Driving Enterprise Software Development and Observability for Wholistic DevOps
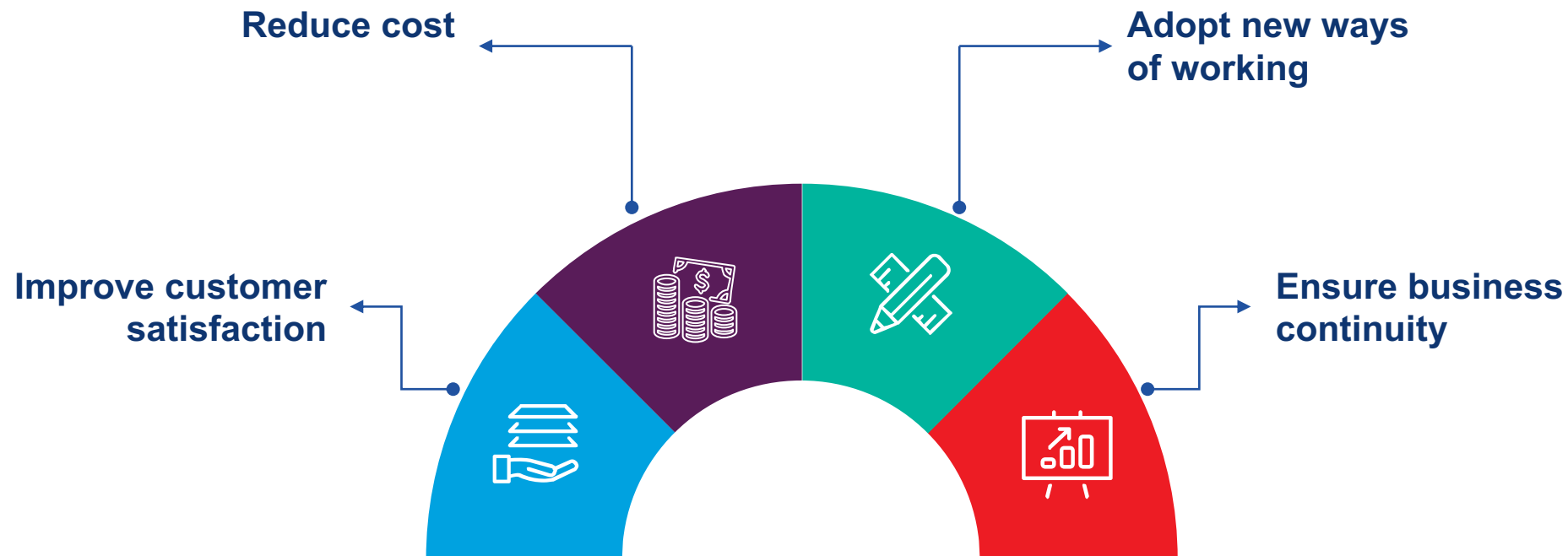
Eric Tice
Global Open Source SME Lead, EA
Wipro Limited
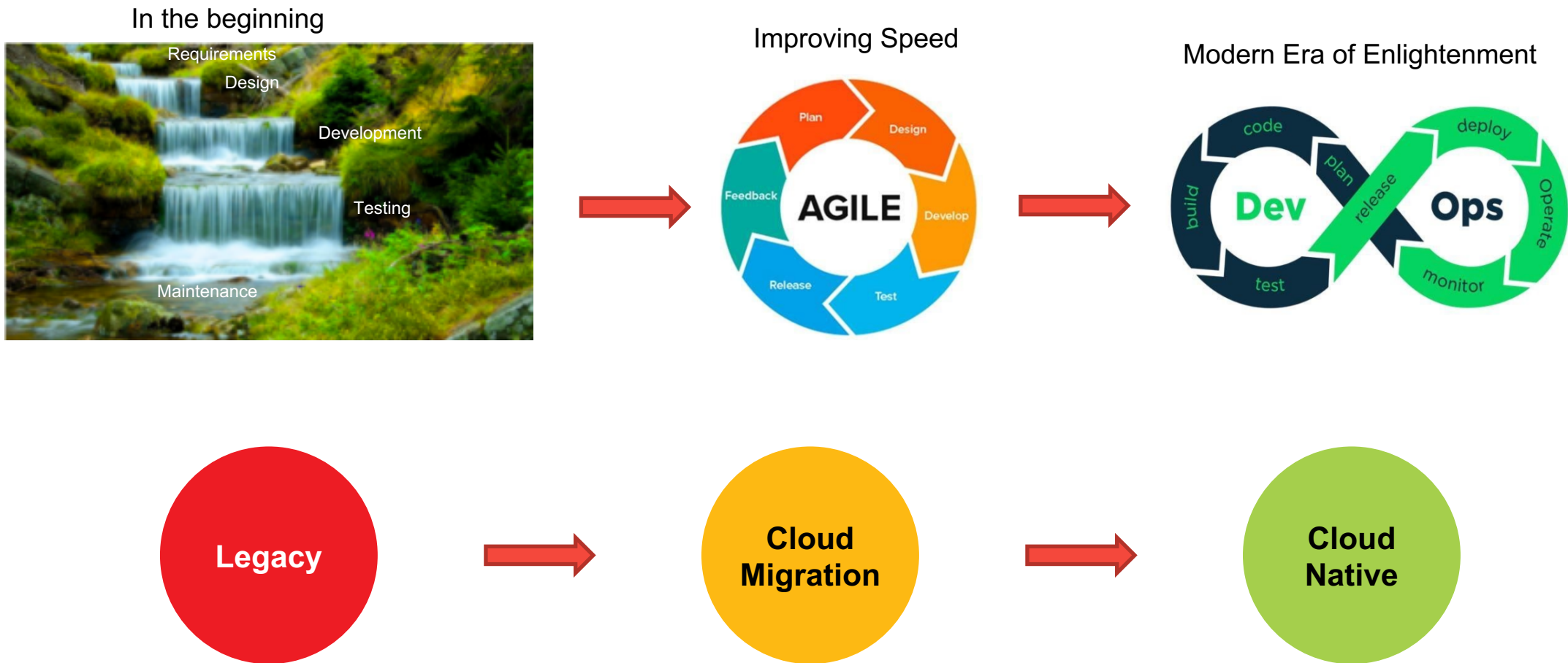
DEVOPS WORLD
by CloudBees

Enterprises in times of pandemic

DevOps is an absolute must for enterprises in times of pandemic!

Reduce cost

Adopt new ways of working

Improve customer satisfaction

Ensure business continuity

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Current Trends in the Application Landscape

In the beginning

Requirements
Design
Development
Testing
Maintenance

Improving Speed

AGILE — Plan, Design, Develop, Test, Release, Feedback

Modern Era of Enlightenment

DevOps — code, deploy, plan, release, operate, build, test, monitor

Legacy → **Cloud Migration** → **Cloud Native**

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Adopting DevOps

Not just a set of CICD tools

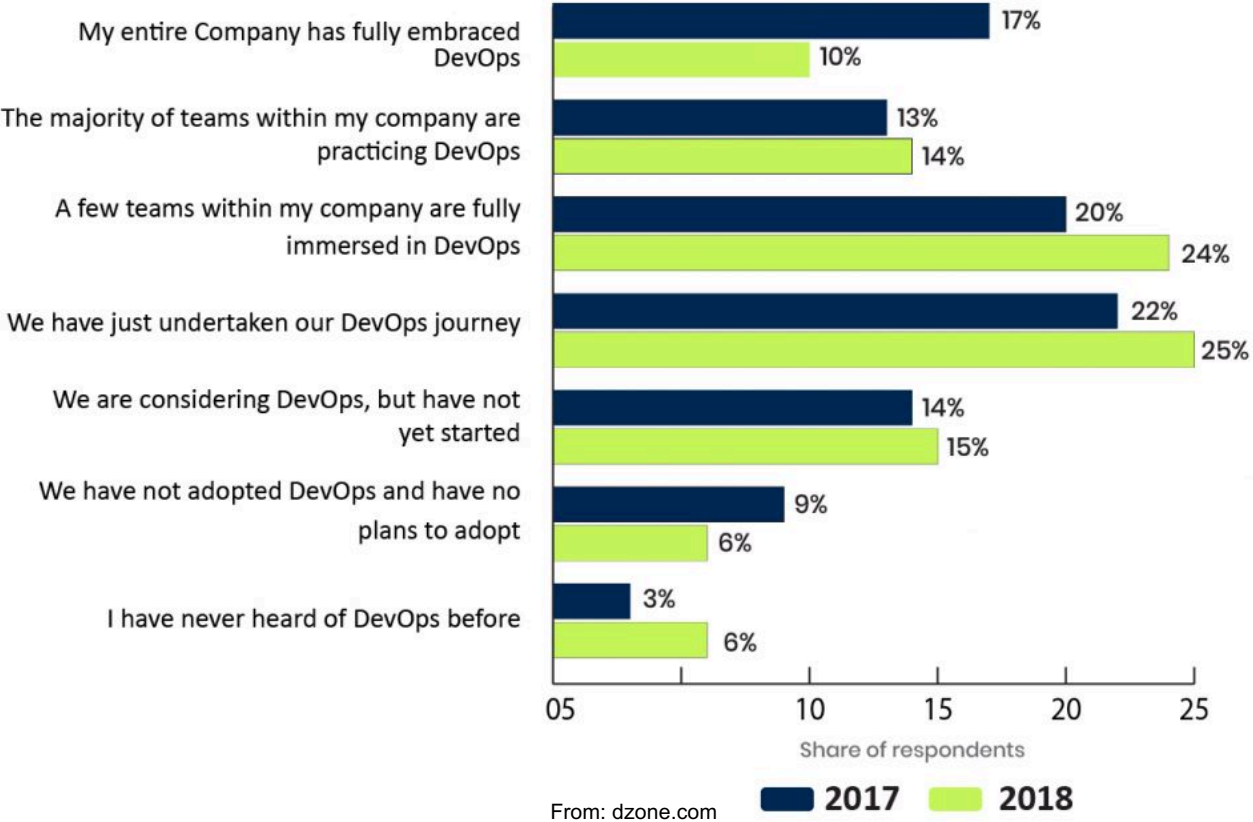DEVOPS
WORLD
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We have a great corporate culture!? Don't we?

"The first step in solving a problem is recognizing that you have one." – Will McAvoy, Newsroom
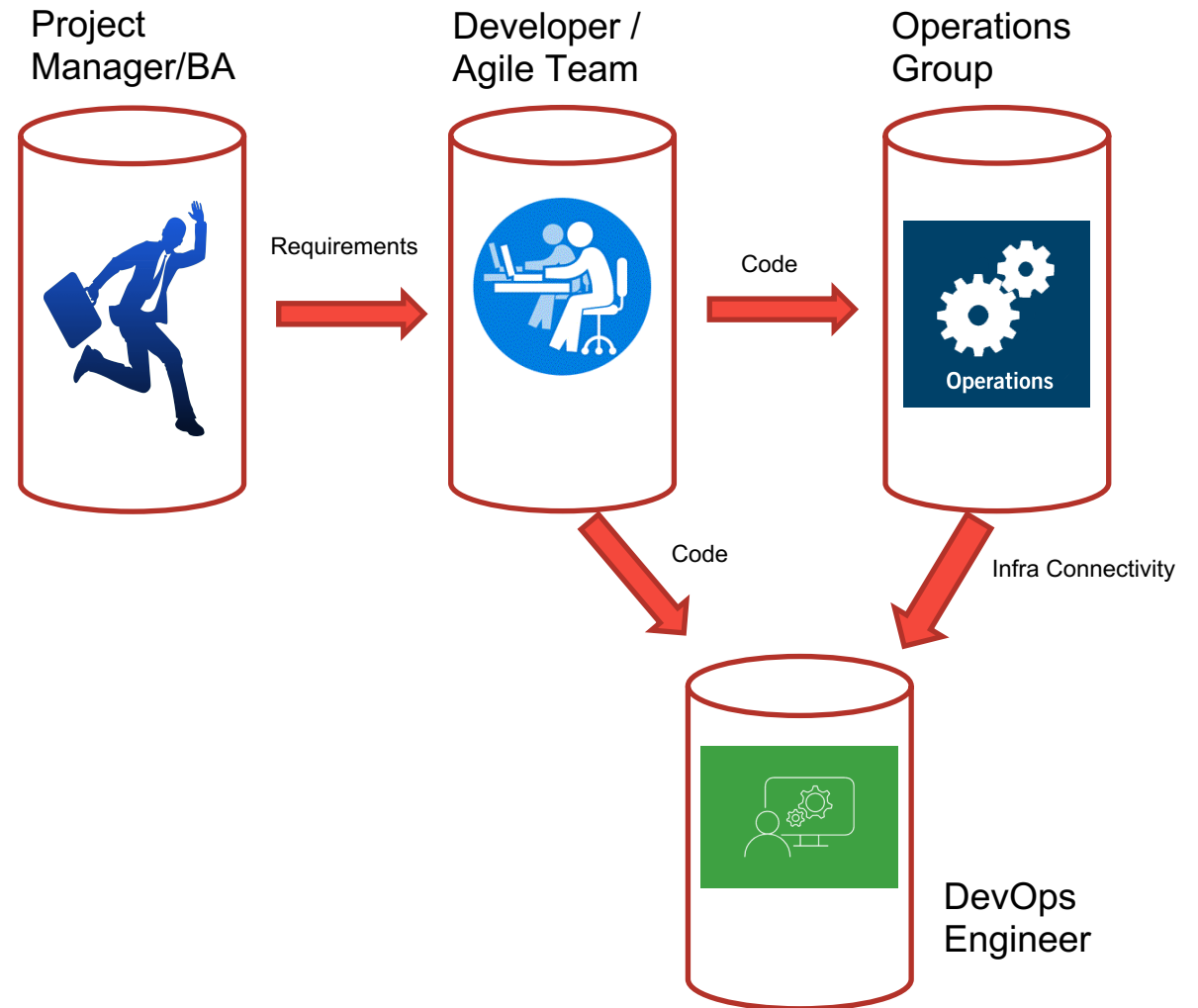
Symptoms of a culture that needs to change

01 Culture and strategy may not be in sync

02 Limited Agile with manual processing

03 Issues constantly returning from QA/Regression Tests

04 Bottleneck between development delivery and ops deployment

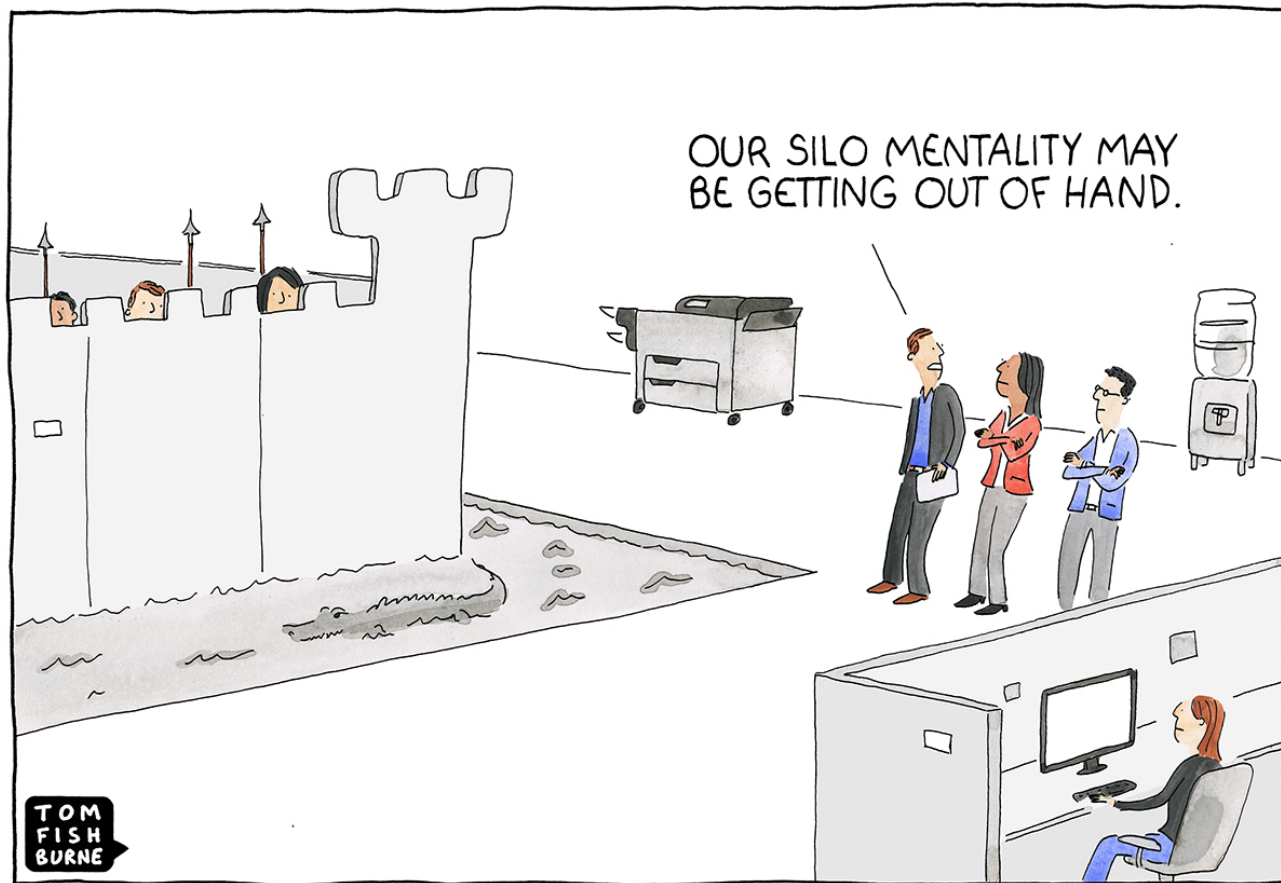**05** Groups don't communicate well, or at all, with each other

Industry trends in DevOps

$4bn

$4Bn
Total DevOps Market

26%

CAGR (2020 - 2021)

	2017	2018
My entire Company has fully embraced DevOps	17%	10%
The majority of teams within my company are practicing DevOps	13%	14%
A few teams within my company are fully immersed in DevOps	20%	24%
We have just undertaken our DevOps journey	22%	25%
We are considering DevOps, but have not yet started	14%	15%
We have not adopted DevOps and have no plans to adopt	9%	6%
I have never heard of DevOps before	3%	6%

Share of respondents

From: dzone.com

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6

What's causing our issues?

Project Manager/BA

Developer / Agile Team

Operations Group

Requirements

Code

Code

Operations

Infra Connectivity

DevOps Engineer

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Culture for stability not growth and performance

Challenges to improvement

- Silos

- Project centric mindset

- Lack of stakeholder collaboration

- Resistance to change

- Lack of documentation or retention of domain knowledge
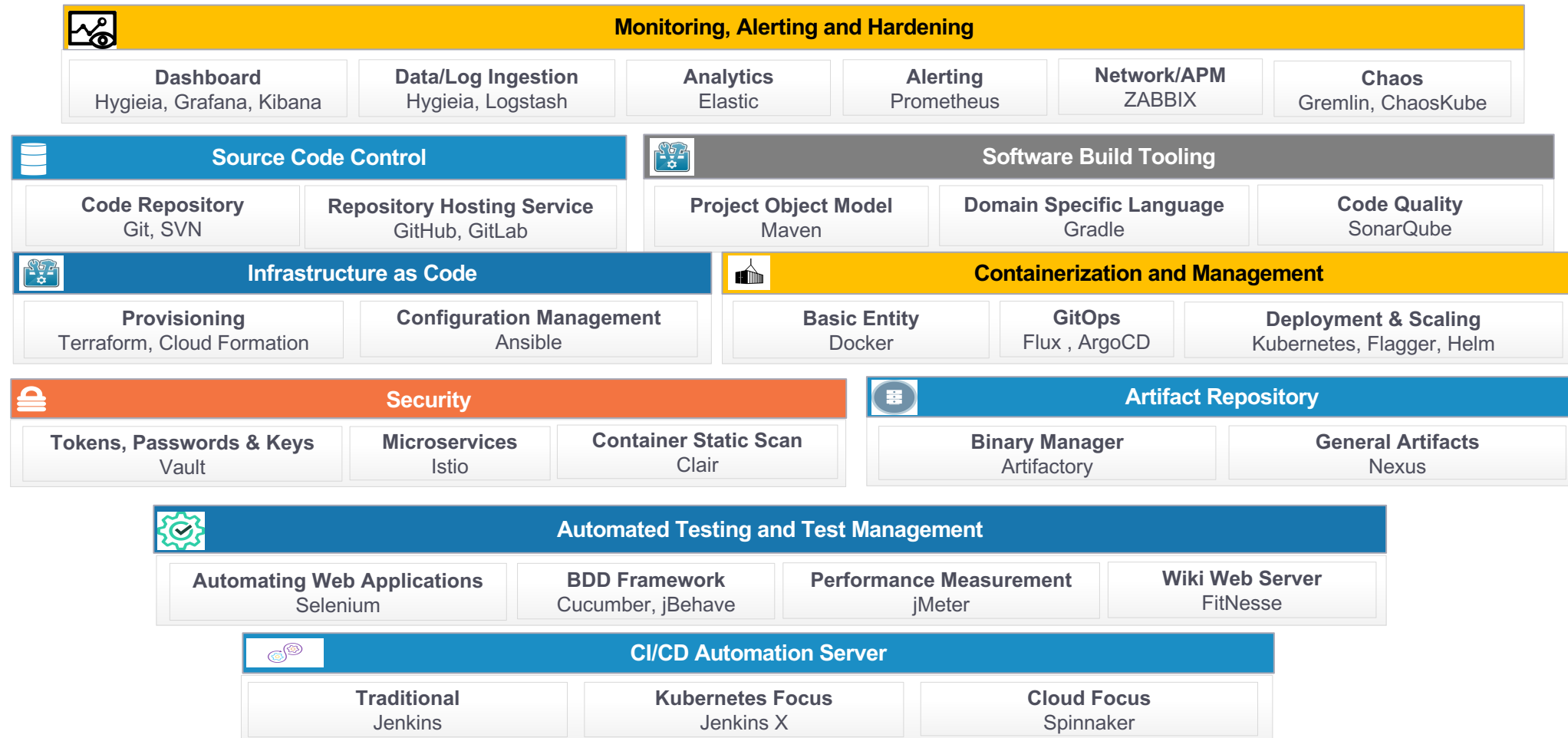
- Lack of adequate internal resources to support change

Modern DevOps Rooted in Open Source

"DevOps and open source software are distinct ideologies and movements within the IT realm. However, they share key conceptual affinities. If not for the work of open source developers in pioneering ideas like rapid software releases, resistance to vendor lock-in and the embrace of failure as a path to innovation, DevOps as we know it might not exist."

– from a blog by Christopher Tozzi, April, 2018

It's an Open Source DevOps World

Monitoring, Alerting and Hardening

Dashboard	Data/Log Ingestion	Analytics	Alerting	Network/APM	Chaos
Hygieia, Grafana, Kibana	Hygieia, Logstash	Elastic	Prometheus	ZABBIX	Gremlin, ChaosKube

Source Code Control

Code Repository	Repository Hosting Service
Git, SVN	GitHub, GitLab

Software Build Tooling

Project Object Model	Domain Specific Language	Code Quality
Maven	Gradle	SonarQube

Infrastructure as Code

Provisioning	Configuration Management
Terraform, Cloud Formation	Ansible

Containerization and Management

Basic Entity	GitOps	Deployment & Scaling
Docker	Flux , ArgoCD	Kubernetes, Flagger, Helm

Security

Tokens, Passwords & Keys	Microservices	Container Static Scan
Vault	Istio	Clair

Artifact Repository

Binary Manager	General Artifacts
Artifactory	Nexus

Automated Testing and Test Management

Automating Web Applications	BDD Framework	Performance Measurement	Wiki Web Server
Selenium	Cucumber, jBehave	jMeter	FitNesse

CI/CD Automation Server

Traditional	Kubernetes Focus	Cloud Focus
Jenkins	Jenkins X	Spinnaker

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Driving DevOps Innovation through Open Source

DevOps is partnership driven cohesive working across business and IT to deliver continuous business value to stakeholder

DevOps Dimensions

- People and Culture
- Process and touch points
- Tools and automation
- Data and insights

DevOps Characteristics

- Empowered teams
- Product and value stream focus
- Frequent small releases (iterations)
- Fully automated CI/CD pipelines
- Microservices & containerization
- PaaS, Cloud oriented infrastructure
- Automated security, quality and analytics

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Bringing DevOps together through collaboration
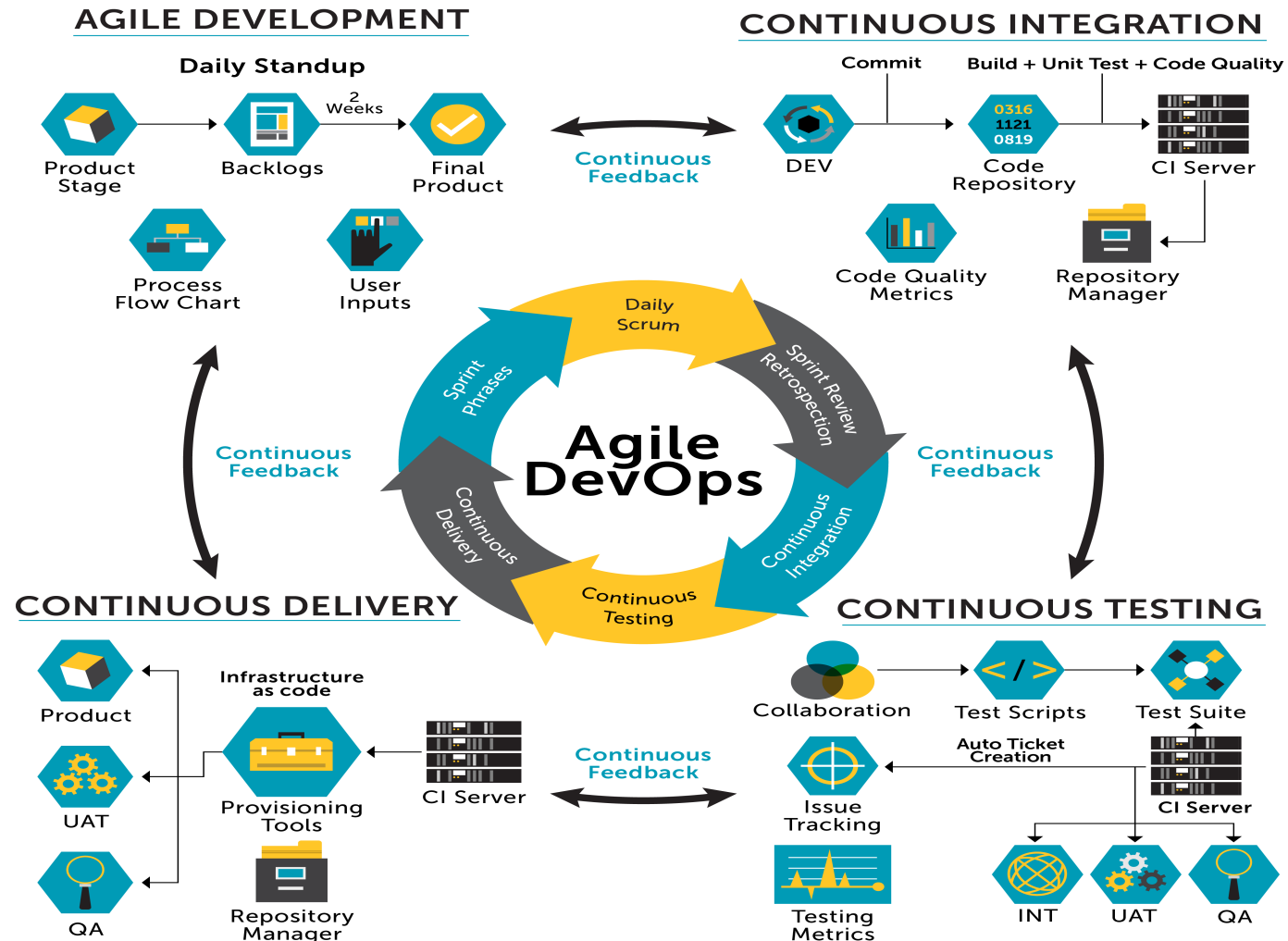
Moving past your comfort zone

Break down the Silos

Define an enterprise strategy, kill the project mindset

Set best practice and standards, implementing governance across all processes and tools

SILOS → **SELL** → **STRATEGY** → **CULTURE** → **STANDARDS** → **AUTOMATE**

Convince everyone there is a reason for change, this isn't just a tech thing

Create a culture for innovative change and technical learning, ideally with open source, re-evaluate often

Automate everything

Benefits of Embracing A Culture Change

Executive buy in with complete reduction in TCO

Shared responsibility breeds trust and constant improvement
- "How do we fix this or make it better" rather than "that's a code problem, not my issue" or "it's a server issue"

Improved customer satisfaction, through improved speed to market with less issues

Automation of everything
- Reduced time to resolve issues
- Improved time to market removing manual mistakes
- Enhanced testing
- Enhanced ability to gather data

Resource Retention as innovation, open source and challenging environments attract top talent

OK, now what?

What next?

How do I effectively manage performance from here?

How do I know if its working?

Identifying the gaps and issues in your organization and applying a culture change will move you down the path

But, how do you visualize success?
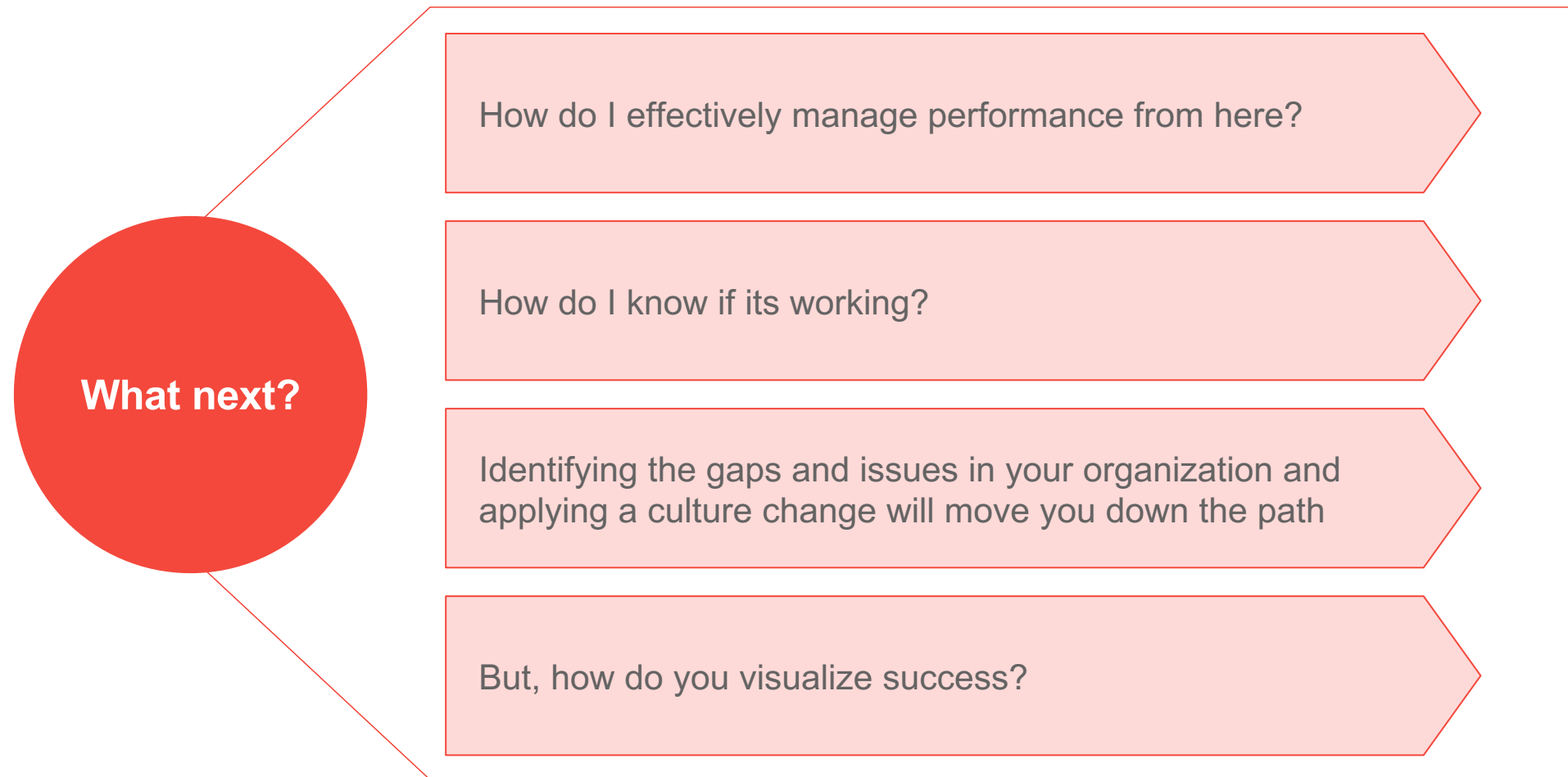
Performance is still not great. Why?

Do you monitor your application?

  – Are you sure?

  – All of it?

Agile tracks stories but what about the code?

Teams are collaborating. Why are there still so many issues?

What am I missing?   Insight through Observability

Monitoring not yielding results

Monitoring applications for issues, yet we still have issues!!

Reactive scanning of log files is what we have always done

Lack of actionable data to manage the process not just the tools

Manual or limited tooling allows for slow debugging

Monitoring not yielding results

- Monitoring applications for issues, yet we still have issues!!

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Trends in Observability

Although tracing is critical, only 19% use a distributed tracing tool!

Practices/Methods Critical to Achieving Observability

- Monitoring — 87%
- Alerting — 76%
- Tracing — 73%
- Instrumentation — 70%
- Anomaly detection — 67%
- Testing — 55%

Tools Used for Observability

- Log management & analysis (e.g., ELK) — 83%
- Alerting (e.g., Nagios) — 51%
- Infrastructure monitoring (e.g., Datadog) — 49%
- Application performance monitoring (e.g., New Relic) — 37%
- Distributed tracing (e.g., Jaeger) — 19%

Source: Logz.io's "2019 DevOps Pulse". Left Chart: Q. Which practices/methods do you feel are most critical for achieving observability? (Select all that apply). Right Chart: Q. What type of observability tools are you using? (Select all that apply) The data in both graphics includes "all of the above responses".

@ 2020 THENEWSTACK

What about the DevOps pipeline?

1 Most organizations neglect the pipeline, yet fail to understand continued issues

2 Most organizations that have CICD tools, gather data from a minimum 3 or more tools to get insights into failures in the process.

3 Observability is lacking at the executive level and requires technical knowledge

4 Application monitoring and logging tools are reactive, move to the proactive

Observability for DevOps

Near real-time tracking

Quantified Metrics

Ease of Integration

End-to-end monitoring of DevOps process

Key Insights

Adaptability

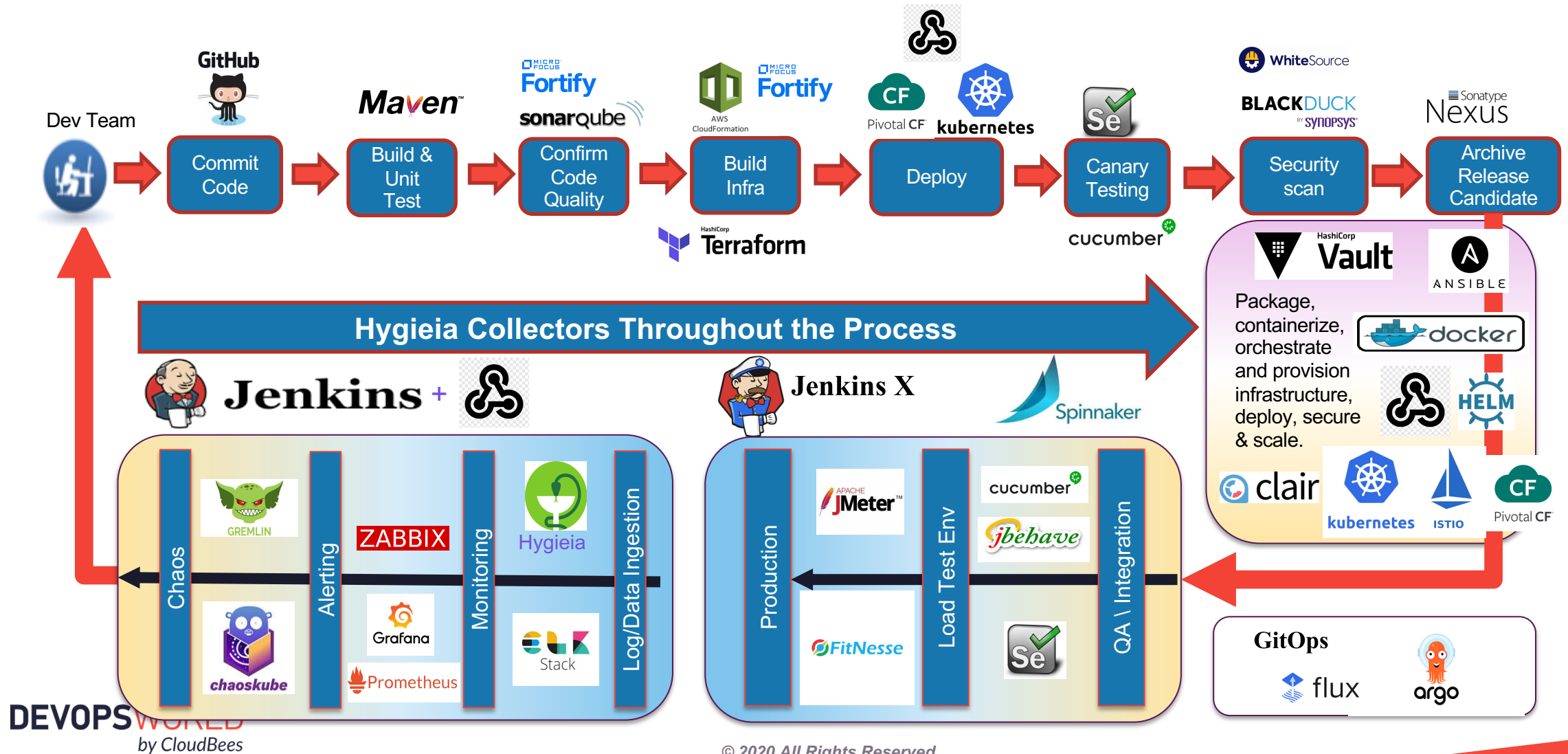# Opportunities for Observability

Bringing it all together with Open Source

Hygieia brings a next–gen approach to DevOps monitoring that enables visualization of end-to-end code and delivery process.

It delivers strategic insights that help to better manage resources and processes throughout the complete development lifecycle.

Hygieia within the DevOps cycle

Benefits of Improved Observability

Further Executive buy-in with complete reduction in TCO

Governance of your team to manage resources that may be under performing

Using a single pane of glass with tools like Hygieia gives all stakeholders a window into performance

REDUCE TCO | **UNDERSTAND** | **GOVERNANCE** | **AGILE** | **UNIFIED VIEW** | **INSIGHTS**

Complete understanding of the bottlenecks in your process

Increased Observability improves agility and ability to more rapidly scale to support your long-term roadmap

Avoid issues in production through better insights from code check-in to initial deployment

Are you ready to make the change?

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Questions?

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Thank you

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