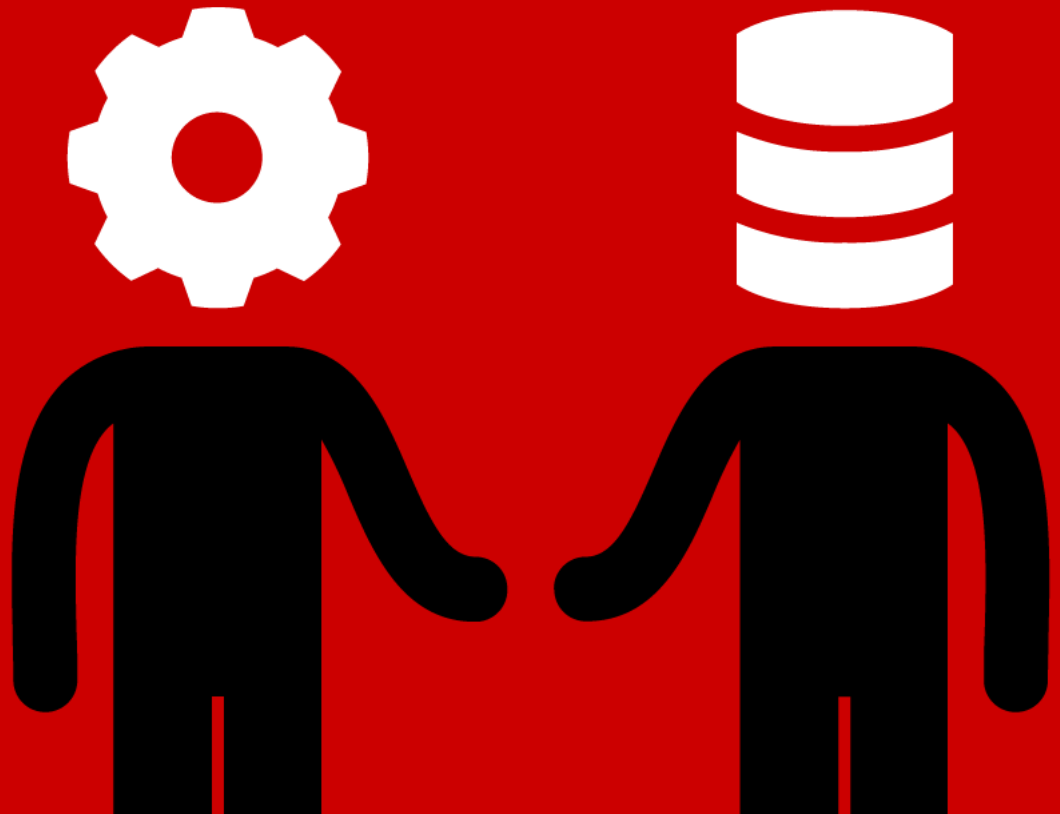
DevOps 101

An Introduction to DevOps



DevOpsGuys

redgate

Introductions

James Betteley

DevOps Evangelist & Coach.
DevOps Transformation

Agenda

Introductions (done!)

DevOps History

DevOps Defined

Why DevOps Happened

DevOps Principles

DevOps Practices

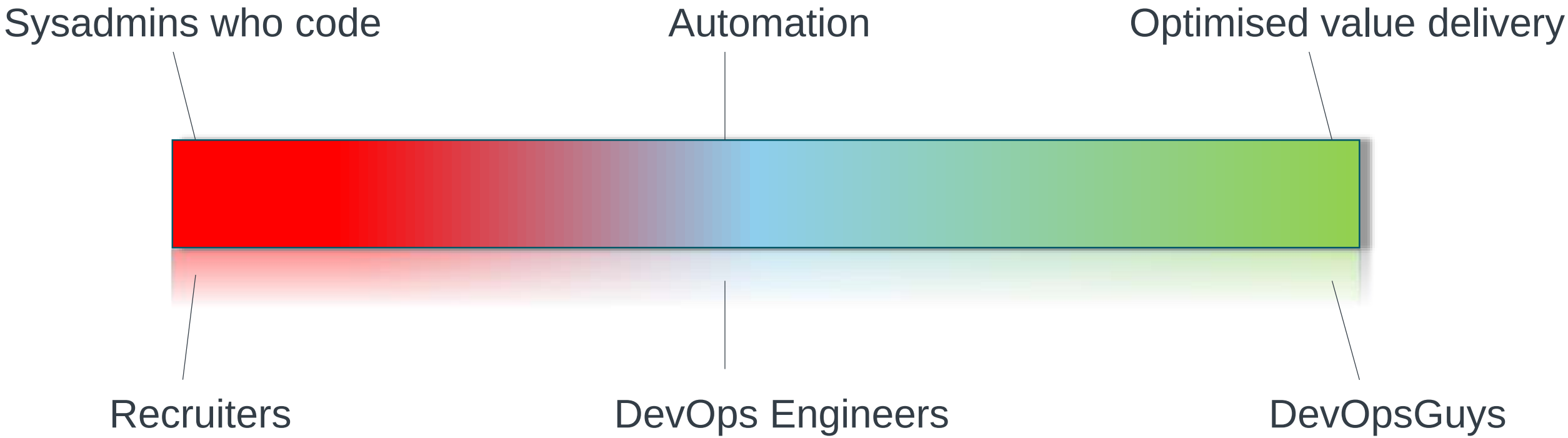
How do we do DevOps?

DevOps KPIs

DevOps History Lesson

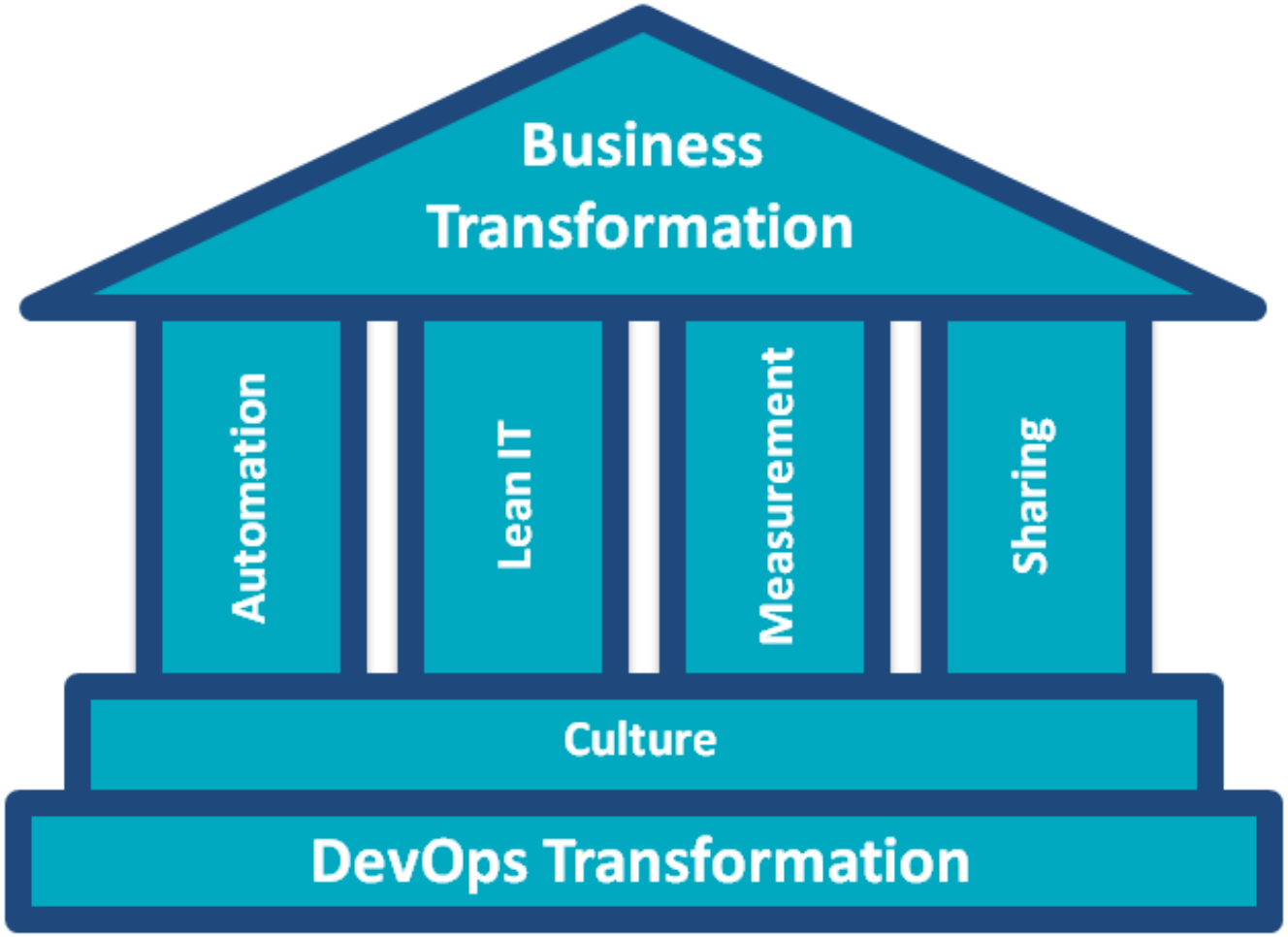
- 2008 Patrick Dubois is a consultant working on a DC migration project for the Belgian government
- 2008 Agile Systems Administration group formed by Dubois and Andrew Shafer
- 2009 Velocity ‘09 – John Allspaw & Paul Hammond give talk on 10+ Deploys a day at Flickr
- 2009 First DevOpsDays conference
- 2010 First DevOpsDays US
- 2013 DevOps defined (sort of) as “an intimate understanding between the development and operations teams”

DevOps Defined



The DevOps “calms” model

- Culture
- Automation
- Lean
- Measurement
- Sharing



Continuous Delivery
+ Operability
= DevOps


Maintainability
Resilience
Disaster Recovery
Scalability
OPERABILITY
Supportability
Deployability
Monitoring
Alerting

why did DevOps happen?

by HikingArtist

why did DevOps happen?

We tried to answer this question:

> “How do we keep up with the demand for new features and new technologies while maintaining stability and high performance?”

Why did DevOps happen?

It was the wrong question ☹

> “How do we deliver maximum value to our customers and shareholders?”

The first ingredient of DevOps: Shared Goals

DevOps Principles

The DevOps “calms” model

- Culture
- Automation
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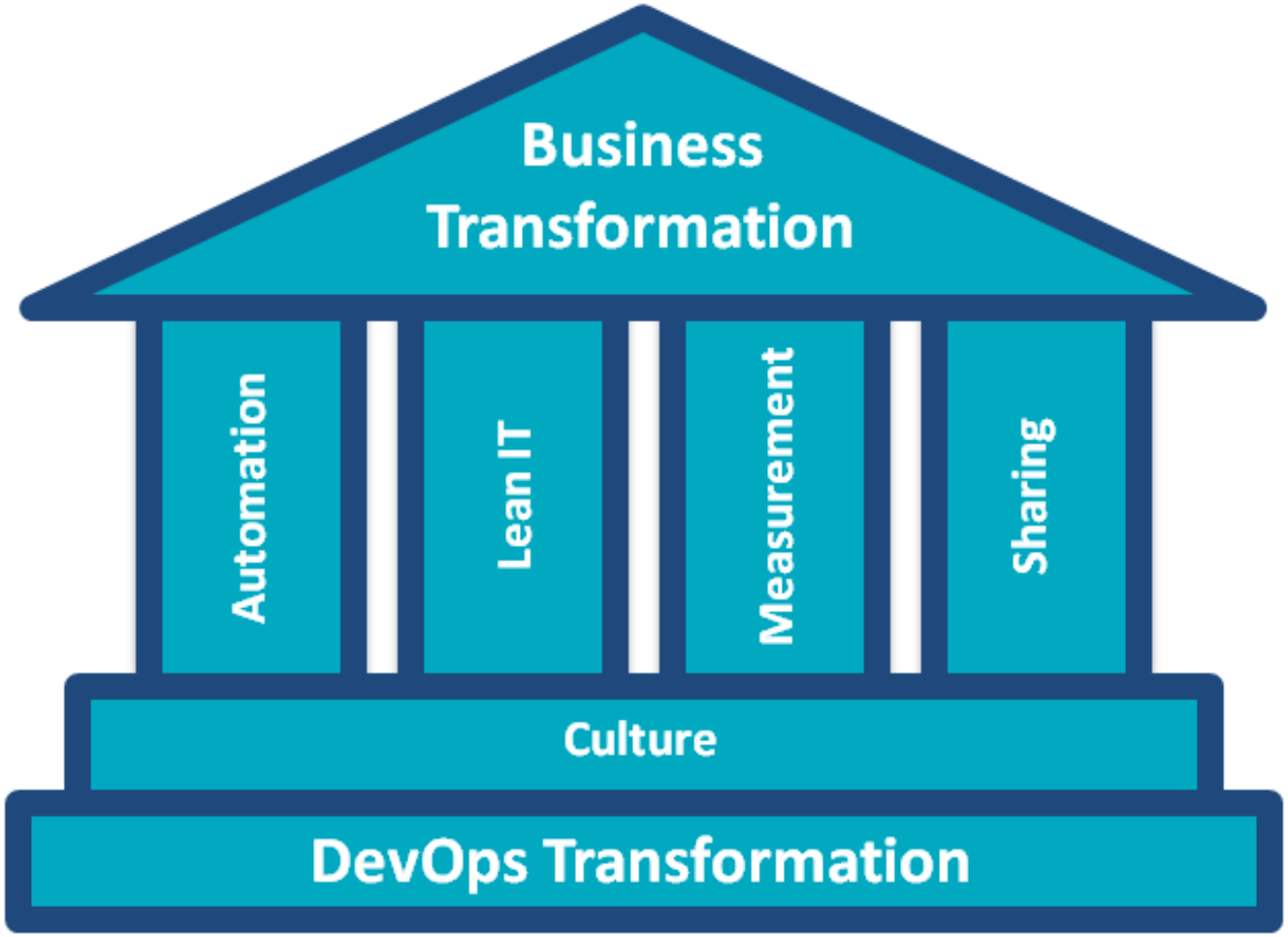
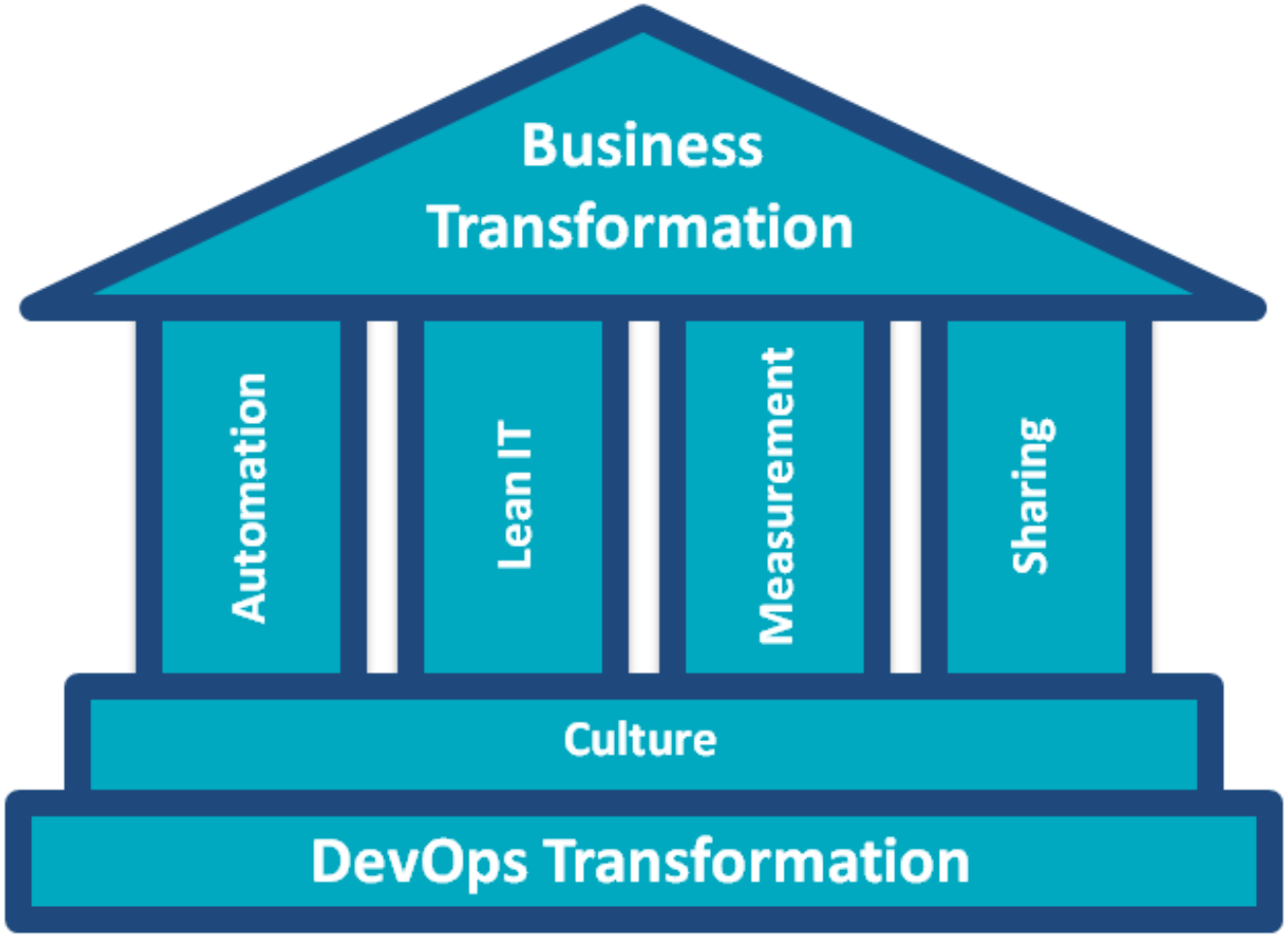


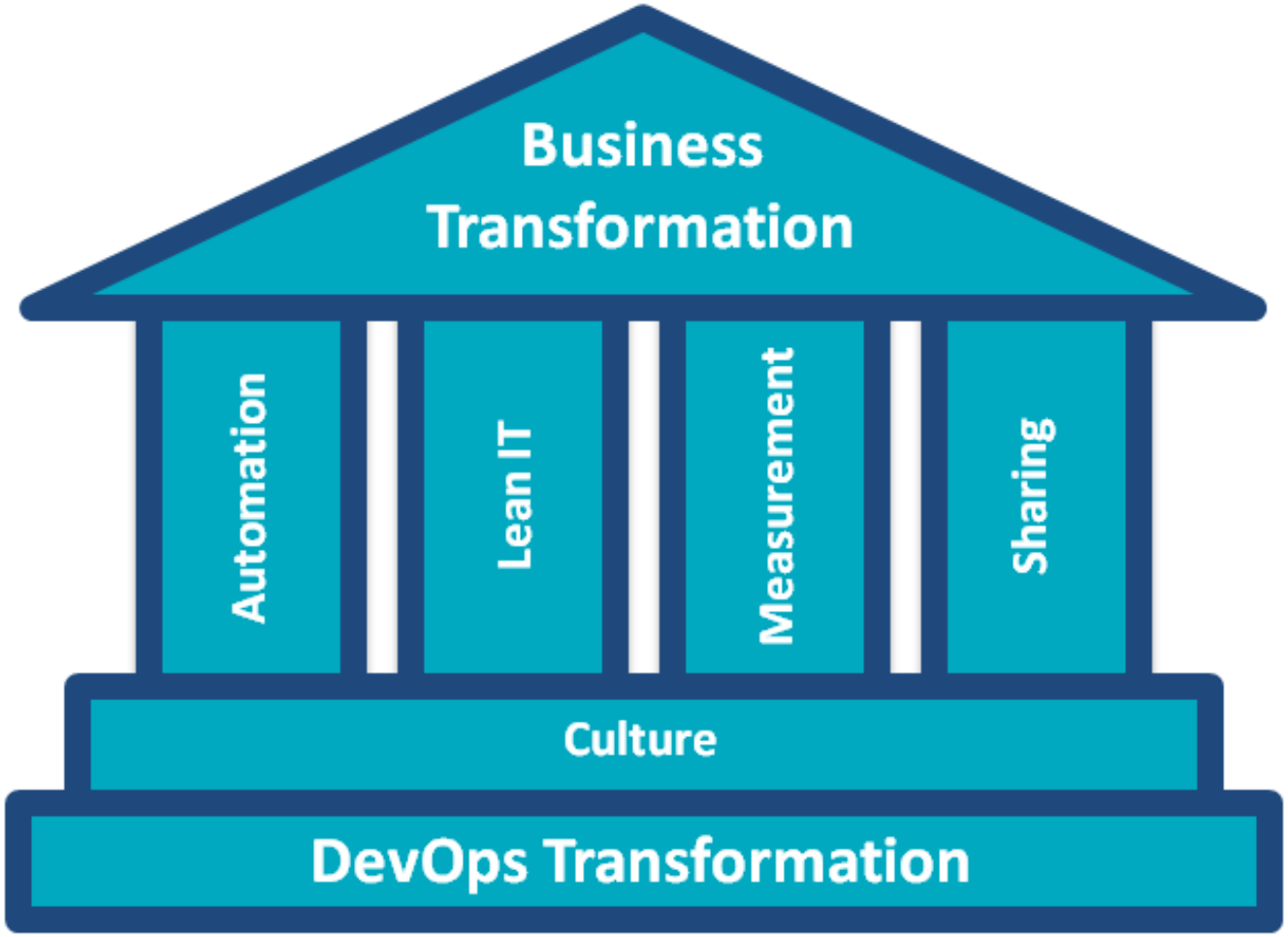
The DevOps “calms” model

- Create a culture of collaboration and ownership.
- Start small and scale out, not up.



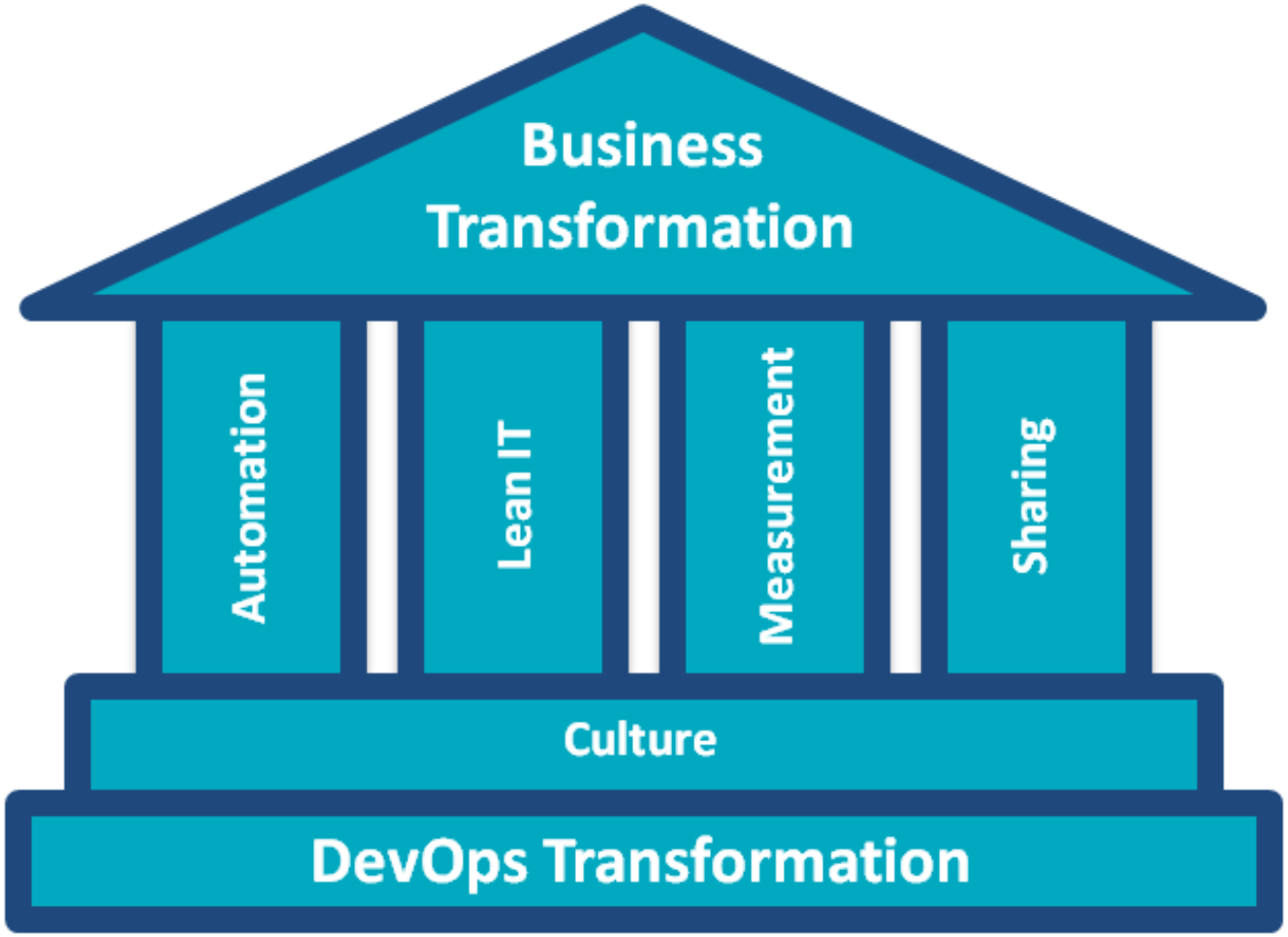
The DevOps “calms” model

- Fast feedback through automation.
- We need information to guide our decisions



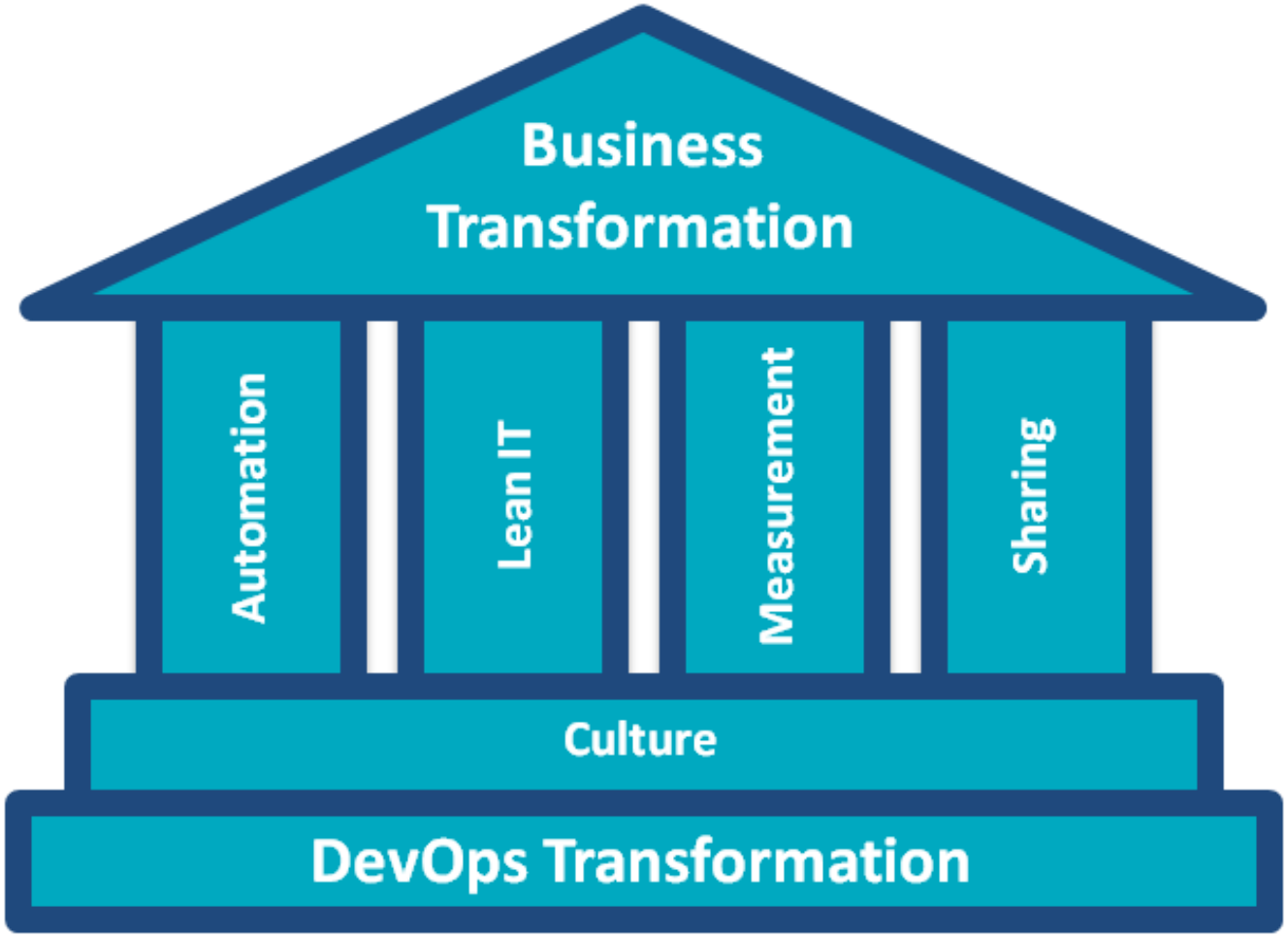
The DevOps “calms” model

- Lean approach to system’s thinking
- Localised optimisations are a mirage
- Being busy != being valuable



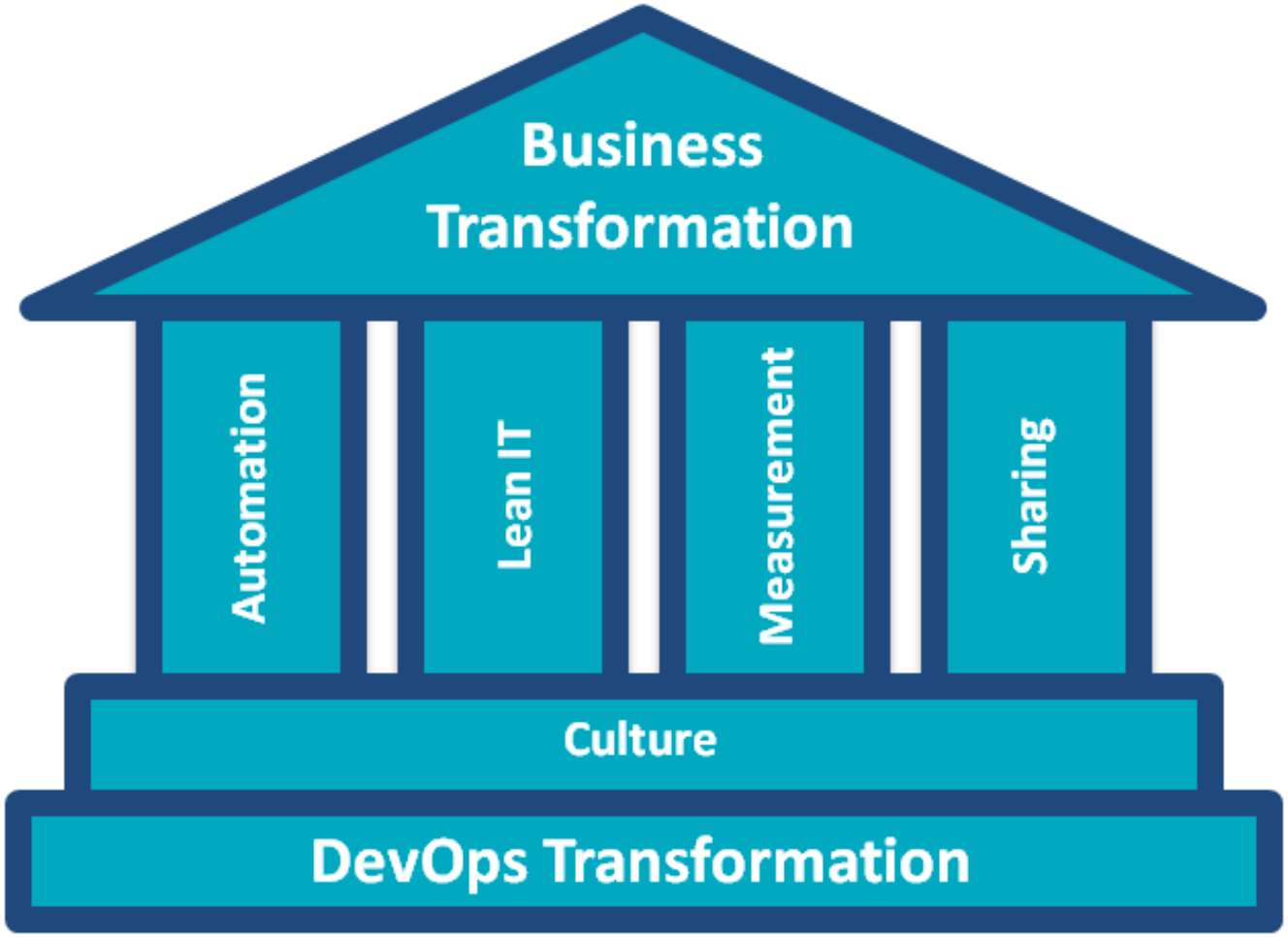
The DevOps “calms” model

- Measure the right things
- Be empirical, let the stats guide you.
- Beware of the cultural impact

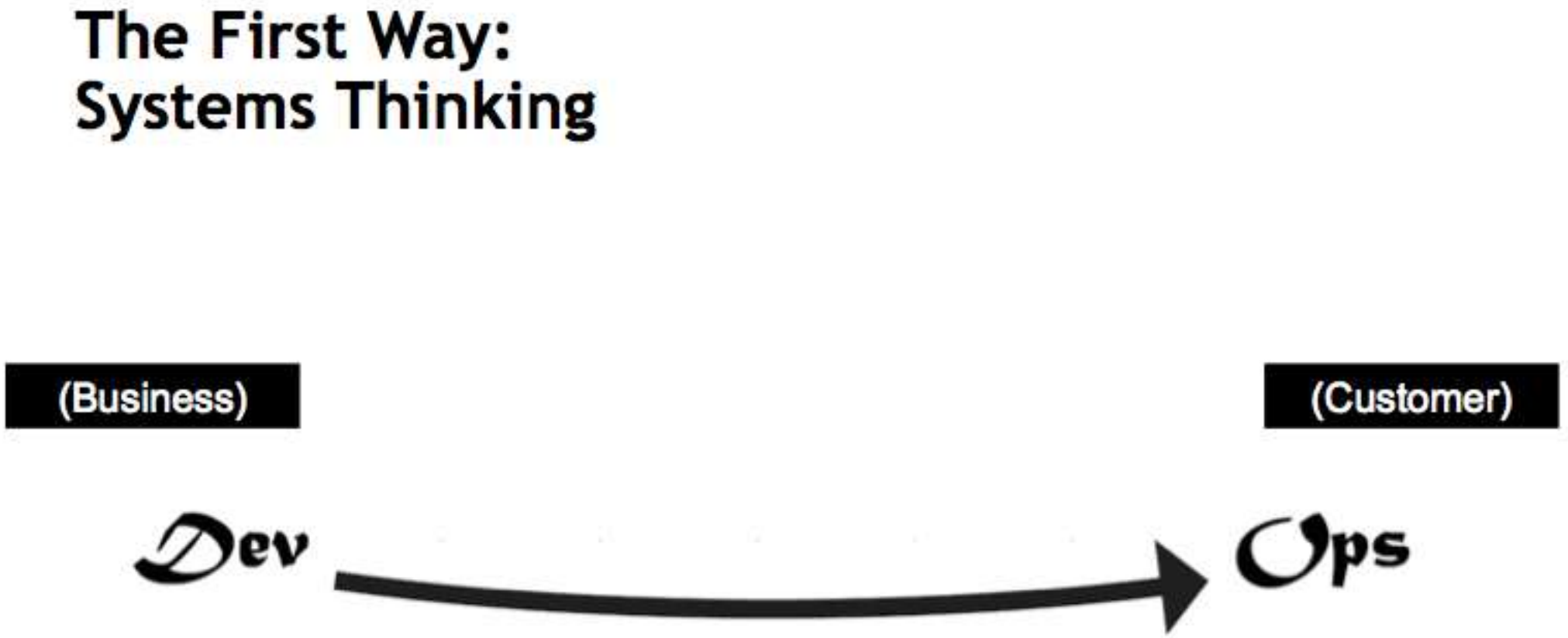


The DevOps “calms” model

- Share goals to create a common purpose
- Share experiences to encourage learning



Gene Kim's "3 Ways" of DevOps



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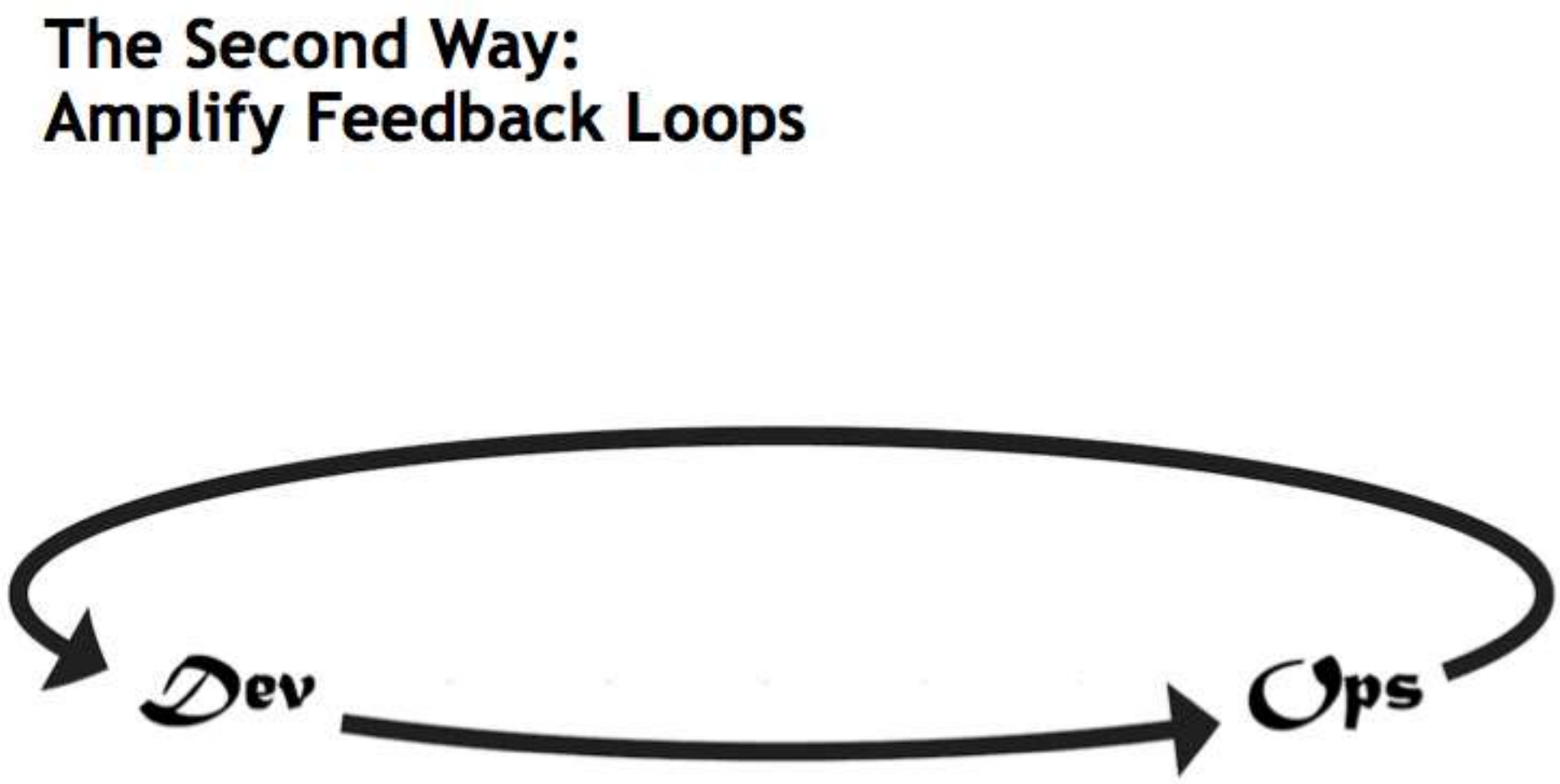
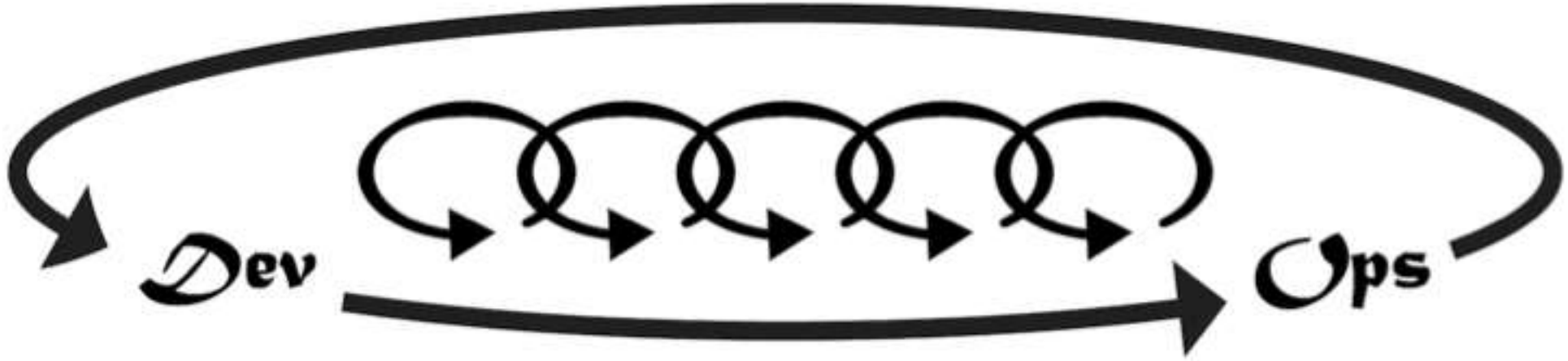


Gene Kim's "3 Ways" of DevOps

The Third Way:
Culture Of Continual Experimentation And Learning



DevOps Practices

Infrastructure as Code

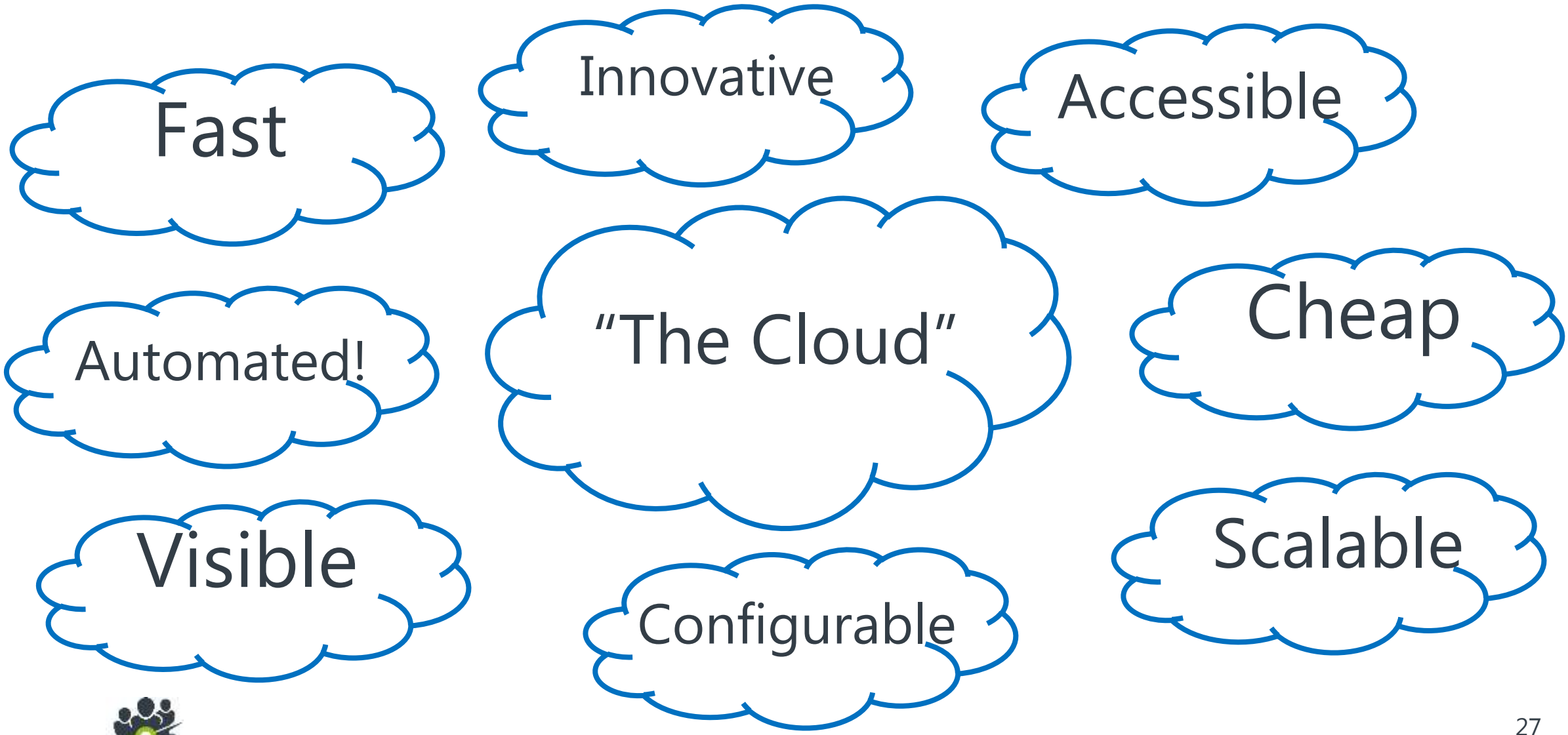
```
workflow CreateWebVM
{
    InlineScript {
        "Creating VM $($Using:VMName)"
        Select-AzureSubscription $Using:SubscriptionName
        $VM = New-AzureVMConfig -Name $Using:VMName `
                                -InstanceSize "ExtraSmall" `
                                -ImageName $Using:imageName `
                                -AvailabilitySetName $Using:availgroup
        $VMConfig = Add-AzureProvisioningConfig -Linux `
                                                -VM $VM `
                                                -LinuxUser $Using:username `
                                                -SSHKeyPairs $Using:sshkey `
                                                -password $Using:password
        New-AzureVM -ServiceName $Using:CloudService.ServiceName -VM $VMConfig
    }
}
```

- ✓ Declarative
- ✓ Reusable
- ✓ Automated
- ✓ Testable

Configuration as Code

```
package "apache2" do
  case node[:platform]
  when "centos","redhat","fedora","suse"
    package_name "httpd"
  when "debian","ubuntu"
    package_name "apache2"
  when "arch"
    package_name "apache"
  end
  action :install
end
```

Cloud


Fast
Innovative
Accessible
Automated!
"The Cloud"
Cheap
Visible
Configurable
Scalable

Test-driven

- As a lazy ops guy I want an Ansible role that will install Apache on an Ubuntu Server So that I can host the best website ever

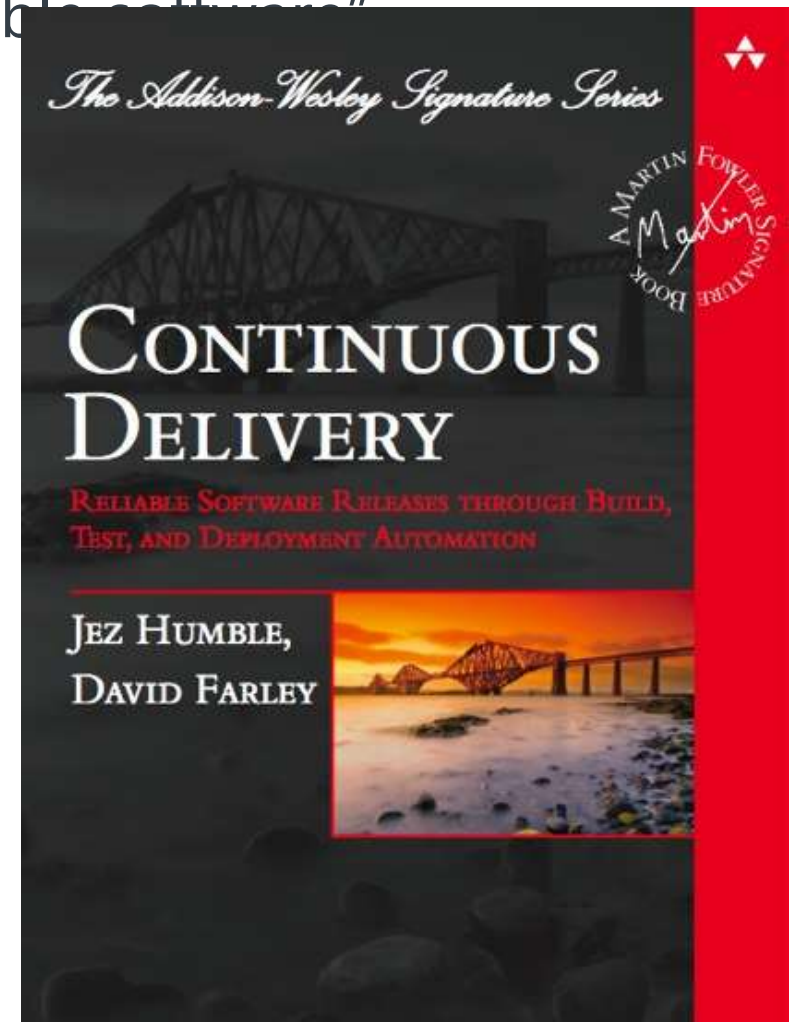
- Additional notes:
  - Install whatever the latest version of Apache is, we're a bleeding edge company
  - Must work on Ubuntu 14.04 (current) and 15.04 (future rollout)
  - The external load balancer will route incoming http requests to port 55555 on all machines
  - The NSA wants their own root account on all our environments
  - Please remove telnet for maximum security

Test-driven

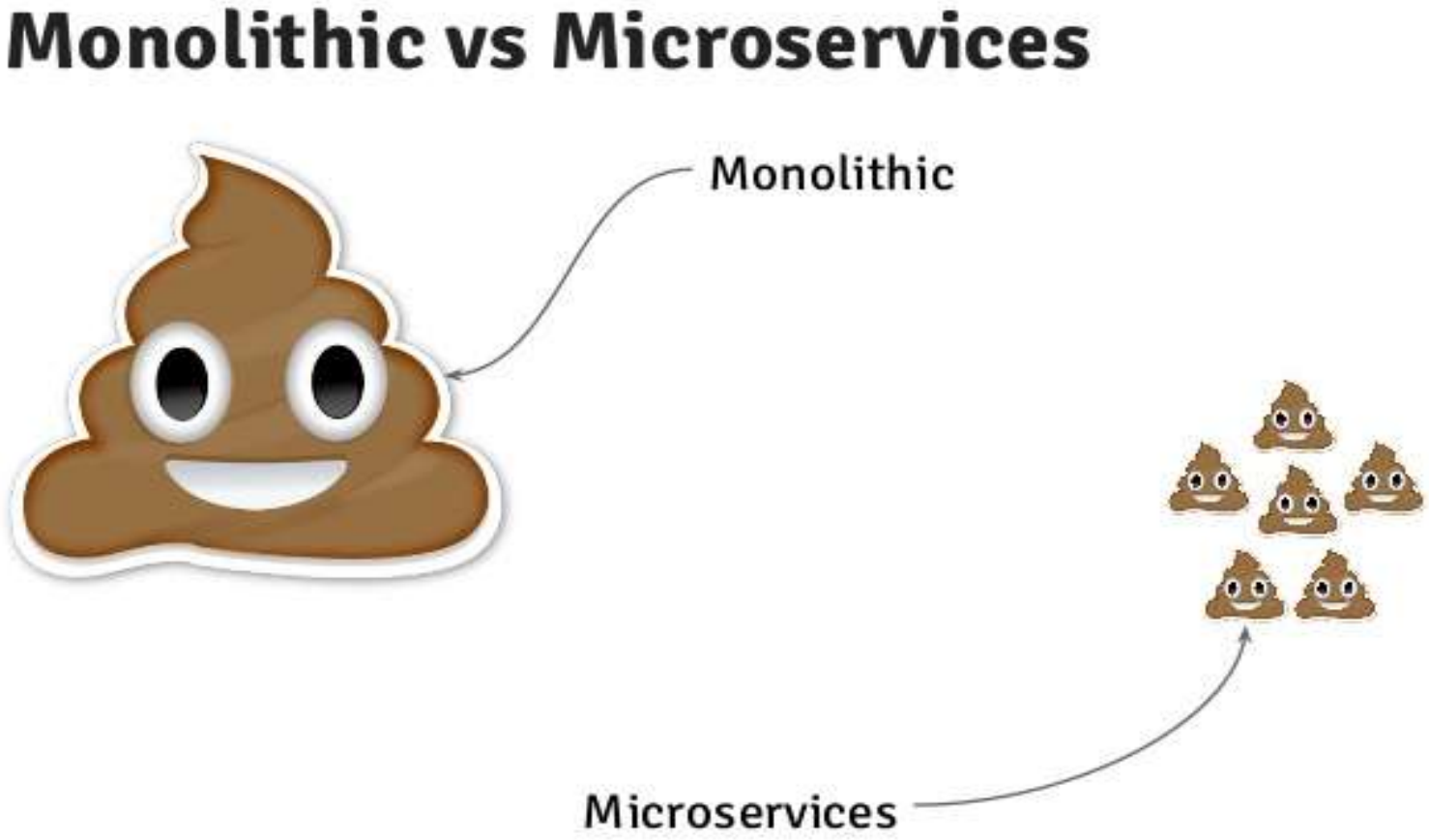
```
require 'spec_helper'
          describe package('apache2') do
            it { should be_installed }
          end
          describe service('apache2') do
            it { should be_running }
          end
          describe port(55555) do
          it { should be_listening }
          end
          describe user('NSA') do
            it { should exist }
            it { should belong_to_group('root') }
end
```

Continuous Delivery

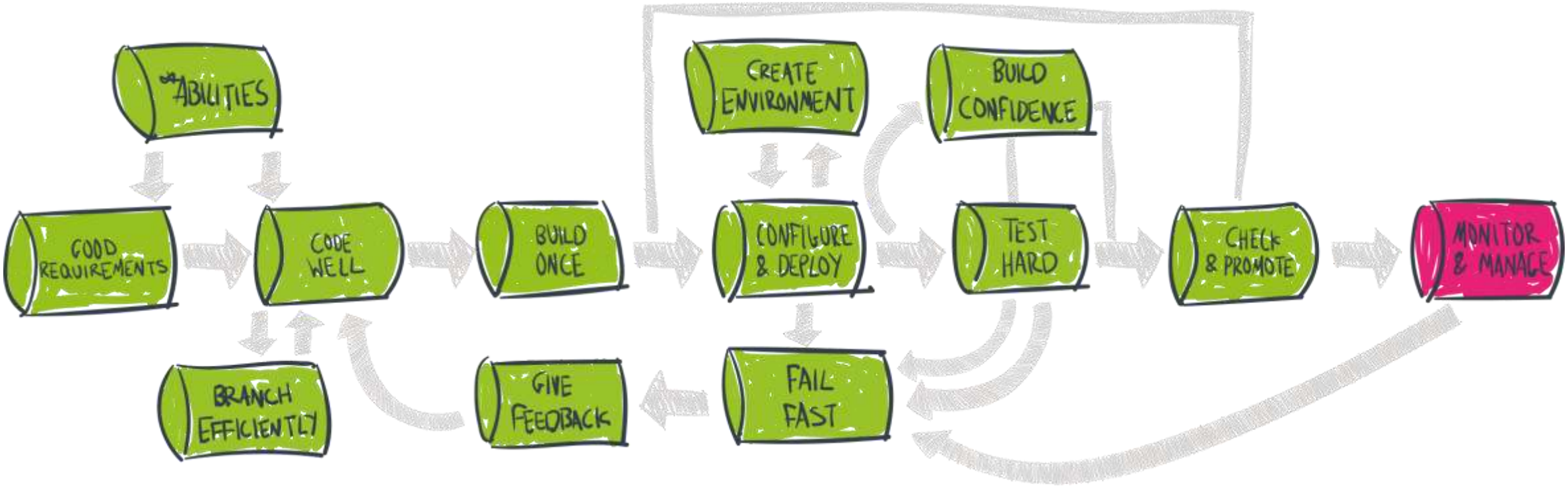
- “Our highest priority is to satisfy the customer through early and continuous delivery of valuable software”



Microservices



Continuous Delivery



Continuous Delivery – 8 principles

1. The process for releasing/deploying software MUST be repeatable and reliable
2. Automate everything!
3. If somethings difficult or painful, do it more often
4. Keep everything in source control
5. Done means “released”
6. Build quality in!
7. Everybody has responsibility for the release process
8. Improve continuously

Continuous Delivery – 4 practices

1. **Build binaries only once**
2. **Use precisely the same mechanism to deploy to every environment**
3. **Smoke test your deployment**
4. **If anything fails, stop the line!**

PERIODIC TABLE OF DEVOPS TOOLS (V1)

XebiaLabs
Deliver Faster

Os	Open Source
Fr	Free
Fm	Freemium
Pd	Paid
En	Enterprise

Database | SCM | Build
CI | Repo Mgmt | Testing
Deployment | Config / Provisioning | Containerization
Cloud / Iaas / Paas | Release Mgmt | Collaboration
BI / Monitoring | Logging | Security

1 En O 12c																		2 Fm Aws Amazon Web Services	
3 Os My MySQL	4 Os Gt Git														5 En Ch Chef	6 En Pu Puppet	7 Os An Ansible	8 En Sl Salt	9 Os Dk Docker	10 Pd Az Azure
11 En Mq MSSQL	12 Os Sv Subversion														13 Fr Ssh SSH	14 En Bl BladeLogic	15 Os Va Vagrant	16 Fr Tf Terraform	17 Os Rk rkt	18 Fm Hk Heroku
19 Os Pq PostgreSQL	20 Fr Mc Mercurial	21 Os Mv Maven	22 Os Gr Gradle	23 En Mr Meister	24 Os Jn Jenkins	25 Pd Bb Bamboo	26 Os Tr Travis CI	27 Fr Ar Archiva	28 Os Fn FitNesse	29 Fr Se Selenium	30 Os Gn Gatling				31 Pd Gd Deployment Manager	32 Os Sf SmartFrog	33 Fr Cb Cobbler	34 Os Bc Bcfg2	35 Os Kb Kubernetes	36 En Rs Rackspace
37 Os Mg MongoDB	38 Fm Gh Github	39 Os Br Buildr	40 Os At ANT	41 Fm Bm BuildMaster	42 Fm Cs Codeship	43 Fm Sn Snap CI	44 Fm Cr CircleCI	45 Os Nx Nexus	46 Fr Cu Cucumber	47 Os Cj Cucumber.js	48 Fr Qu Qunit				49 Fr Cp Capistrano	50 Fr Ju JuJu	51 Os Rd Rundeck	52 Os Cf CFEngine	53 Fr Pk Packer	54 Fm Bx Bluemix
55 En Db DB2	56 Fm Bb Bitbucket	57 Fm Qb QuickBuild	58 En Ub UrbanCode Build	59 Pd Ta Visual Build	60 Fm Tc TeamCity	61 Fm Sh Shippable	62 Os Cc CruiseControl	63 Os Ay Artifactory	64 Fr Ju JUnit	65 Fr Jm JMeter	66 Fr Tn TestNG				67 En Rd RapidDeploy	68 Fm Cy CodeDeploy	69 En Oc Octopus Deploy	70 No CA Nolio	71 En Eb ElasticBox	72 En Ad Apprenda
73 Fr Cs Cassandra	74 En Hx Helix	75 Os Msb MSBuild	76 Os Rk Rake	77 Os Lb LuntBuild	78 Os Cu Continuum	79 Fm Ca Continua CI	80 Os Gu Gump	81 Os Ng NuGet	82 Os Ap Appium	83 En Xltv XL TestView	84 En Tc TestComplete				85 Os Go Go	86 En Ef ElectricFlow	87 En Xld XL Deploy	88 En Ud UrbanCode Deploy	89 Os Mo Mesos	90 Os Cf Cloud
												91 En Xlr XL Release	92 En Ur UrbanCode Release	93 En Ls CA Service Virtualization	94 En Bm BMC Release Process	95 En Hp HP Codar	96 Pd Ex Excel	97 En Pl Plutora Release	98 En Sr Serena Release	99 Fm Tr Trello	100 Pd Jr Jira	101 Fm Rf HipChat	102 Fm Sl Slack	103 Fm Fd Flowdock	104 Pd Pv Pivotal Tracker	105 En Sn ServiceNow
												106 En Sp Splunk	107 Os Ki Kibana	108 Fm Nr New Relic	109 Os Ni Nagios	110 Os Gg Ganglia	111 Os Ct Cacti	112 Os Gr Graphite	113 Os Ic Icinga	114 Fm Sl Sumo Logic	115 Os Ls Logstash	116 Fm Lg Loggly	117 Os Gr Graylog	118 Os Sn Snort	119 Os Tr Tripwire	120 En Cy CyberArk

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DevOps Applied

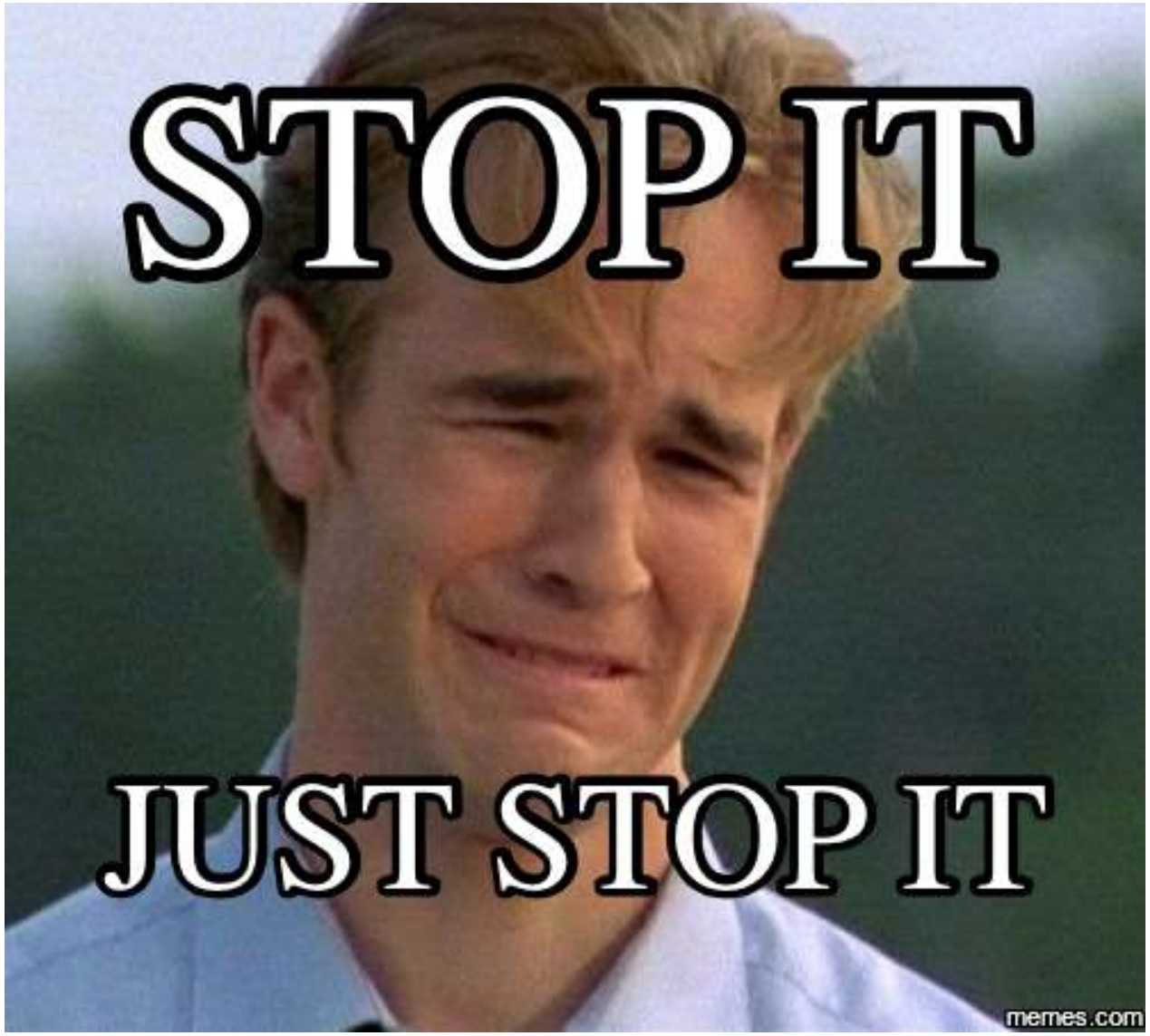
How Do Organisations do DevOps?

What do these organisations have in common?

5 Steps to Doing DevOps

1. Establish your goals
    1. What does DevOps mean to the team?
2. Build the platform
    1. Environments
    2. Continuous Delivery
    3. Test Automation
3. Assemble the team
4. Be agile, not waterfall
5. Work together to achieve great things
    1. Autonomy, mastery & purpose

How to change an organisation's culture



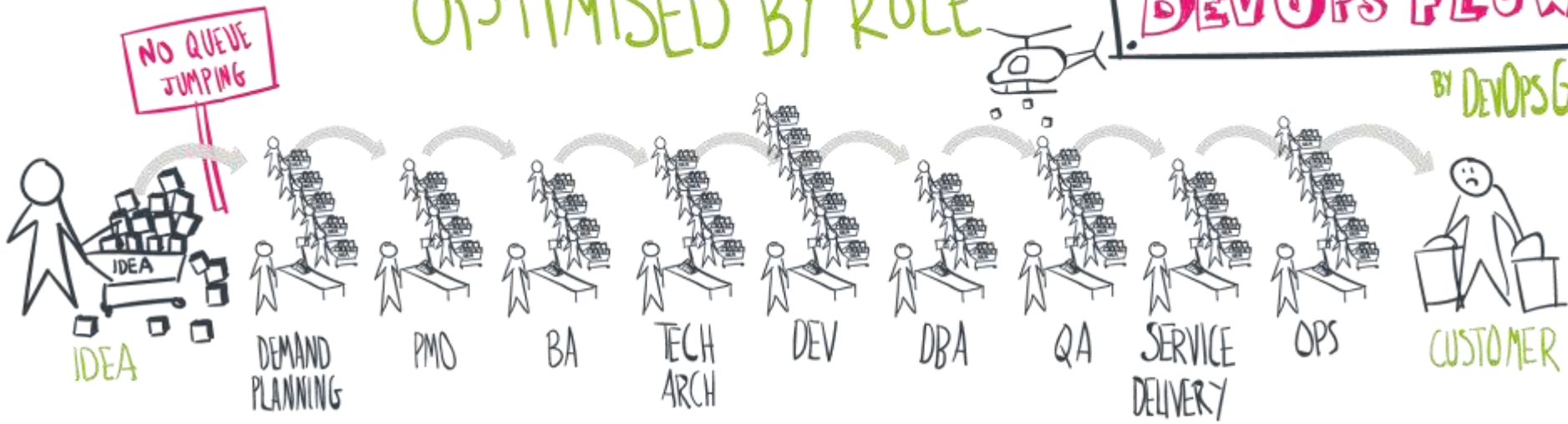
DevOps Topologies

How Organisations organise their organisations

DevOps Flow

by DevOps Guys

Optimised by Role

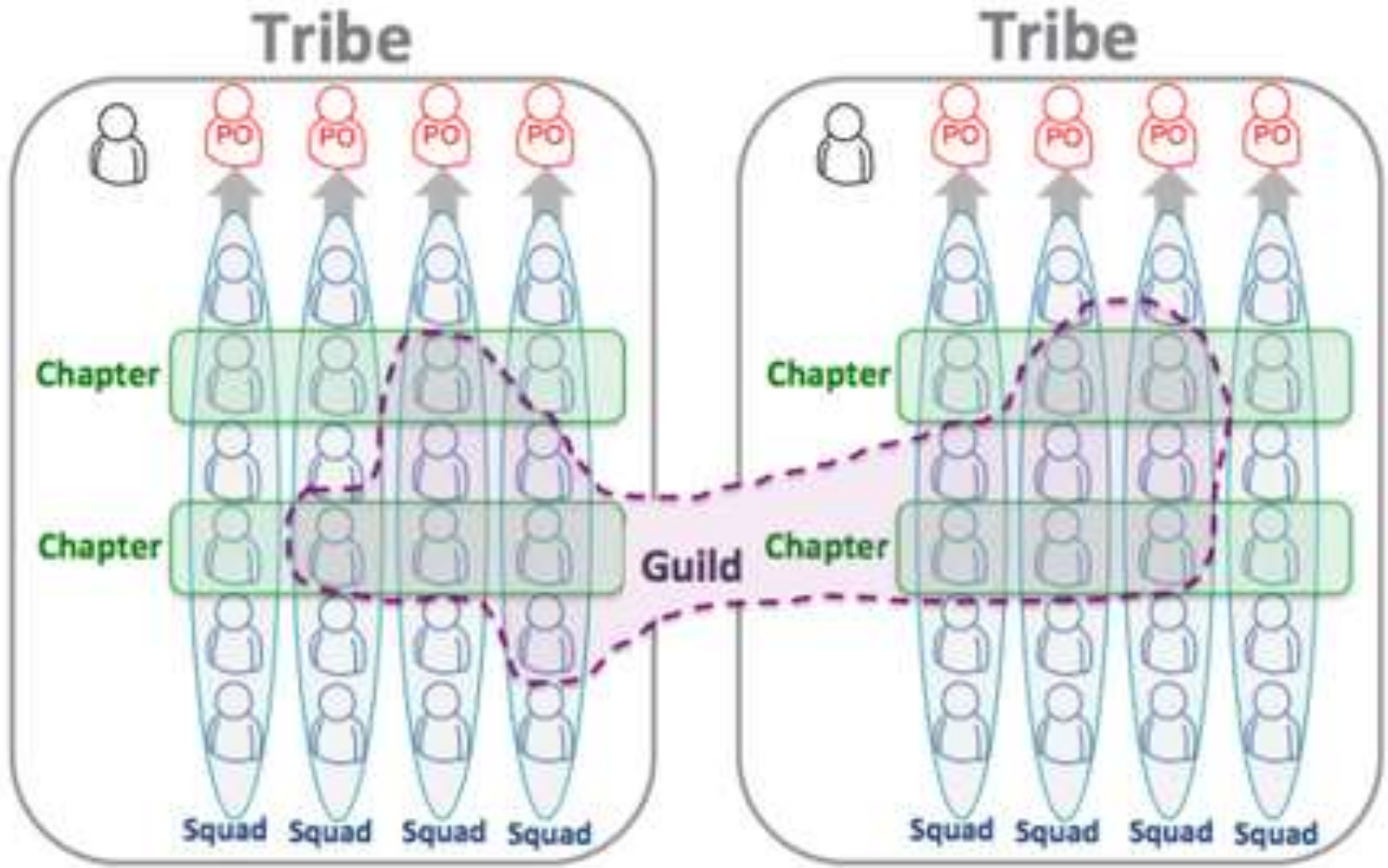


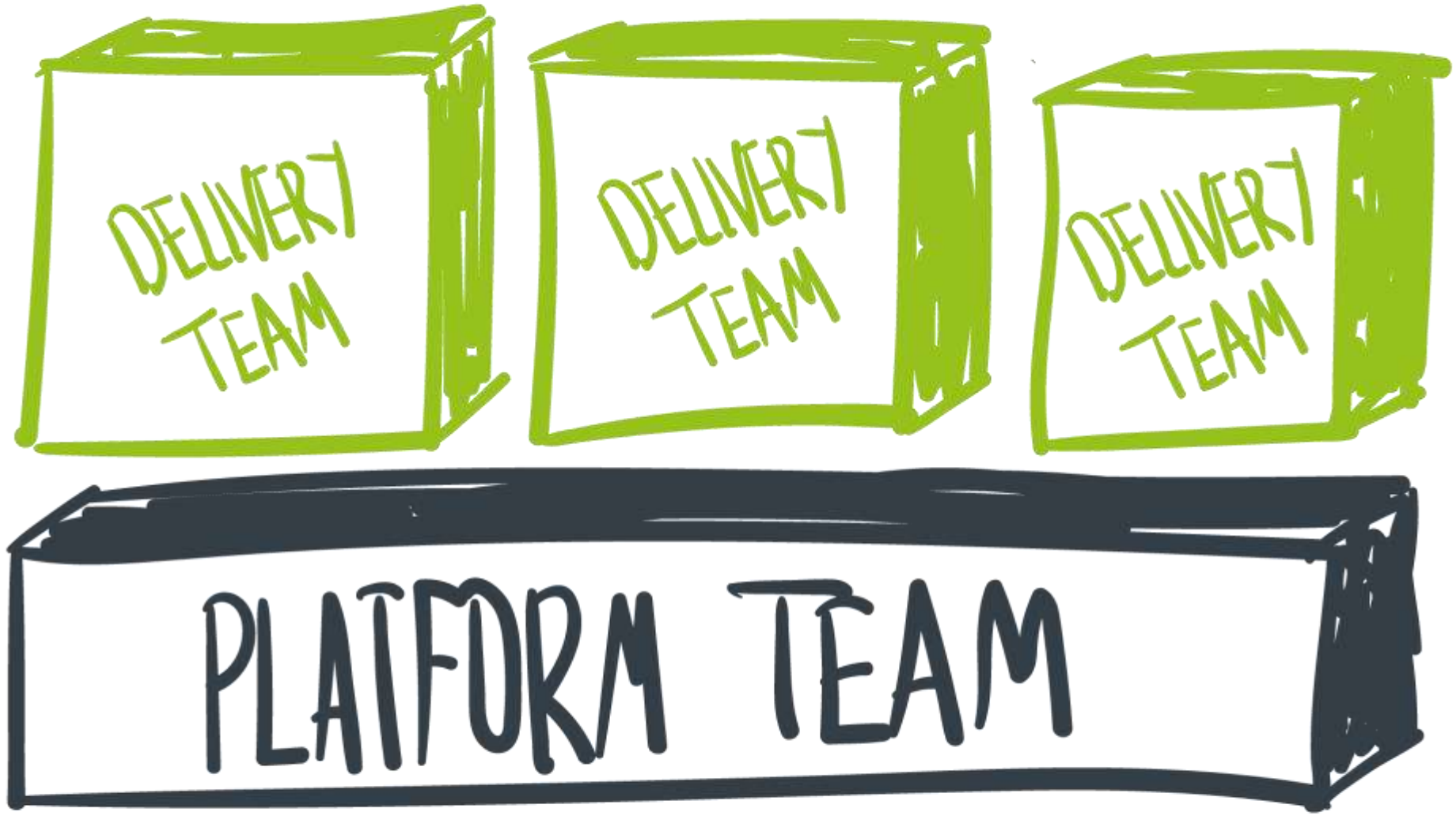
Optimised for Flow

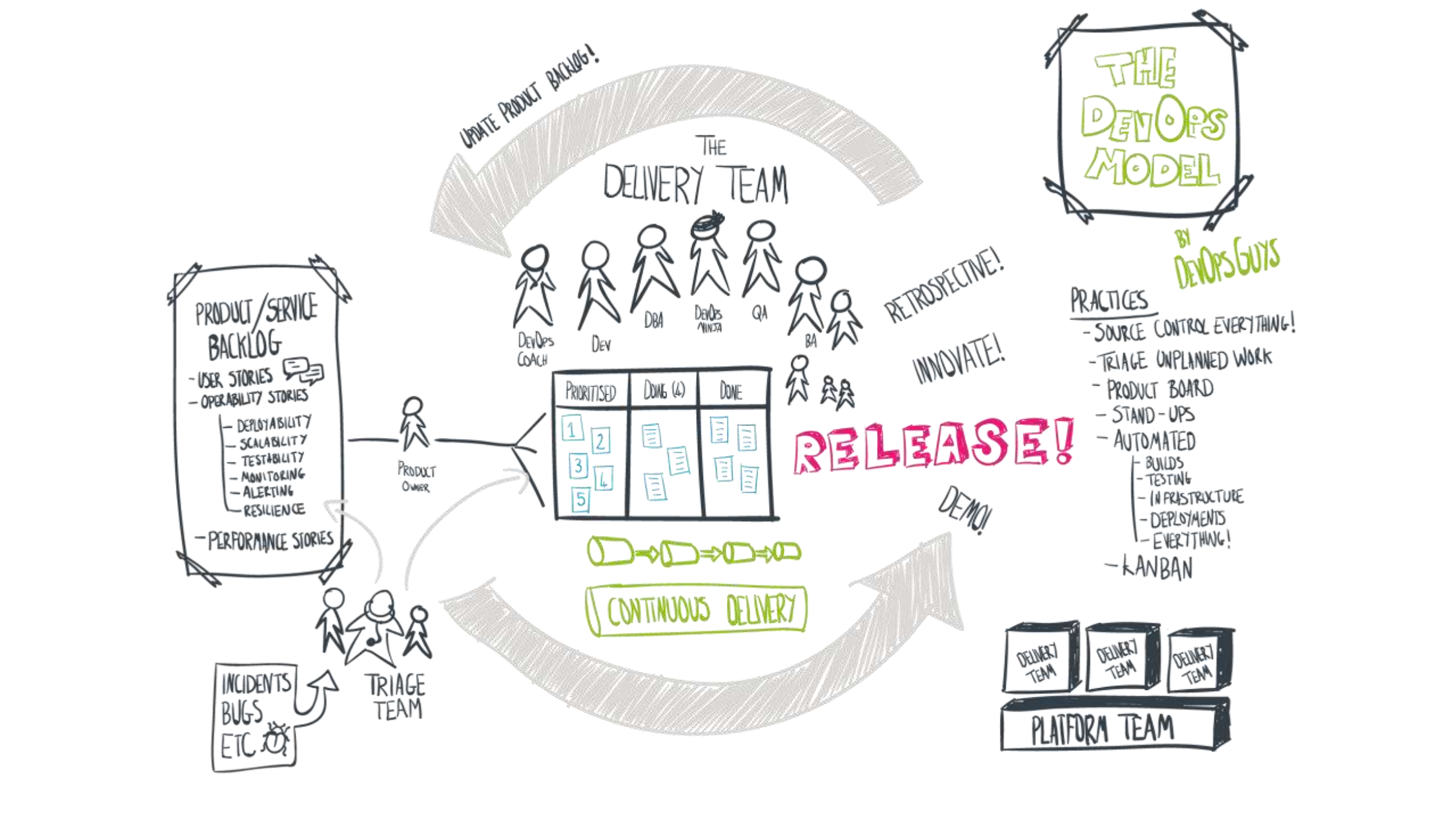
- REDUCE HANDOVERS
- REMOVE QUEUES
- LOWER BATCH SIZE
- IMPROVE CYCLE TIME

DevOpsGuys

Henrik Kniberg & Anders Ivarsson
Oct 2012




DELIVERY TEAM
DELIVERY TEAM
DELIVERY TEAM
PLATFORM TEAM


THE DEVOPS MODEL
BY DEVOPS GUYS
UPDATE PRODUCT BACKLOG!
THE DELIVERY TEAM
DEVOPS COACH
DEV
DBA
DEVOPS NINJA
QA
BA
RETROSPECTIVE!
INNOVATE!
PRODUCT/SERVICE BACKLOG
- USER STORIES
- OPERABILITY STORIES
- DEPLOYABILITY
- SCALABILITY
- TESTABILITY
- MONITORING
- ALERTING
- RESILIENCE
- PERFORMANCE STORIES
PRODUCT OWNER
PRIORITISED
DOING (4)
DONE
1
2
3
4
5
RELEASE!
DEMO!
CONTINUOUS DELIVERY
PRACTICES
- SOURCE CONTROL EVERYTHING!
- TRIAGE UNPLANNED WORK
- PRODUCT BOARD
- STAND-UPS
- AUTOMATED
- BUILDS
- TESTING
- INFRASTRUCTURE
- DEPLOYMENTS
- EVERYTHING!
- KANBAN
INCIDENTS BUGS ETC.
TRIAGE TEAM
DELIVERY TEAM
DELIVERY TEAM
DELIVERY TEAM
PLATFORM TEAM

DevOps Solutions

ducate

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DevOps Coaching

Workshops & Training

DevOps Engineering

Application Lifecyle

Automation

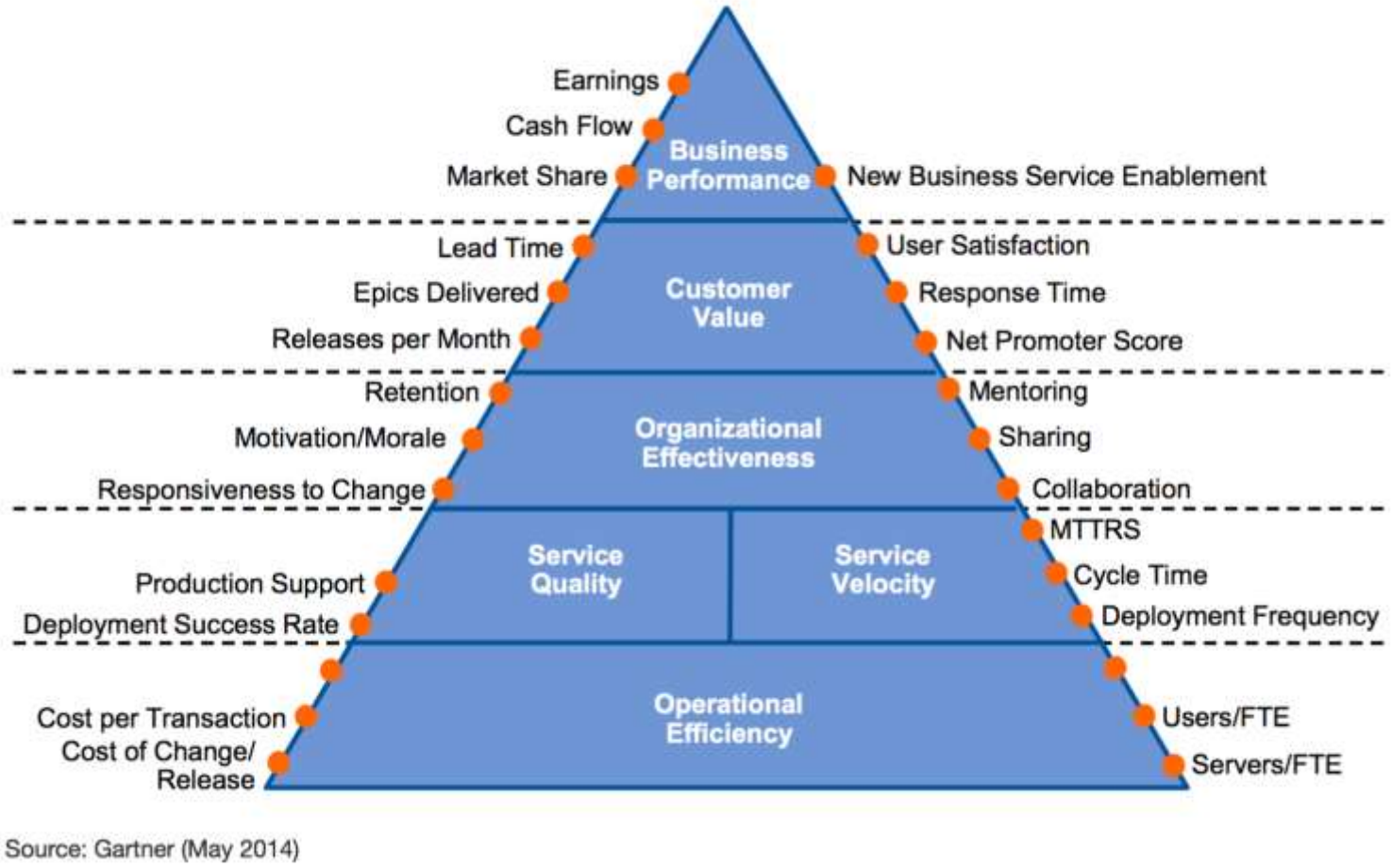
DevOps Consultancy

DevOps, Agile & Cloud

Strategy

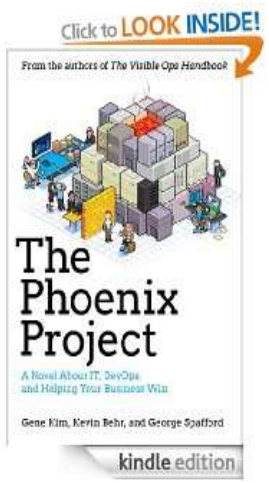
Measuring Success

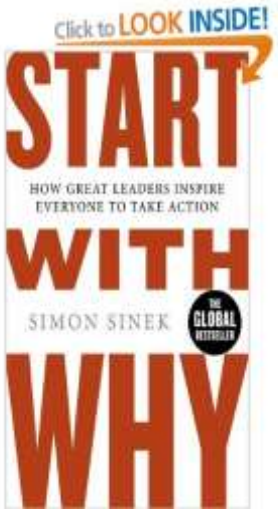
Key Performance Indicators

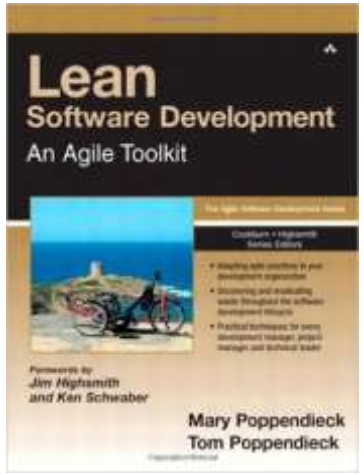


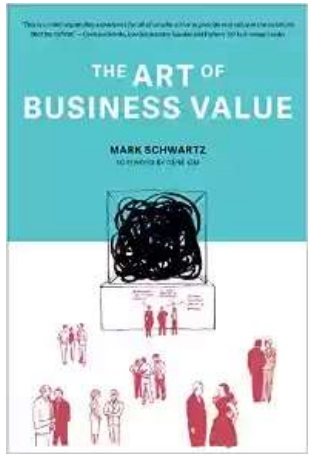
Source: Gartner (May 2014)

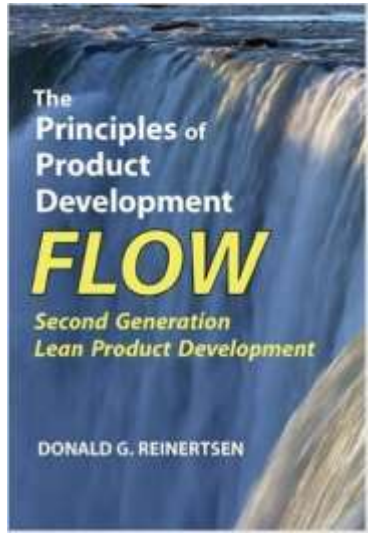
Further reading

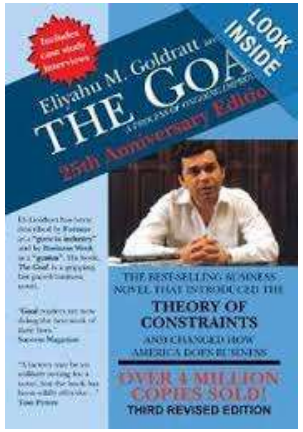


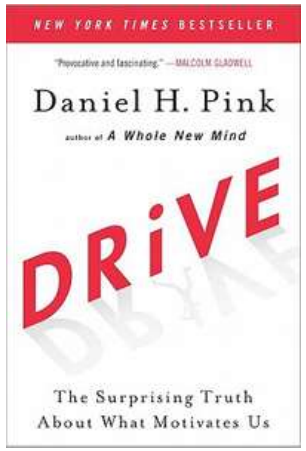


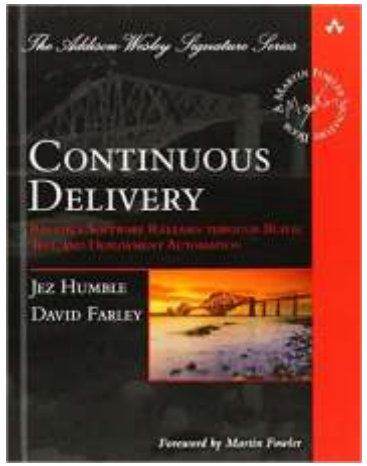


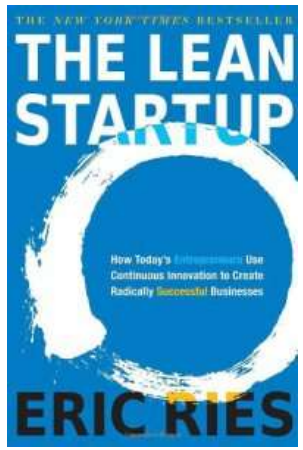






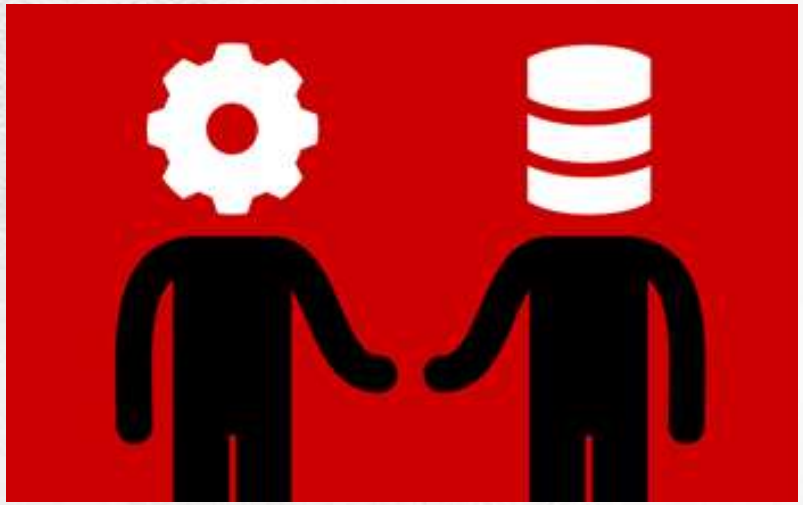






Questions?

CONTACTS



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