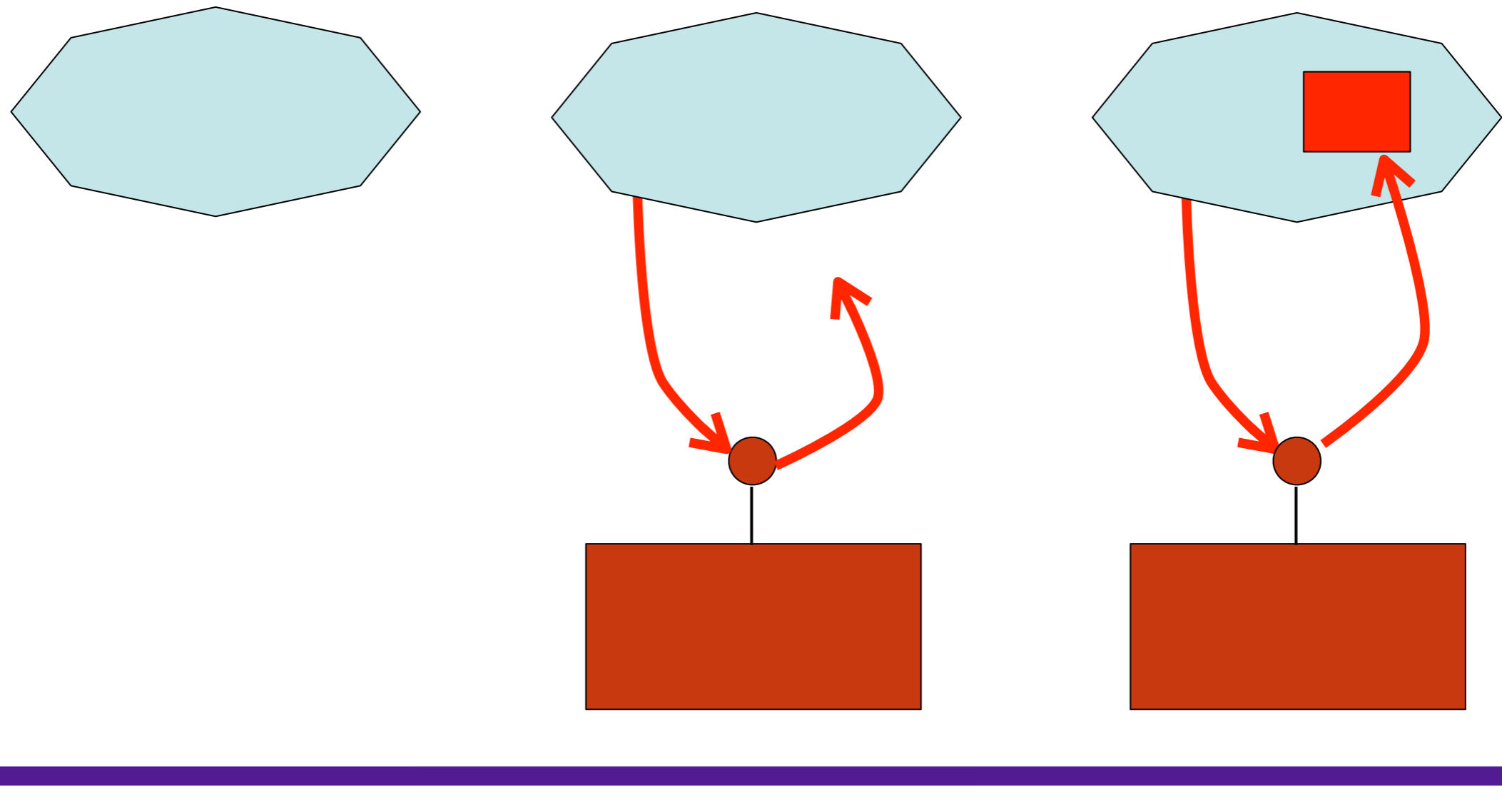
# incremental deployment



# dark launching



# dark launching



# measuring effectiveness

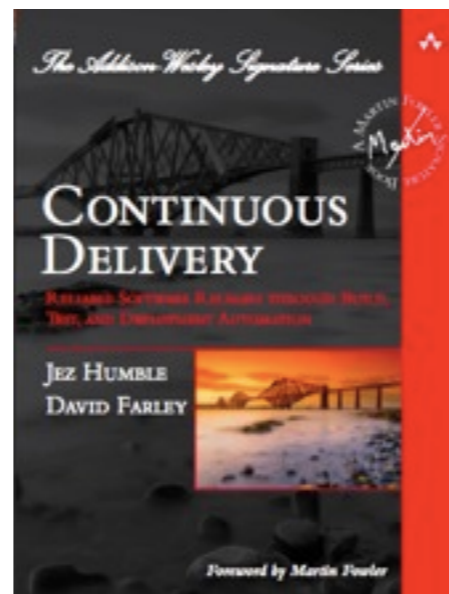
How long would it take you to release a change to a single line of code?

Ops metrics - changes, incidents, TTD, TTR, TBF

If your data center blew up, how long would you take to restore service?

# questions

Jez Humble



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