



# Continuous Delivery with Maven, Puppet and Tomcat

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 **@csanchez**

**Apache  
Maven**

**ASF  
Member**

**Eclipse  
Foundation**

**csanchez.org  
maestrodev.com**

**How we got here**

# Agile

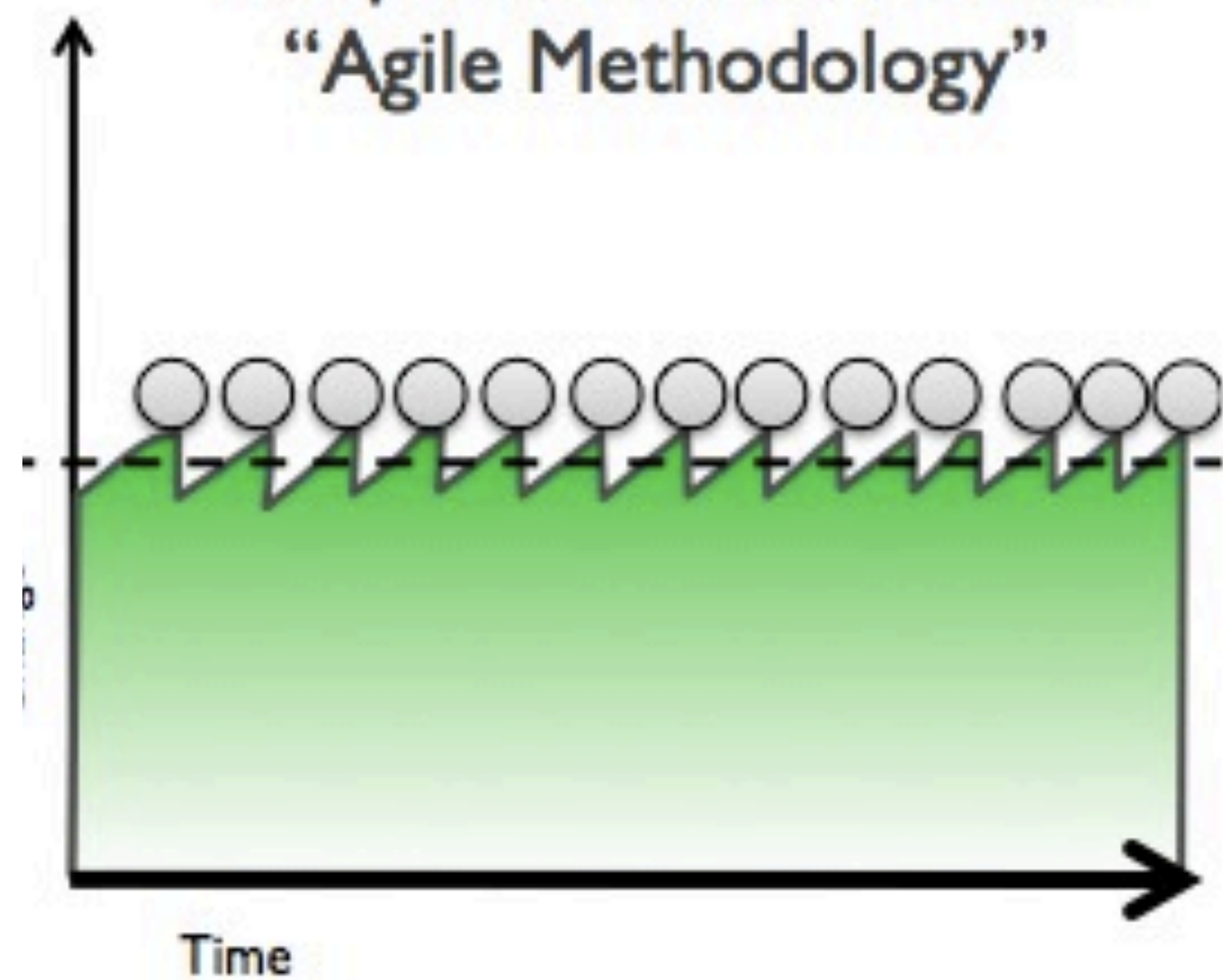
planning

iterative development

continuous integration

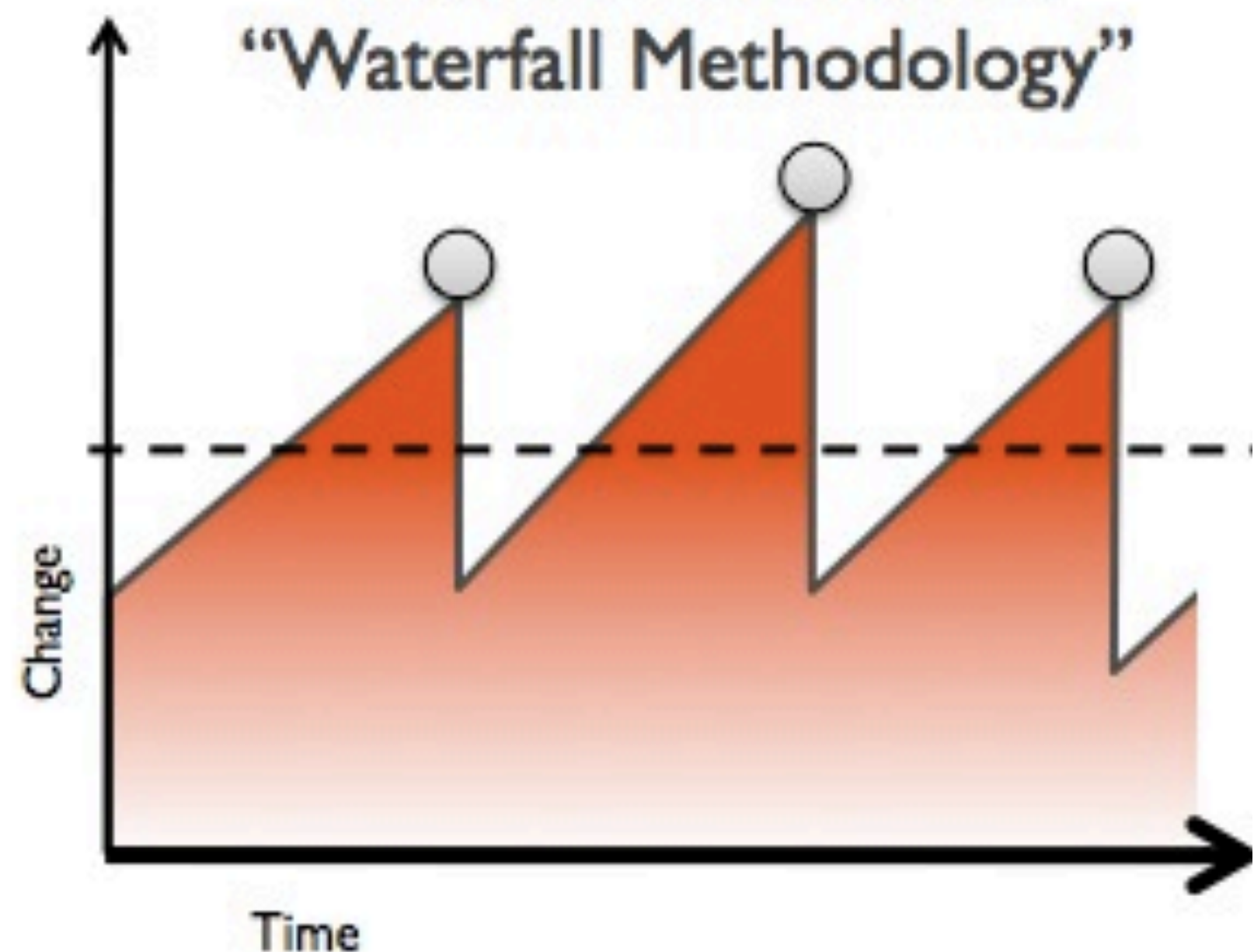
release soon, release often

Frequent Release Events  
"Agile Methodology"

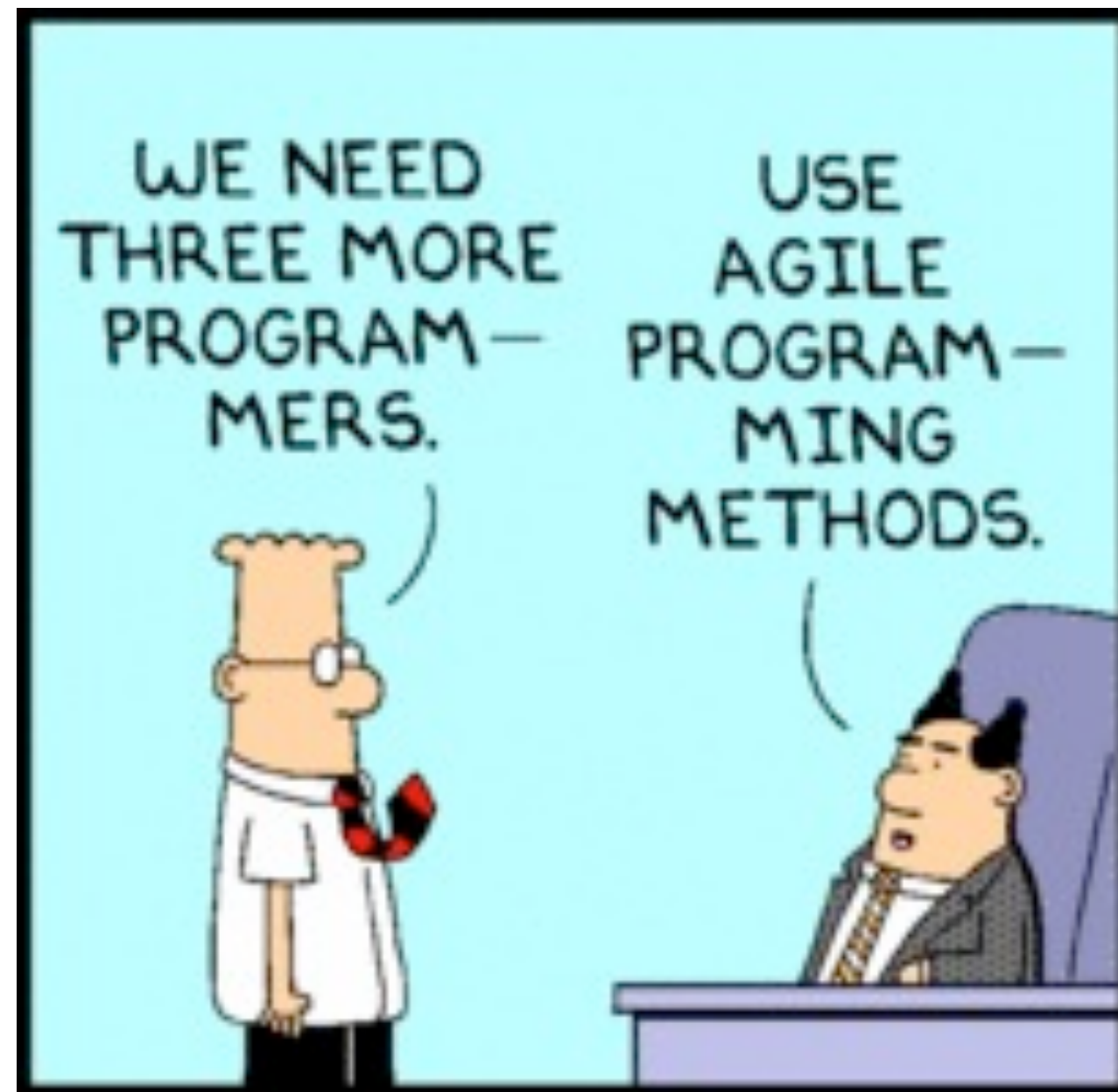


Smoother Effort  
Less Risk

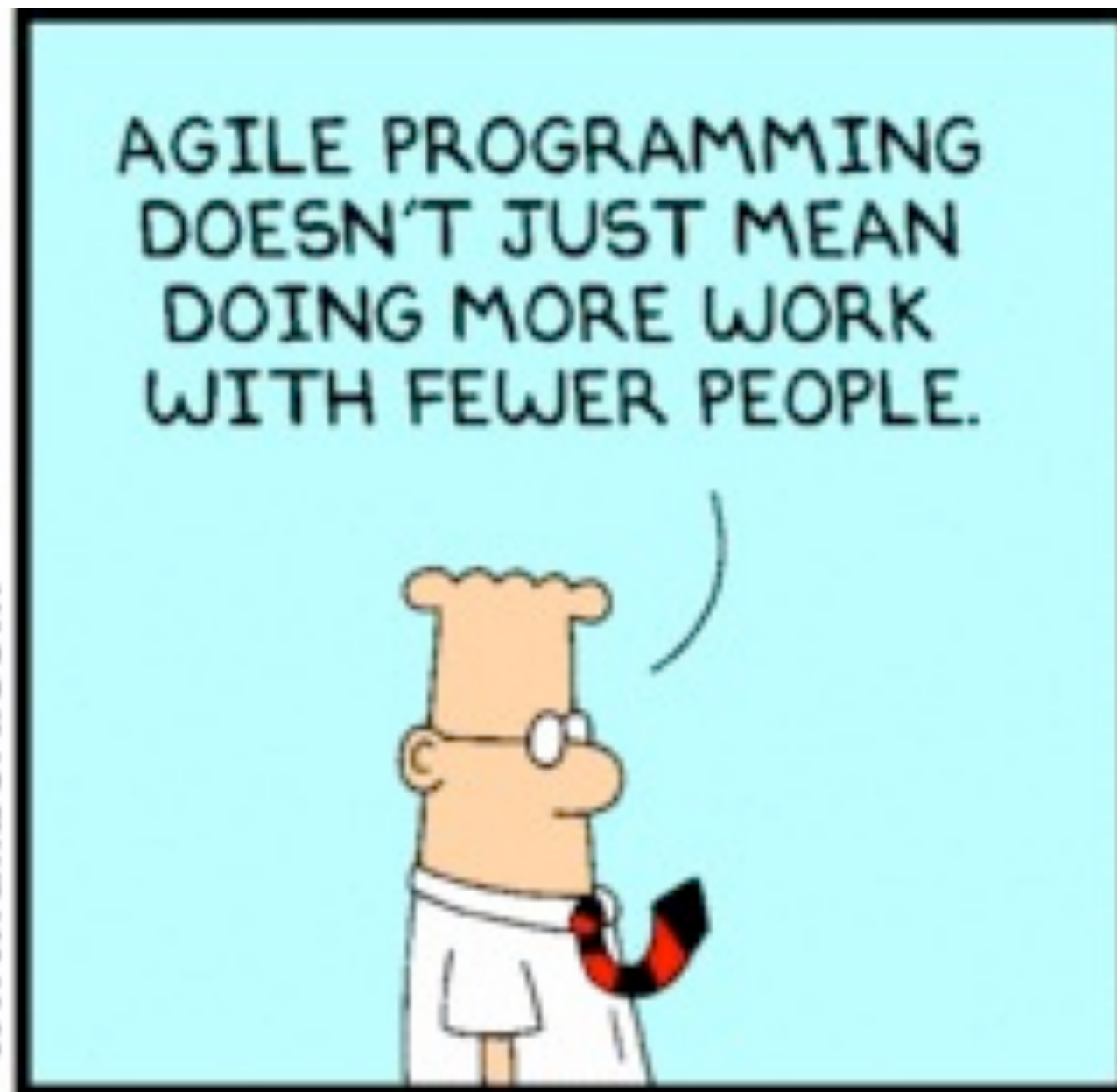
Rare Release Events  
"Waterfall Methodology"



Effort Peaks  
High Risk



www.dilbert.com scottadams@aol.com



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Fear of change

Risky deployments

It works on my machine!

Siloisation

Dev Change vs. Ops stability

Individuals and interactions over processes and tools  
Working software over comprehensive documentation  
Customer collaboration over contract negotiation  
Responding to change over following a plan



# OPs requirements

Operating System

config files

packages installed

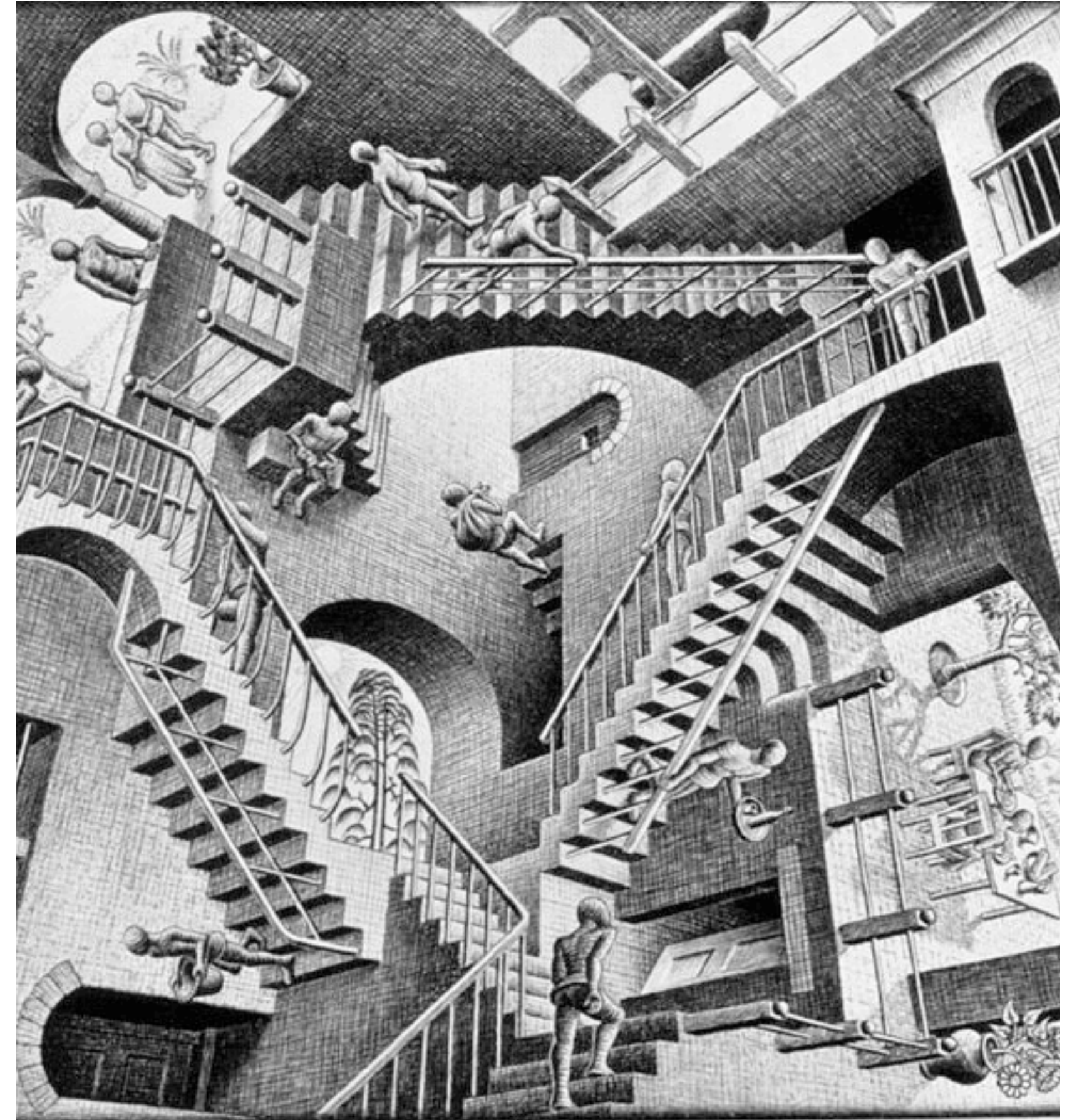
multi stage configurations

dev

QA

pre-production

production



# Deployment

**How do I deploy this?**

documentation

manual steps

prone to errors

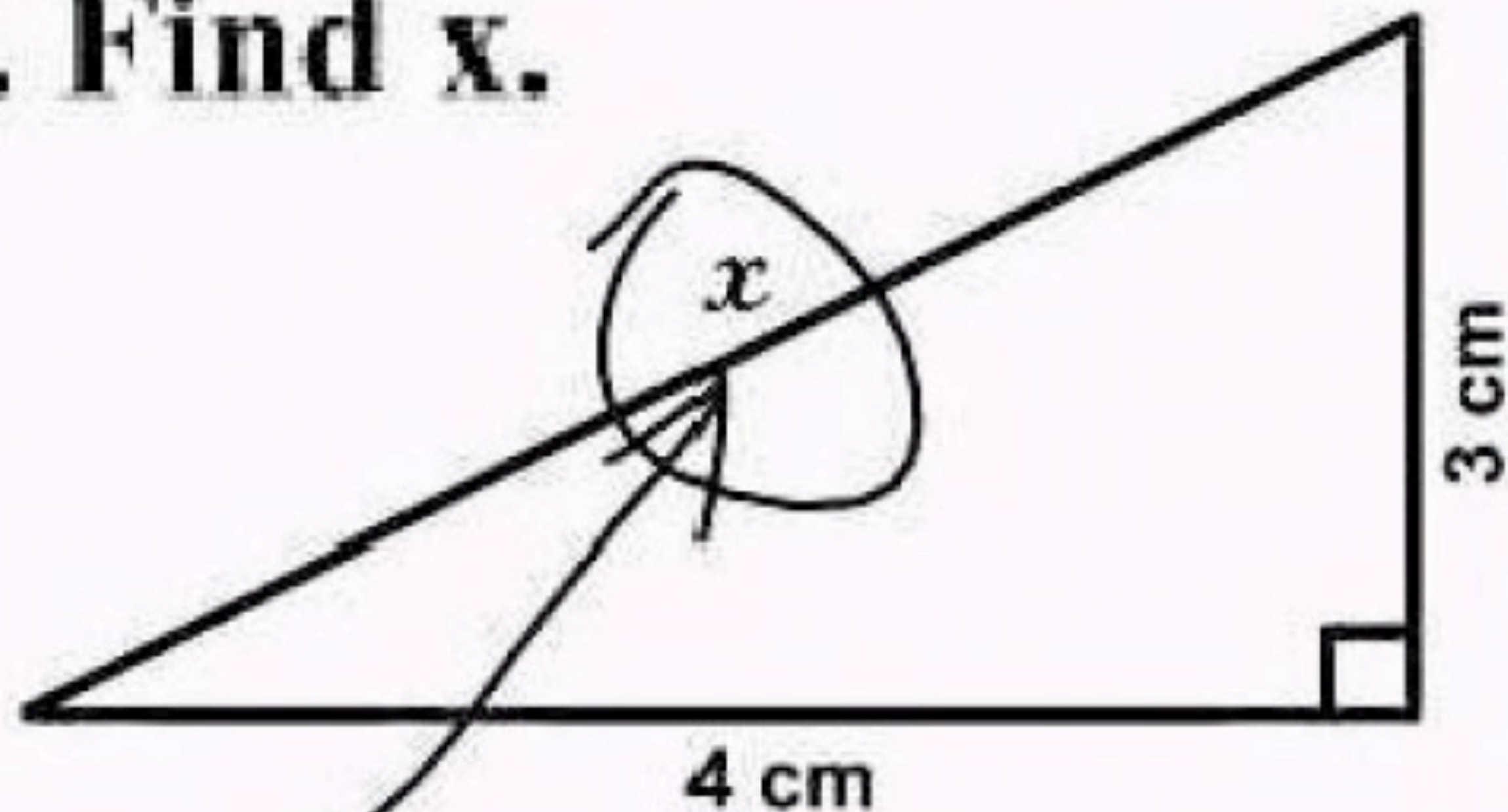


# Cloud

**How do I deploy this?**  
to hundreds of servers



3. Find  $x$ .

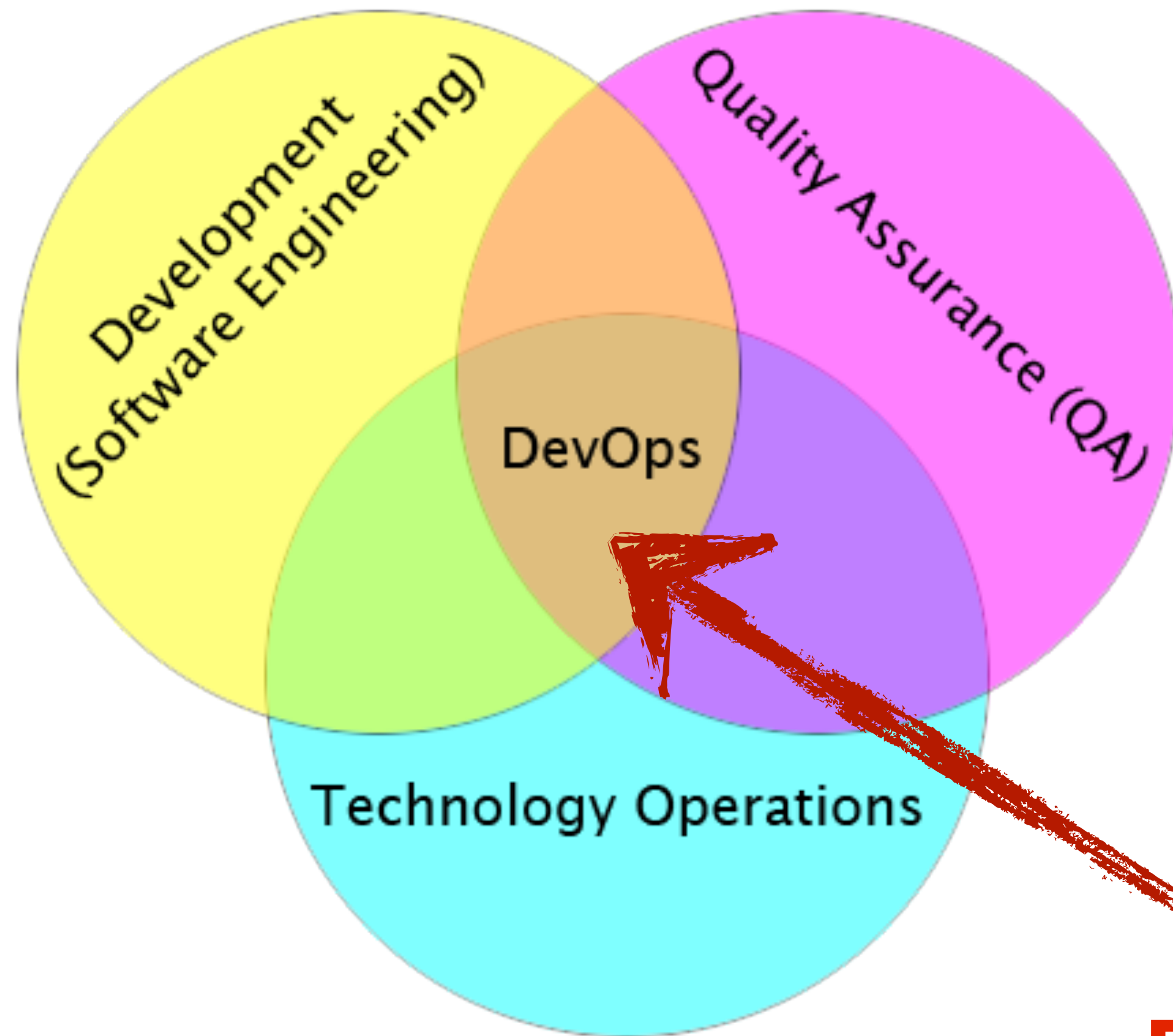


*Here it is*

# SIMPLICITY

The simplest solutions are often the cleverest  
They are also usually wrong

**DevOps**



**DevQaOps ?**

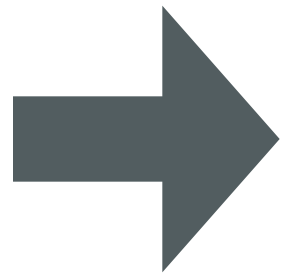


**@DEVOPS\_BORAT**

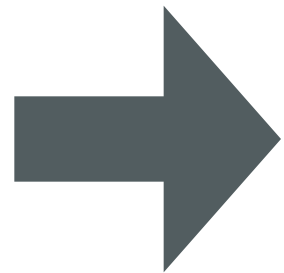
DevOps Borat

To make error is human. To propagate error to all server in automatic way is **#devops**.

**DEV**

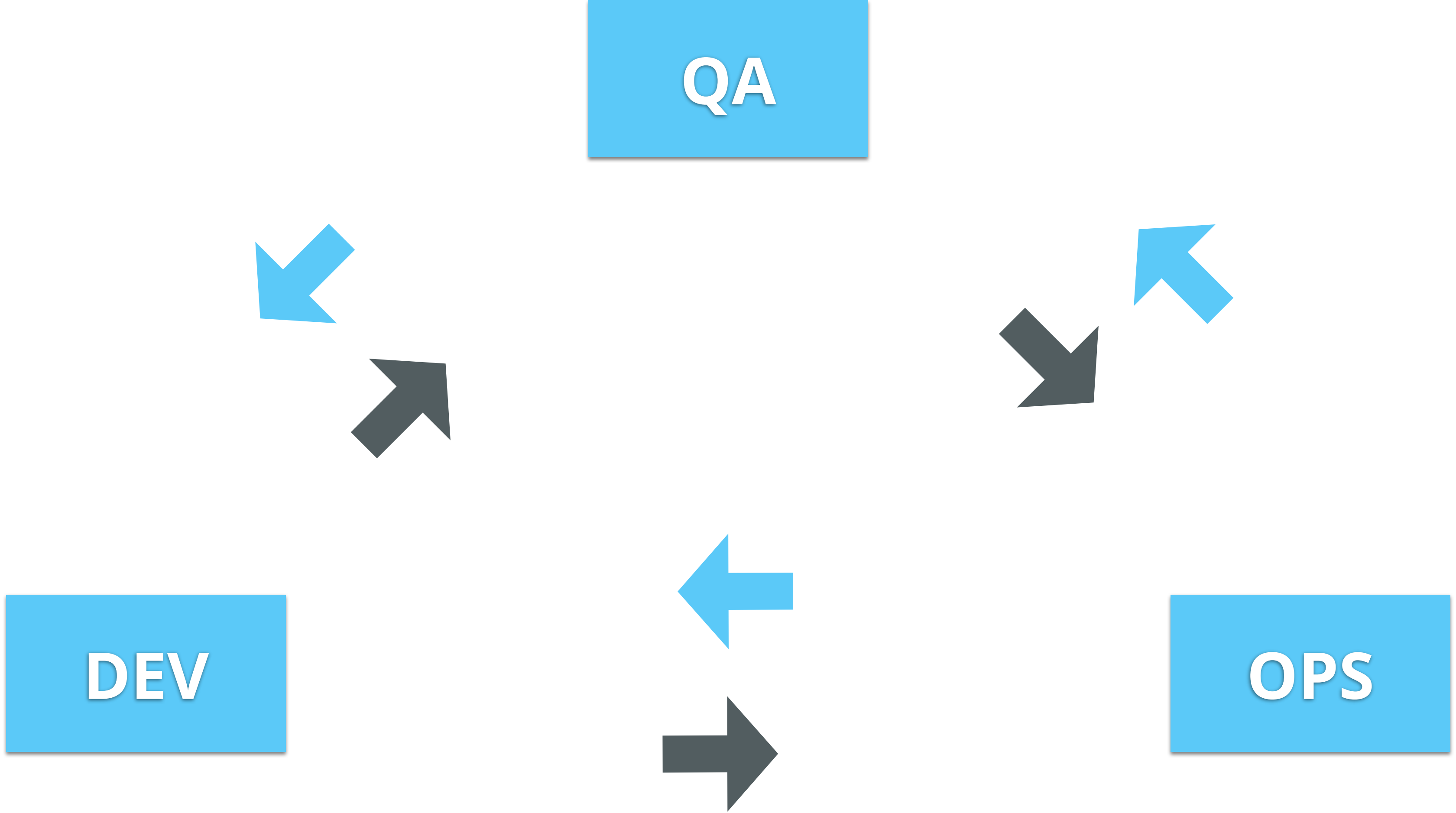


**QA**



**OPS**

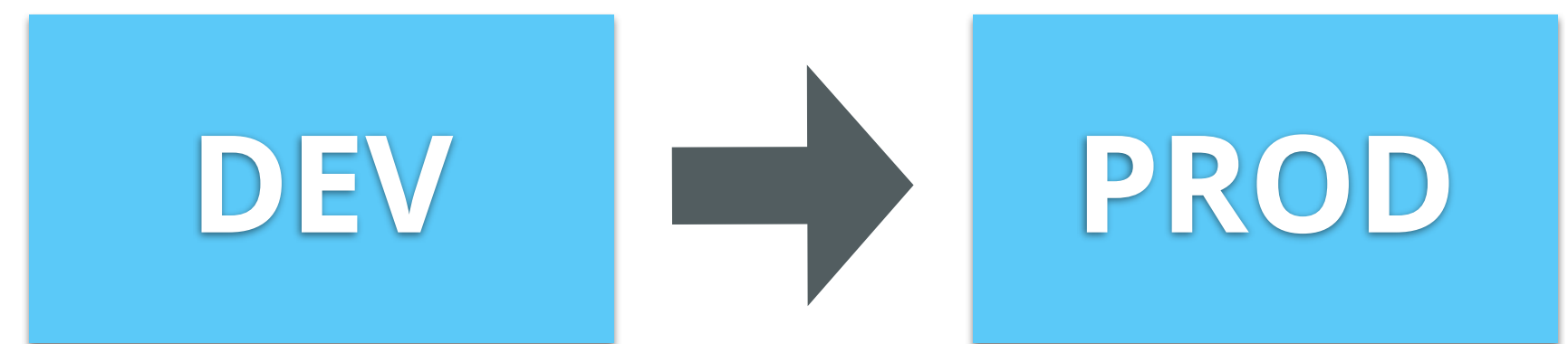


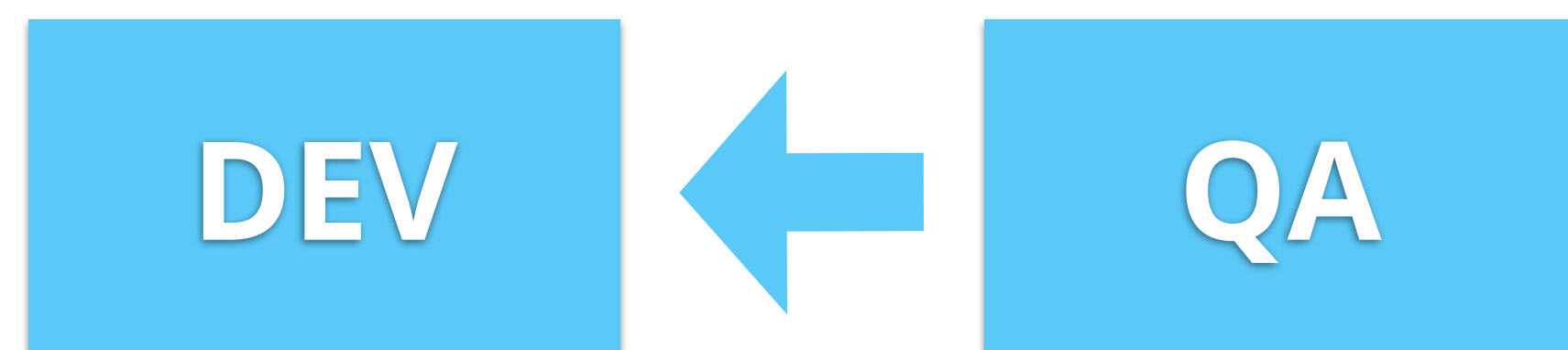


Specs

Packages

Versions



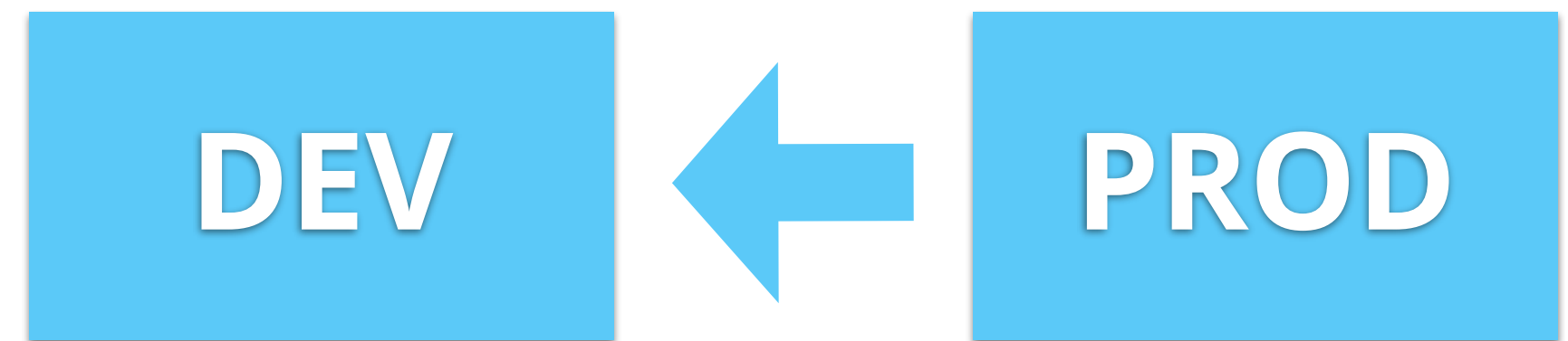


Testability

Metrics

Logs

Security  
updates





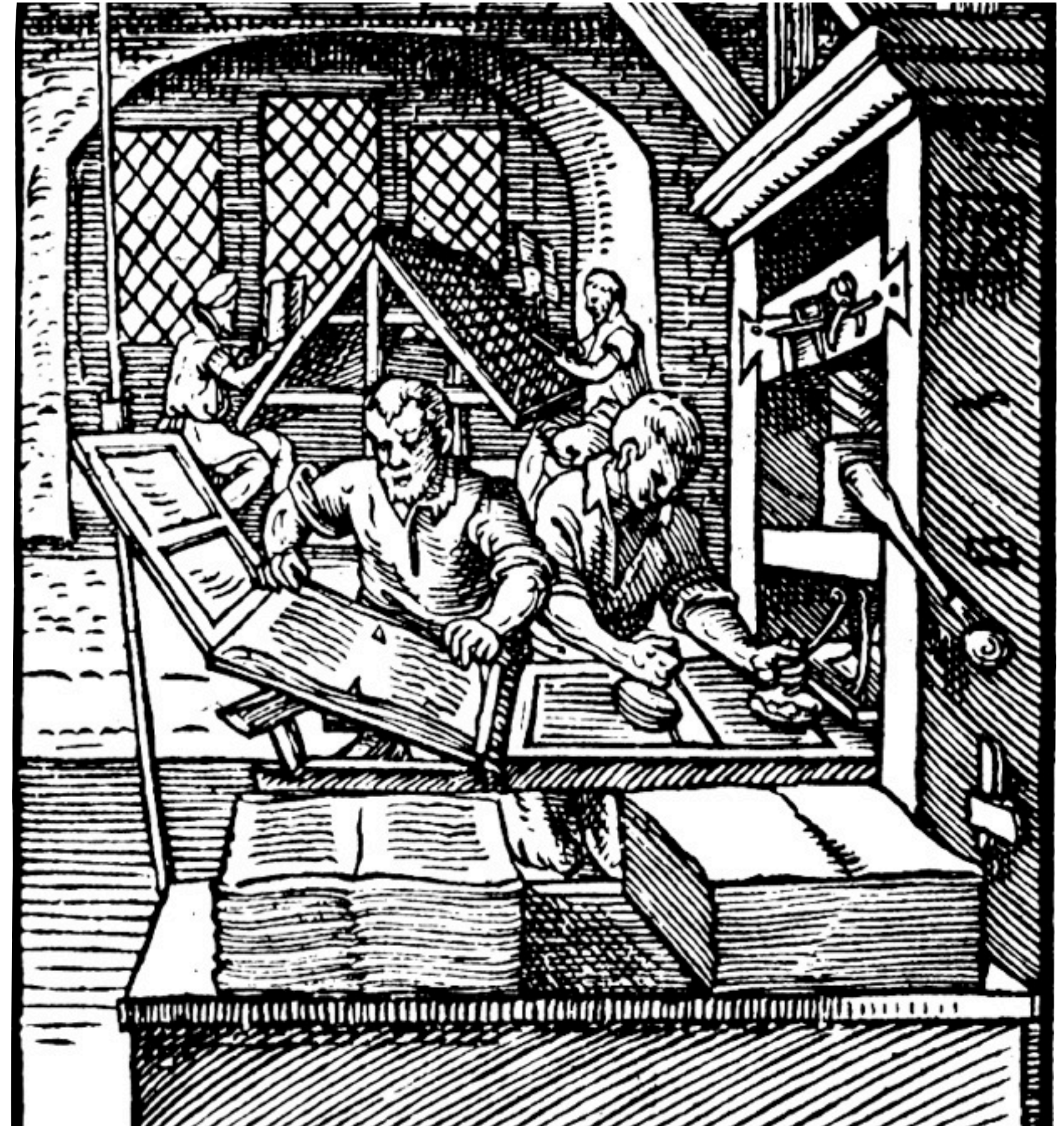
is not about  
the tools

*but*

how can I  
implement IT

Tools can  
enable change  
in behavior  
and eventually  
change  
culture

*Patrick Debois*



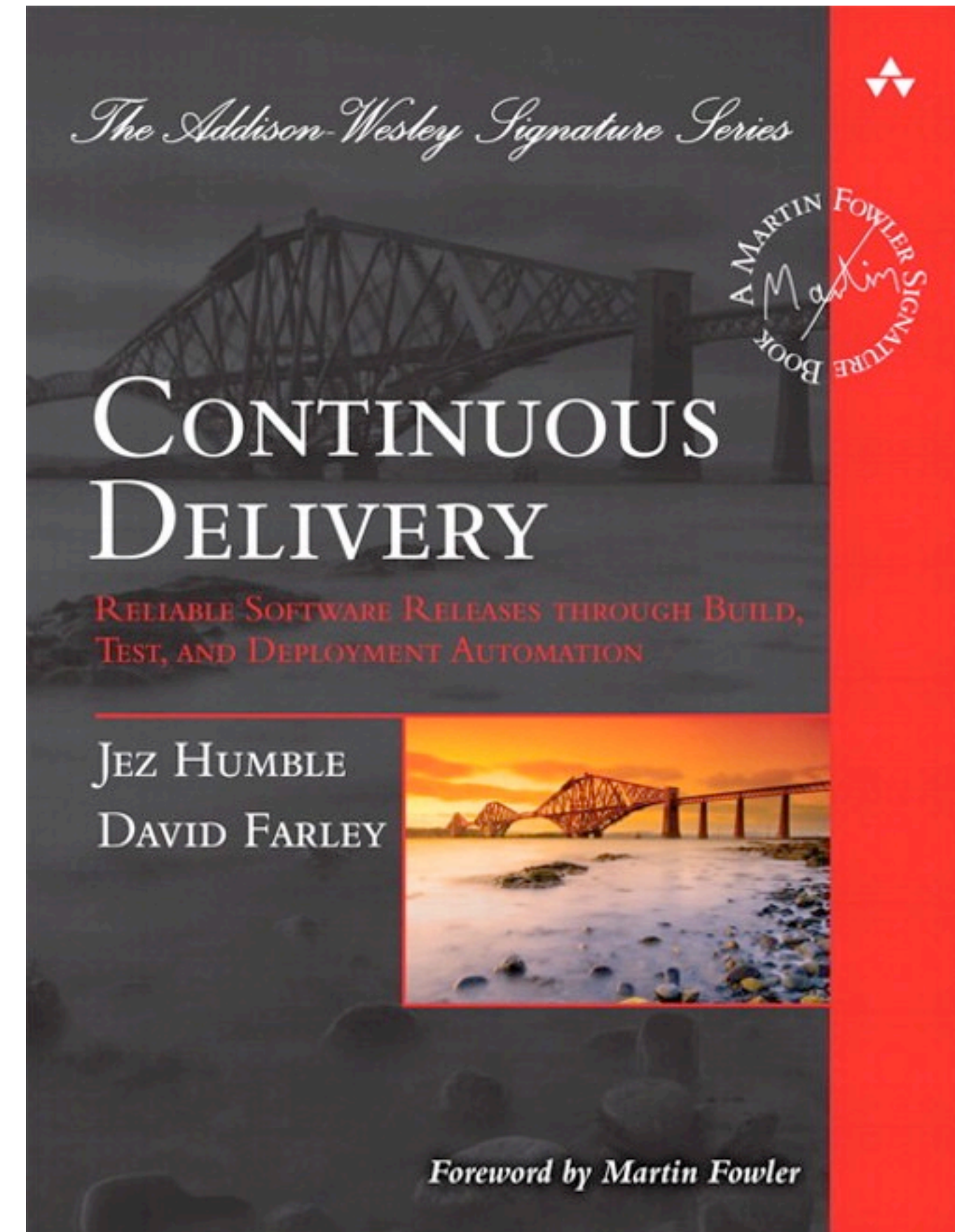


everyone is  
intelligent  
enough  
every tool is  
cloud enabled  
*every tool is DevOps(tm)*

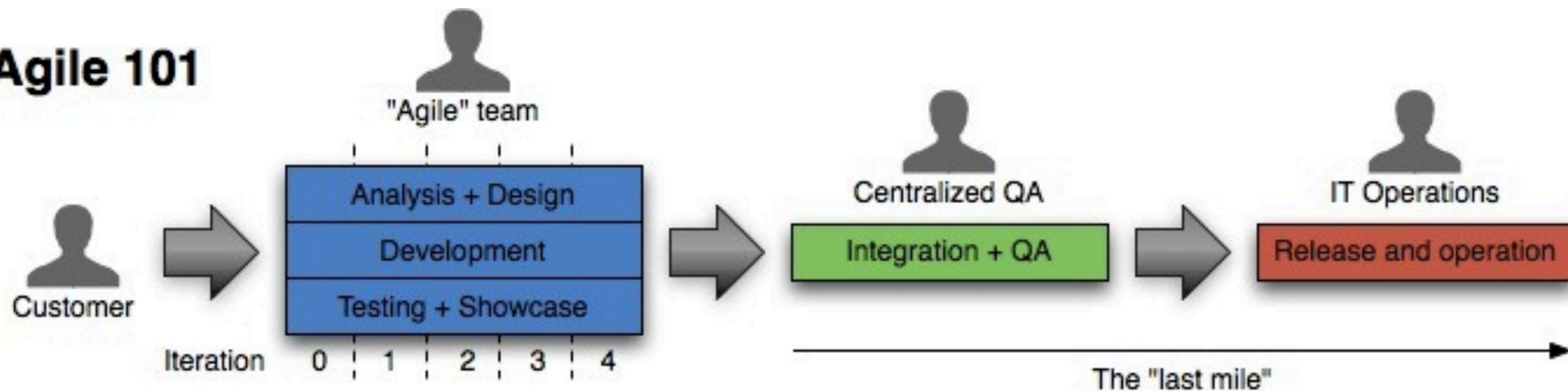
**3 key concepts**



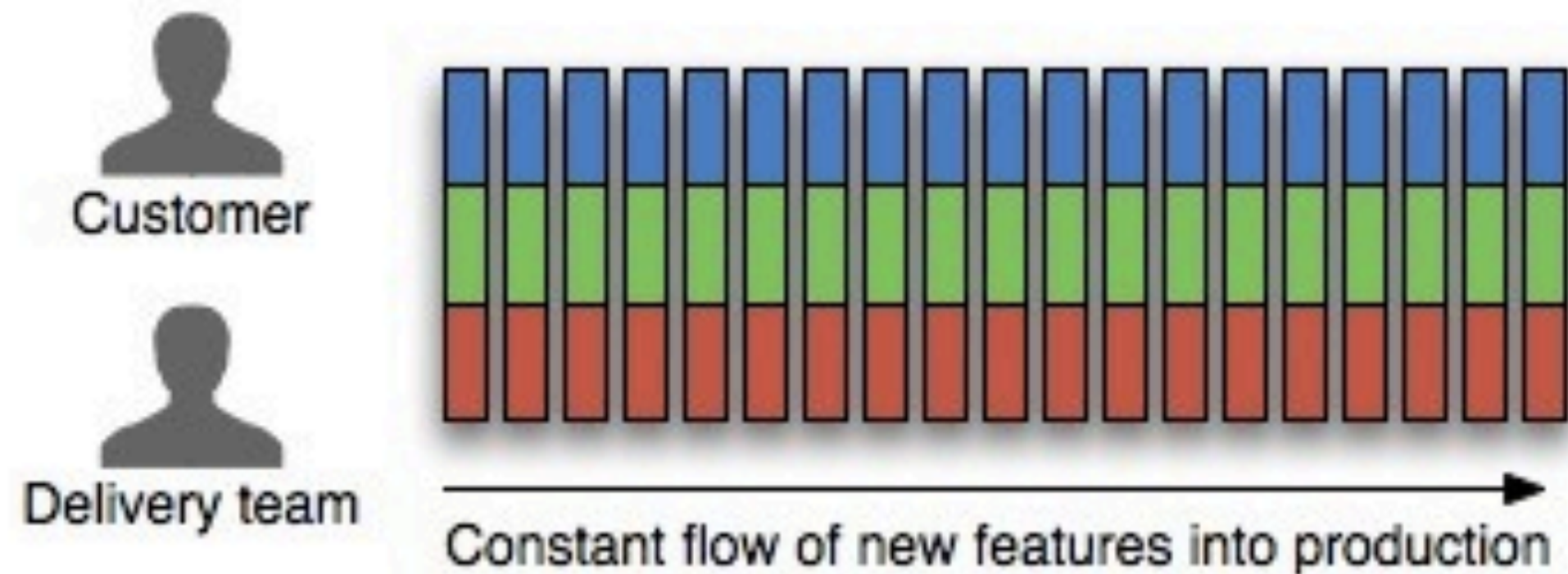
# Continuous Delivery



## Agile 101



## Continuous Delivery



**Continuous  
delivery**



# Infrastructure as Code

*it's all been invented,  
now it's standardized*

# manifests ruby-like

ERB templates

```
exec { "maven-untar":  
  command => "tar xf /tmp/x.tgz",  
  cwd => "/opt",  
  creates => "/opt/apache-maven-${version}",  
  path => ["/bin"],  
} ->  
file { "/usr/bin/mvn":  
  ensure => link,  
  target => "/opt/apache-maven-${version}/bin/mvn",  
}  
file { "/usr/local/bin/mvn":  
  ensure => absent,  
  require => Exec["maven-untar"],  
}  
file { "$home/.mavenrc":  
  mode => "0600",  
  owner => $user,  
  content => template("maven/mavenrc.erb"),  
  require => User[$user],  
}
```

```
package { 'openssh-server':  
  ensure => present,  
}
```

**infrastructure**  
**IS code**

```
service { 'ntp':  
  name    => 'ntpd',  
  ensure  => running,  
}
```

**declarative model**  
**state vs process**

no scripting

Follow  
development  
best  
practices

*tagging*

*branching*

*releasing*

*dev, QA, production*

**new  
solutions**

**new  
challenges**

Self servicing







Infrastructure  
always  
available

*virtualization & cloud  
empower developers  
reduce time-to-  
market*

devs buy-in

*With great power  
comes great  
responsibility*





# Vagrant

*empower developers*  
*dev-ops collaboration*  
*automation*



**Vagrant**

# Vagrant



Oracle VirtualBox cmdline automation

Easy Puppet and Chef provisioning

Keep VM configuration for different projects

Share boxes and configuration files across teams

base box + configuration files

# Vagrant base boxes

[www.vagrantbox.es](http://www.vagrantbox.es)

anywhere! just (big) files

# using Vagrant

```
$ gem install vagrant
$ vagrant box add centos-6.0-x86_64 \
  http://dl.dropbox.com/u/1627760/centos-6.0-x86\_64.box
$ vagrant init myproject
$ vagrant up
$ vagrant ssh
$ vagrant suspend
$ vagrant resume
$ vagrant destroy
```



# Vagrant

```
Vagrant::Config.run do |config|
```

```
  # Every Vagrant virtual environment requires a box to build off of.
```

```
  config.vm.box = "centos-6.0-x86_64"
```

```
  # The url from where the 'config.vm.box' box will be fetched
```

```
  config.vm.box_url = "http://dl.dropbox.com/u/1627760/centos-6.0-x86\_64.box"
```

```
  # Boot with a GUI so you can see the screen. (Default is headless)
```

```
  #config.vm.boot_mode = :gui
```

```
  # Assign this VM to a host only network IP, allowing you to access it via the IP.
```

```
  # config.vm.network "33.33.33.10"
```

```
  # Forward a port from the guest to the host, which allows for outside
```

```
  # computers to access the VM, whereas host only networking does not.
```

```
  config.vm.forward_port "sonar", 9000, 19000
```

```
  # Enable provisioning with Puppet stand alone.
```

```
  config.vm.share_folder("templates", "/tmp/vagrant-puppet/templates", "templates")
```

```
  config.vm.provision :puppet do |puppet|
```

```
    puppet.manifest_file = "base.pp"
```

```
    puppet.module_path = "mymodules"
```

```
    puppet.options = ["--templatedir", "/tmp/vagrant-puppet/templates"]
```

```
    puppet.options = "-v -d"
```

```
  end
```

```
end
```

# manifests/base.pp

```
package { jdk:  
  ensure => installed,  
  name   => $operatingsystem ? {  
    centOS => "java-1.6.0-openjdk-devel",  
    Ubuntu => "openjdk-6-jdk",  
    default => "jdk",  
  },  
}
```

# Maven and Puppet

# What am I doing to automate deployment

Ant tasks plugin

ssh commands

Assembly plugin

Cargo

Capistrano

# What can I do to automate deployment

Handle full deployment including infrastructure

not just webapp deployment

Help Ops with clear, automated manifests

Ability to reproduce production environments

in local box using Vagrant / VirtualBox / VMWare

Use the right tool for the right job

# Maven-Puppet module

A Maven Puppet module

<https://github.com/maestrodev/puppet-maven>

fetches Maven artifacts from the repo  
manages them with Puppet  
no more extra packaging

# Installing Maven

```
$repo1 = {  
  id => "myrepo",  
  username => "myuser",  
  password => "mypassword",  
  url => "http://repo.acme.com",  
}
```

# Install Maven

```
class { "maven::maven":  
  version => "2.2.1",  
} ->
```

# Create a settings.xml with the repo credentials

```
class { "maven::settings" :  
  servers => [$repo1],  
}
```

# New Maven type

```
maven { "/tmp/maven-core-2.2.1.jar":  
  id => "org.apache.maven:maven-core:jar:2.2.1",  
  repos => ["http://repo1.maven.apache.org/maven2",  
            "http://mirrors.ibiblio.org/pub/mirrors/maven2"],  
}
```

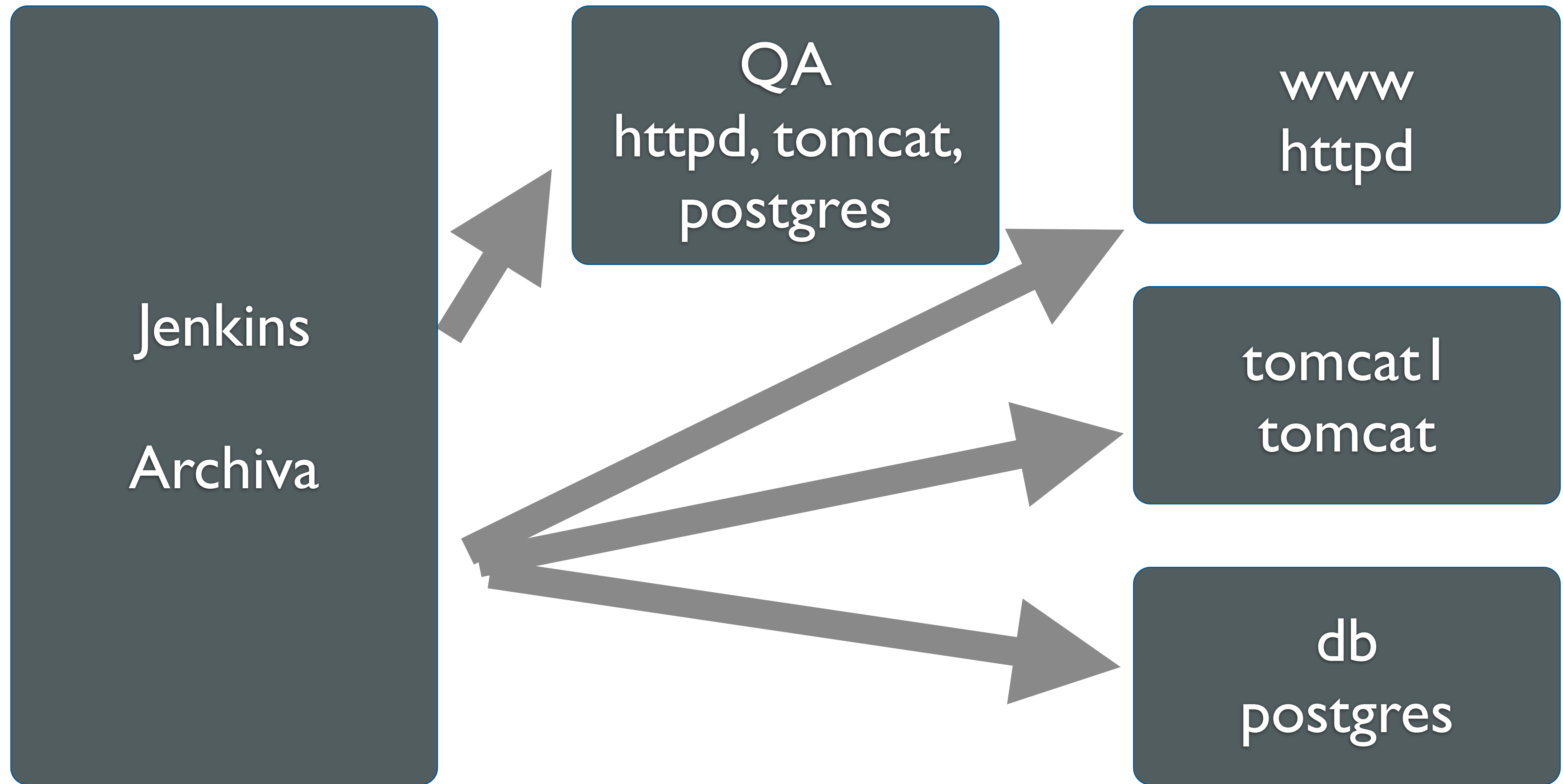


# New Maven type

```
maven { "/tmp/maven-core-2.2.1.jar":  
  groupId => "org.apache.maven",  
  artifactId => "maven-core",  
  version => "2.2.1",  
  packaging => "jar",  
  repos => ["http://repo1.maven.apache.org/maven2",  
            "http://mirrors.ibiblio.org/pub/mirrors/maven2"],  
}
```

**Examples**

# Infrastructure



# Tomcat cluster + postgres

postgres database

db.acme.com

tomcat servers

tomcat1.acme.com

tomcat2.acme.com

...

httpd

www.acme.com

# Puppet Modules required

**bundle install && librarian-puppet install**

```
mod 'puppetlabs/java', '0.1.6'  
mod 'puppetlabs/apache', '0.4.0'  
mod 'inkling/postgresql', '0.2.0'  
mod 'puppetlabs/firewall', '0.0.4'  
mod 'tomcat',  
  :git => 'https://github.com/carlossg/puppet-tomcat.git',  
  :ref => 'centos'  
mod 'maestrodev/maven', '1.x'  
mod 'stahnma/epel', '0.0.2'  
mod 'maestrodev/avahi', '1.x'  
mod 'acme', :path => 'mymodules/acme'
```

# mymodules/acme/manifests/db\_node.pp

```
class 'acme::db_node' {  
  
  class { "postgresql::server" :  
    config_hash => {  
      'postgres_password' => 'postgres'  
    }  
  } ->  
  postgresql::db{ "appfuse":  
    user      => "appfuse",  
    password => "appfuse",  
    grant     => "all",  
  }  
}
```

# mymodules/acme/manifests/tomcat\_node.pp

```
class 'acme::tomcat_node' ($db_host = 'db.local') {  
  
  class { "java":  
    distribution => "java-1.6.0-openjdk"  
  }  
  
  class { 'tomcat': } ->  
  tomcat::instance {'appfuse': } ->  
  
  class { 'maven::maven': } ->  
  maven { "/srv/tomcat/appfuse/webapps/ROOT.war":  
    id => "org.appfuse:appfuse-spring:2.2.1:war",  
  }  
}
```

# manifests/site.pp

```
import 'nodes/*.pp'  
  
node 'parent' {  
  class {'epel': } ->  
  
  class {'avahi':  
    firewall => true,  
  }  
}
```



# manifests/nodes/tomcat.pp

```
# tomcat1.acme.com, tomcat2.acme.com,  
tomcat3.acme.com, ...  
node /tomcat\d\..*/ inherits 'parent' {  
  file {'/etc/motd':  
    content => "tomcat server: ${::hostname}\n",  
  }  
  
  class {'acme::tomcat_node'}  
}
```

# manifests/nodes/qa.pp

```
node /qa\..*/ inherits 'parent' {  
  class {'acme::db_node': }  
  
  class {'acme::tomcat_node':  
    db_host => 'localhost',  
  }  
  
  class {'acme::www_node':  
    tomcat_host => 'localhost',  
  }  
}
```

# spec/hosts/db\_spec.pp

```
require 'rspec-puppet'

describe 'db.acme.com' do
  let(:facts) { {
    :osfamily => 'RedHat',
    :operatingsystem => 'CentOS',
    :operatingsystemrelease => '6.3' } }

  it { should contain_class('postgresql::server') }
end
```

# spec/hosts/www\_spec.pp

```
require 'rspec-puppet'

describe 'www.acme.com' do
  let(:facts) { {
    :osfamily => 'RedHat',
    :operatingsystem => 'CentOS',
    :operatingsystemrelease => '6.3' } }

  it { should contain_package('httpd') }
end
```

# Example code and slides

Available at

<http://slideshare.csanchez.org>

<http://github.csanchez.org>

<http://blog.csanchez.org>



**Thanks!**

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