RED HAT SUMMIT

Shift-left site reliability engineering for self-healing applications

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Our Challenge:
Delivering better software faster

Your App / Container

OPENSHIFT

kubernetes

aws

Google Cloud Platform

Microsoft Azure

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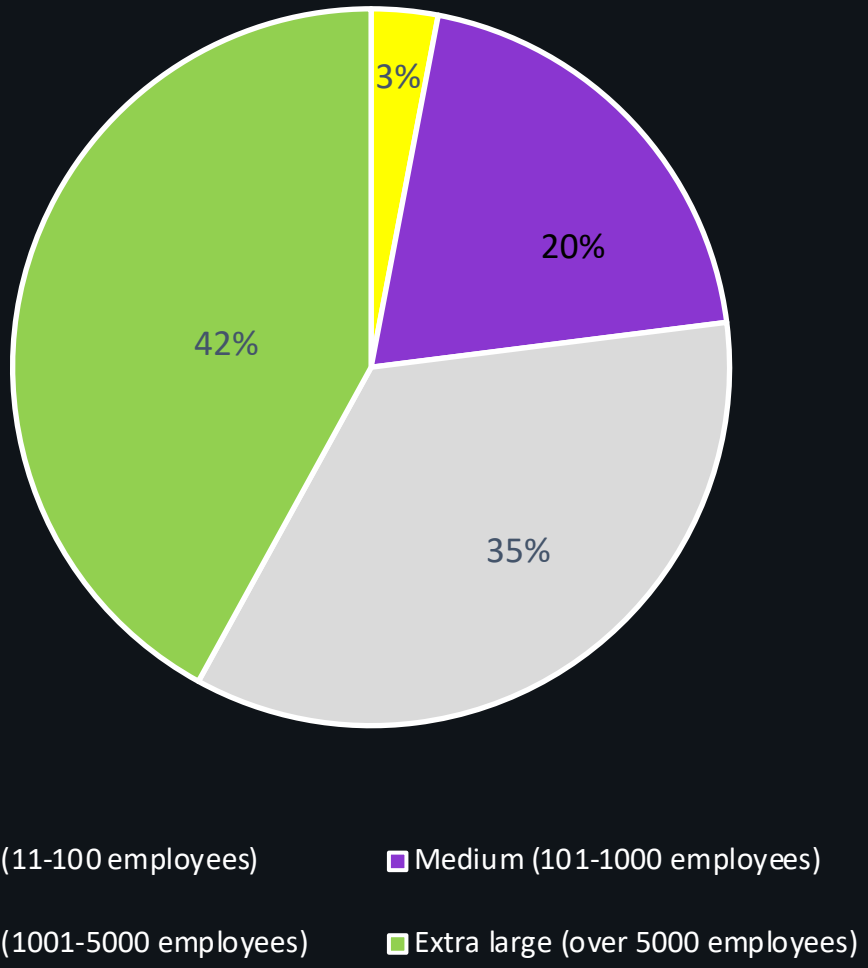
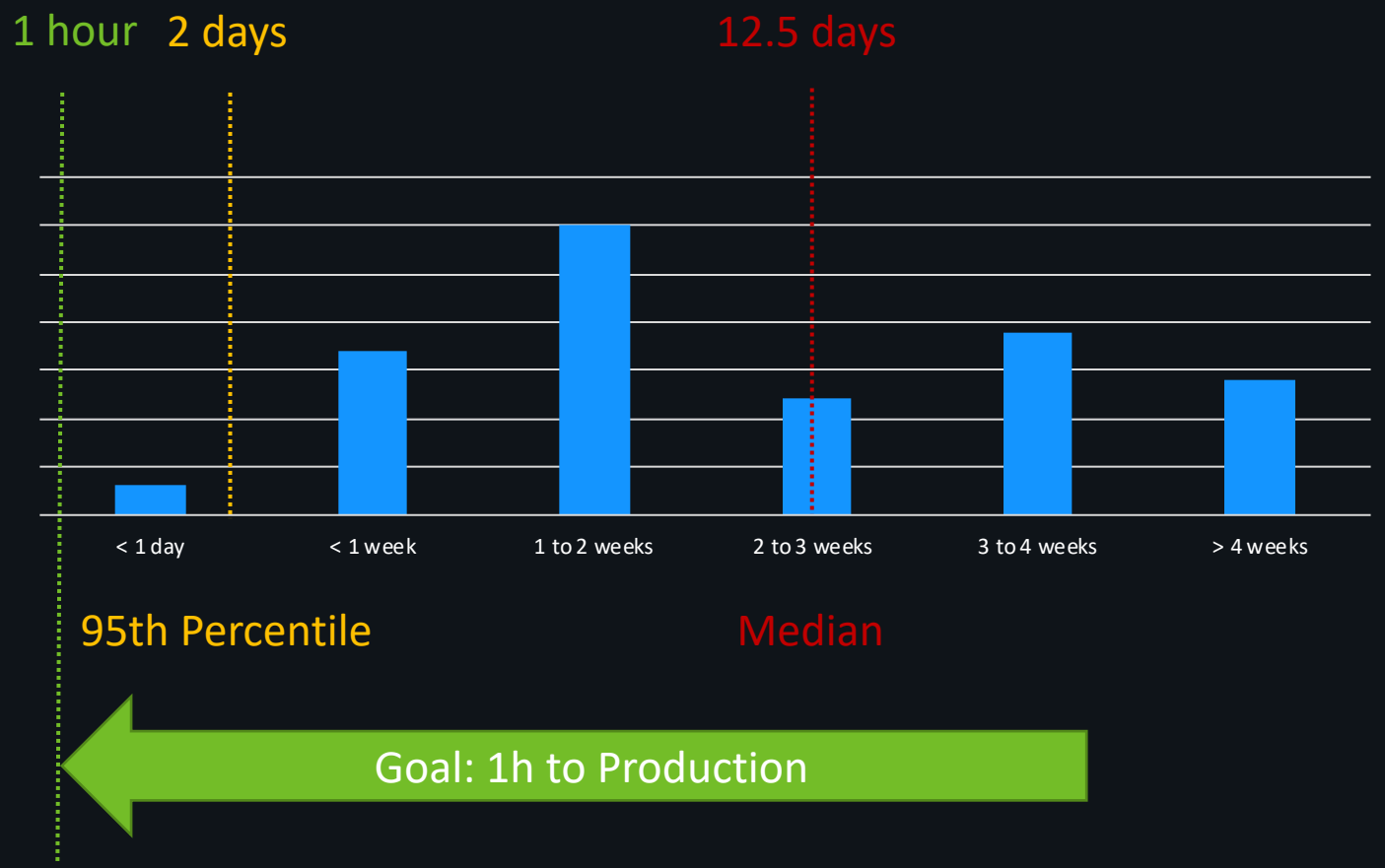
Cloud Native:
Deliver High
Quality Faster

Collecting more evidence: https://dynatrace.ai/acsurvey



Commit Cycle Time: From Dev to Pro

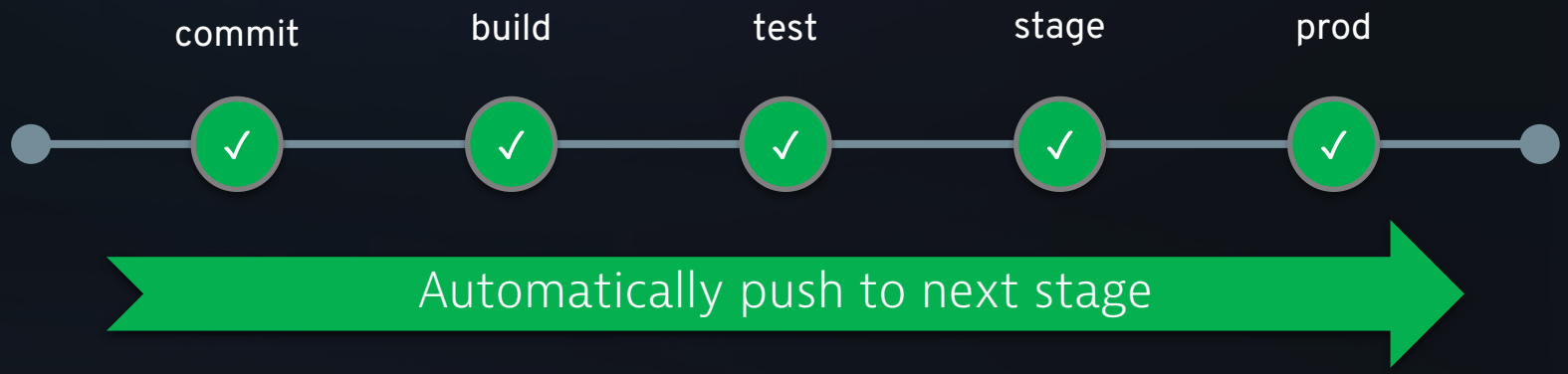


Some results from our survey

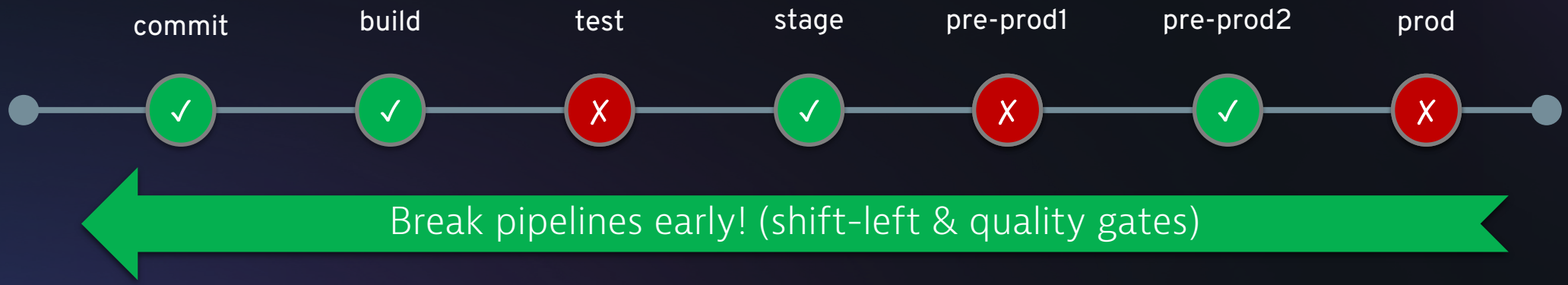
	Code to Production (Commit Cycle Time)	Business **Impacting** Deployments	**Per** Production **Deployment**	MTTR (Mean Time to Repair)
95th Percentile	2 days	1 out of 10	0 hotfixes	~4 hours
Median	12.5 days	3 out of 10	3 hotfixes	4.8 days

Evaluate for yourself: https://dynatrace.ai/acsurvey

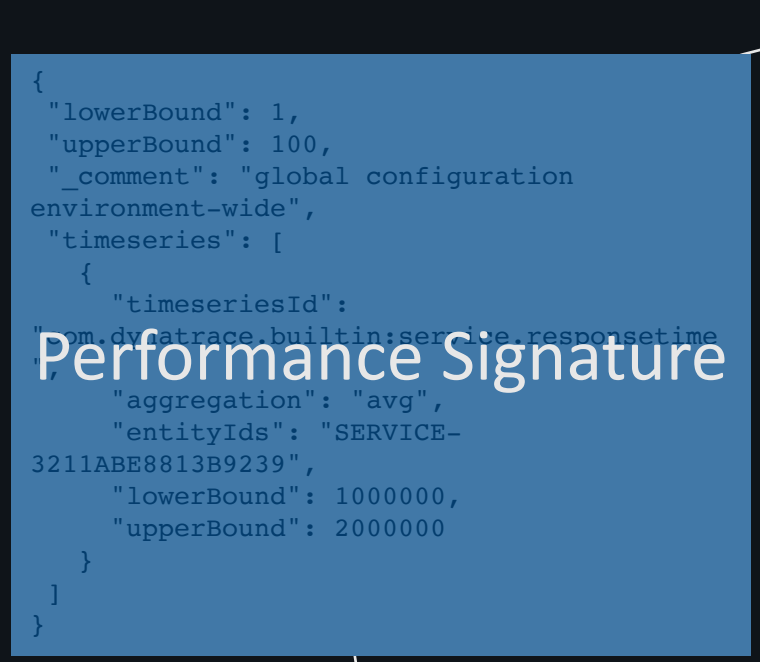
What we want



What we (sometimes) have



Shift-left quality gates – performance-spec-as-code

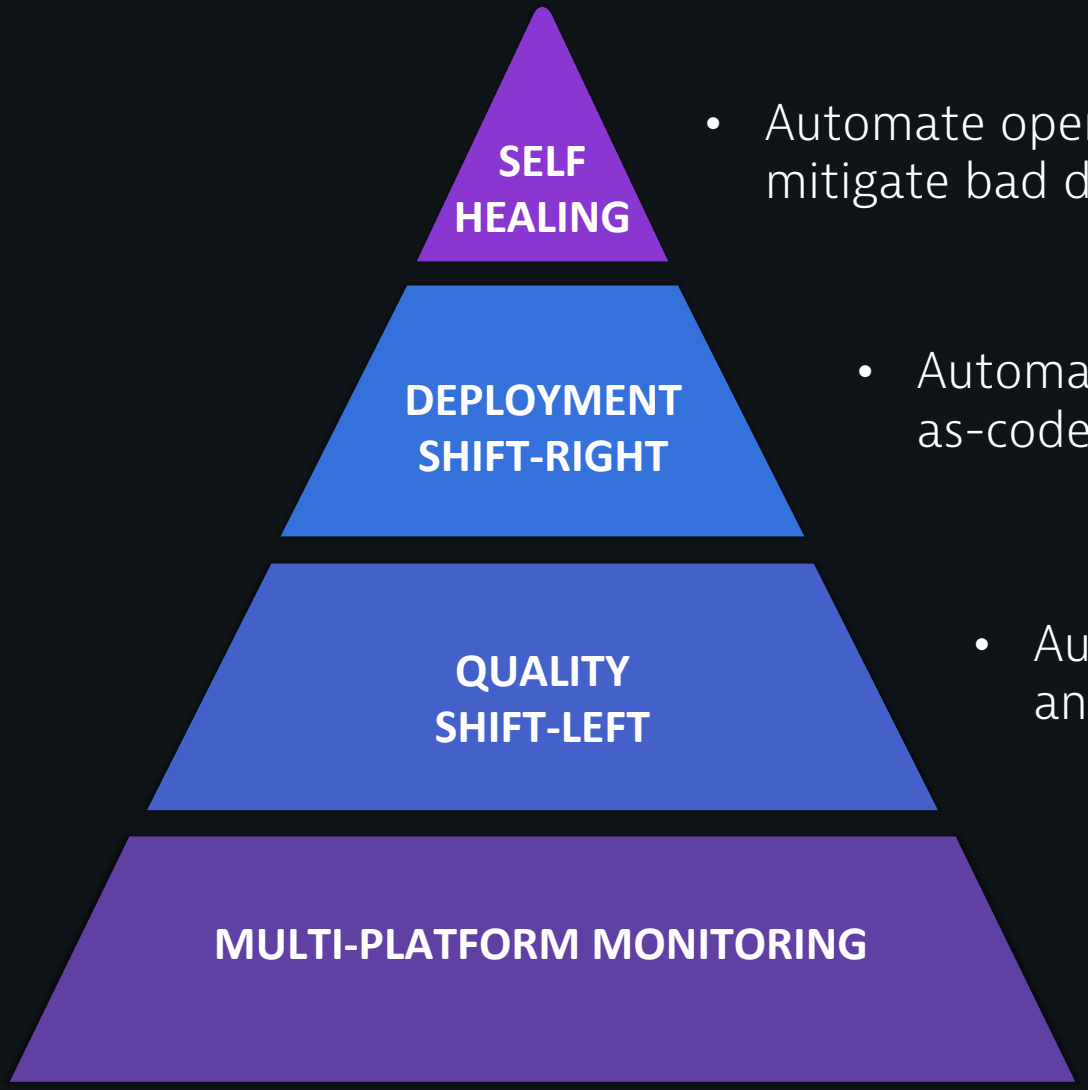


Performance Signature

Build Performance Analysis

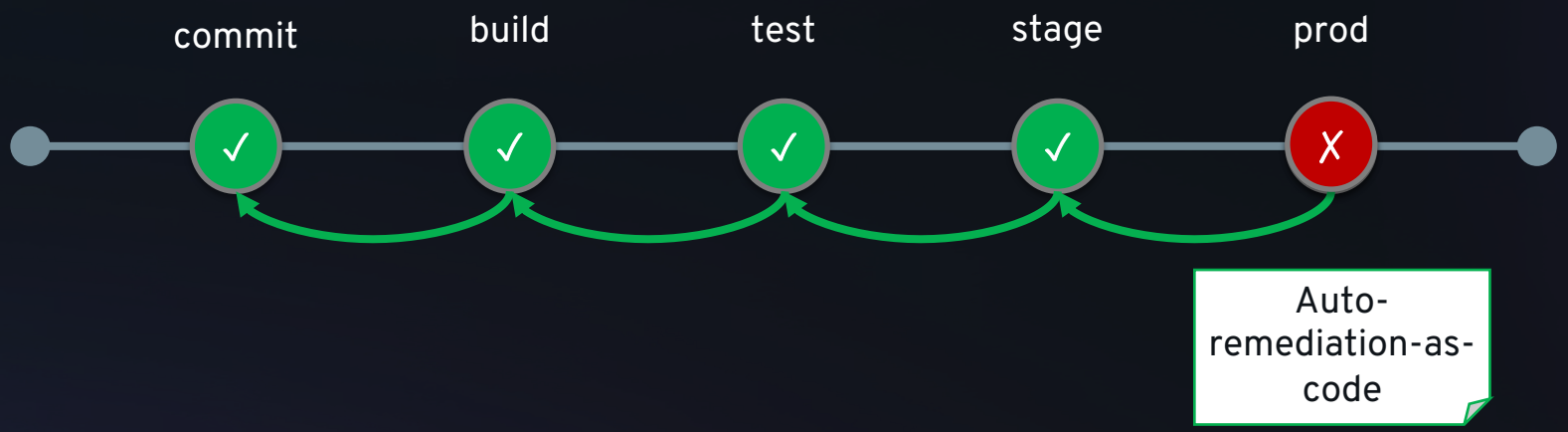
Automatic Feedback

How to increase quality



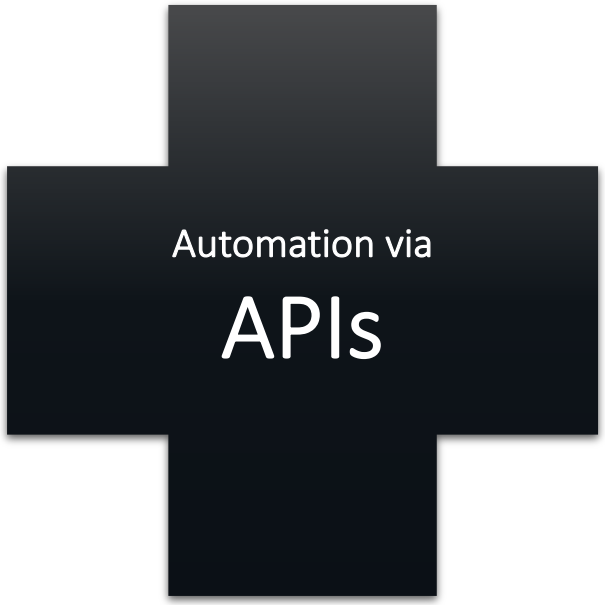
- Automate operations (self-healing) – auto-mitigate bad deployments in production
- Automate deployment (shift-right) – push "monitoring-as-code" for auto-validation and auto-alerting
- Automate quality (shift-left) – automate the pipeline and stop bad code changes before they reach prod
- Automated monitoring – monitoring as feature of the end-to-end pipeline

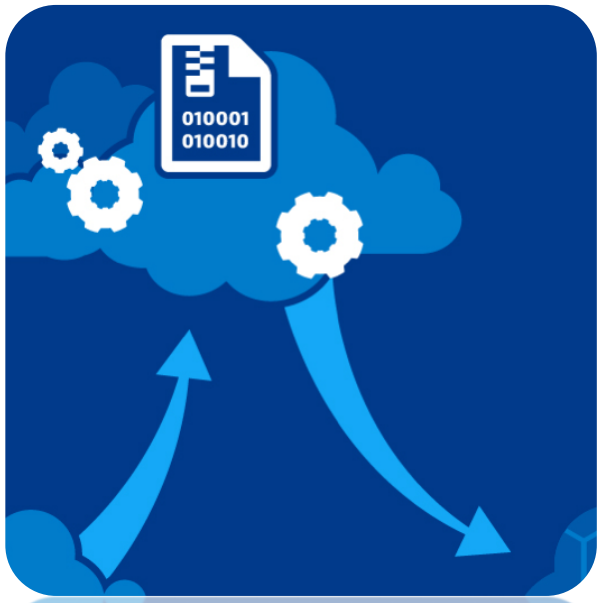
How to increase resilience



Auto-remediation building blocks

- **Monitoring**: know what's going on in your applications
  - End-to-end
  - Full-stack – fully integrated in all stages
- **Automation/Execution**: perform mitigation/remediation actions
  - Access to all systems



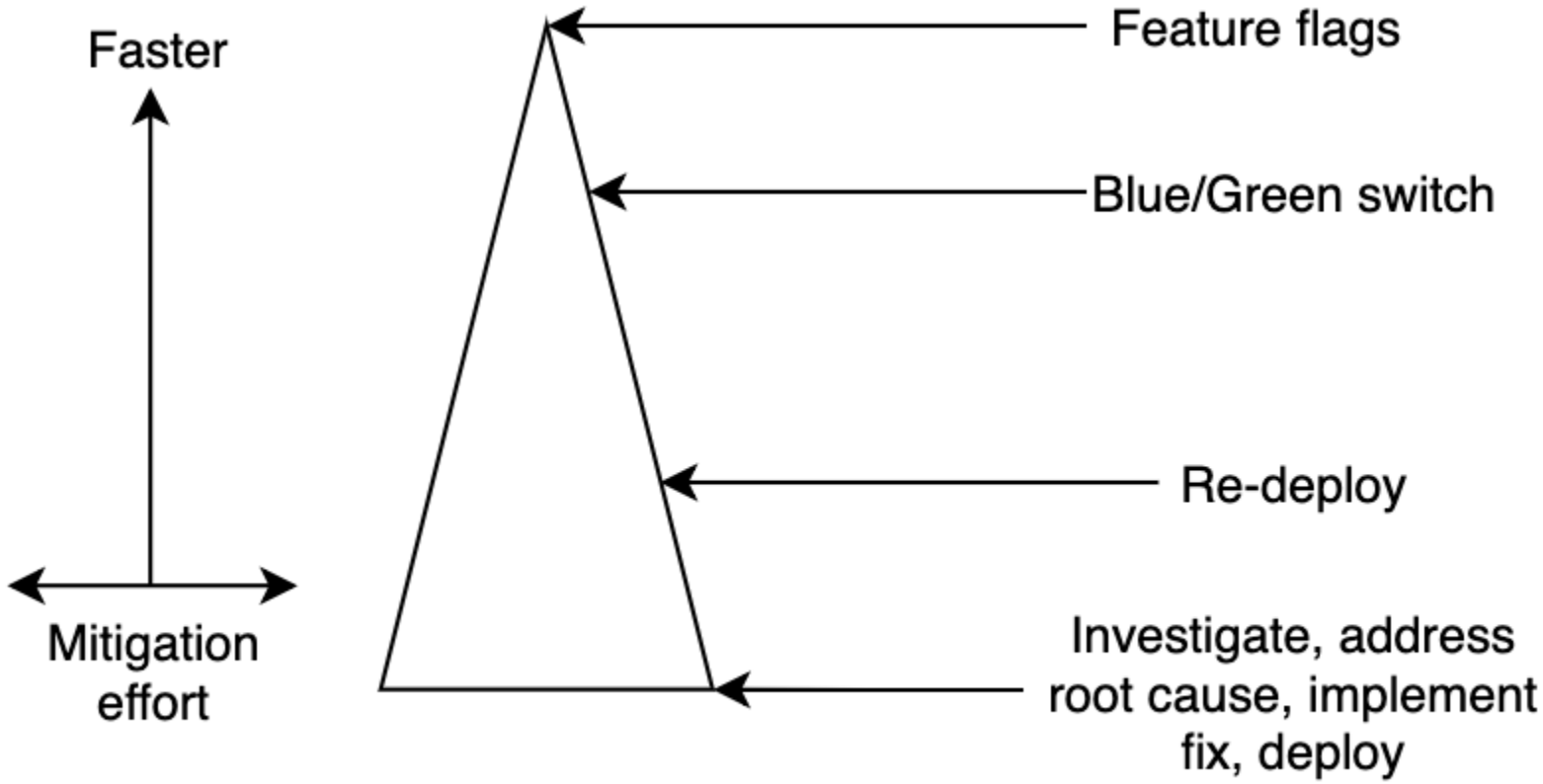


Auto-remediation with Ansible (Tower)

- APIs are key to enable automation
- Ansible Tower provides rich API for managing Ansible jobs
- Playbooks can be orchestrated in workflows and job templates

RED HAT® ANSIBLE® Tower

Options to build (auto)remediation

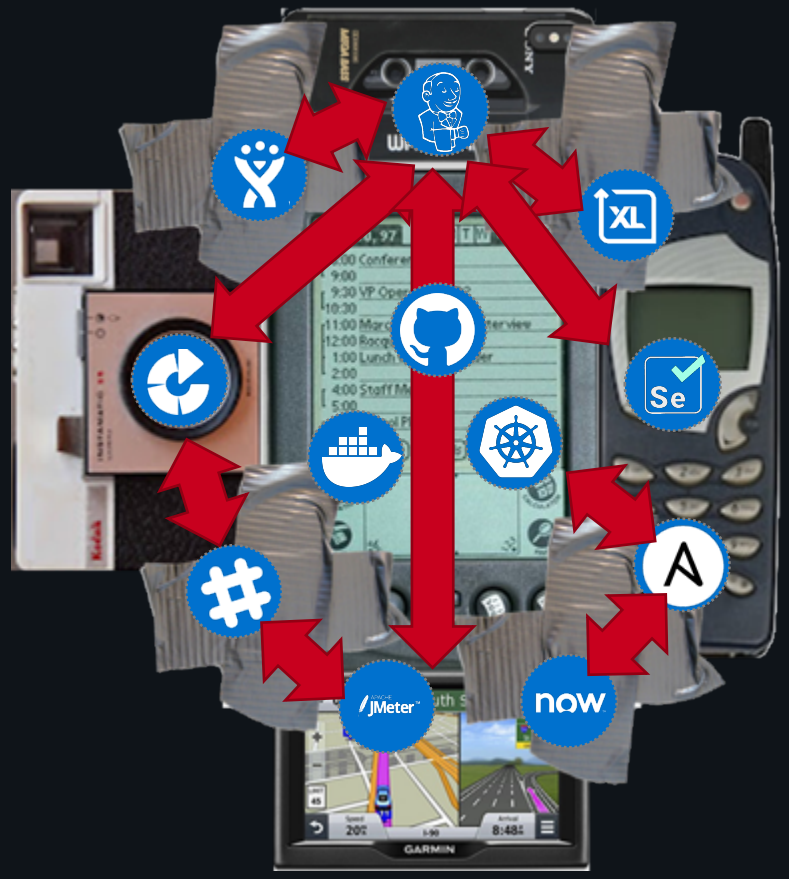


https://medium.com/@sashman90/ops-mitigation-triangle-300c81d97df6

Introducing  keptn

What we have seen organizations actually do!

- Building Custom Integrations with OpenSource & Commercial tools for
  - Deployment Pipelines
  - Testing Pipelines
  - Auto-Remediation
  - Notifications
  - Auditing



What we have seen organizations struggle with

Quote: „Pipelines seem to become our new future unmanagable legacy code!“

- Teams want to ***stick with existing tools*** to ***protect*** investement
- ***Containing*** lots of ***custom code*** for tool integration, error handling, logging, …
- ***Getting harder*** to ***maintain*** the more tools get integrated
- ***Pipelines*** becoming more ***complex*** requiring ***dedicated teams***
- ***Uncoordinated*** deployments between pipelines resulting in ***unstable*** Environments

keptn from 10000ft

Core capabilities


Automated multistage unbreakable delivery pipelines


Self-healing blue/green deployments


Event-driven runbook automation

Design Principles


GitOps-based collaboration


Operator patterns for all logic components

Monitoring and operations as code


Built on and for Kubernetes


Event-driven and serverless

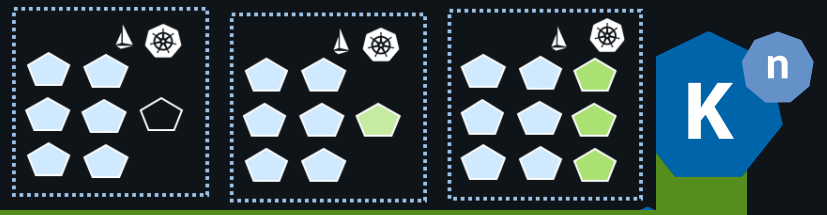

Pluggable tooling

keptn – conceptual architecture

Core

keptn Autonomous Cloud Control Plane

Environment Definition (shipyard file)



Services

GitOps

Container Registry

Continuous Delivery

AIOps

Operations Automation

Test Automation

ChatOps

Data Provider

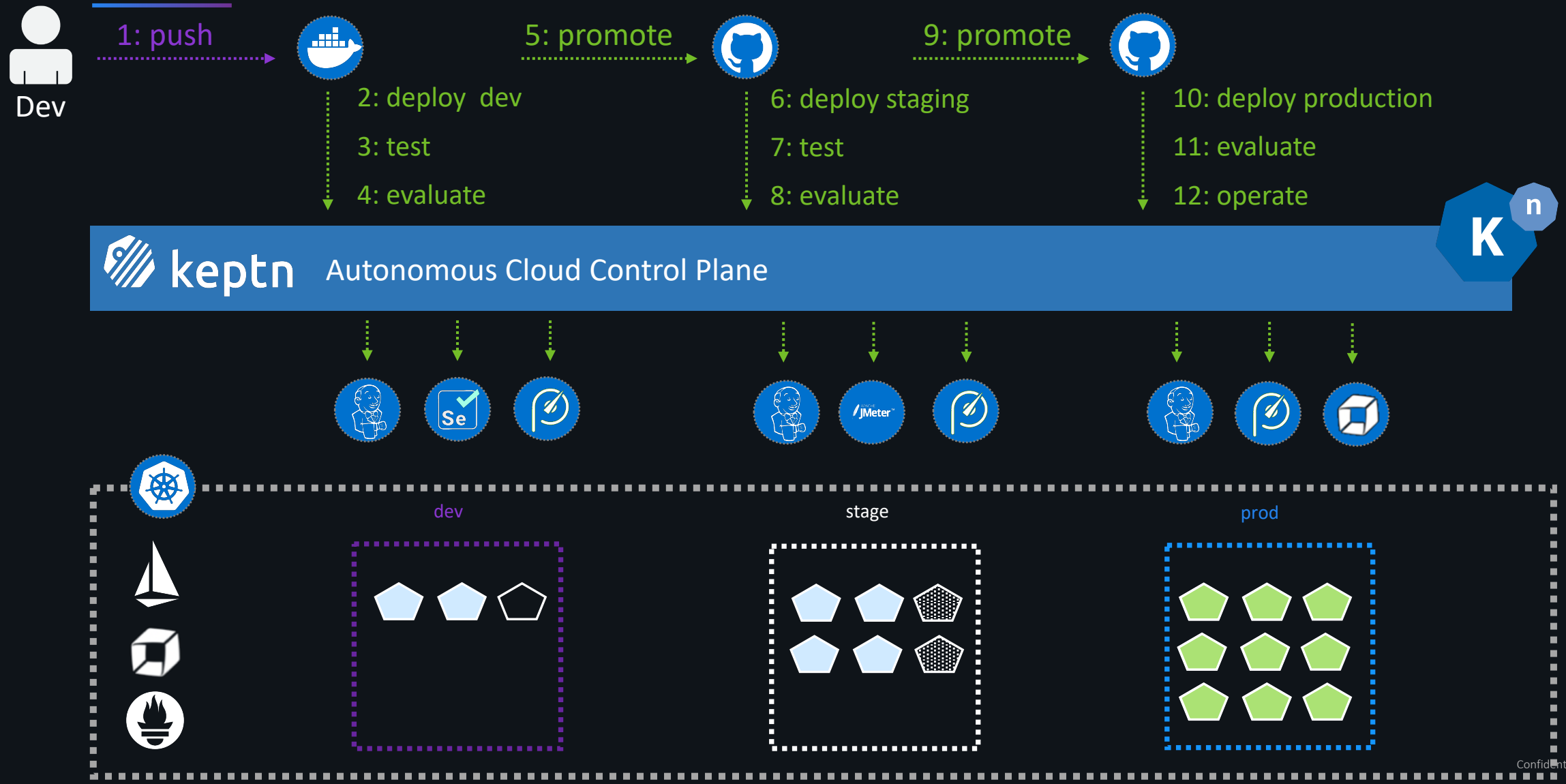
Platform

Dev Namespace

Staging Namespace

Production Namespace

keptn – Shipping through Unbreakable Continuous Delivery Pipelines



Demo Time

Key takeaways

- Everything-as-code
  - Performance signature as code
  - Auto-remediation as code
- Increase resilience by automated quality checks in pipelines
- keptn as open source tool for implementing unbreakable pipelines
  - https://keptn.sh
  - https://github.com/keptn

Even more talks!

- **Building autonomous operations for Kubernetes with keptn**
  Tuesday May 7th 2.30-3.15pm
  Speaker: Alois Reitbauer
- **Dynatrace Operator**
  Wednesday May 8th 4.20-4.40pm + Thursday May 9th 11.30-11.50am
  Speaker: Markus Heimbach
- **Unifying OpenShift cluster, container and application monitoring**
  Wednesday May 8th 3.30-3.50pm
  Speaker: Asad Ali
- **Unbreakable DevOps on Red Hat OpenShift**
  Thursday May 9th 1-1:45pm
  Speakers: Peter Hack & Florian Bacher

Thank you !