Powering Agency Transformation Through Innovation

Jason Dudash

Chief Architect

North America Public Sector
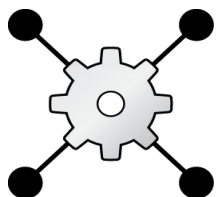
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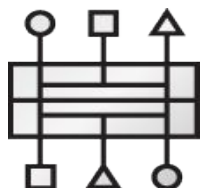
@redhatgov

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"Let's face it, all we are doing is writing tomorrow's legacy software today"
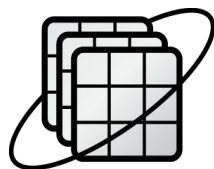
–Martin Fowler

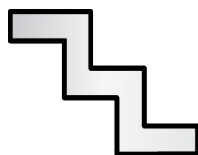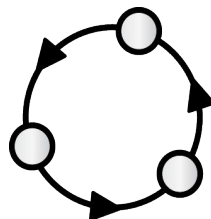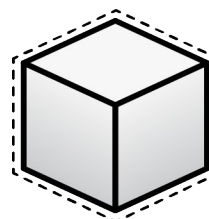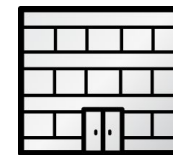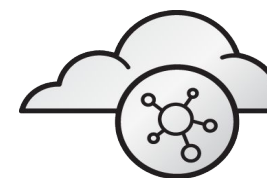| Service Endpoints	Architecture	Development Process	Deployment	Infrastructure	Security
Web Services	Monolith	Waterfall	Server/VM	Data Center	Slow ATO
APIs	Microservices	Agile + CI/CD	Container	Cloud	Security "Shift Left"

Cloud-native
/kloud ˈnādiv/

Systems and processes that are designed to embrace rapid change, large scale, and resilience in dynamic environments such as public, private, and hybrid clouds

TRADITIONAL (LEGACY)

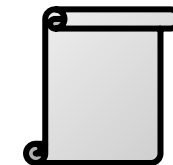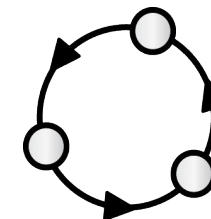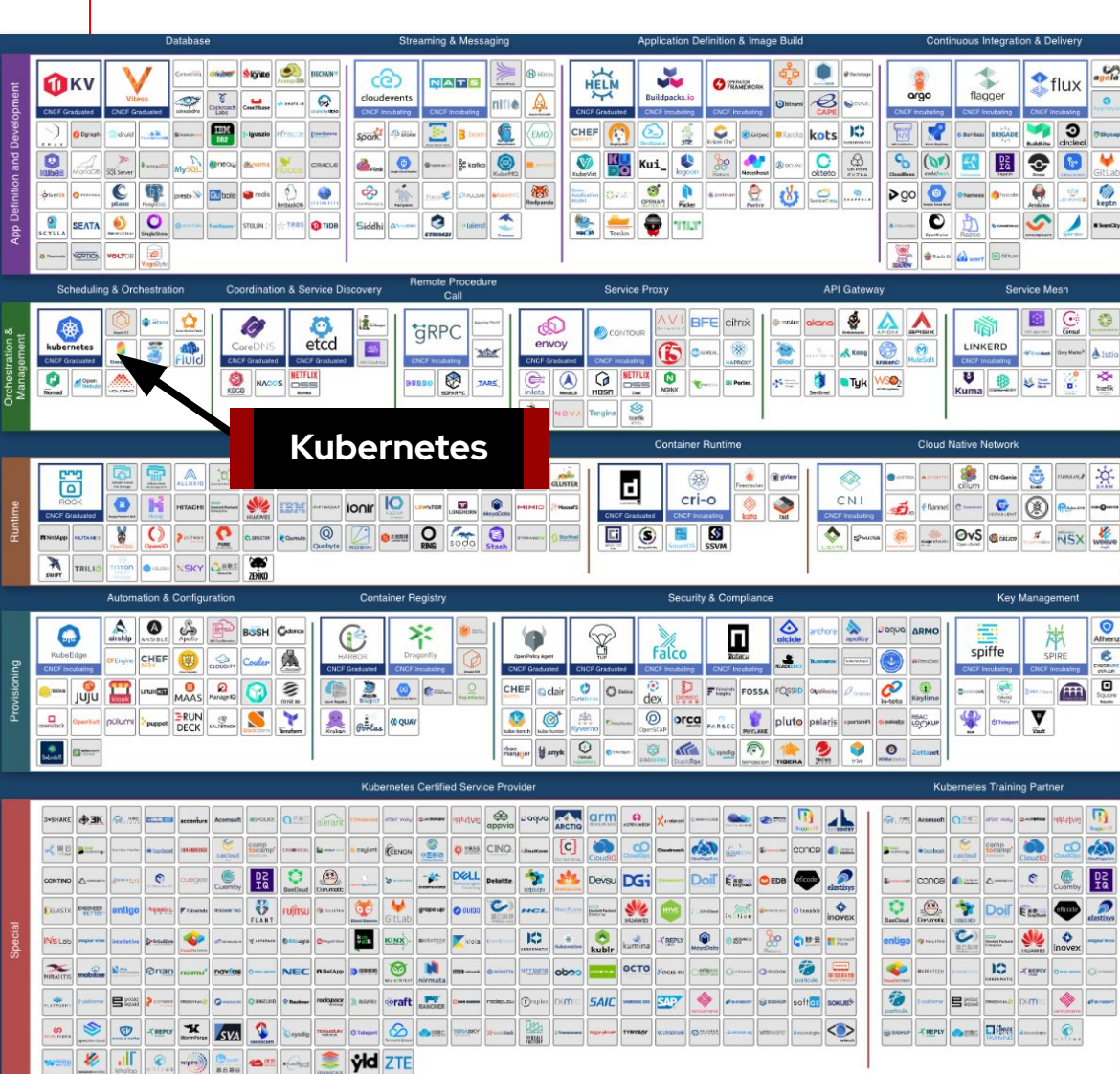|	
Server–centric	Container-centric
Scale up vertically	**Scale out horizontally**
Tightly coupled monolith	Loosely coupled and service-based
Infrastructure-dependent	**Portable across infrastructure**
Waterfall, semi–agile, and long delivery	Agile and continuous delivery
Local IDEs & developer tools	**Cloud-based, intelligent tools**
Siloed dev from ops, QA, and security teams	DevSecOps, NoOps, and collaboration

CLOUD-NATIVE (MODERN)

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But many measures, the most popular and innovative open source cloud technology is Kubernetes

Kubernetes is not enough && Kubernetes is hard

Kubernetes

https://landscape.cncf.io/
https://youtu.be/LpFApeaGv7A
https://youtu.be/QKI-JRs2RIE?t=1406

INCIDENT #1: AWS ALB 502

Technical problem occurred: [org.zalando.riptide.NoRouteException: Unable to dispatch response: 502 - Bad Gateway {Server=[awselb/2.0], Date=[Tue, 09 Apr 2019 11:35:29 GMT],

502 Bad Gateway

Server: awselb/2.0

16   github.com/zalando/riptide   zalando

Broken runtime #1 : Zombies

ps auxf | grep -c defunct
16018

readinessProbe:
  exec:
    command: [server_readiness_probe.sh]
    timeoutSeconds: 1

@lbernail @roboll

←—?—→

Projects vs. Product?

"Given two technologies, the one that's easier to obtain, configure, and use will usually be the one that wins"

-Stephen O'Grady, The New Kingmakers

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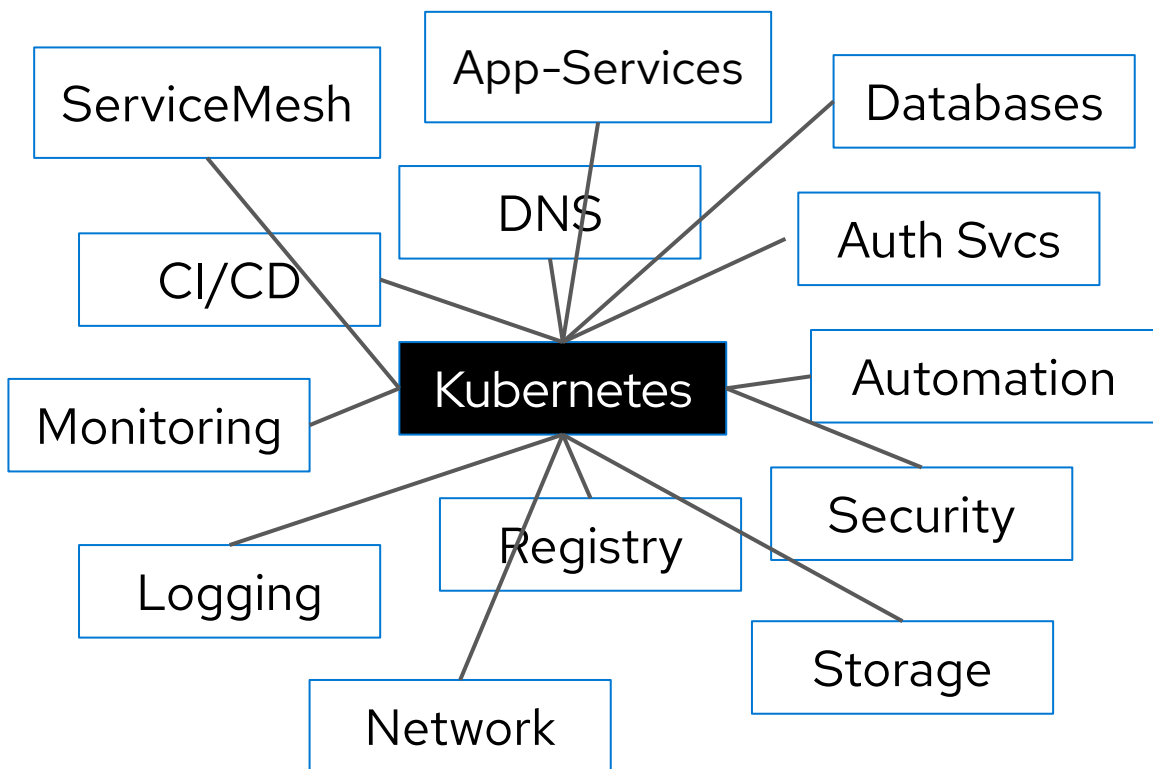
Kubernetes + components needed to run production workloads + SRE team + support

ServiceMesh
App-Services
Databases
DNS
Auth Svcs
CI/CD
Kubernetes
Automation
Monitoring
Security
Registry
Logging
Storage
Network

Support and Operations

Monitoring
Service Mesh
Dev Tools
Registry
Metrics
Logging
CI/CD

OpenShift Cluster Services
Networking :: Router :: OLM

Kubernetes

Red Hat Core OS

ROSA

aws

https://aws.amazon.com/rosa/
https://aws.amazon.com/blogs/containers/aws-and-red-hat-extend-collaboration-annoucing-new-managed-red-hat-openshift-service-on-aws/

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Run | Modernized traditional

A A A A A A

Grow

A A

Transform | New cloud-native

A A

Build and Deploy Innovative Applications

Managed OpenShift Application Platform

Architecture

- "Fast-moving monolith"
- Microservices
- Serverless

Agile integration

- API First
- Event Driven Architecture
- Hybrid old/new

Streamline app life cycle

- Accelerate TTM
- CI/CD
- Automation

Continuous innovation

- DevSecOps Factories
- Collaboration
- AI/ML & Data Services

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"Creating short-term wins is different from hoping for short-term wins."

-John Kotter, Leading Change

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GOALS

"Modernization"
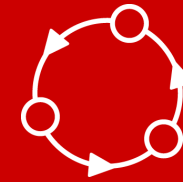
"Develop Faster"

"Improve Delivery"

"Innovate"

MEASURABLE RESULTS

LEAD TIME FOR CHANGE

DEPLOYMENT FREQUENCY

MEAN TIME TO RECOVERY (MTTR)

CHANGE FAILURE RATE*
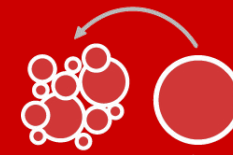
AGILITY

RELIABILITY

12

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Business requirements drive the need for transformation

Transformation needs technology, process, and culture change

Open source communities are a catalyst for technology innovation

Cloud-native brings innovation to a transformation strategy

**Modernize
Create / Innovate
Disrupt**
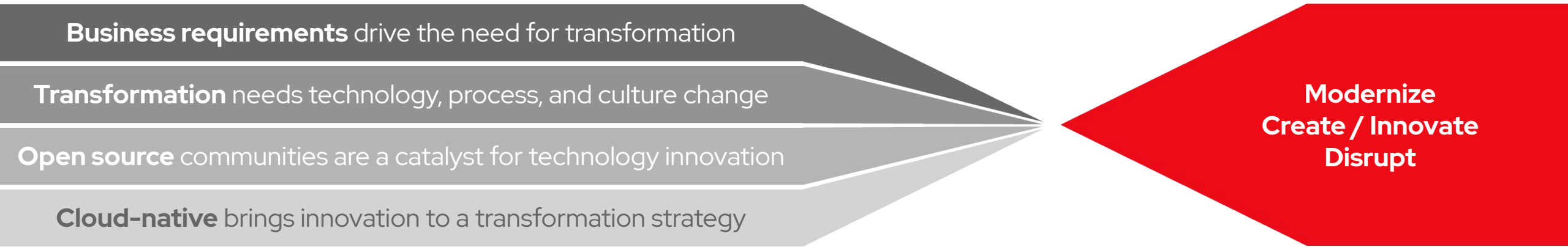
If you don't need to focus on the platform you can focus on your goals

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"I'm starting to associate the smell of pizza with the futility of a death march"

-Gene Kim, The Phoenix Project

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Thank you

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