BOSTON, MA
JUNE 23-26, 2015

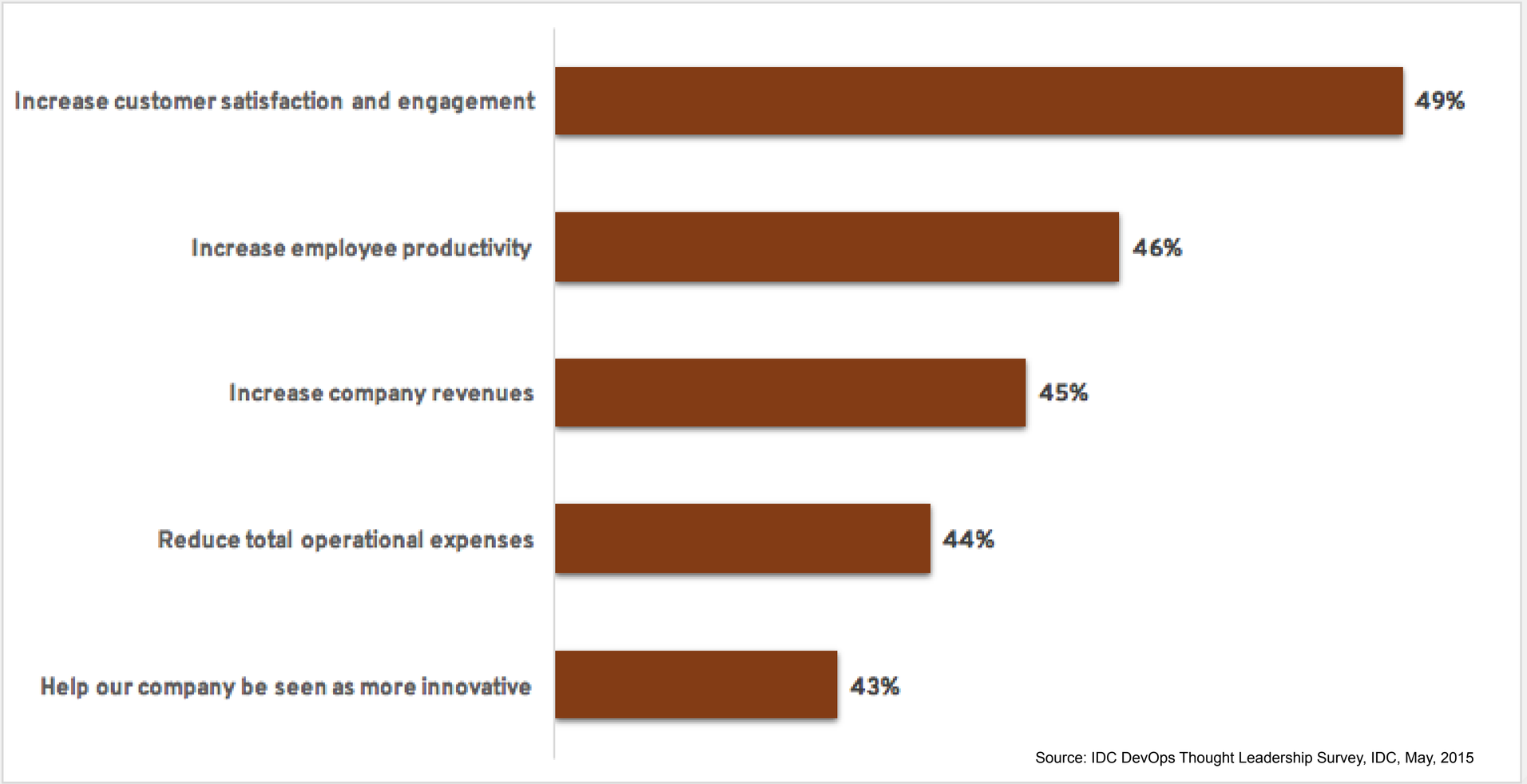
APPLYING PRACTICAL MANUFACTURING SKILLS TO DEVOPS

Gordon Haff & William Henry
Cloud & DevOps Product Strategy
24 June 2015

redhat.

DEVOPS:
THE WHAT & THE WHY

Why do DevOps?



Source: IDC DevOps Thought Leadership Survey, IDC, May, 2015

The Consumerization of IT sets new expectations

A Definition

DevOps applies open source principles and practices with:

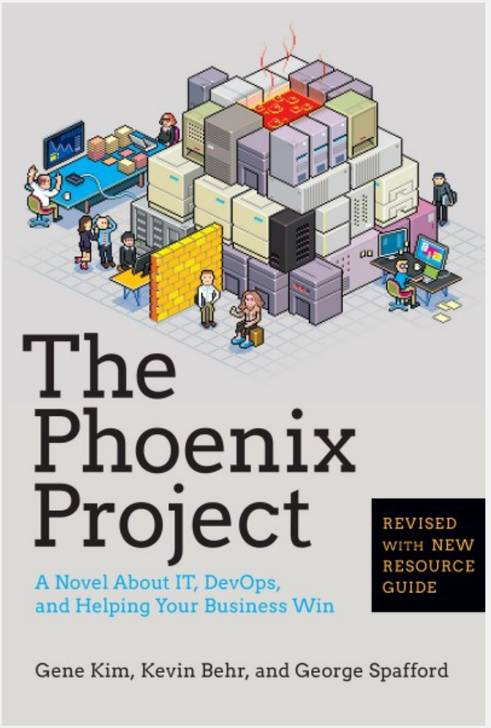
- Culture of collaboration valuing openness and transparency
- Automation of process from development through ongoing operations
- Adoption of tools drawing from innovative development communities

Key Principles of DevOps

“Organizations that are employing DevOps effectively are poised to blow their rivals completely out of the water."

- Peer review
- Less management approval required
- Rigorous automated testing
- The ability to create entire environments on demand
- One-click deployment

These principles are a reflection of the culture shift required to successfully implement DevOps



Tony Bradley, Gene Kim Shares his thoughts on upcoming Jenkins User Conference, Jun 4, 2015. devops.com

WHAT MANUFACTURING CAN TEACH US

DevOps + Cloud = Industrialize

Principles for Success

- Understand the process
- Drive modularity
- Automate repeatable processes
- Create culture
- Continuous iteration and improvement

The Second Wave

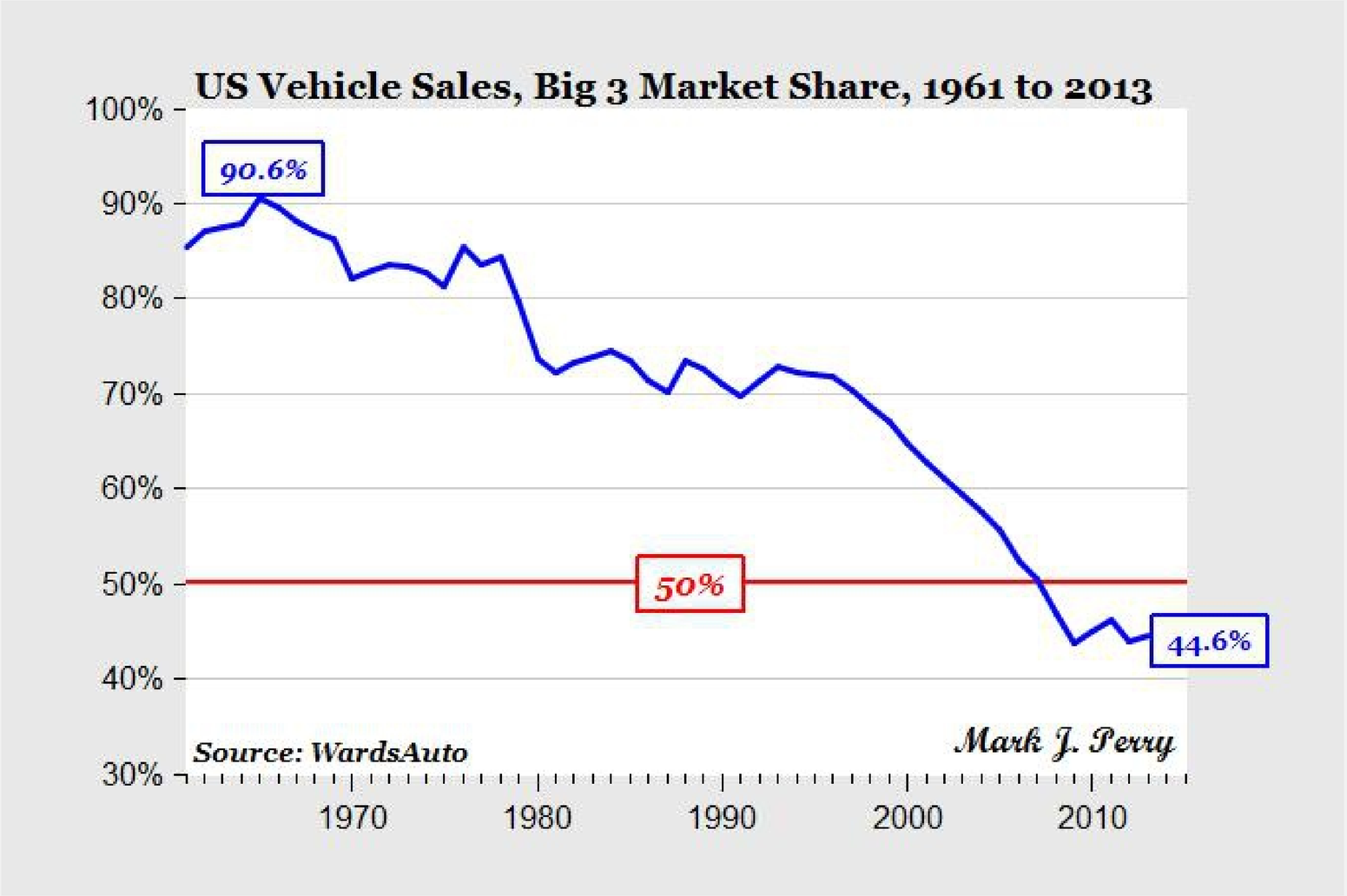
Clicl

Any customer can have a car painted any color that he wants so long as it is black.

Henry Ford
(probably apocryphal)

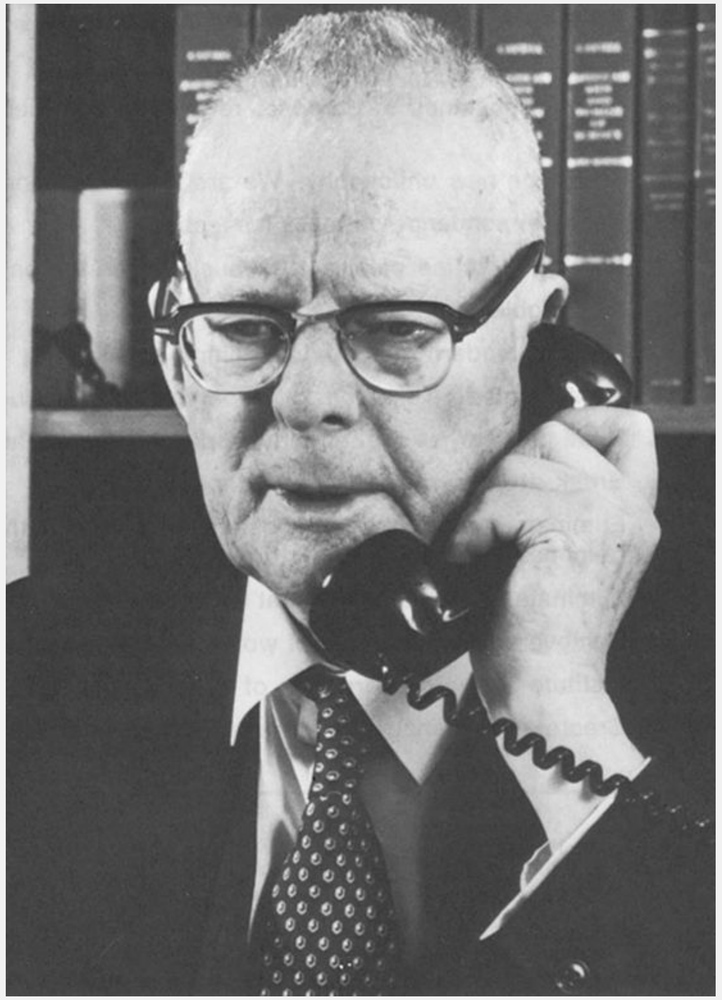
General Motors Fairfax Assembly Plant
Kansas City, Missouri

But All Was Not Well



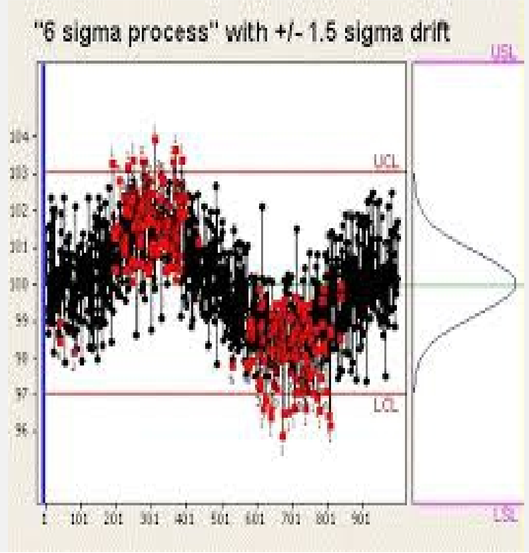
What Happened?

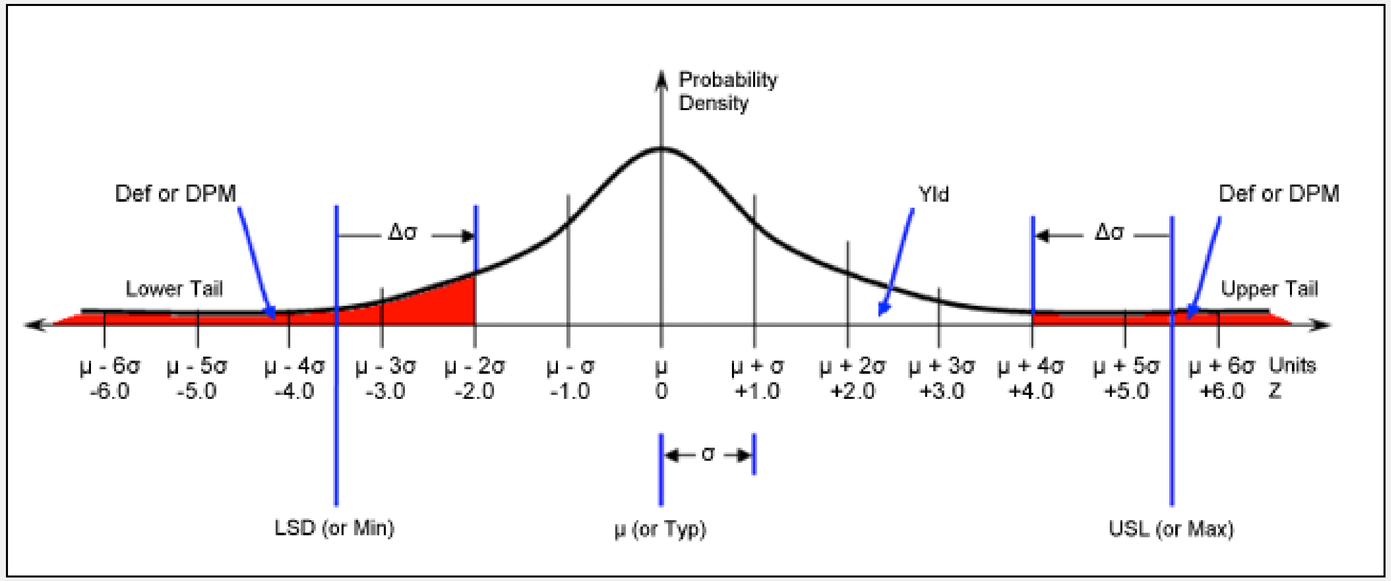
Taiichi Ohno, Inventor of the Toyota Production System (TPS)

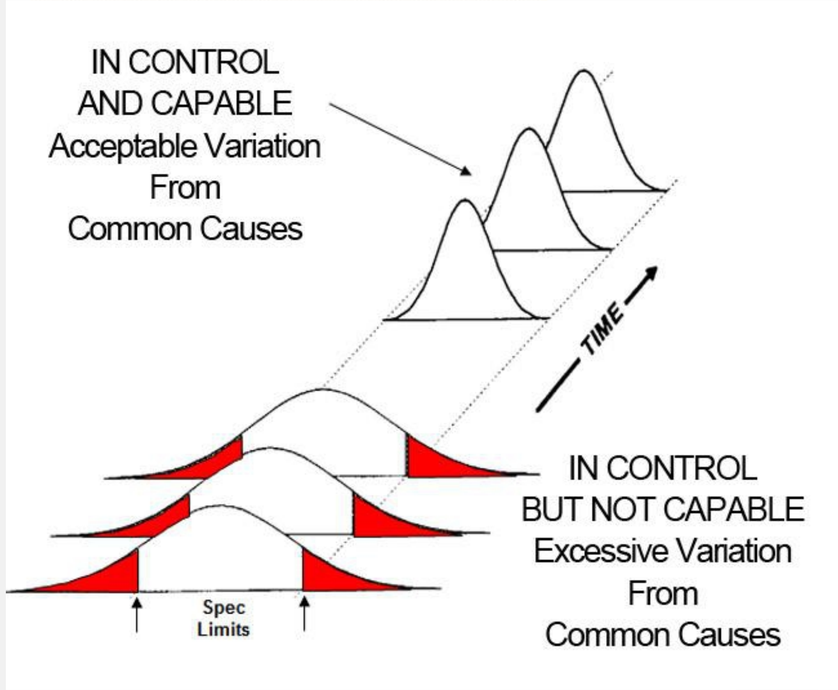


W. Edward Demming, champion of statistical process control

You Can't Fix What You Can't See







Beyond Local Maxima: Reuse

Platform Thinking Wins

Top 10 global megaplatforms

Forecast volume and number of models for 2017

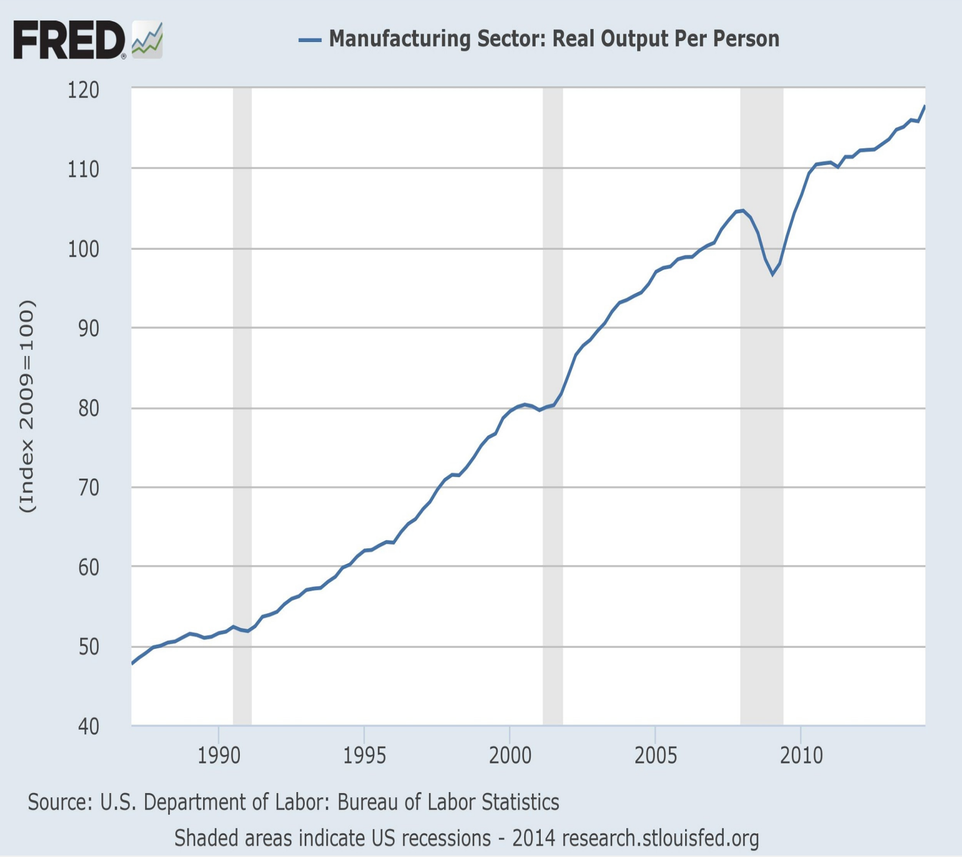
OEM	Platform	Volume (in mn)	No. of Models	Sample models
1. VW	MQB	6.3	41	VW Golf, Passat; Audi A3
2. Toyota	MC	5.2	25	Auris, Corolla, Vibe: Scion xB
3. Hyundai/Kia	HD	3.0	16	Hyundai i30; KiaCee'd
4. GM	Delta	2.5	19	Opel Astra; Chevrolet Cruze
5. PSA	EMP2	2.3	24	Peugeot 308; Citroen C4, DS4
6. Renault/Nissan	B	2.2	10	Renault Clio; Nissan Cube, Juke, Leaf
7. Ford	C1	2.2	18	Focus, C-Max, Kuga
8. Hyundai/Kia	PB	1.9	18	Hyundai i20; Kia Rio, Venga
9. Renault/Nissan	CMF1	1.9	20	Renault Megane, Nissan Qashqai
10. Ford	B2E	1.8	11	Fiesta, B-Max; Mazda2/Demio
Subtotal		29.4	202	

Source: IHS Automotive, AlixPartners analysis

"45–47% passenger cars will use one of top 20 platforms by 2015."

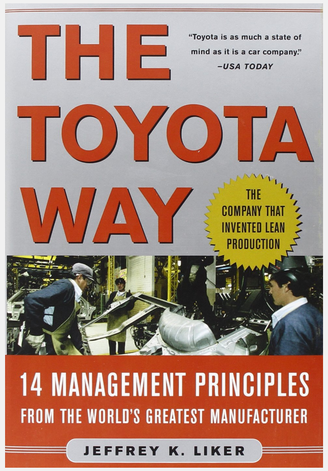
Evaluserve, 2012

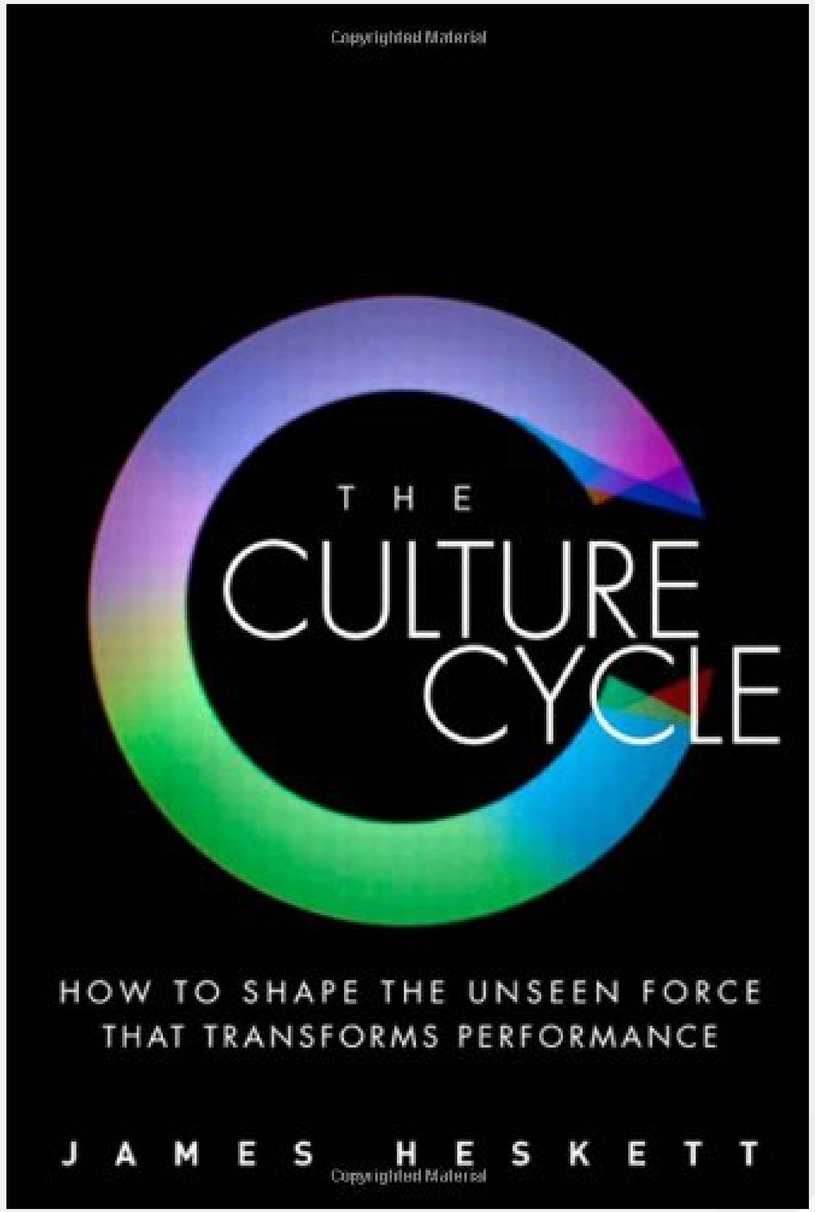
Automate (Many of) the Things



Creating Culture

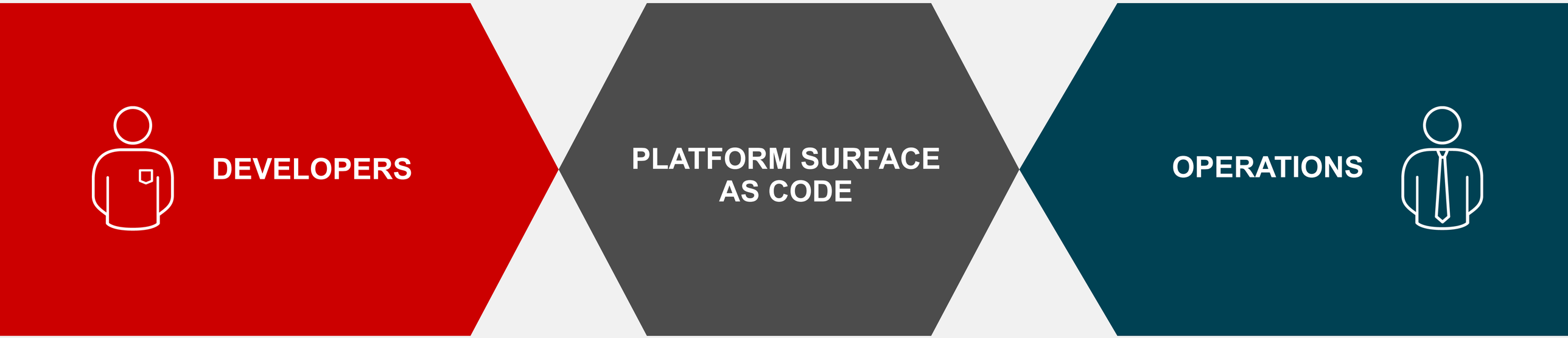
Toyota Way has been driven so deeply into the psyche of employees at all levels that it has morphed from a strategy into an important element of the company's culture.





APPLYING THESE LESSONS TO SOFTWARE

The Road to DevOps: Three Converging Paths

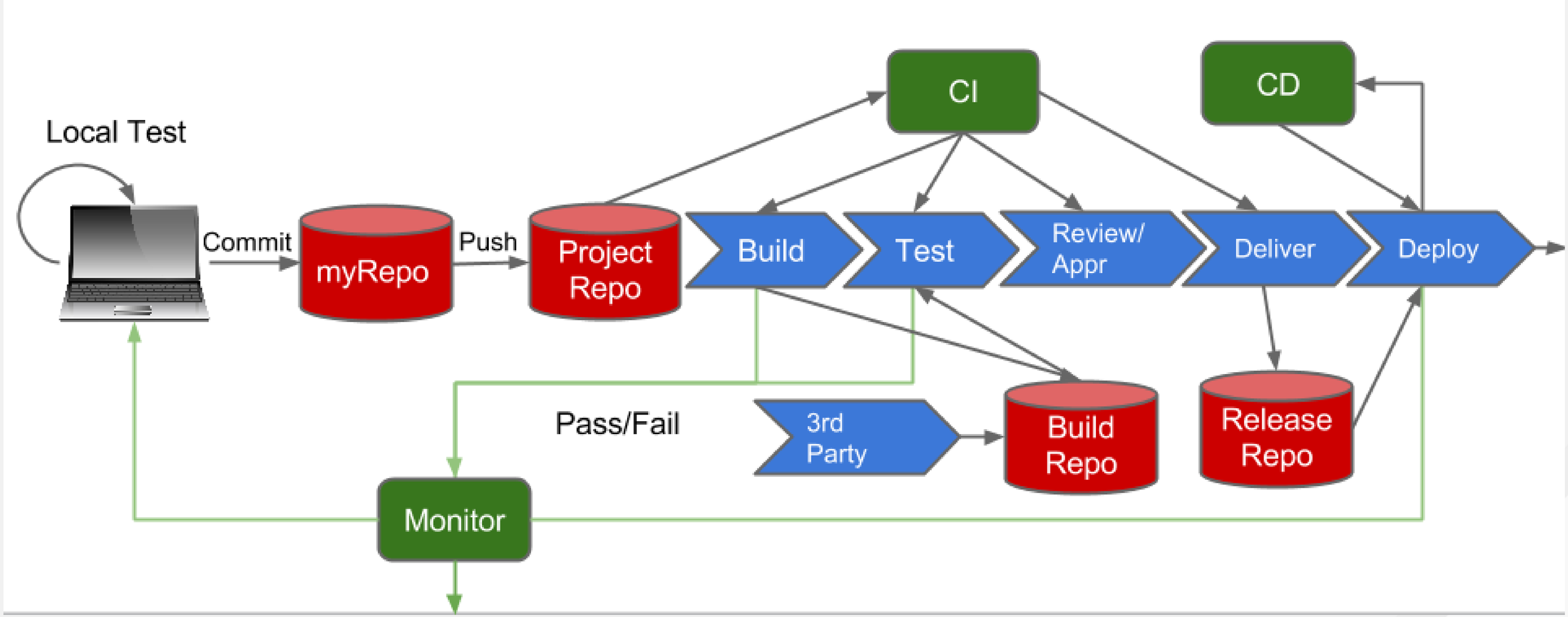


Increase developer productivity and release agility for ops

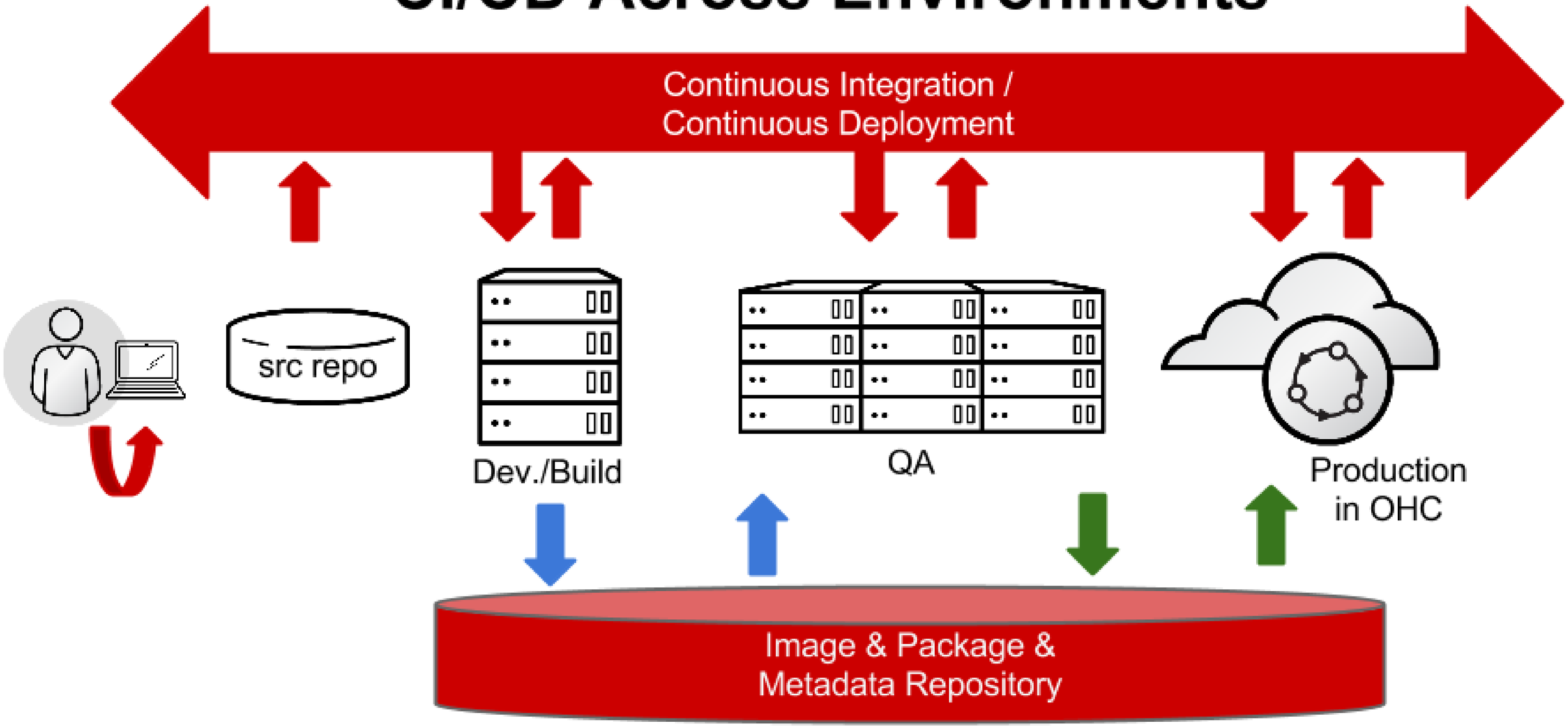
Increase platform infrastructure automatability

Increase ops agility and feedback for developers

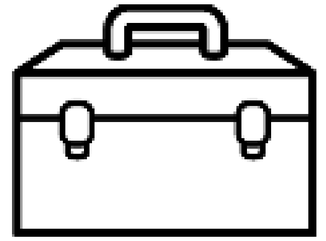
Desirable Enterprise DevOps Process



CI/CD Across Environments



CI/CD Pipeline Toolset



RED HAT CLOUDFORMS

RED HAT SATELLITE

gerrit

Trello

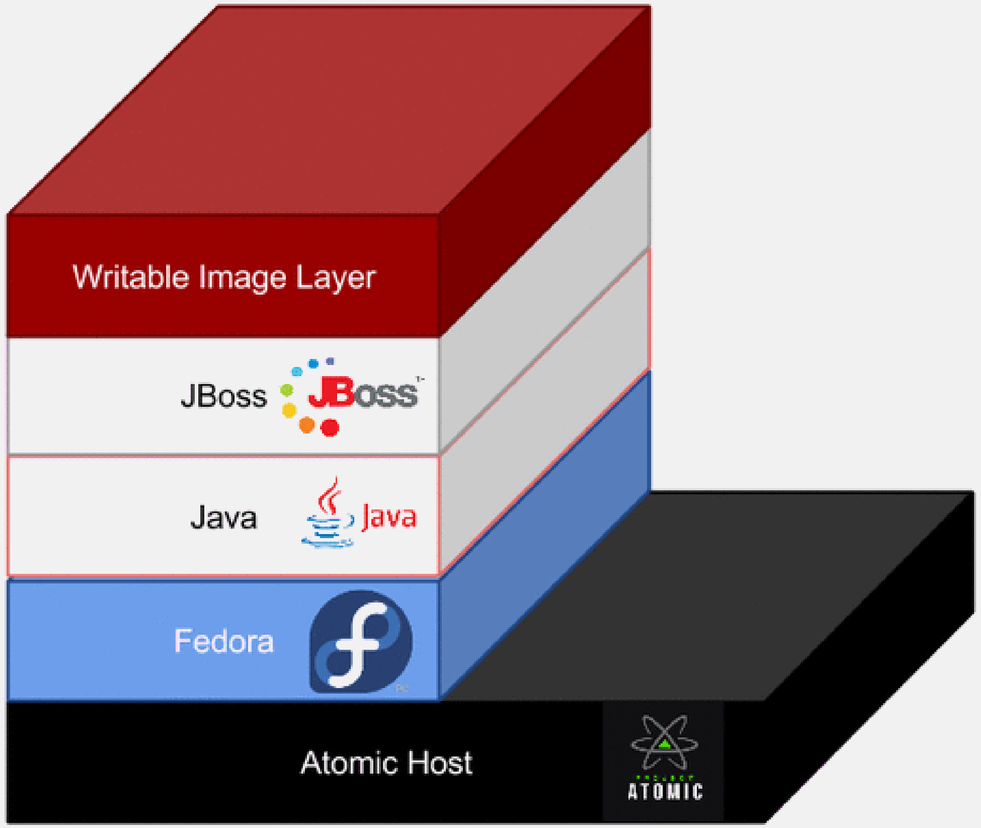
JIRA

etherpad

Puppet

CI/CD Workflow UI

Why Containers for DevOps?

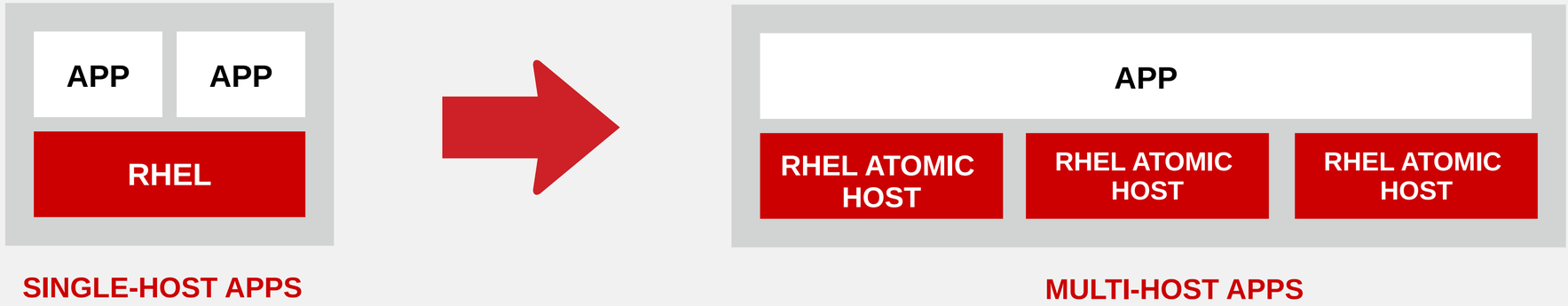


- Aligned with lightweight services
- Defined as composable layers
- Resource-efficient

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

DevOps Workflow

OPS

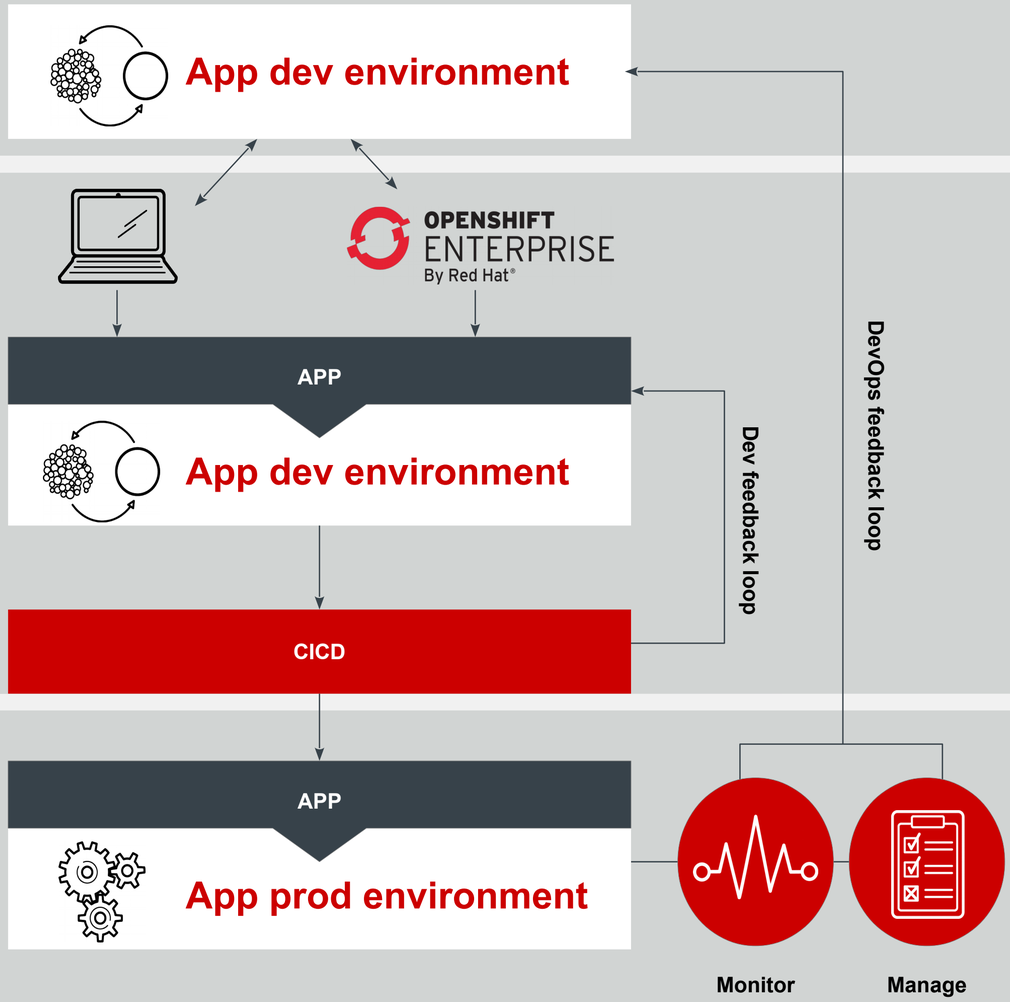
- Create containerized IaaS or PaaS development environment

DEV

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

DEVOPS

- Scheduler orchestrates and deploys app
- Monitor and operate app



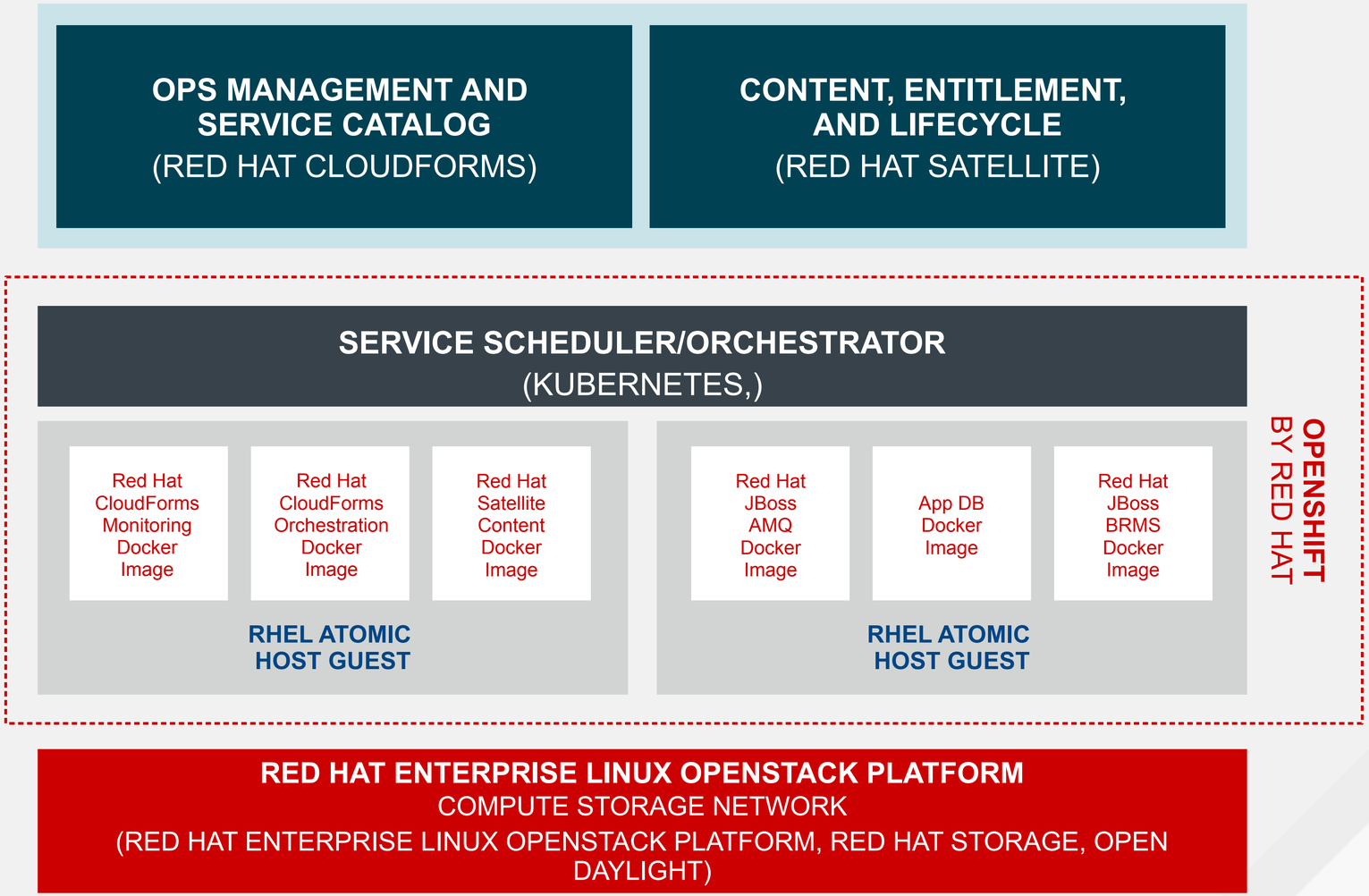
A Cloud Platform for Microservice Cloud Apps

Provision apps from service catalog

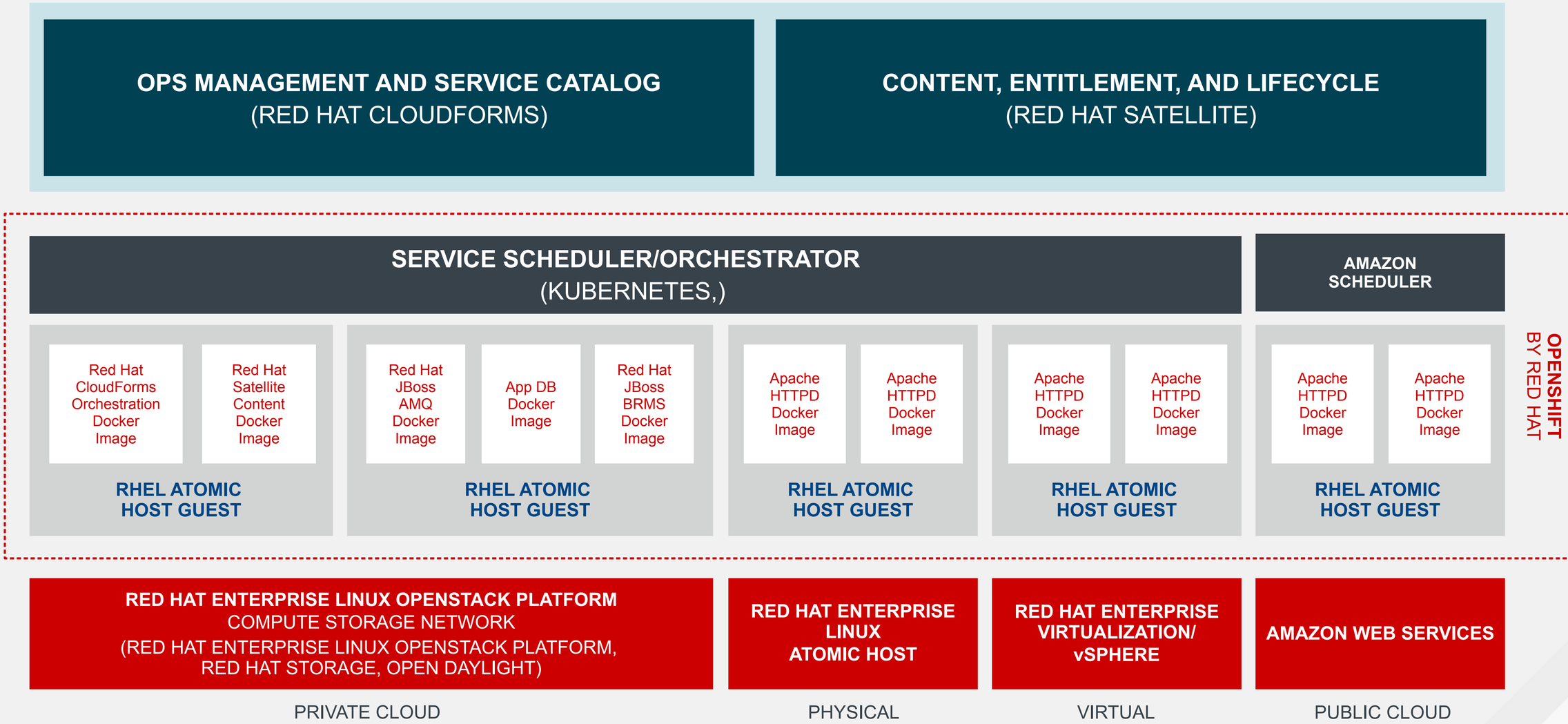
Orchestrate and place apps

Run composed microservices in containers

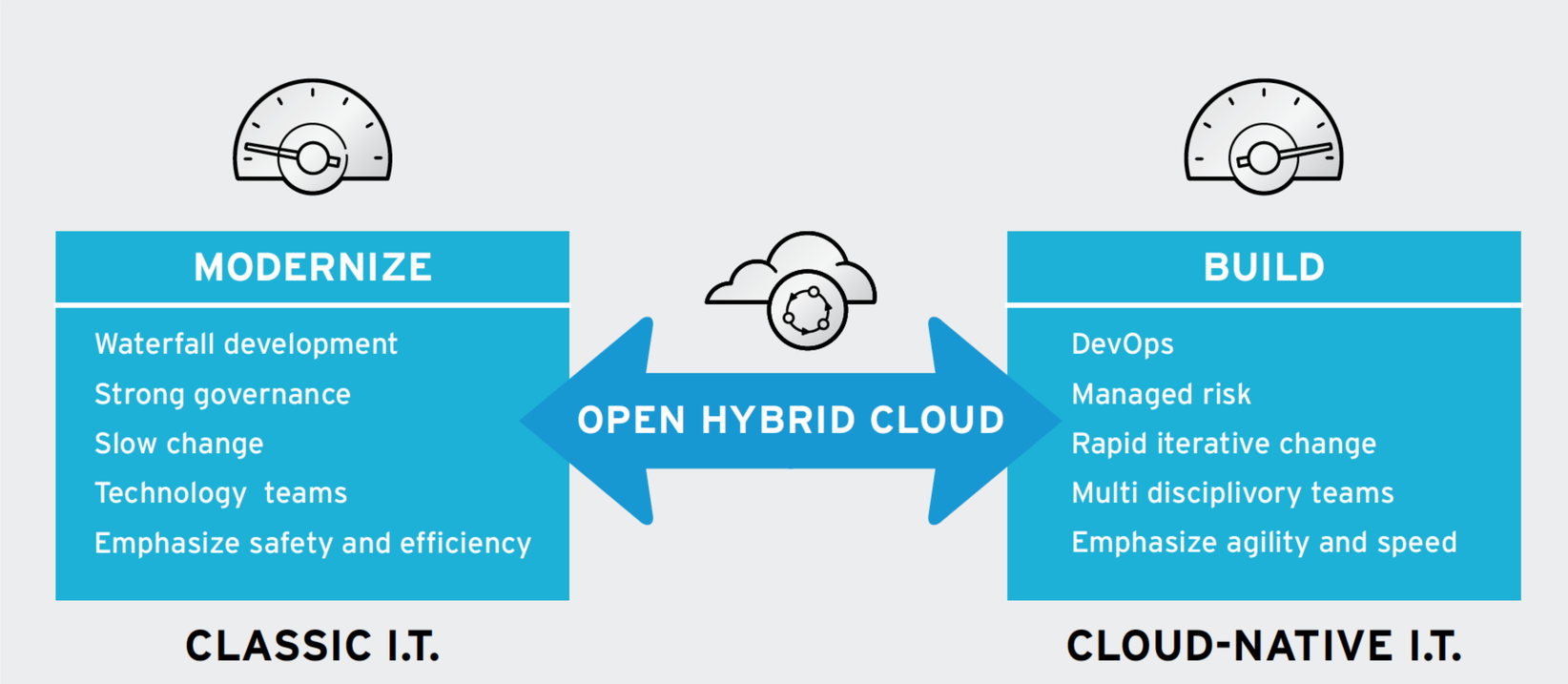
Provide dynamic, programmable infrastructure



DevOps Spans Infrastructure Types



DevOps Spans Modes of IT



Some Other DevOps Sessions

- Bootstrapping a DevOps movement in Red Hat IT (Wednesday @ 4:50)
- Accelerate DevOps with OpenShift Platform-as-a-Service (Thursday @ 10:40)
- Continuous delivery, with a side order of DevOps (Thursday @ 1:20)
- So you want to be a DevOps Engineer? (Thursday @ 4:50)

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RED HAT SUMMIT

SUMMIT BY DAY
PARTY BY NIGHT

JOIN OUR **JBOSS,**
OPENSHIFT,
AND **MOBILE** TEAMS
FOR A NIGHT OF GAMES, DANCING,
AND OPEN CONTAINERS

Visit the Red Hat booth
in Hall D for location
and invitation.

LEARN. NETWORK.
EXPERIENCE OPEN SOURCE.