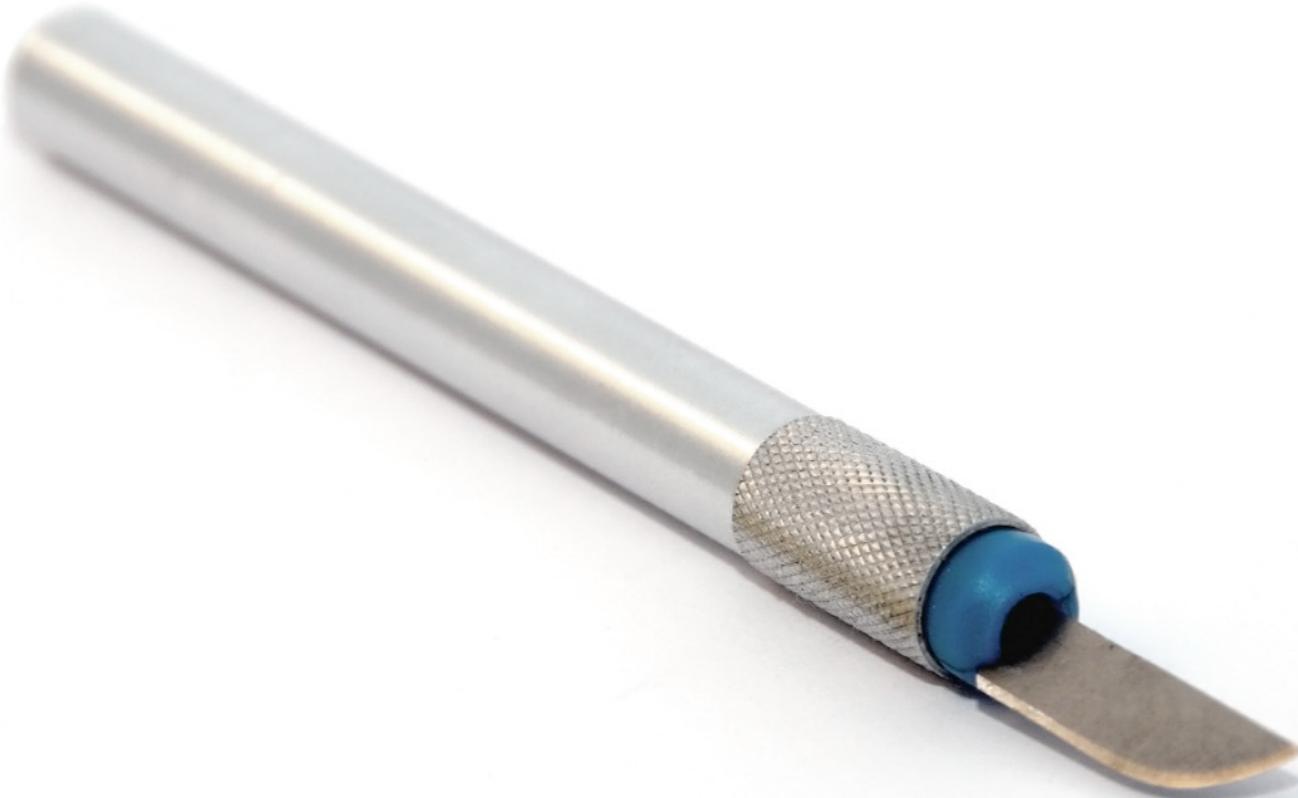


Dissecting DevOps



- What is this "DevOps" thing?
- What problem is it solving?
- How does it relate to
 - Chef/Puppet/Ansible/SaltStack/CFEngine?
 - Infrastructure management & Cloud?
 - Containerization (Docker, rkt)?

Who am I?

- Geek
- Consultant @ SingleStone
- Infrastructure/virtualization/tools background

@chrisbelyea

linkedin.com/in/chrisbelyea

github.com/chrisbelyea

- Co-organizer of DevOps RVA (tomorrow night!)



*No, I will not fix
your computer.*

What is DevOps?

(Other than a buzzword)

**DevOps is an approach for increasing delivery speed by
reducing friction and automating for repeatability.**

“Well it runs fine on my laptop.”

–Stereotypical Developer

“Our data center would run great if we could just get those applications out of there.”

–Stereotypical Ops Engineer

Reducing Friction: Development vs. Operations



Windows

Linux

Virtualization

Storage

Networking

Broker

Development

QA

• • • • • • • •

Windows

Linux

Hand-offs are slow

Virtualization

Storage

Broker

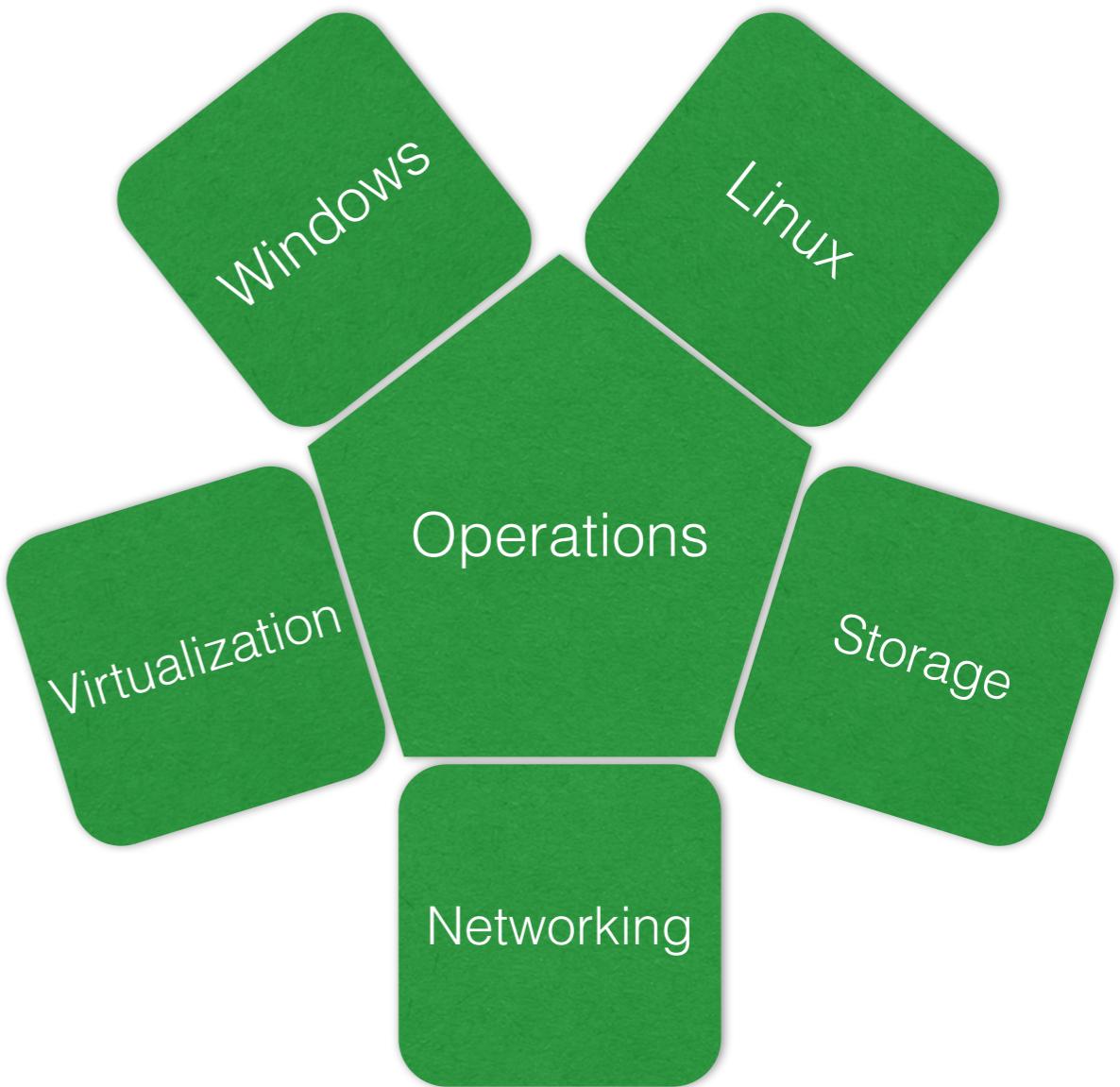
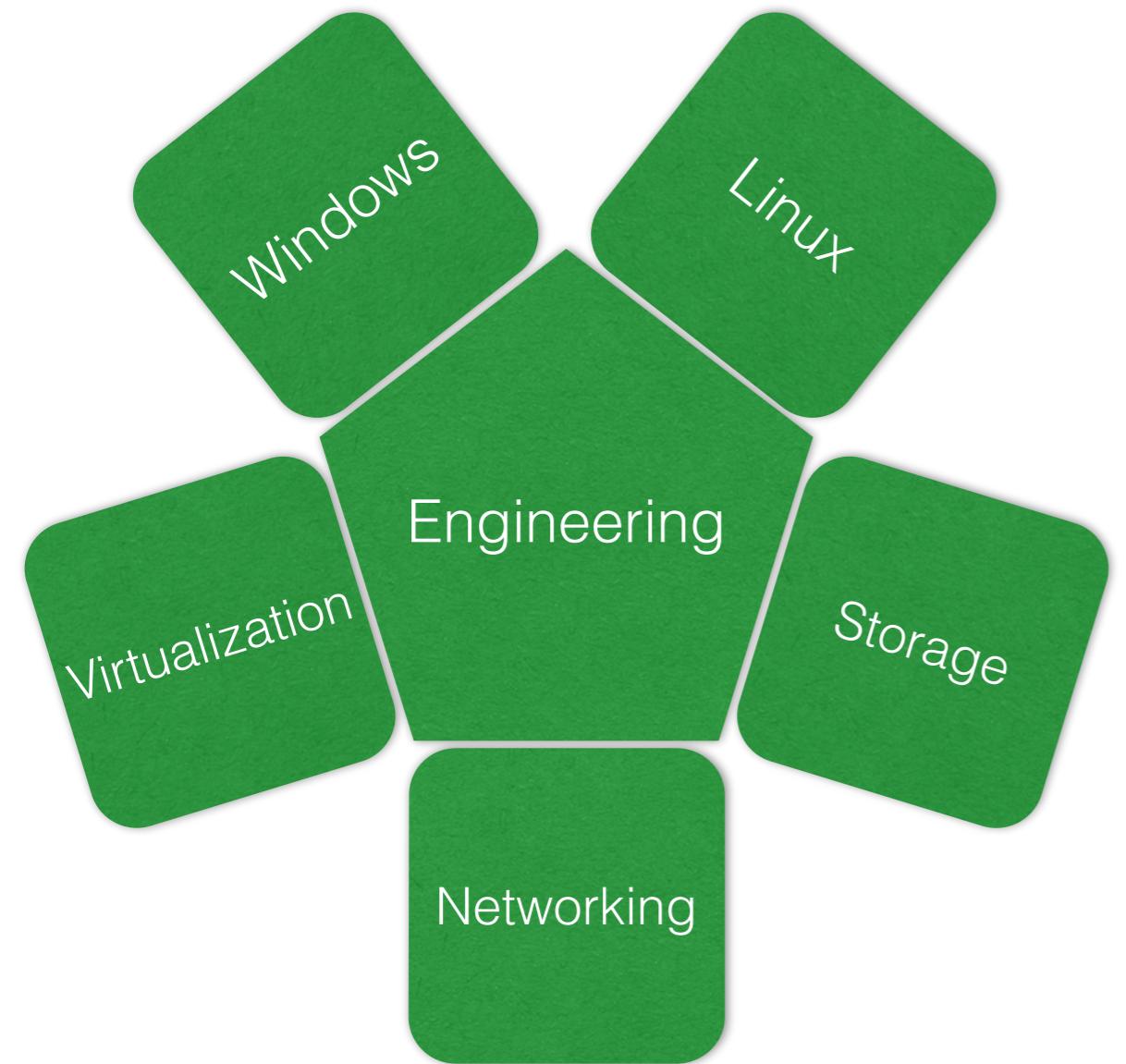
Development

Change velocity is low

Networking

QA

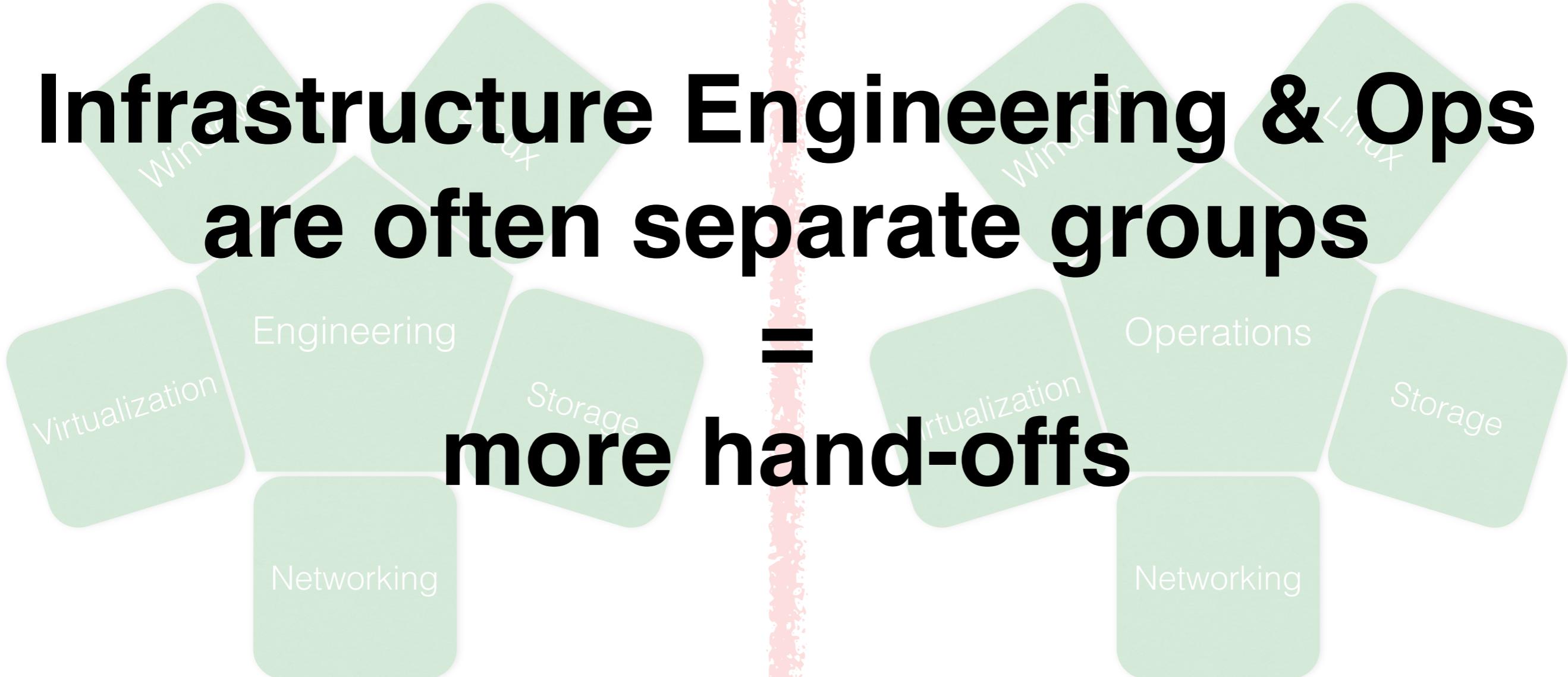
Details are lost in translation

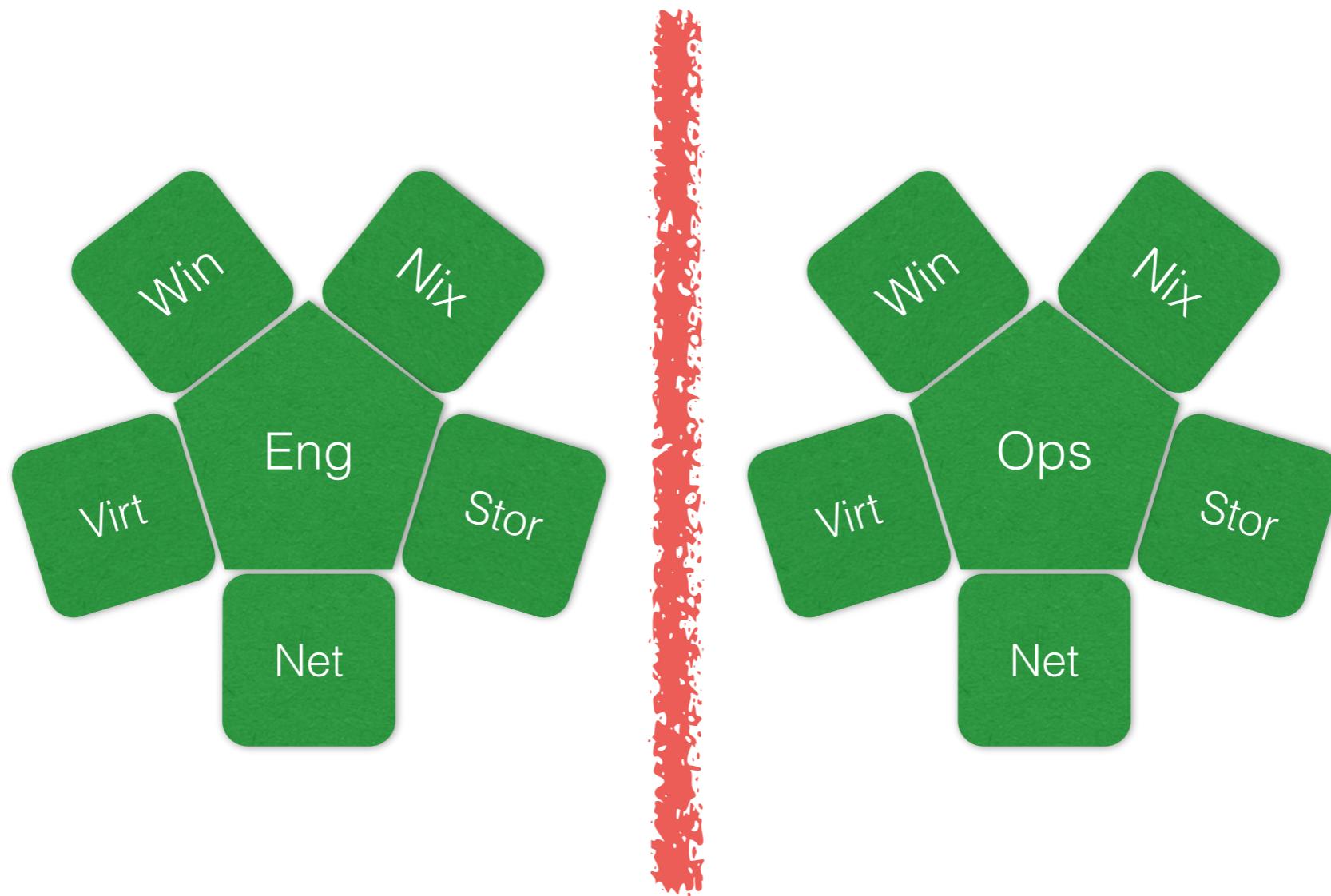
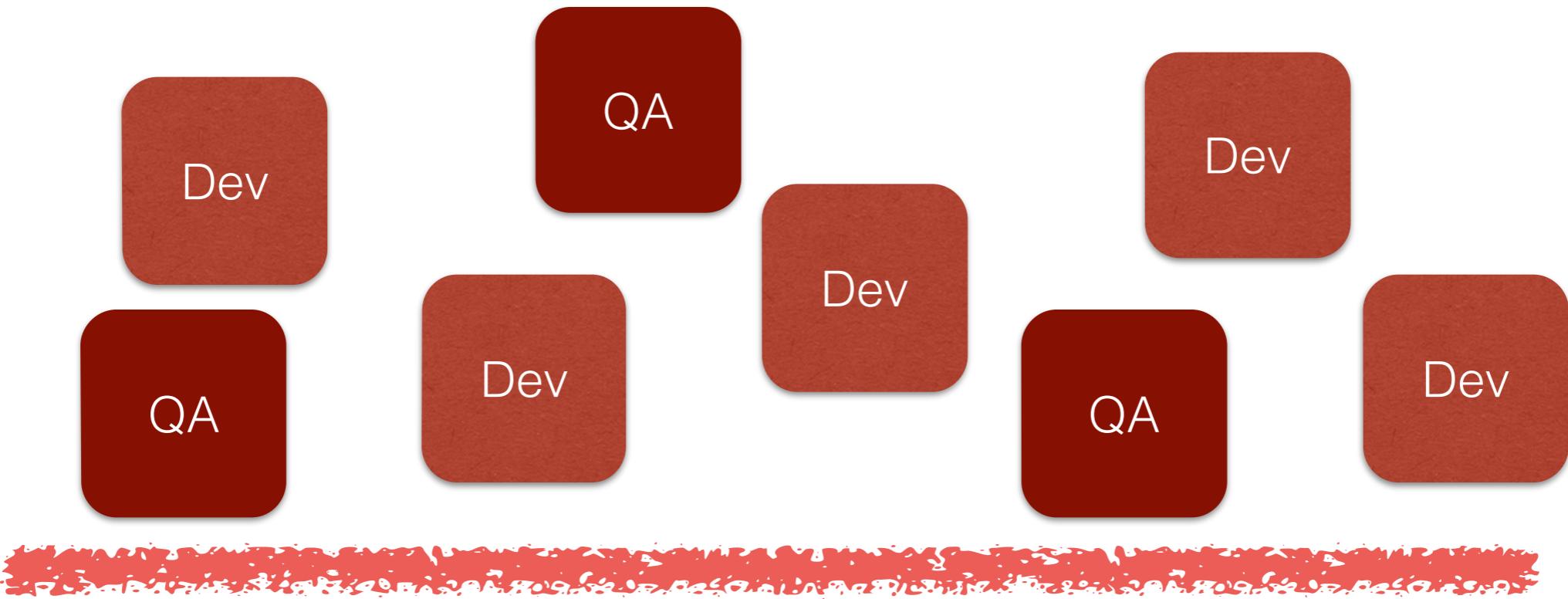


Infrastructure Engineering & Ops are often separate groups

=

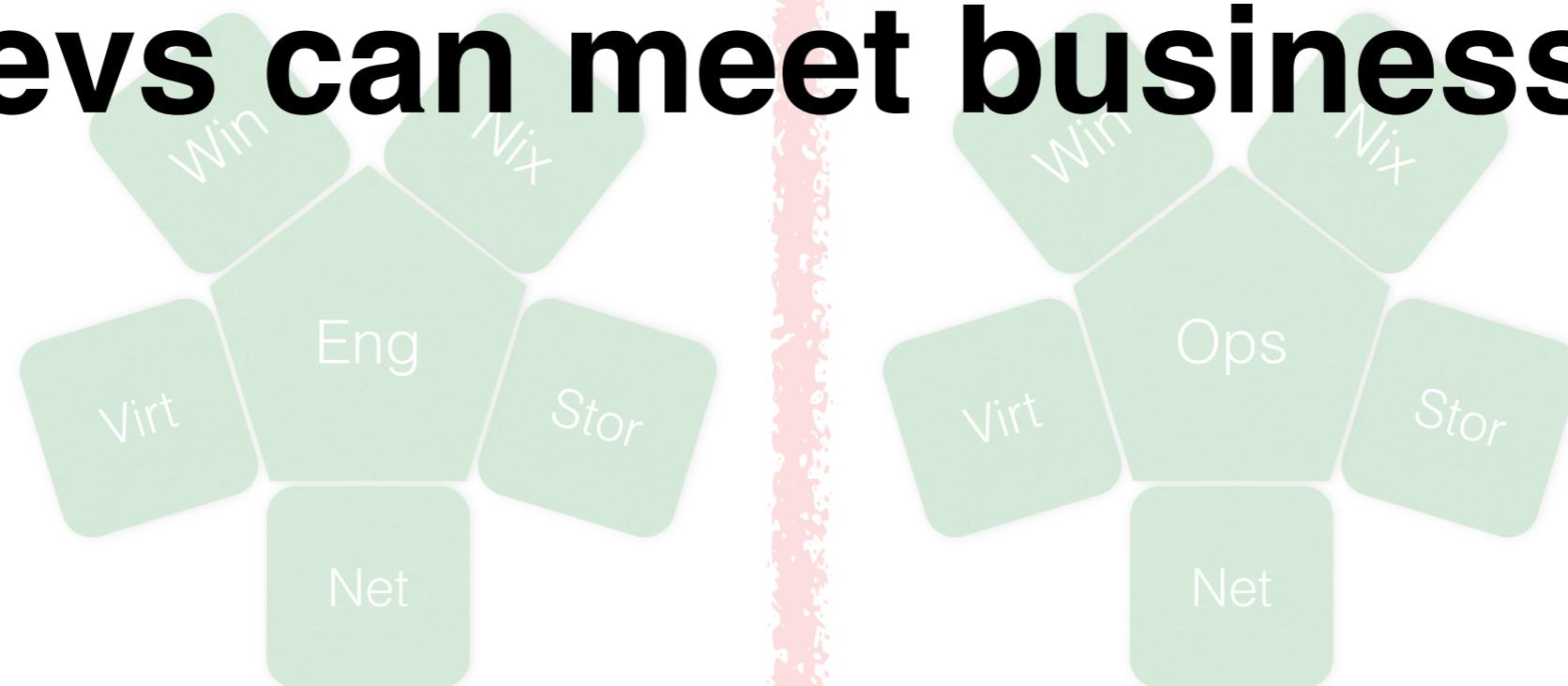
more hand-offs

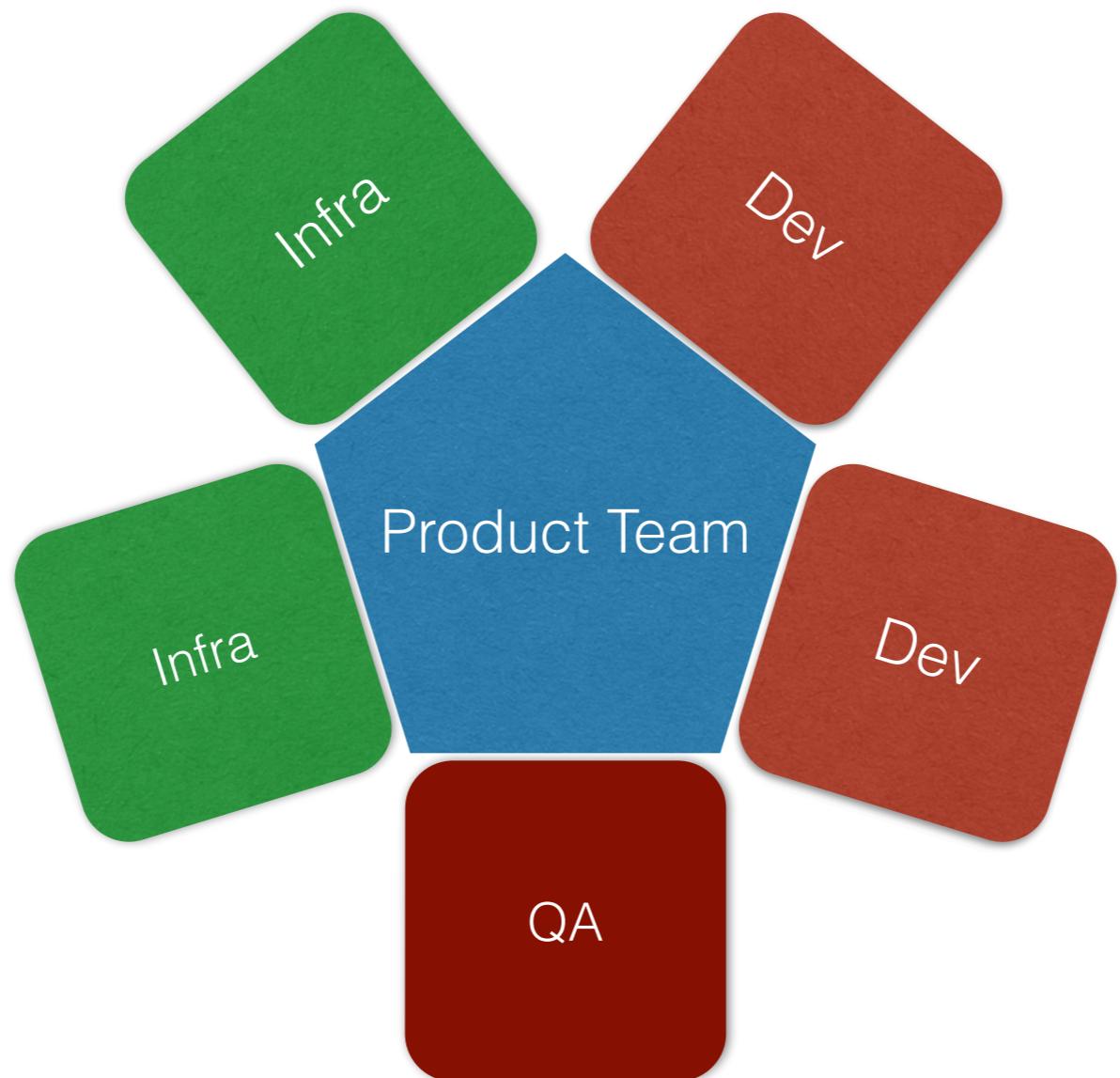


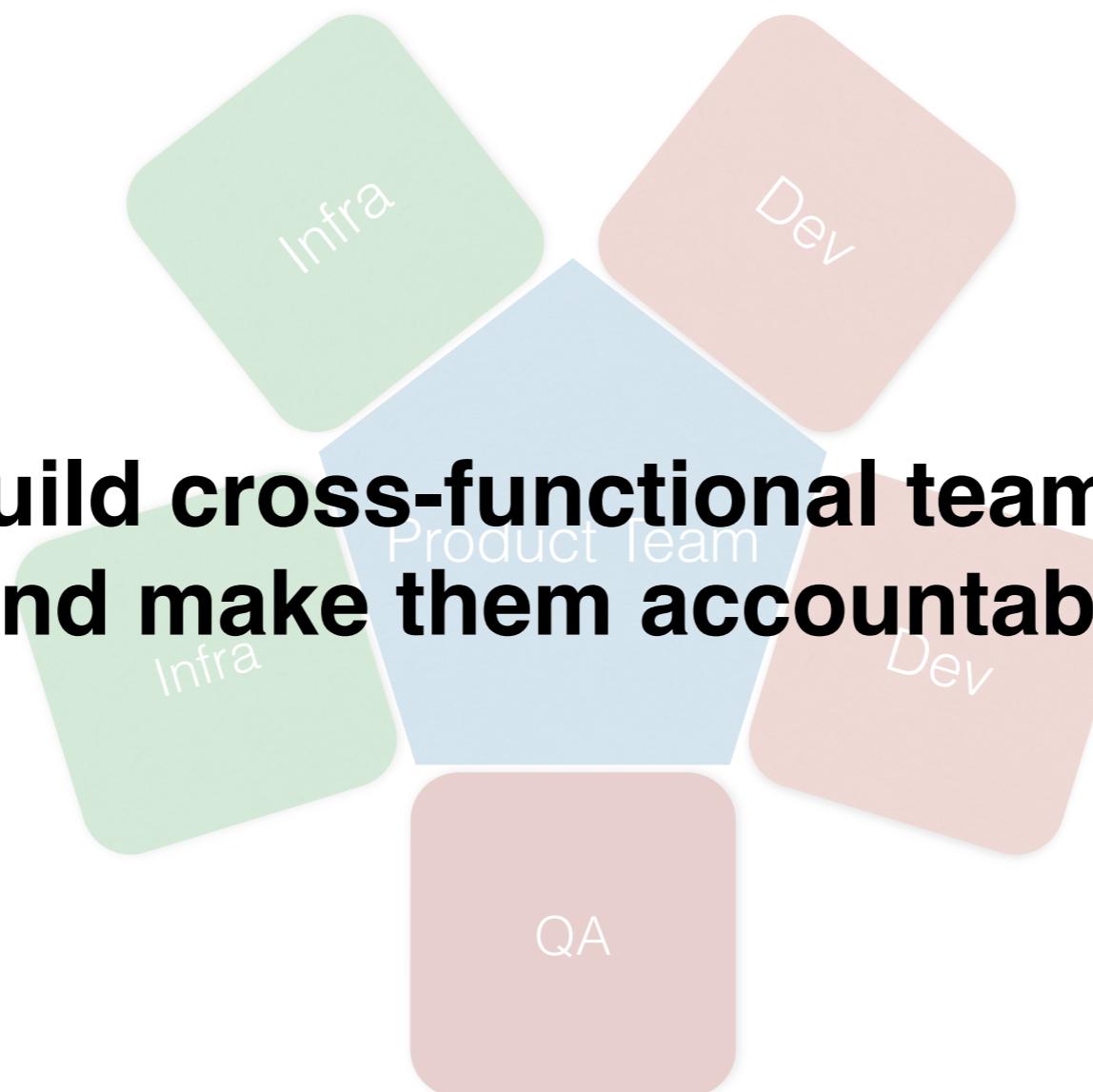




Competing priorities stretch infrastructure teams to deliver so that devs can meet business goals







The diagram illustrates a cross-functional team structure. At the center is a light blue hexagon labeled "Product Team". Surrounding it are four rounded rectangles: two green ones labeled "Infra", one orange one labeled "Dev", and one reddish-brown one labeled "QA".

**Build cross-functional teams*,
and make them accountable.**

* Find the people in your org who are already interested in this and empower them.

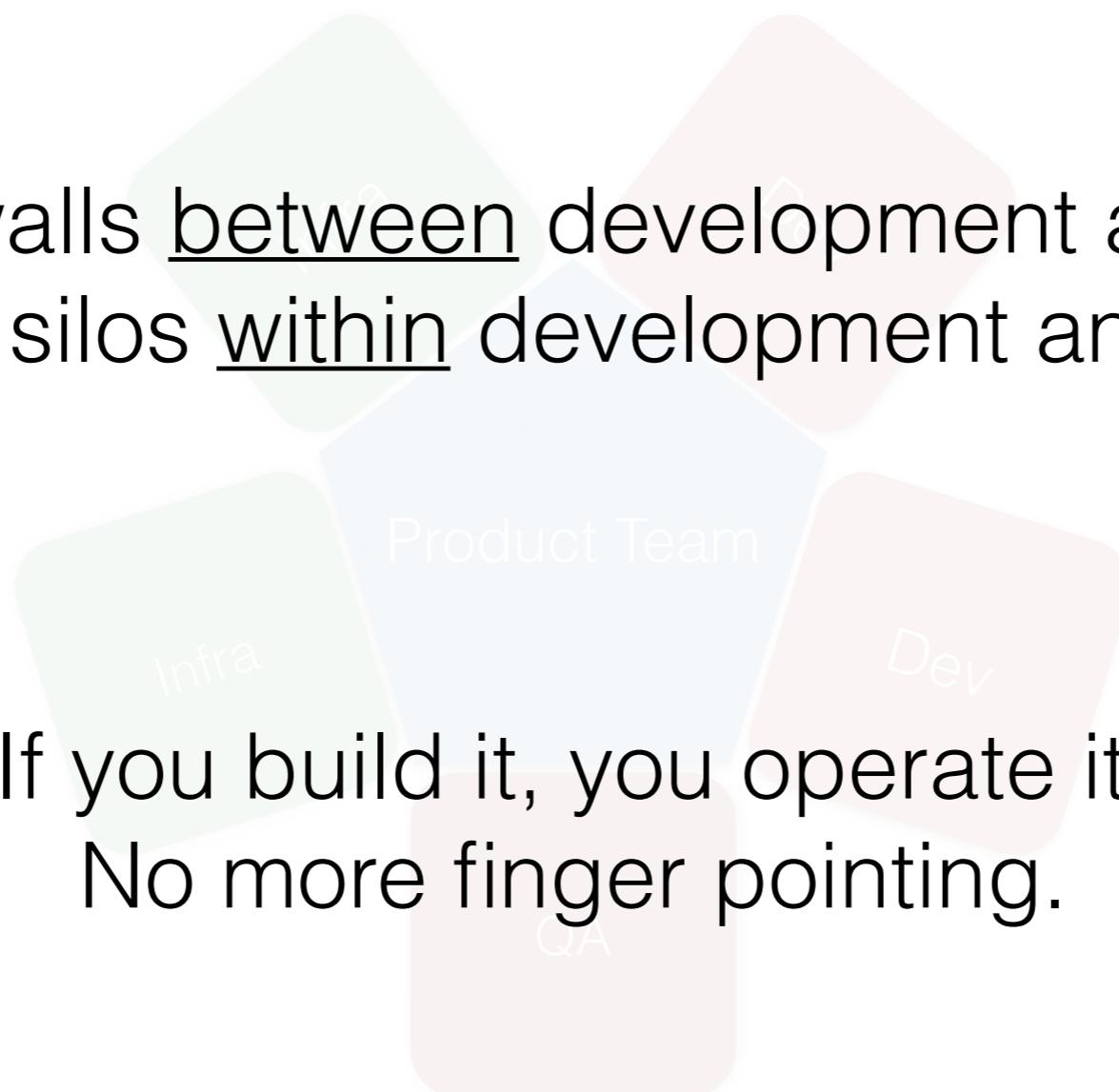
Developers bring experience with SDLC, version control, Continuous Integration

Product Team

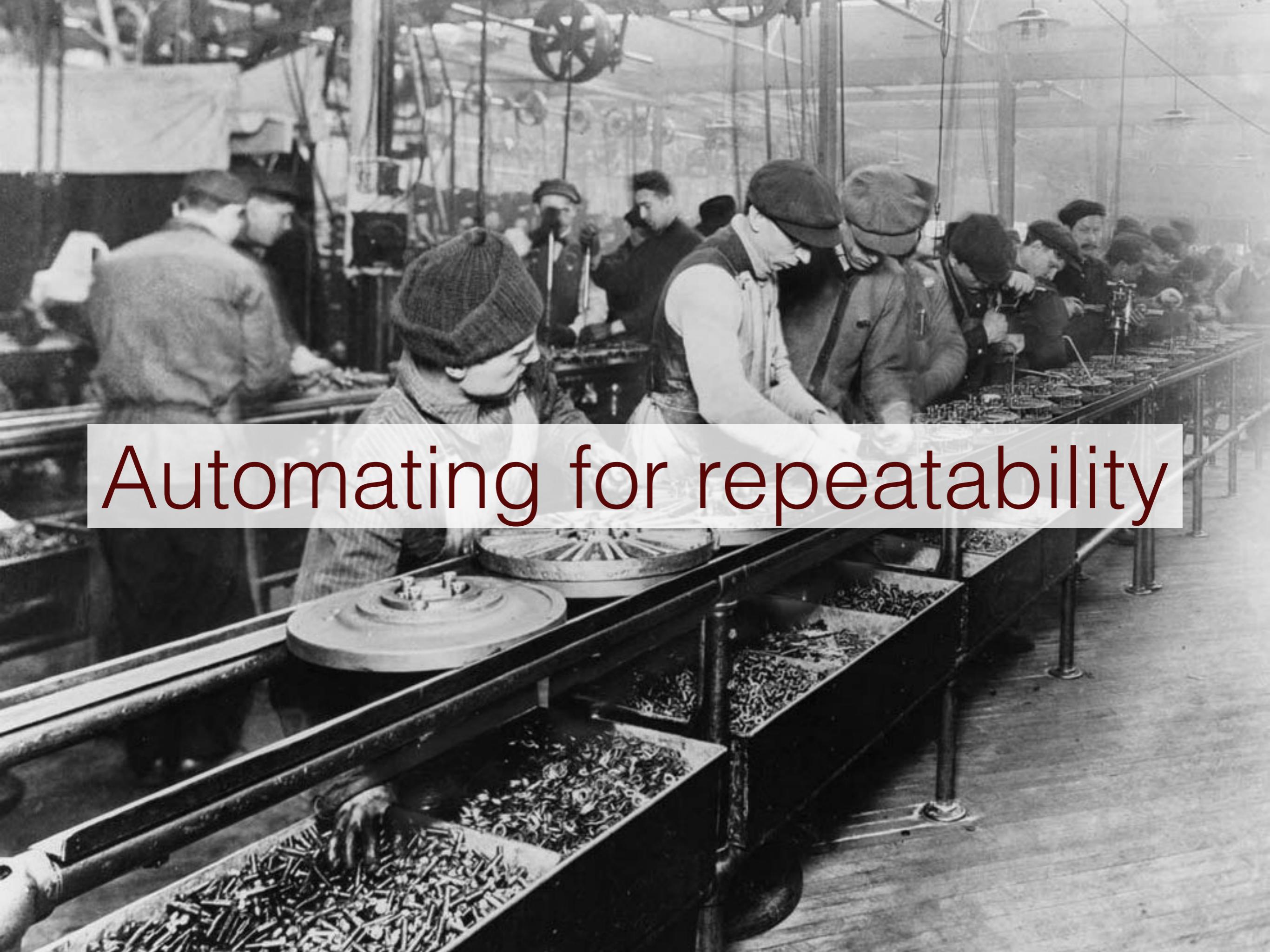
Ops brings experience with scalable system architecture, and sysadmin stuff

QA

Break down walls between development and operations
Break down silos within development and operations



“If you build it, you operate it.”
No more finger pointing.



Automating for repeatability

1. Automation ensures repeatability of processes
2. Repeatable processes increase delivery speed
3. Faster delivery drives business agility

Configuration Management

- CM tools automatically maintain a desired system state across your organization
- Define **infrastructure as code**
- Incorporate software development best-practices, i.e. **testing, version control, continuous integration**
- Examples: Chef, Puppet, Ansible, SaltStack, CFEngine



Infrastructure as code

```
class ssh::config inherits ssh {

    file { '/etc/ssh/sshd_config':
        ensure  => file,
        content => template('ssh/sshd_config.erb'),
        owner   => 'root',
        group   => 'root',
        mode    => '0644',
    }

    file { $ssh::params::ssh_banner:
        ensure => file,
        owner  => 'root',
        group  => 'root',
        mode   => '0600',
    }

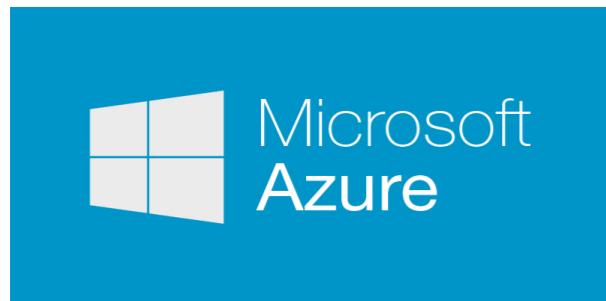
}
```

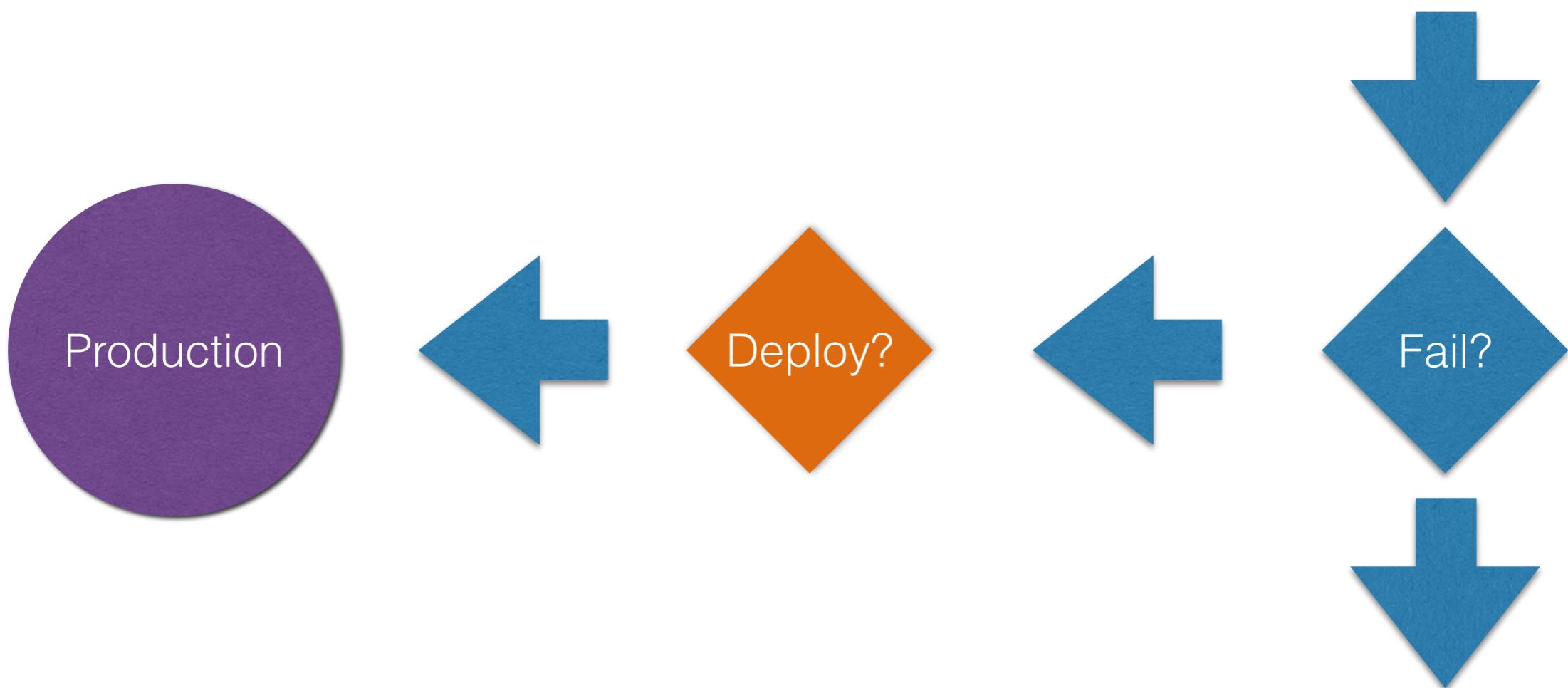
Infrastructure as code, pt. 2

```
{  
  "AWSTemplateFormatVersion" : "2010-09-09",  
  
  "Description" : "This CloudFormation template describes the creation of the InnovateVA web server. SSH traffic will  
  be allowed in through the bastion. Inbound HTTP(S) traffic will be limited to specific IPs.",  
  
  "Parameters" : {  
  
    "HostedZone" : {  
      "Description" : "This is the hosted zone you will connect jenkins to",  
      "Type" : "String",  
      "Default" : "singlestonedemo.com"  
    },  
  
    "S3Bucket" : {  
      "Description" : "This is the s3 bucket where your cfn templates are stored",  
      "Type" : "String",  
      "Default" : "singlestonedemo"  
    },  
  
    "InstanceType" : {  
      "Description" : "Enter m3.medium, m3.large, or m3.xlarge. Default is m3.medium.",  
      "Default" : "m3.medium",  
      "Type" : "String",  
      "AllowedValues" : [ "m3.medium", "m3.large", "m3.xlarge" ],  
      "ConstraintDescription" : "Must be a valid EC2 instance type."  
    },  
  
    "IvaPublicSubnetId" : {  
      "Description" : "This parameter will pull in the Public Subnet ID returned from vpc.template.",  
      "Type" : "String"  
    },  
  ...  
}
```



Use the same CM tools to manage
across public/private clouds





STOP!

**Deploying to production
should be a business
decision.**

Trends

Infrastructure as Code = Infrastructure is Disposable

Pets versus Cattle

Disable SSH/RDP

Blue/Green deployments — no more patching

Scale horizontally, not vertically

Microservices

Containerization



Lightweight

...Fast!

Managing at scale is still new

Return to bare metal? (i.e. CoreOS)

Want more?

- SingleStone’s “DevOps Demystified” presentation and code
<https://github.com/singlestone/devops-iva>
- DevOps RVA Meetup – 3rd Wed of each month
<http://www.meetup.com/DevOps-RVA/>