

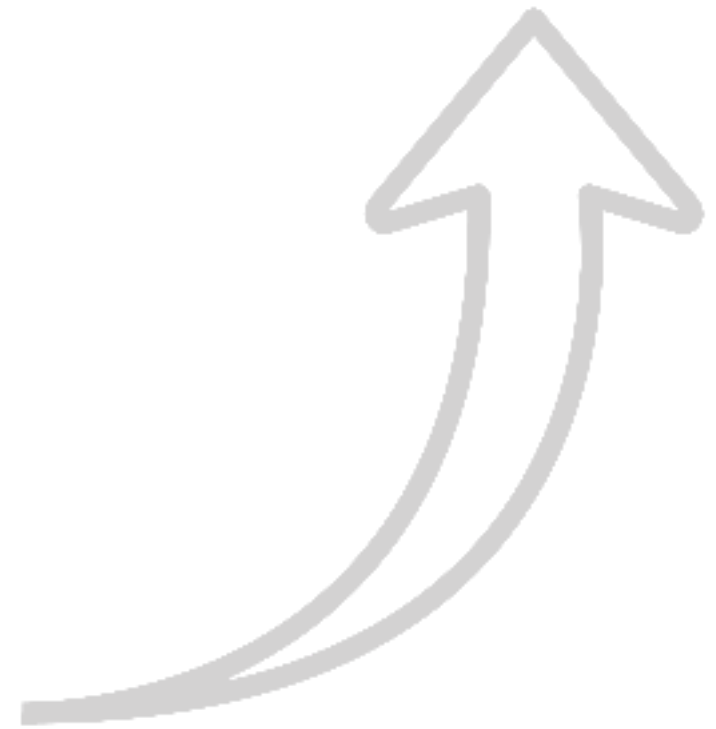
# A DevOps State of Mind

Chris Van Tuin  
Chief Technologist, West  
[cvantuin@redhat.com](mailto:cvantuin@redhat.com)

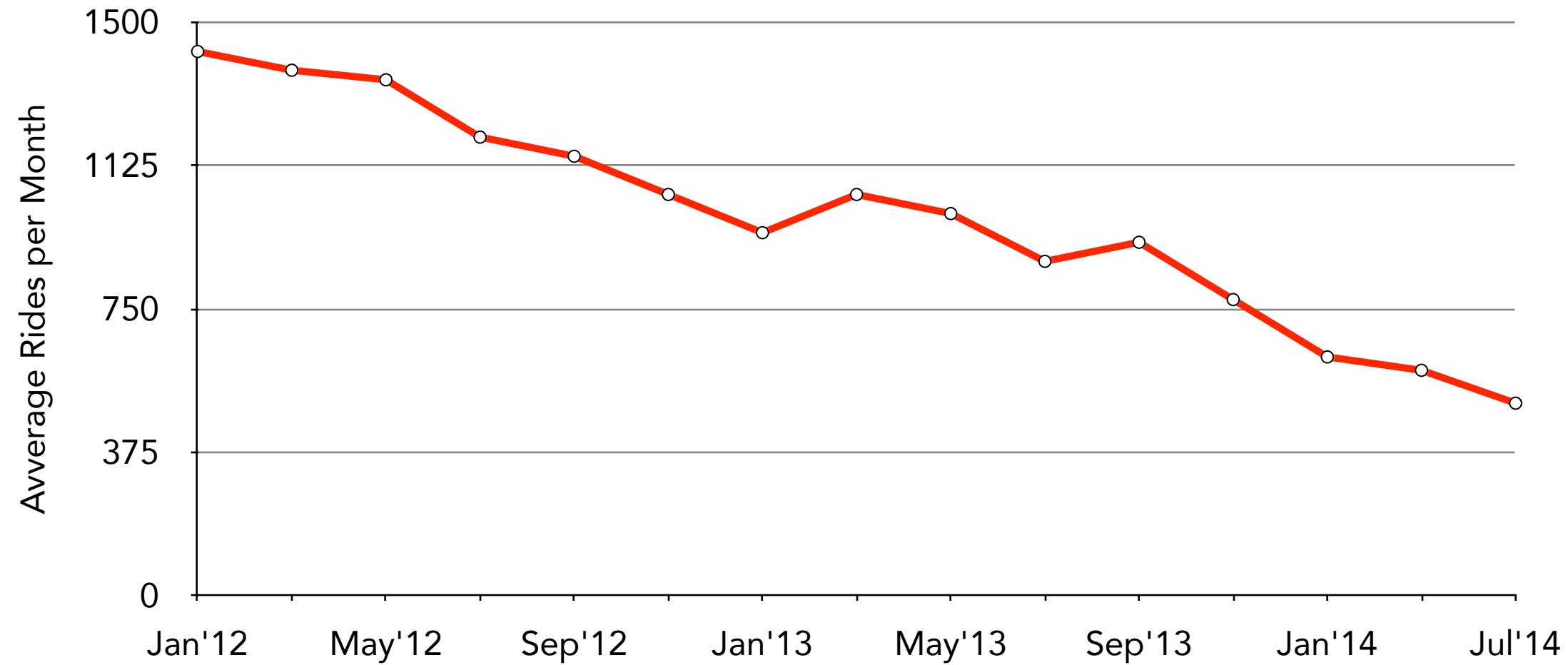


“In short, software is eating the world.”

- Marc Andreessen, Wall Street Journal, August 2011



# UBER, LYFT FALLOUT: TAXI RIDES PLUNGE 65% IN SAN FRANCISCO



# BUT DEMANDS ON IT INCREASING AS BUSINESSES ARE REIMAGINED



Online, Mobile



Software Defined Networks

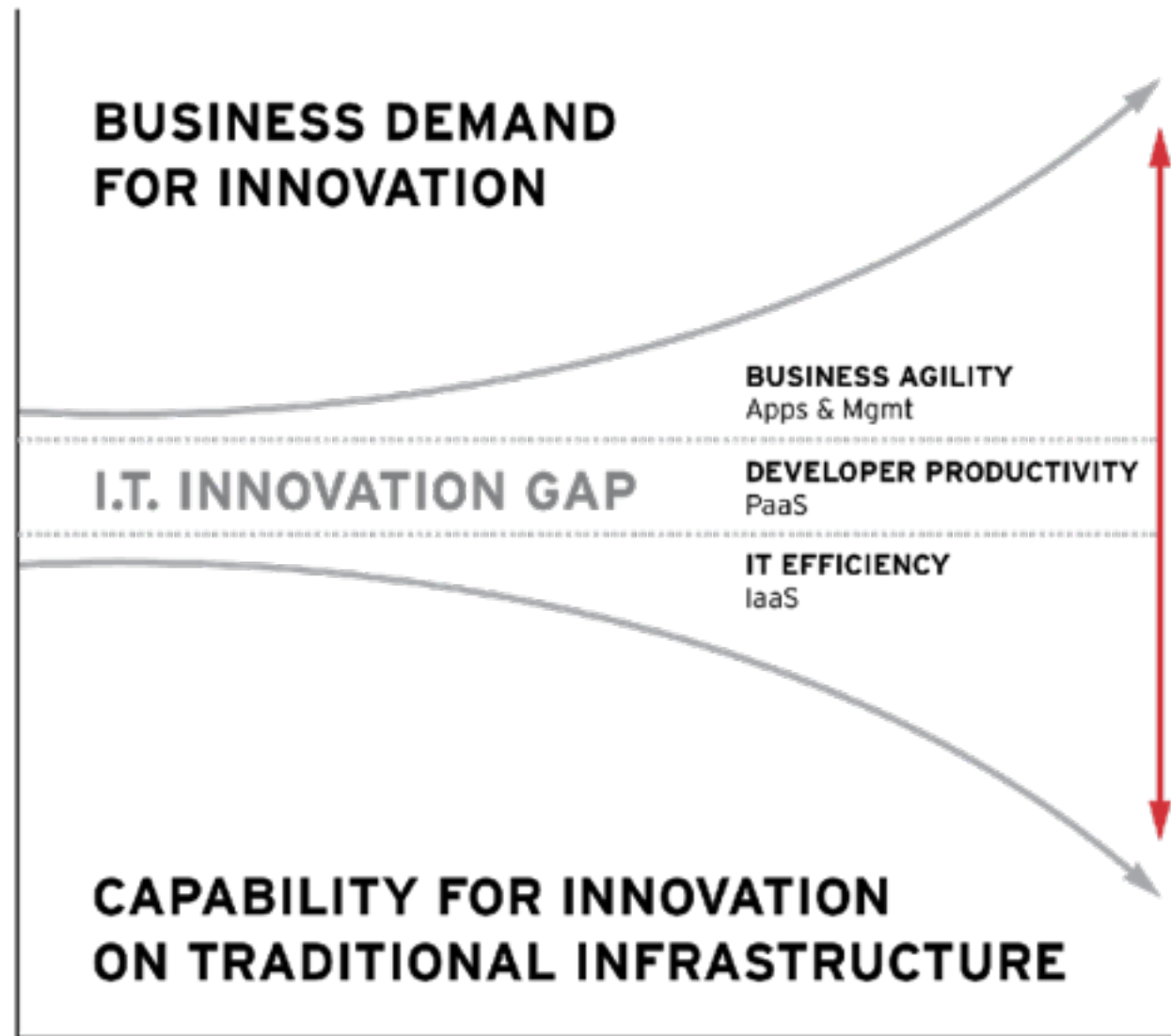


Desktop to Cloud



Online, Mobile

# CREATES AN IT INNOVATION GAP



- Business wants agility, more efficiency, new capabilities
- IT struggling with existing legacy infrastructure architecture and cost model
- IT needs to adopt cloud architectures and technologies to close innovation gap

# DELIVERING SOFTWARE TODAY: THE REALITY VS. THE GOAL

**BUDGET**

**45%**  
OVER

**TIME**

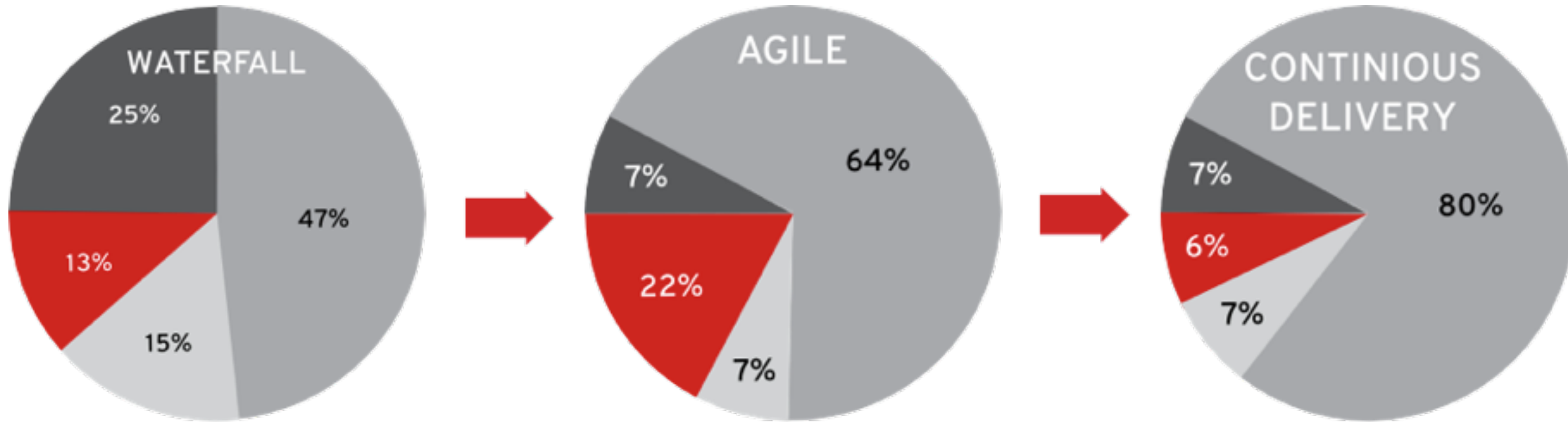
**7%**  
OVER

**VALUE**

**56%**  
LESS

Source: Delivering large-scale IT projects on time, on budget, and on value  
McKinsey & Company, October 2012

# DEVELOPMENT LIFECYCLE TRENDS



**More time spent on Development**

# WHAT CAN I.T. DO?

## I.T. CAN TURN OPS AND DEV INTO DEVOPS

“DevOps is a software development method that stresses communication, collaboration and integration between software developers and information technology (IT) professionals.”<sup>[1]</sup>



[1] <http://en.wikipedia.org/wiki/DevOps>



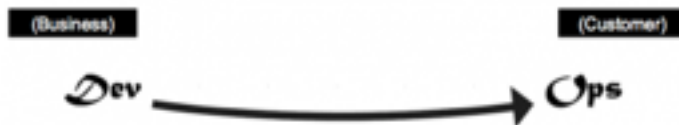
# WHAT CAN I.T. DO?

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“DevOps is a software development method that stresses communication, collaboration and integration between software developers and information technology (IT) professionals.” [1]

### Gene Kim’s THREE “WAYS” OF DEVOPS [2]

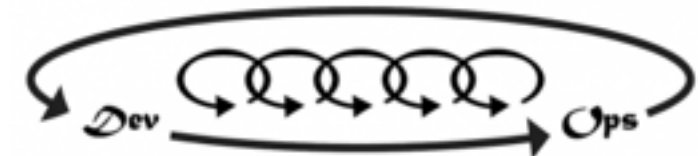
The First Way:  
Systems Thinking



The Second Way:  
Amplify Feedback Loops



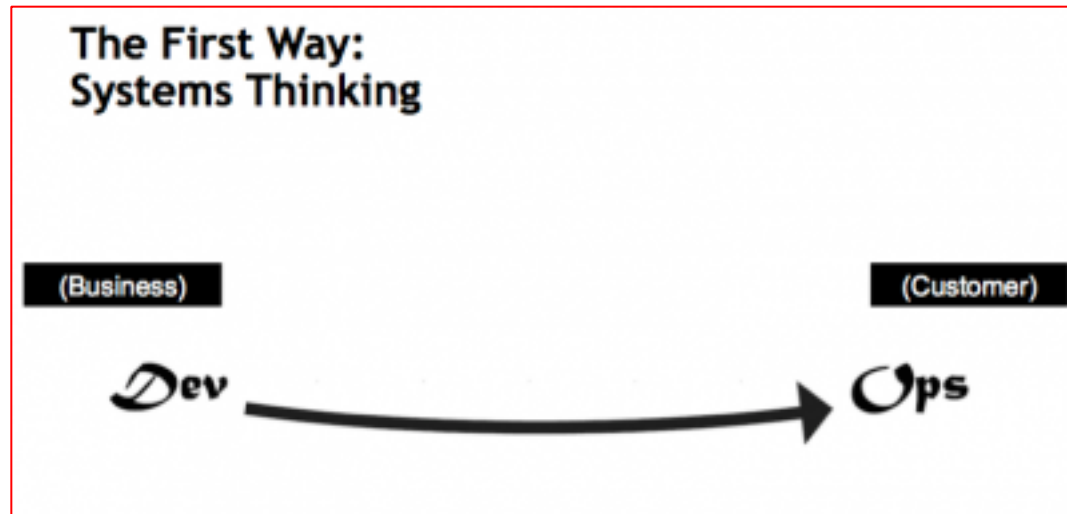
The Third Way:  
Culture Of Continual Experimentation And Learning



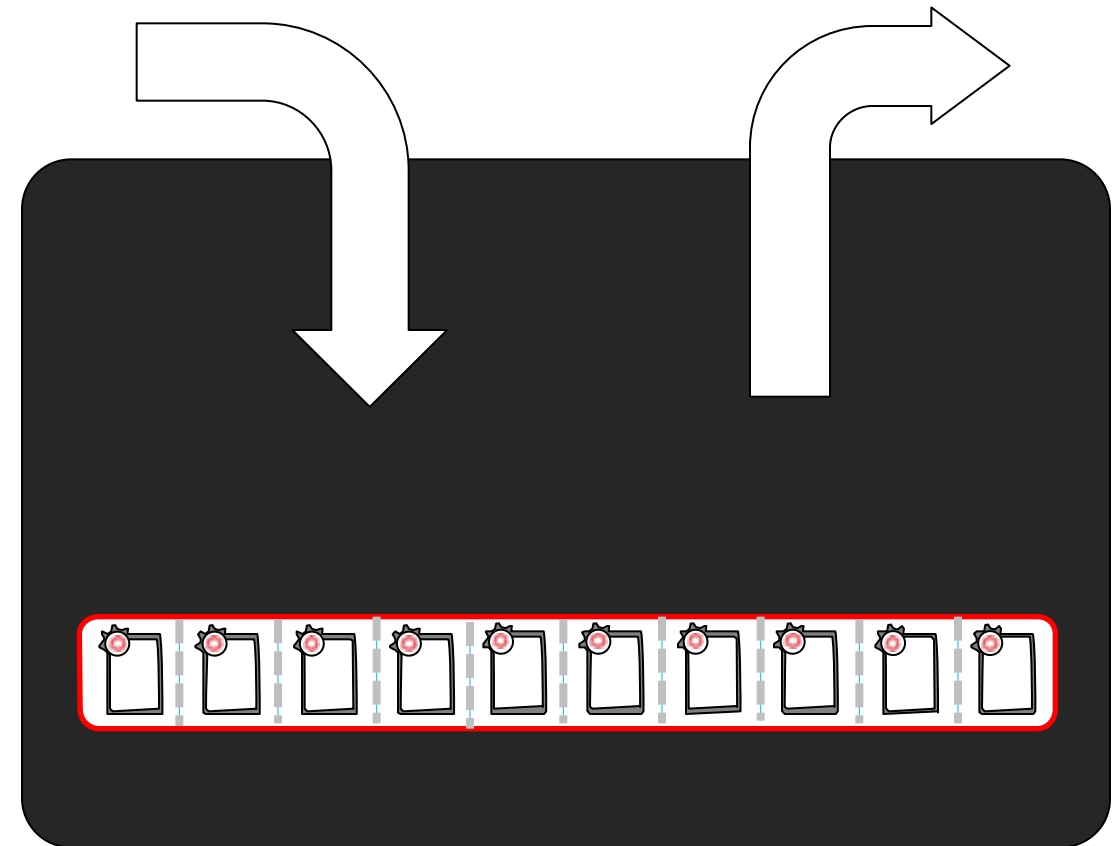
[1] <http://en.wikipedia.org/wiki/DevOps>

[2] <http://itrevolution.com/the-three-ways-principles-underpinning-devops/>

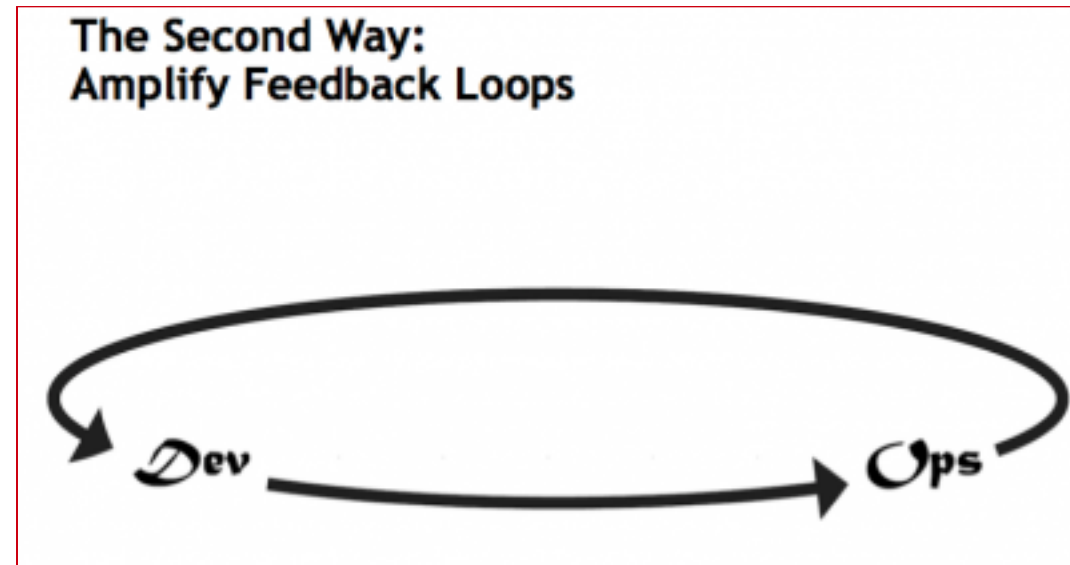
# HOW DO THE THREE WAYS TRANSLATE?



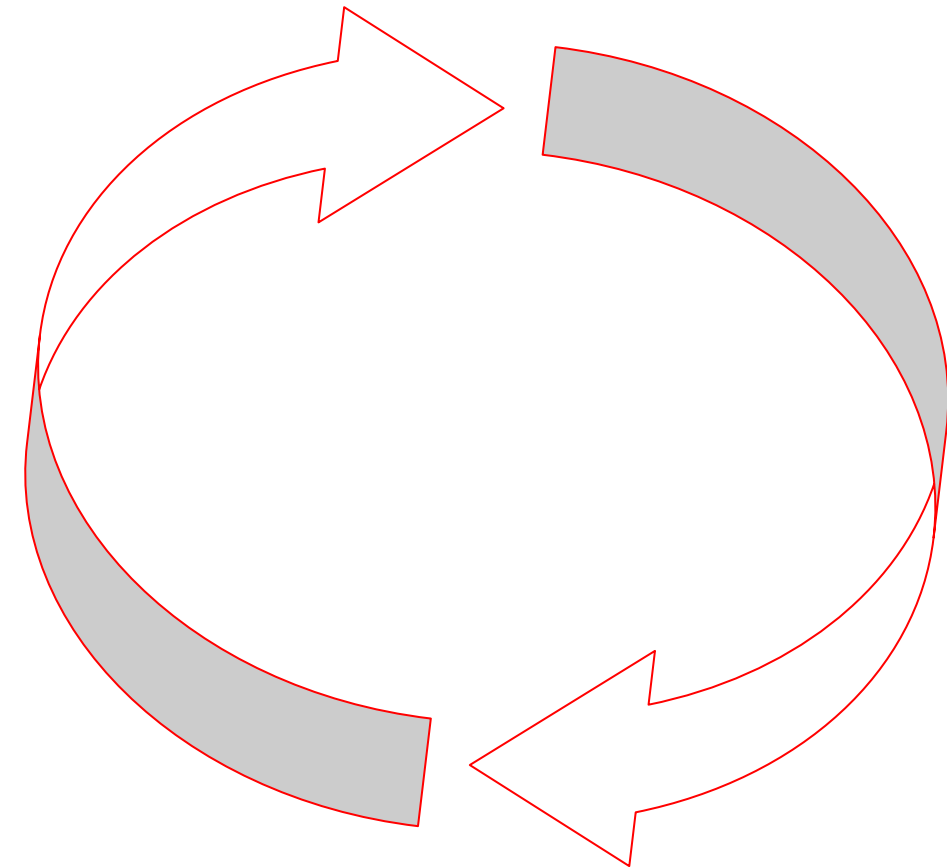
- ✓ STANDARDIZED ENVIRONMENTS
- ✓ AUTOMATED PROVISIONING



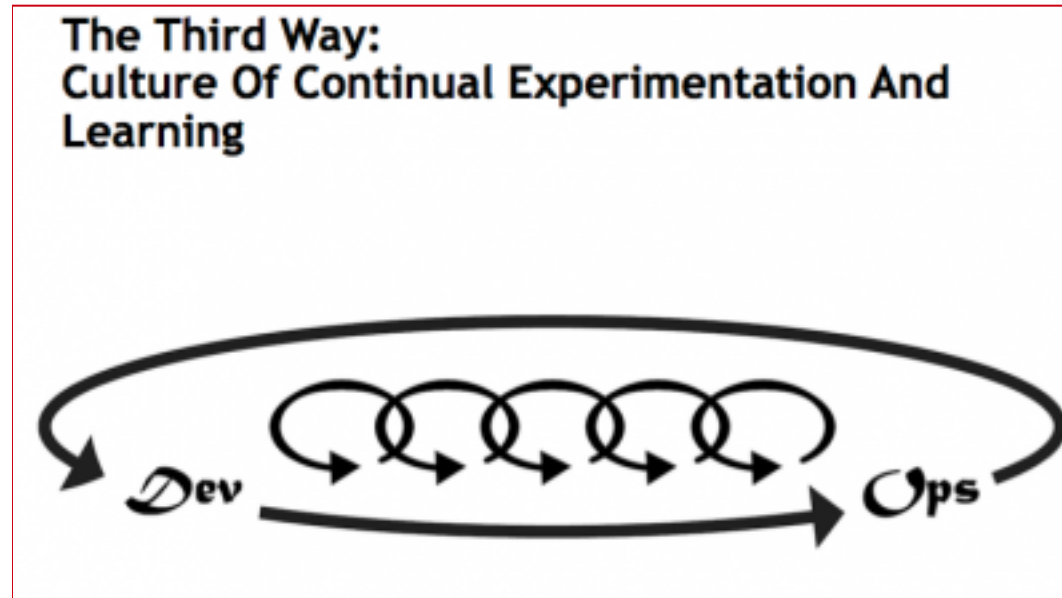
# HOW DO THE THREE WAYS TRANSLATE?



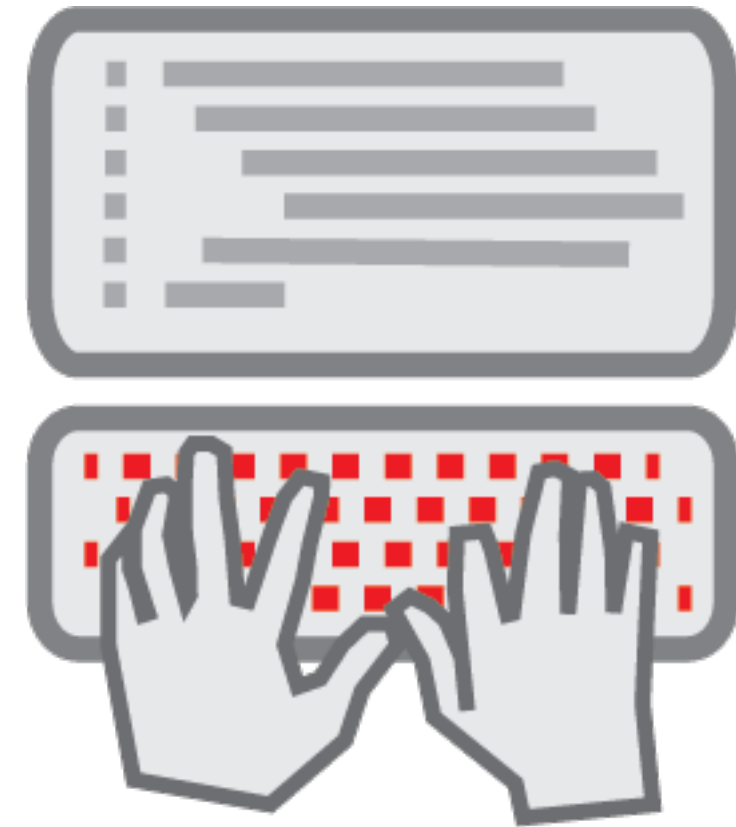
- ✓ **CONTINUOUS INTEGRATION**
- ✓ **CONTINUOUS DELIVERY**



# HOW DO THE THREE WAYS TRANSLATE?



- ✓ DEVELOPER SELF-SERVICE
- ✓ RAPID PROTOTYPING



# ORGANIZATIONS IMPLEMENTING DEVOPS

**Better deployment quality**

**63%**

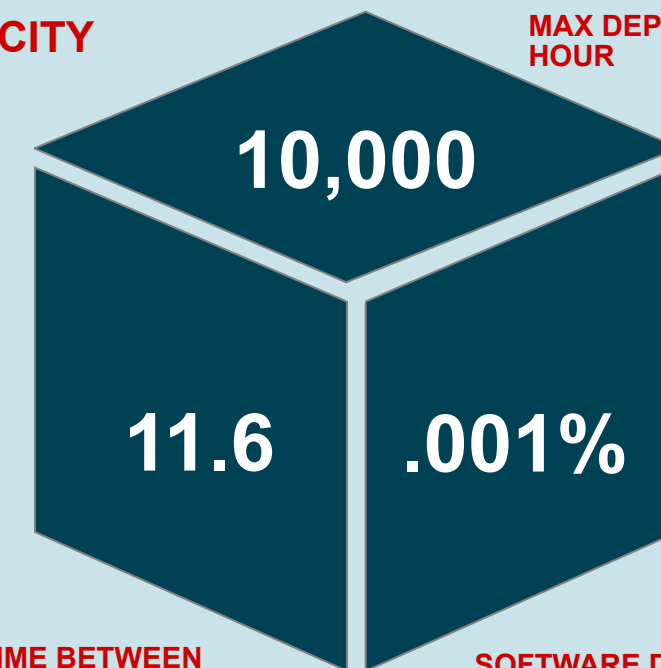
**Faster release frequency**

**63%**

**Improved process visibility**

**61%**

**DEVOPS VALUE  
IN ACTION: VELOCITY  
AT AMAZON AWS**



**MEAN TIME BETWEEN  
DEPLOYMENTS  
(SECONDS)**

**SOFTWARE DEPLOYMENTS  
CAUSING AN OUTAGE**

Source: 2014 State of DevOps Report  
Puppet Labs, IT Revolution Press, ThoughtWorks

# ORGANIZATIONS IMPLEMENTING DEVOPS



Etsy

“**30** innovations to the website deployed each day, ... sometimes adding **millions** of dollars in sales”  
Forbes, Apr’14



“Taking a system that required a **full month** to release new features and turning it into one that pushes out updates **multiple times per day.**”  
Wired

# THREE KEY QUESTIONS FOR I.T. AND BUSINESS

1

How to quickly and reliably deliver new capabilities?

2

What kinds of new apps and services to deliver and support?

3

Where to create and run new apps and services?

# DEVOPS IS PART OF A LARGER SHIFT

**HOW?**

**DEVOPS**

**WHAT?**

**CLOUD APPS**

**WHERE?**

**OPEN HYBRID  
CLOUDS**

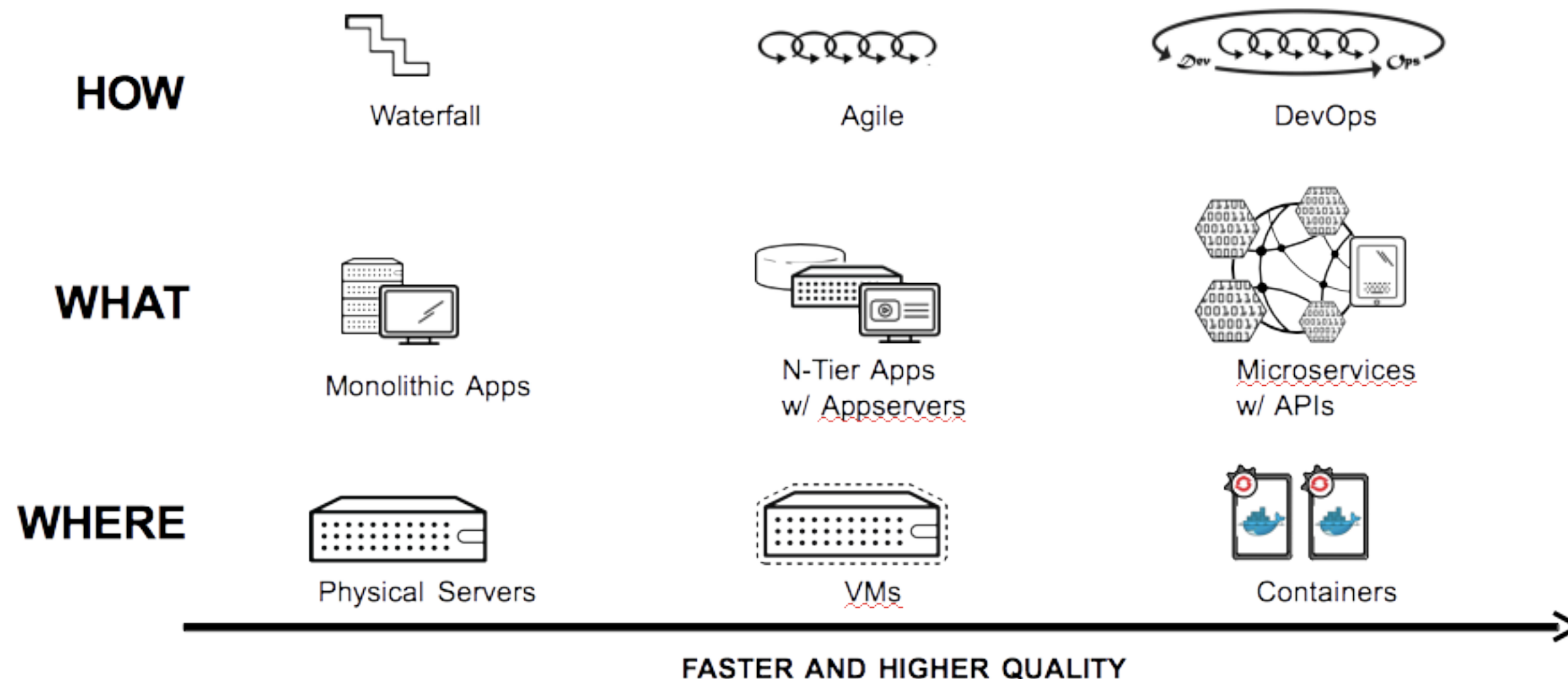


# DEVOPS + CLOUD = INDUSTRIALIZE



# THE NEED FOR SPEED

## THE ACCELERATION OF APPLICATION DELIVERY FOR THE BUSINESS



# DEVOPS WORKFLOW

OPS

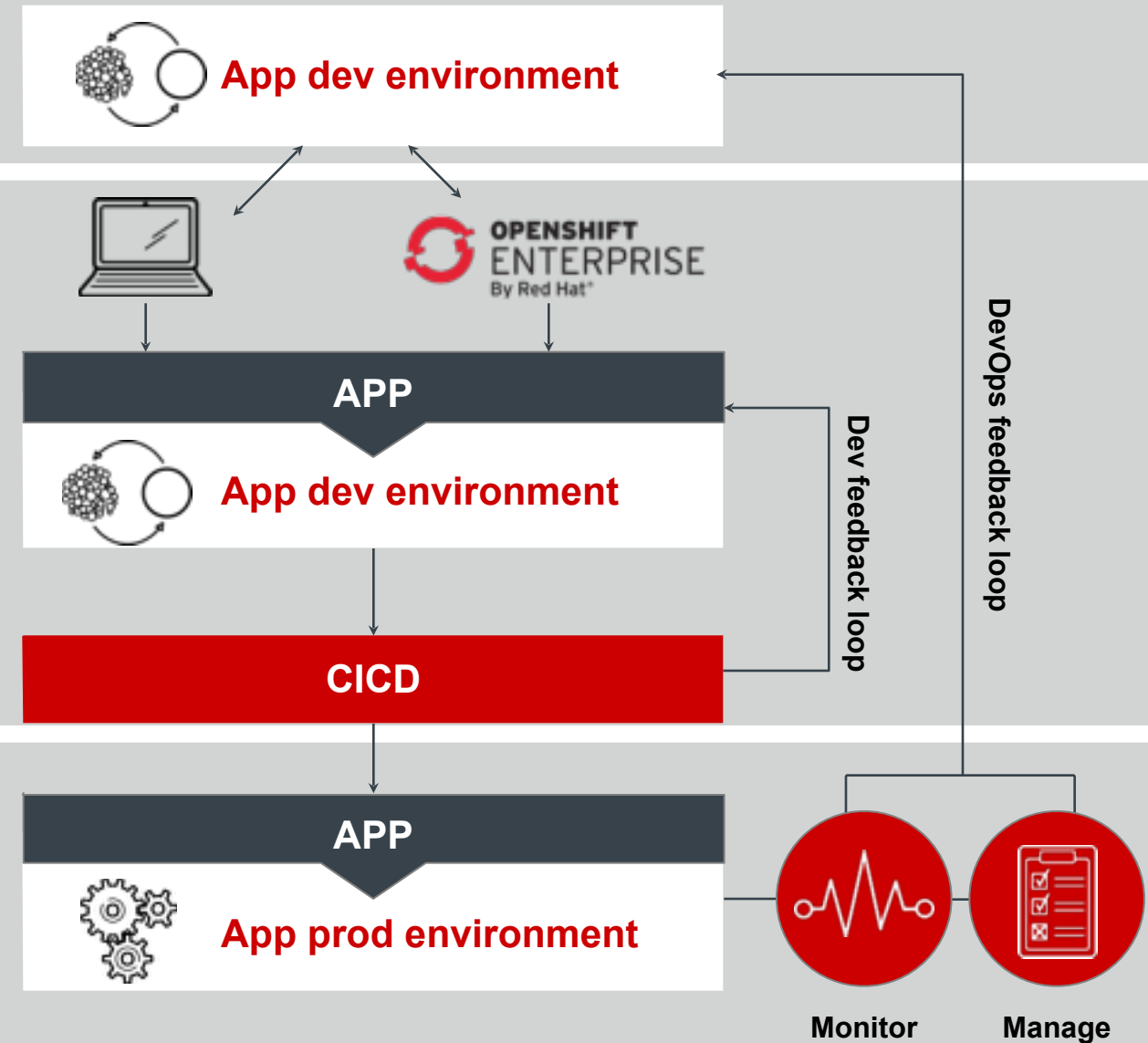
- Create containerized IaaS or PaaS development environment

DEV

- Provision environment locally or at OpenShift by Red Hat
- Write app as containerized microservices cluster and commit changes
- Push changes through CI/CD and automated testing system to containerized staging

DEVOPS

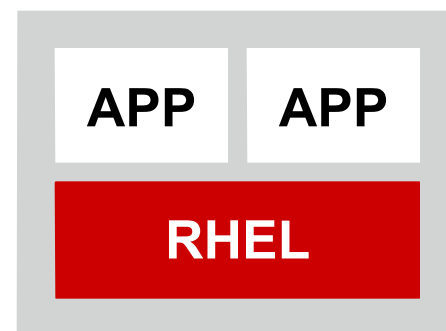
- Scheduler orchestrates and deploys app
- Monitor and operate app



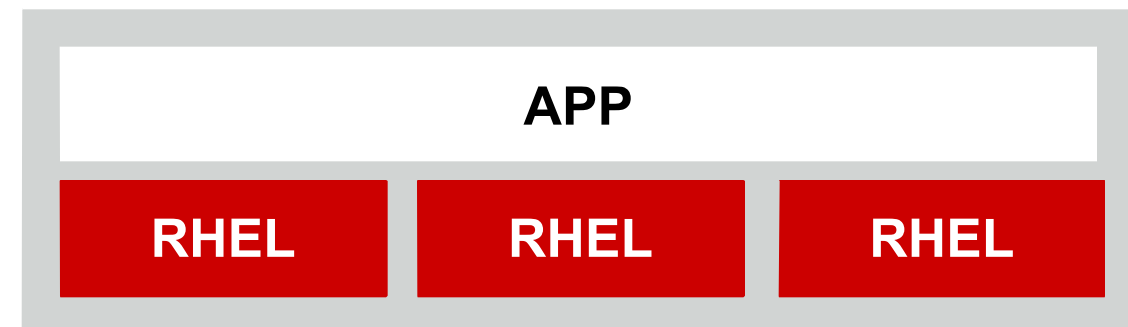
# USE DEVOPS TO CREATE CLOUD-NATIVE APPS

- Monolithic app container
- Scale up by adding hardware resources
- Limited scale out through clustering

- Distributed, networked, containerized services
- Scale out by orchestrating services
- *Faster iteration and release*
- *More robust*



**SINGLE-HOST APPS**



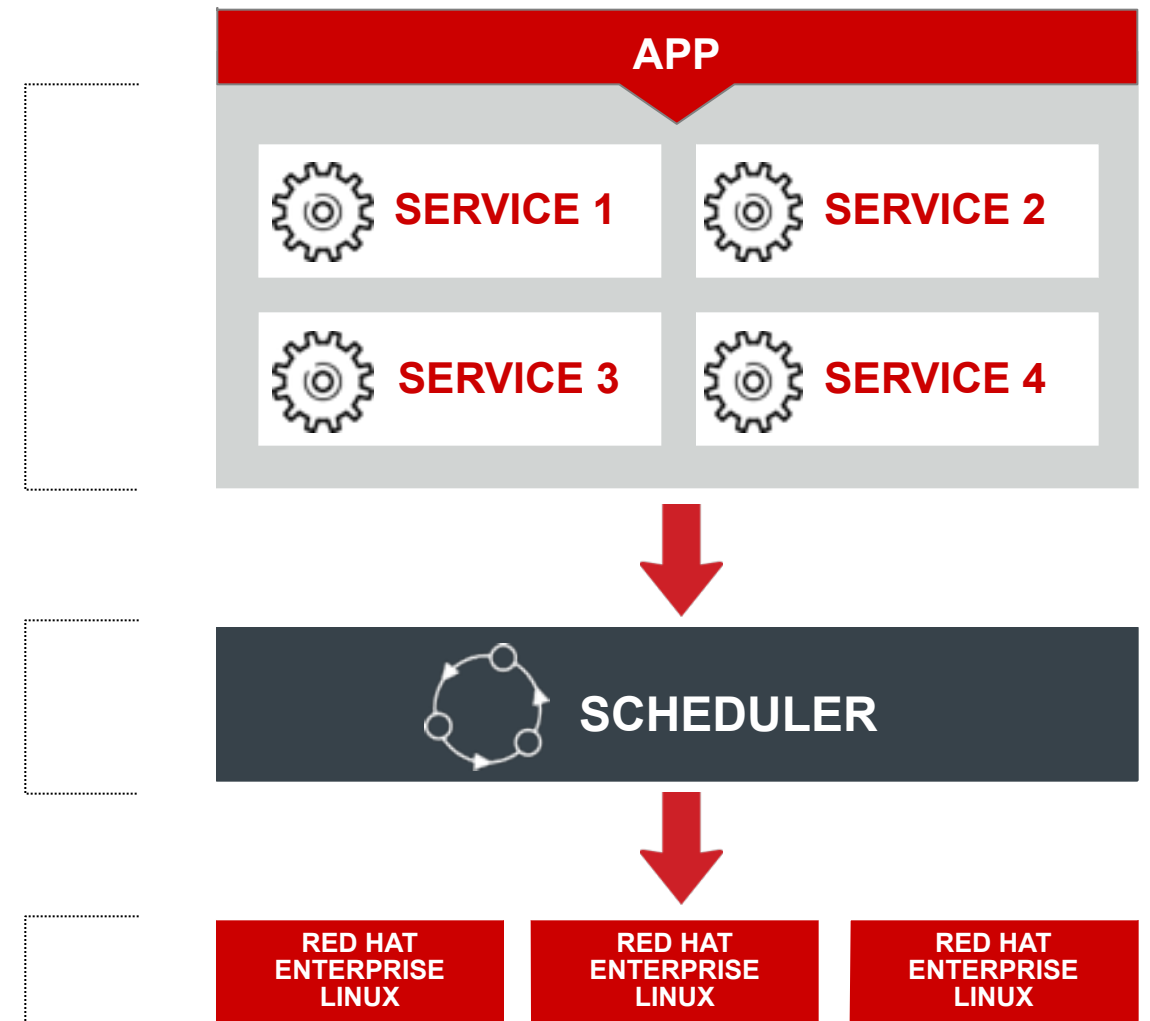
**MULTI-HOST APPS**

# OS EVOLUTION: MULTI-HOST APPS NEED AN ORCHESTRATOR AND A SCHEDULER

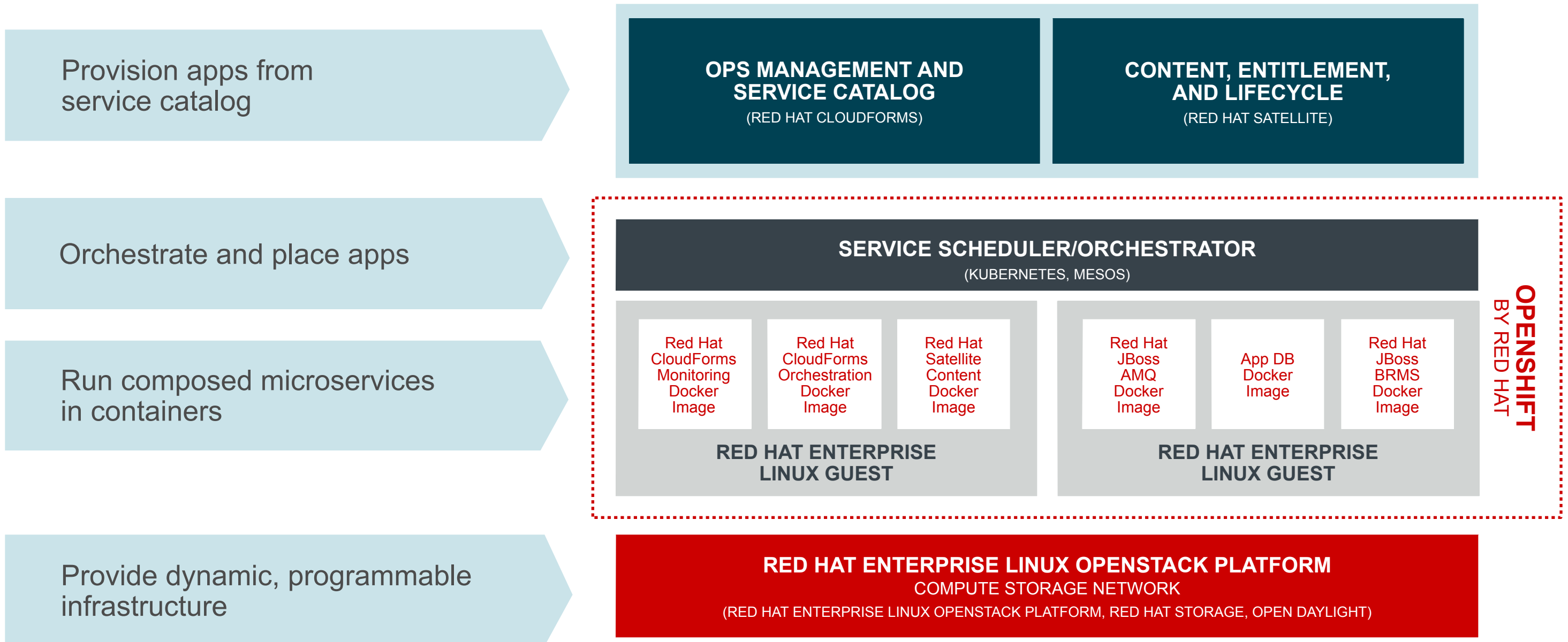
Orchestrator (Kubernetes): Model the app across multiple hosts/containers

Scheduler (Mesos): Provide service and APIs for placing the app onto resources

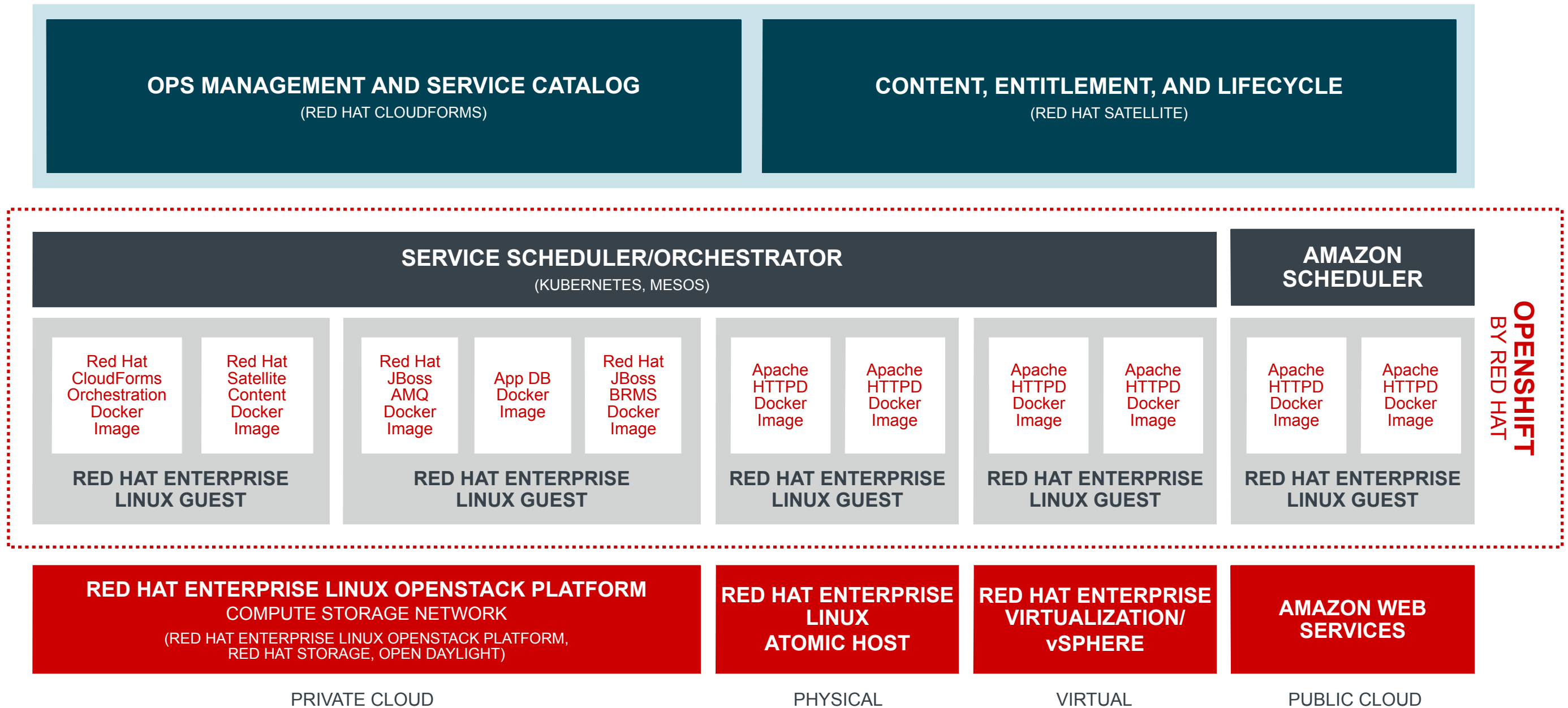
Container pool (Red Hat Enterprise Linux/ Docker): Provide resources to run app



# A CLOUD PLATFORM FOR MICROSERVICE CLOUD APPS

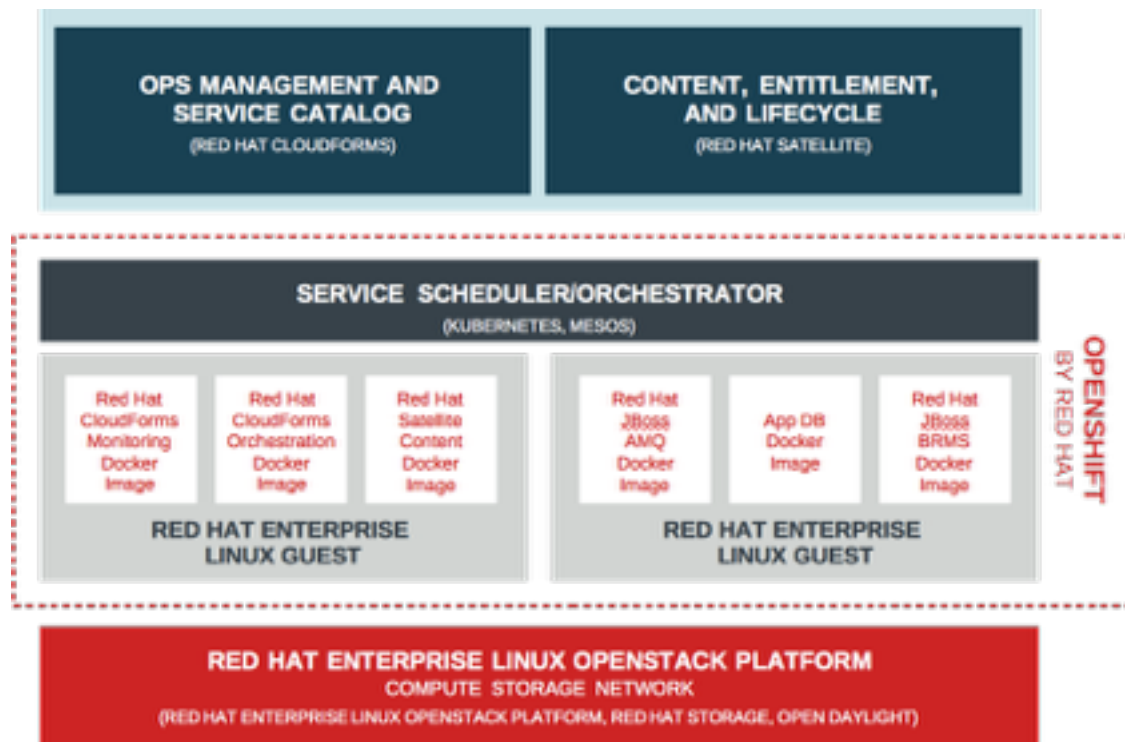


# OPEN HYBRID CLOUD FOR MICROSERVICE CLOUD APPS



# DEVOPS SPANS I.T. APPROACHES

## INTEGRATE DEV, OPS, AND I.T. SERVICES WITH RED HAT



**BROWNFIELD: TRADITIONAL I.T.**



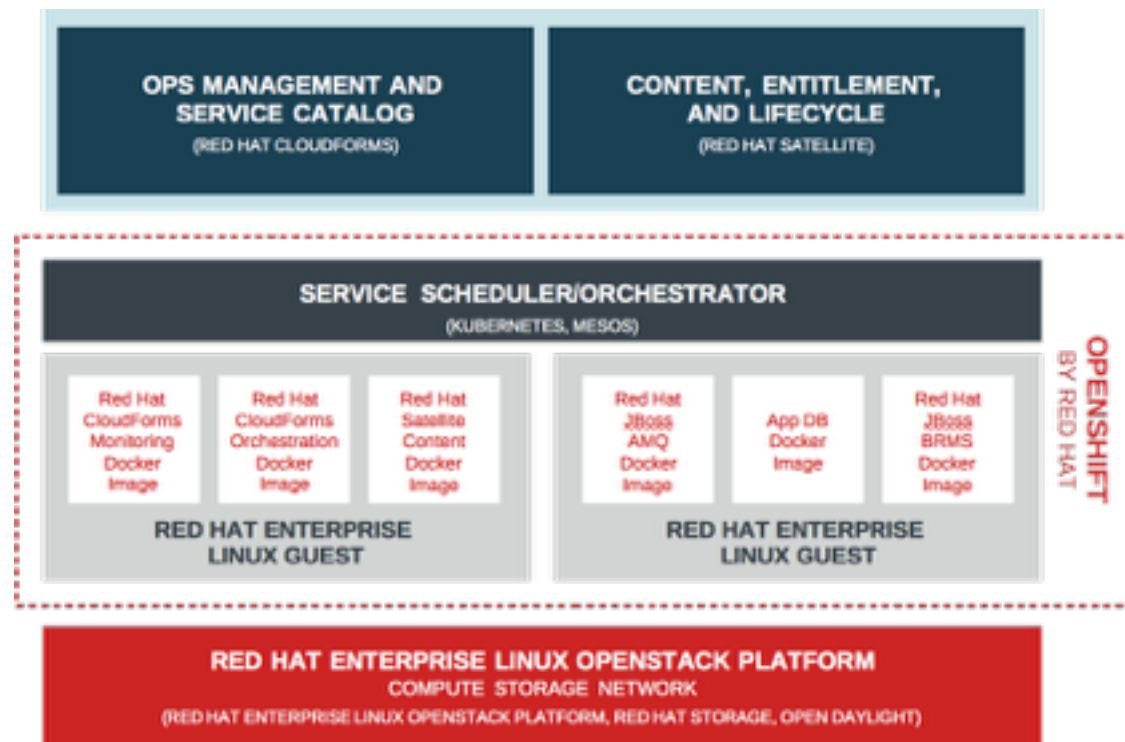
**OPENSHIFT  
ENTERPRISE**  
By Red Hat®

**GREENFIELD: FAST I.T.**



# DEVOPS SPANS I.T. APPROACHES

## INTEGRATE DEV, OPS, AND I.T. SERVICES WITH RED HAT



**BROWNFIELD: TRADITIONAL I.T.**



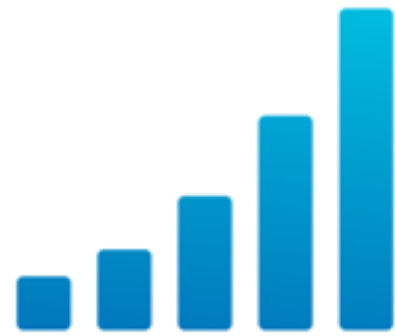
**OPENSIFT  
ENTERPRISE**  
By Red Hat®

**GREENFIELD: FAST I.T.**

# FINANCIAL SERVICES COMPANY



# BUSINESS CHALLENGES



Growth



Competition



Agility



Predictability



Recruiting

# FINANCIAL SERVICES COMPANY

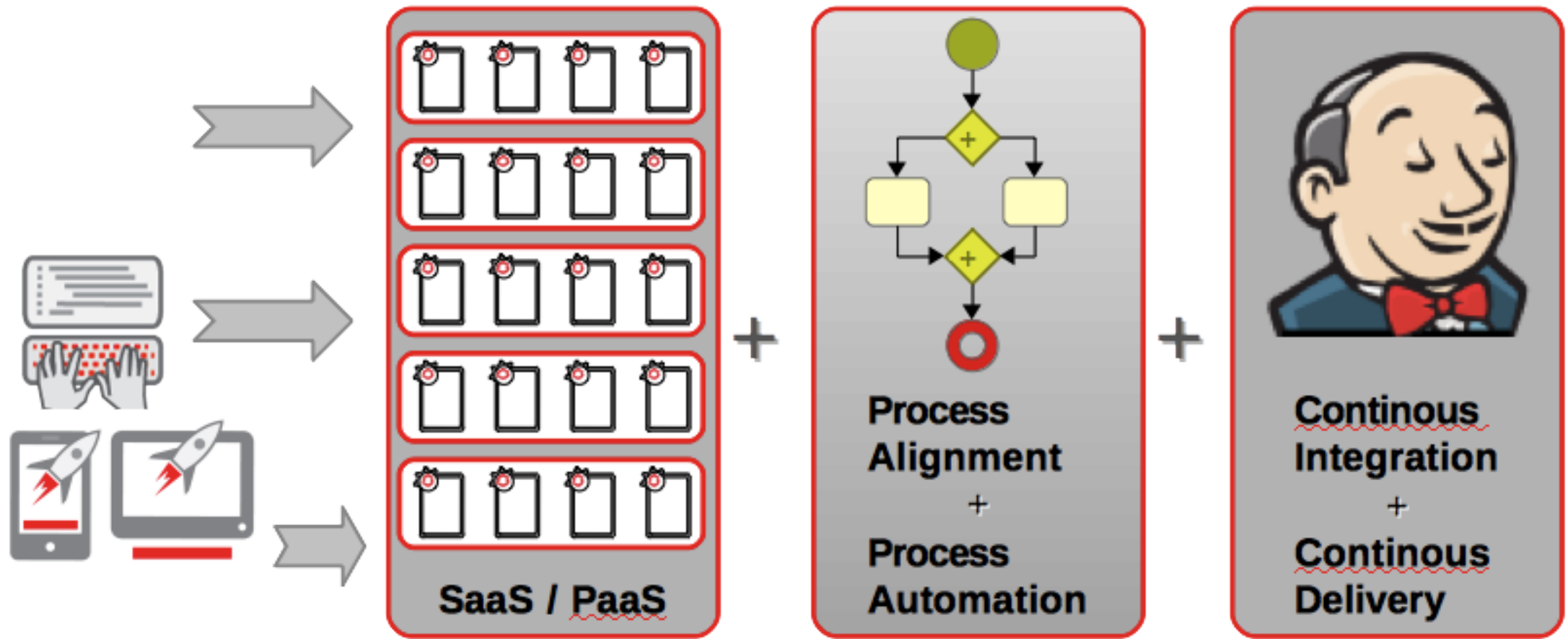
It could take 6 weeks to get a single word changed on the Web site

It took 2 years after a competitive startup launch to get a competing product to market

When developers work in Node.js, they can change the code they're working on, direct it to run, and see whether it works — in the blink of an eye.

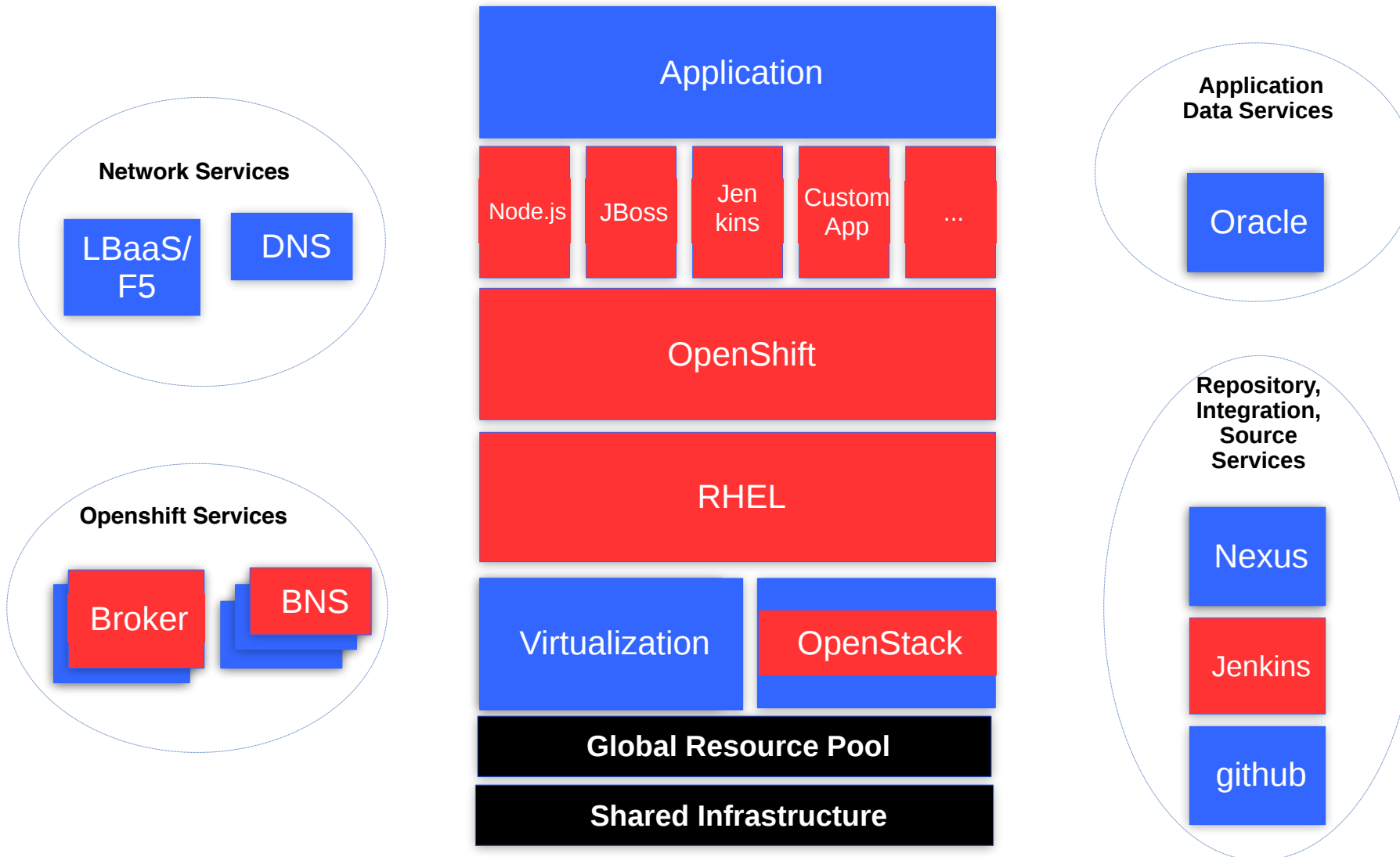
The environment, while stable, didn't use the sexiest technologies, which made recruiting difficult

# DEVOPS SOLUTION

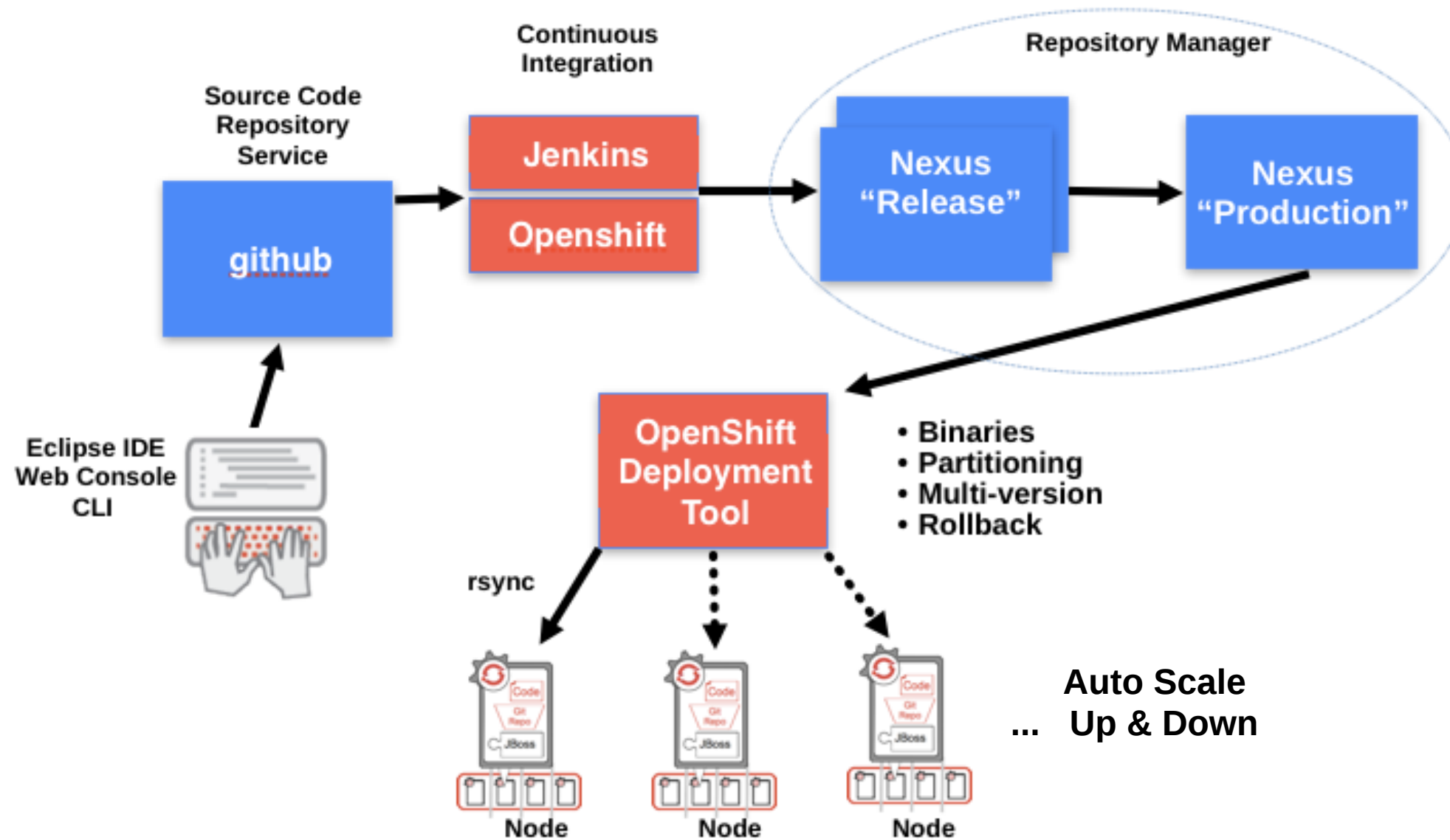


Leverage Automation Technologies Combined with Cloud Architecture

# ARCHITECTURE



# DEVELOPMENT TO PRODUCTION in <30 minutes



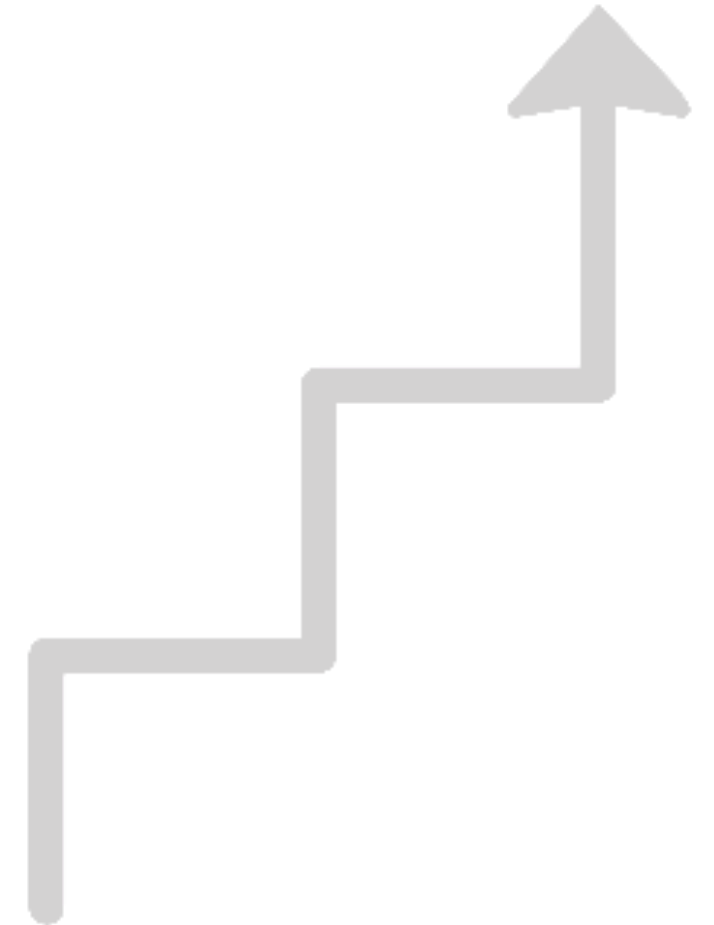
# DEVOPS ROI

## IMPROVE BUSINESS AGILITY

- Shorten time to market of new capabilities and stay ahead of increasing competitive threats
- Reduce app provisioning from 4 weeks to < 30 minutes

## IMPROVE BUSINESS PREDICTABILITY

- Reduce wide variances of time to build and deploy, enabling improved alignment of launch events





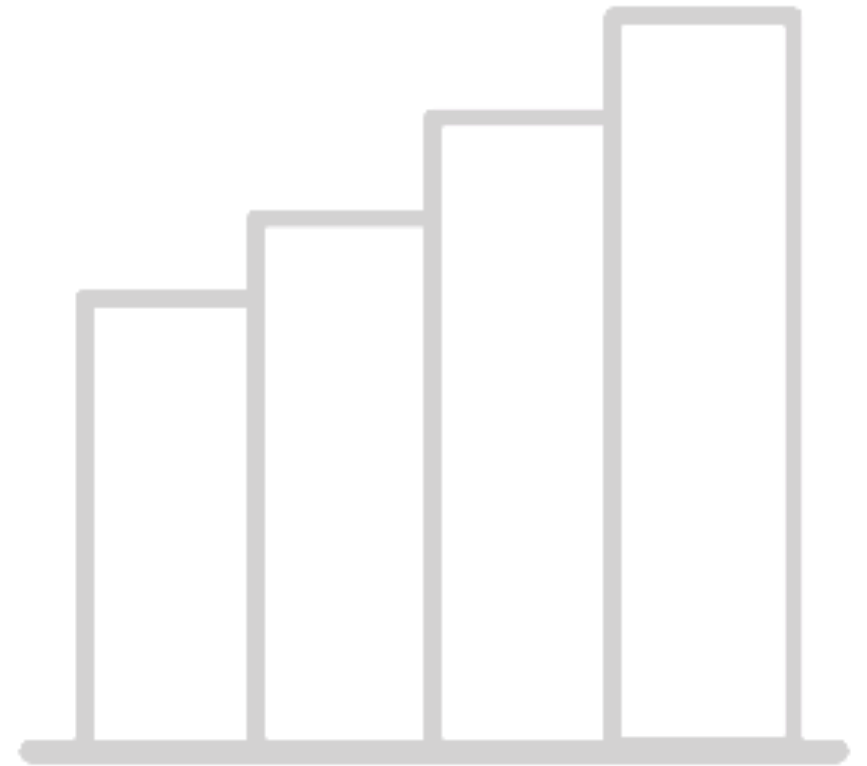
# DEVOPS ROI

## IMPROVE DEVELOPER PRODUCTIVITY

- Provide developers with self-service capabilities
- Continuous integration and deployment
- Reduce dev/QA iteration on bugs from hours to minutes
- Test multiple versions of application in parallel
- Consistent set of tooling in dev, QA, and production
- Distributed Jenkins to improve build performance

## IMPROVE OPERATIONAL EFFICIENCY AND COSTS

- Increase resource use, move from 1 app per VM to containers
- Automate scaling of applications

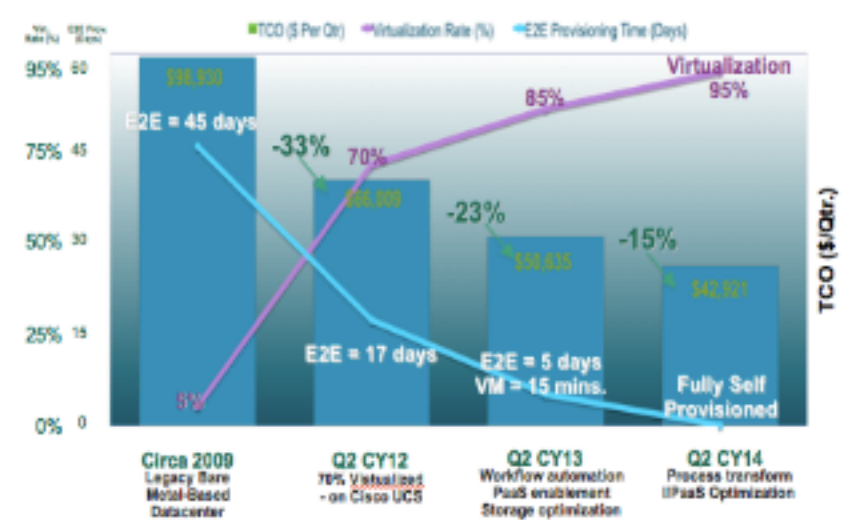
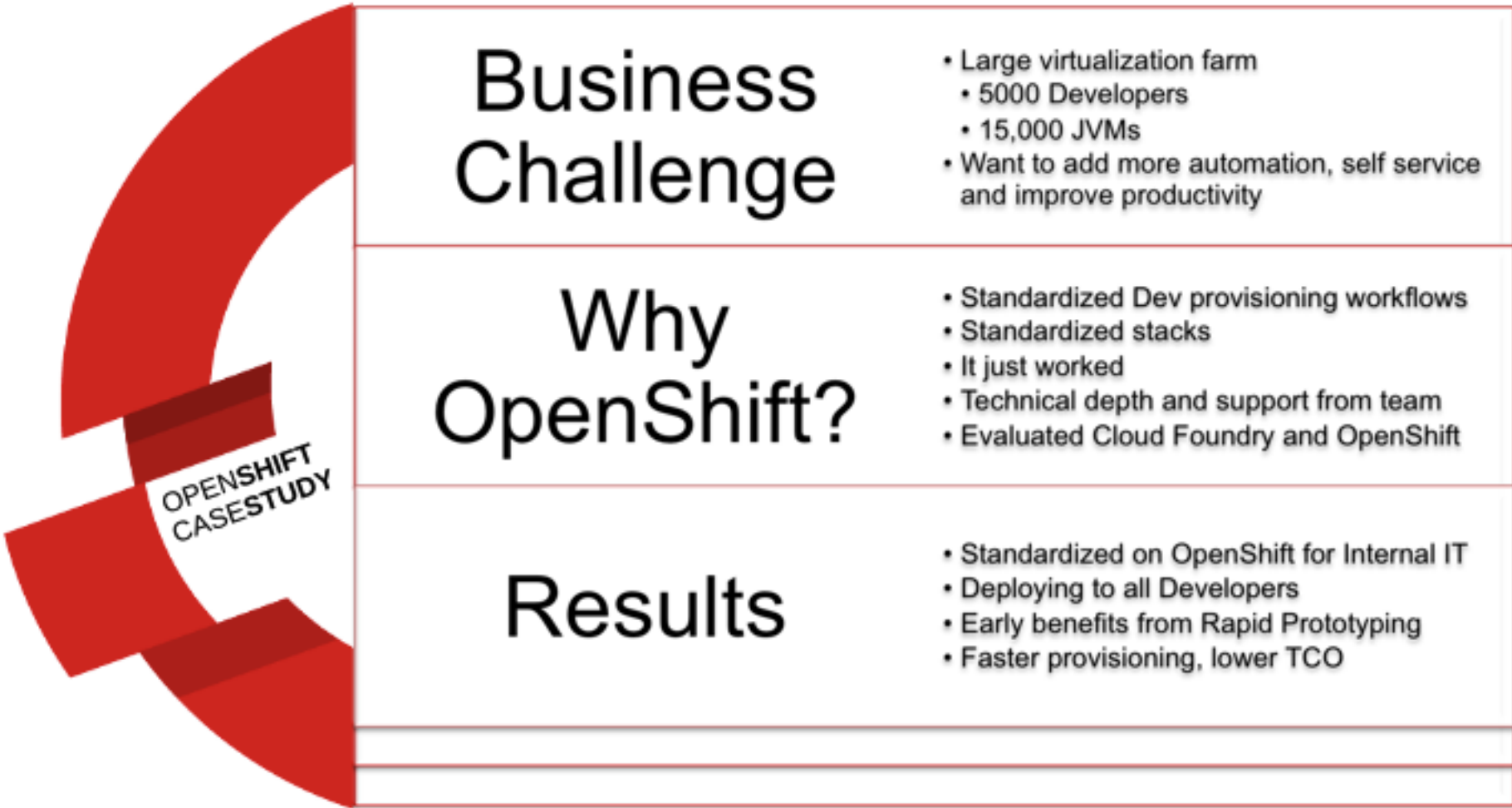


# CASE STUDIES

# Entertainment and Media Giant

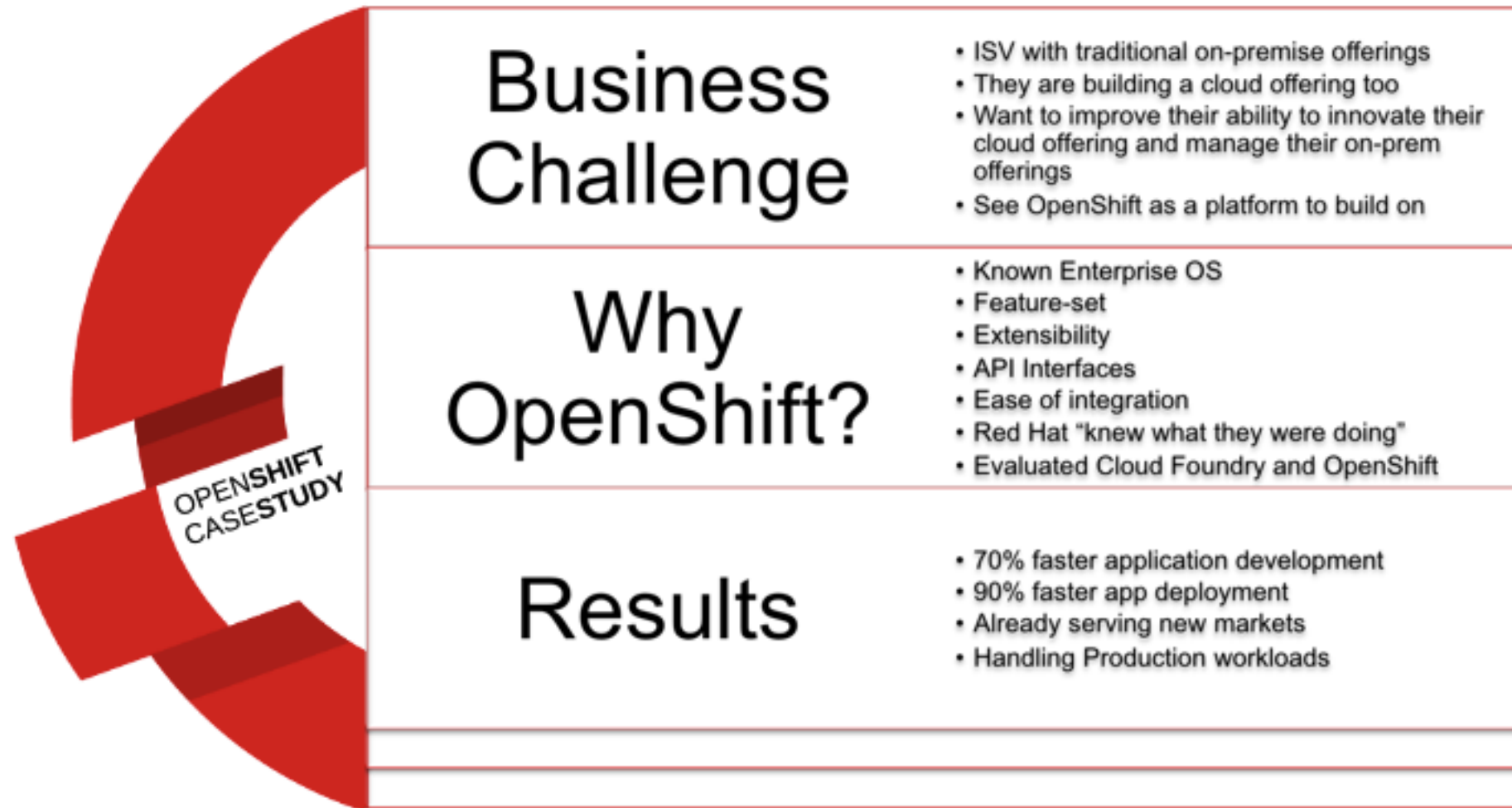


# Fortune 100 Global Technology Provider



Source: Cisco IT GIS—August 2013

# Financial Services Analytics ISV



# FICO™

**THE CHALLENGE:** Reach new markets

**INNOVATION**  
Rapid feature deployment and massive scale

**SECURITY**  
Maintain industry compliance and security of data and workflows

**THE SOLUTION:** Platform-as-a-Service (PaaS)

**FICO ANALYTIC CLOUD**  
made analytics available to new markets

**THE RESULTS:** Analytics to the masses

**70%**  
faster time to value

**40%**  
faster app deployment

"I worry about resiliency, reliability, and the ability to deliver value to customers. Red Hat helps us with all those."

Tony McGivers, CEO, FICO

**THANK YOU**

