AWS re:Invent

NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

COP302

Best practices for centralized operations management on AWS

Dave Cliffe (he/him)
AWS Safety Engineering
AWS

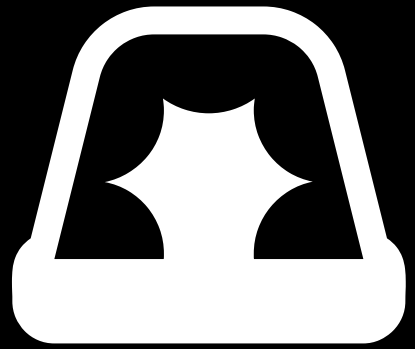
Steve Rice (he/him)
AWS AppConfig
AWS

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Warning: Flashing lights/graphics will be used during this session

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FIRE DRILL!

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Agenda

Why centralize?

Service and building the foundation for cloud operations

- Incident and compliance management

Enabling application teams to move fast, safely

- Application management

Inside AWS

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Force multiply! 1+1 = 3

Help teams move faster, safely

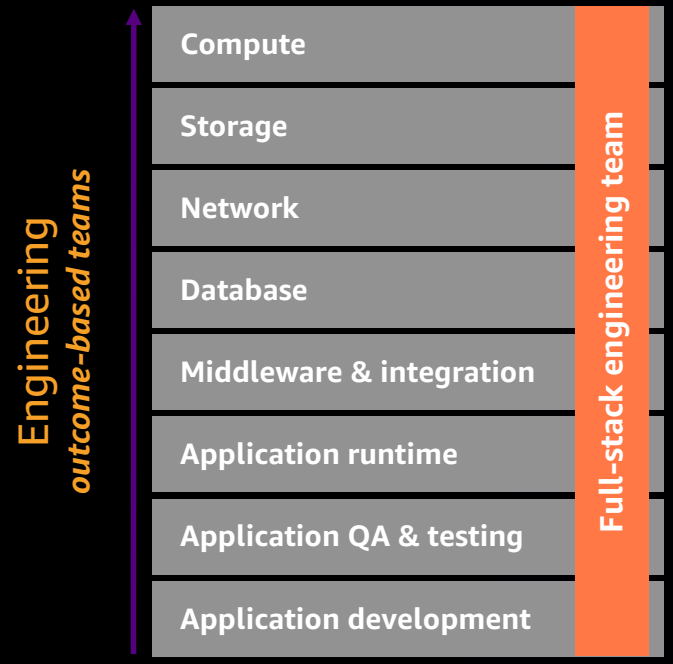
What does AWS centralize? An example

Two-pizza teams

- Team of “builders”
- Focus on customer outcomes
- E2E ownership, including **operations**

Response to major impact

- Owns the detection of aggregate impact
- Takes ownership of large, messy incidents
- Creates tools to help teams run incidents, understand availability, etc.



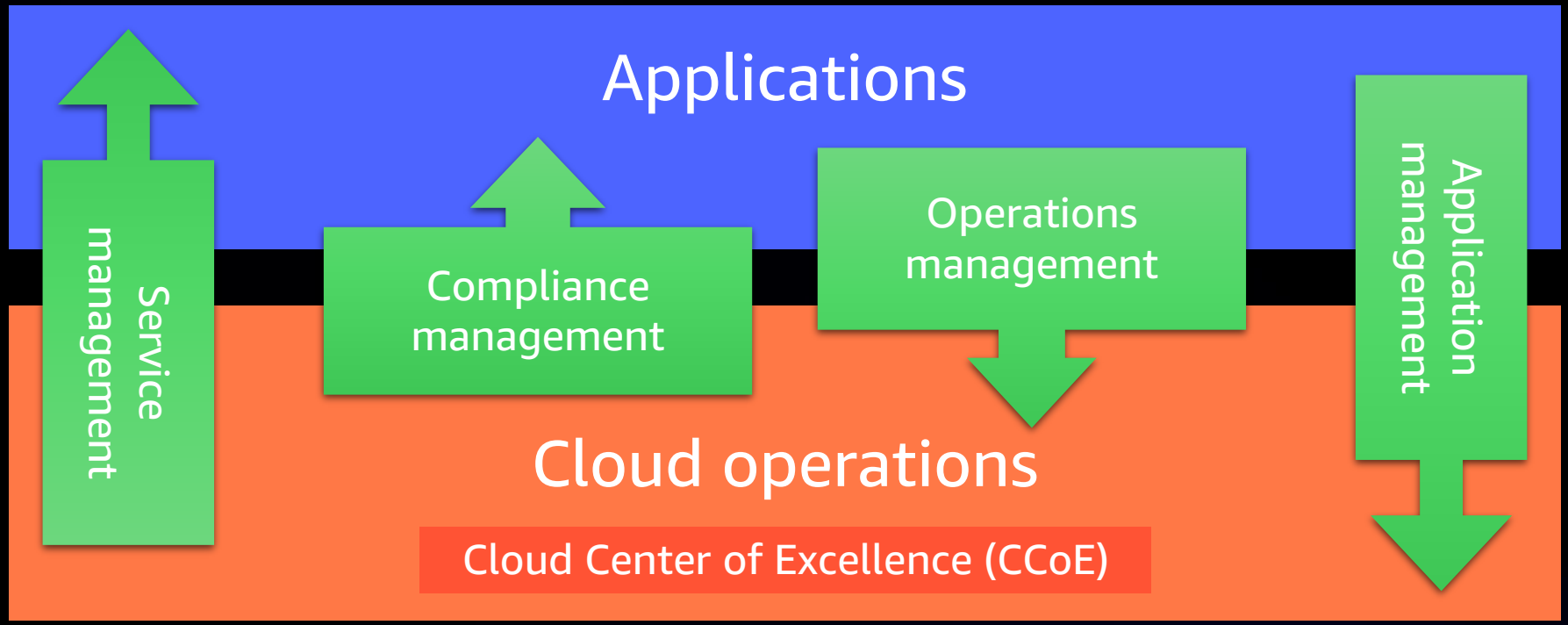
- Self definition of KPIs, self-managed environment
- First contact for alarms
- Safe operations vs. manual/ad hoc
- Use standard services like Amazon CloudWatch, AWS CloudTrail & more



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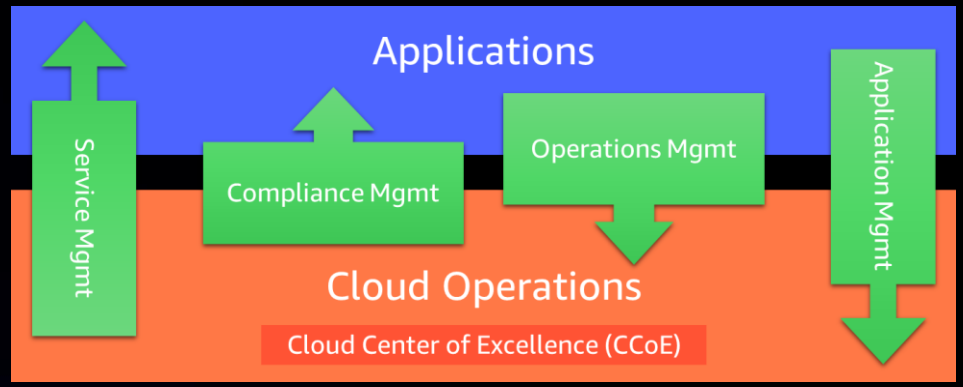
Centralized operations management



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Centralized operations management on AWS

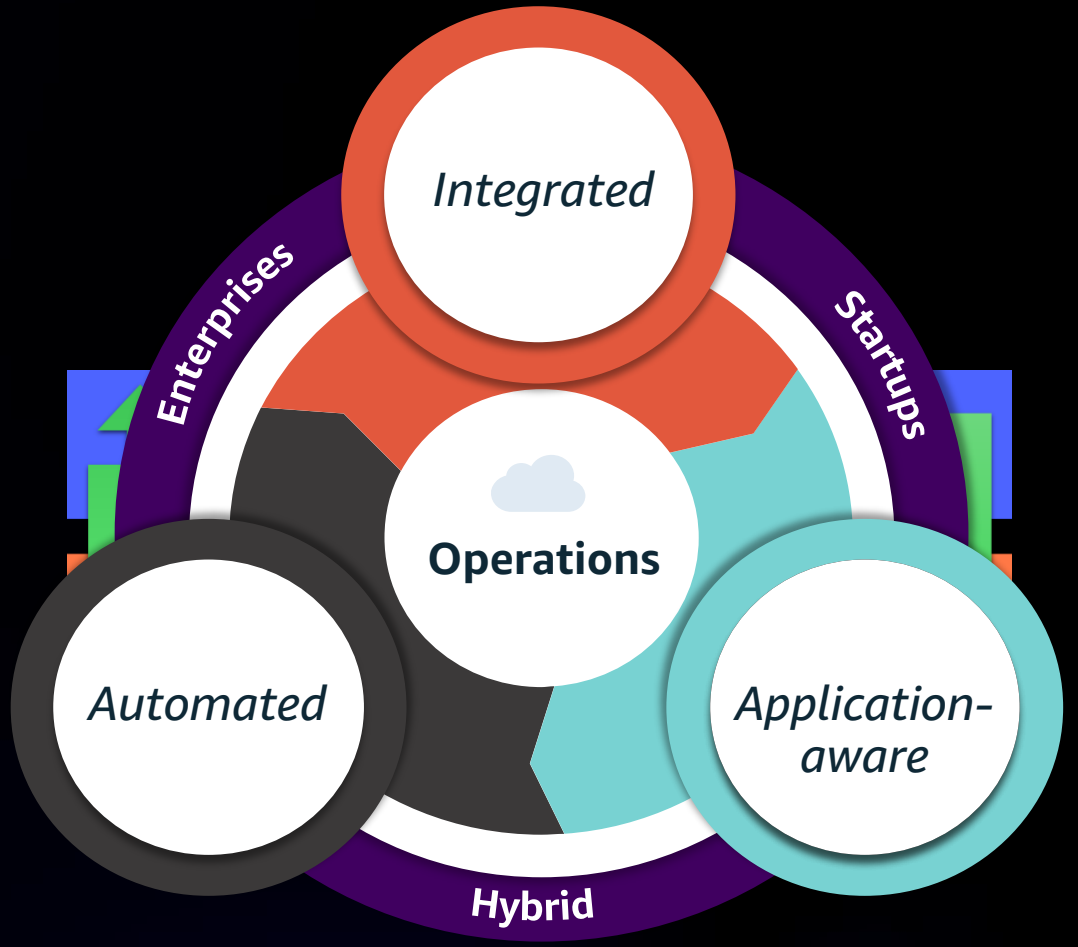
- Enable visibility
- Proactively automate
- Remediate centrally



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Centralized operations management on AWS

- Enable visibility
- Proactively automate
- Remediate centrally



AWS Systems Manager

Agility, scale, and control across all environments

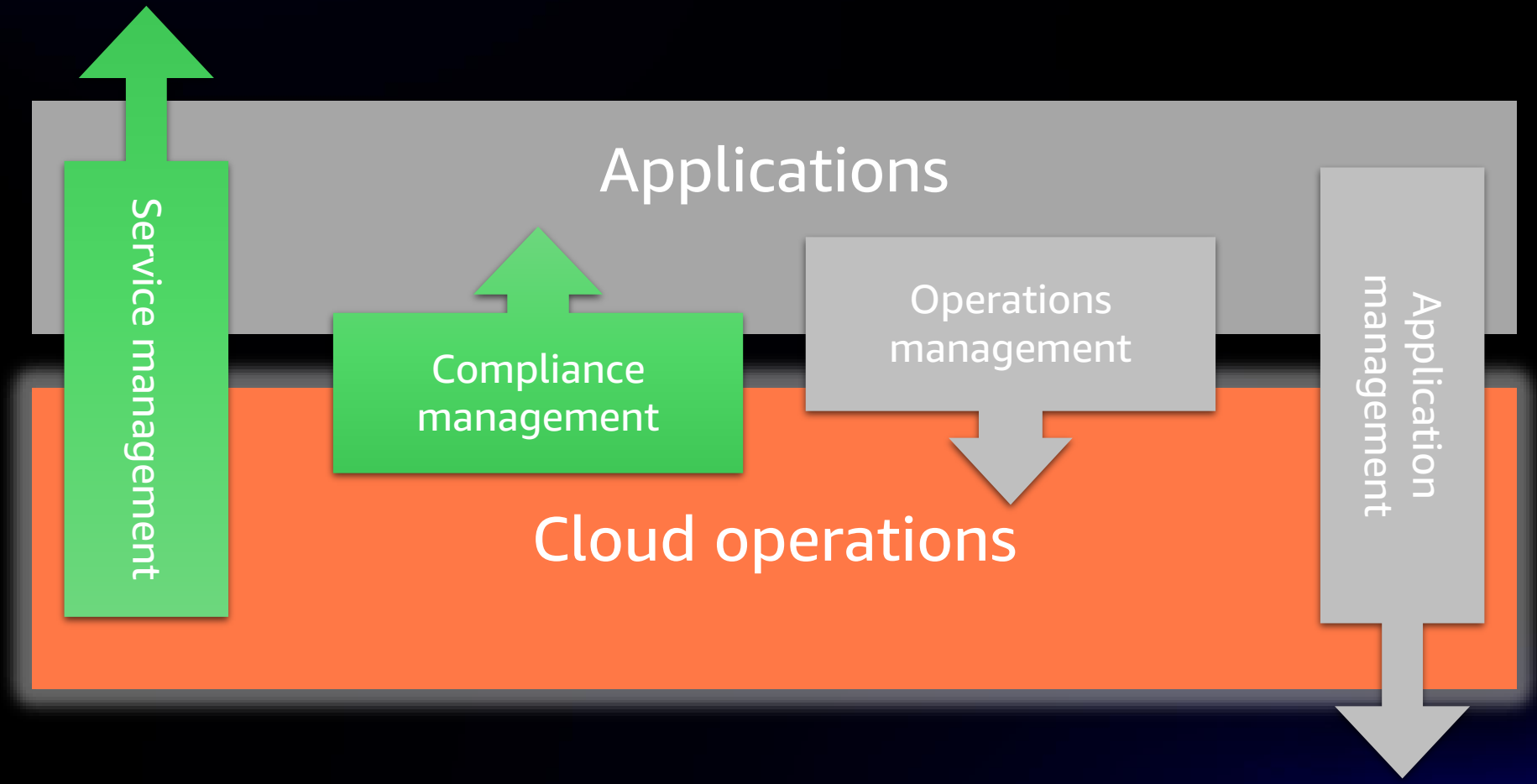
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Building the foundation for cloud operations

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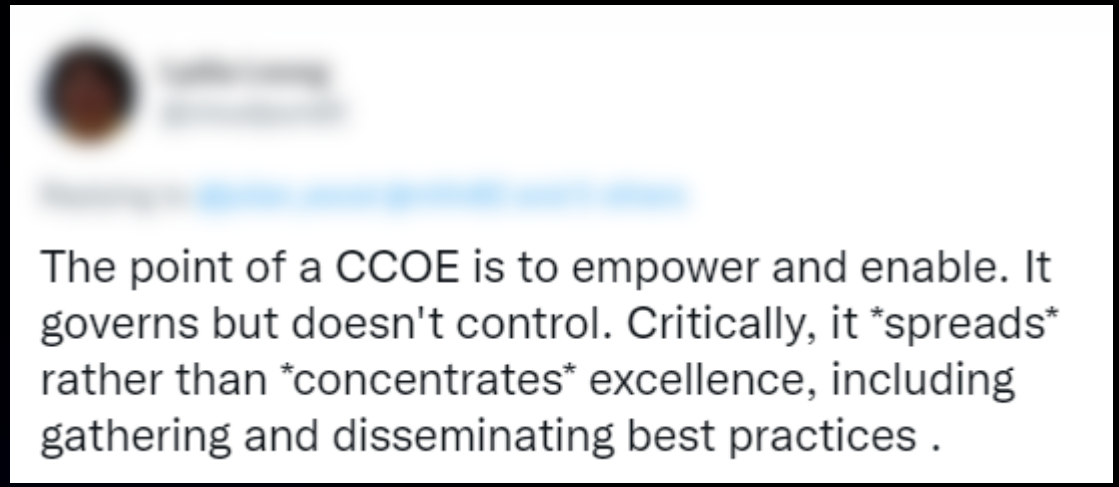
Cloud operations teams



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I’m a cloud operations team – What do I do?

1. Work backward from your customer: the application teams
    - What are they building?
    - How do they operate?
2. Understand best practices and trade-offs
3. Build repeatable mechanisms – use tools that connect you and your customers



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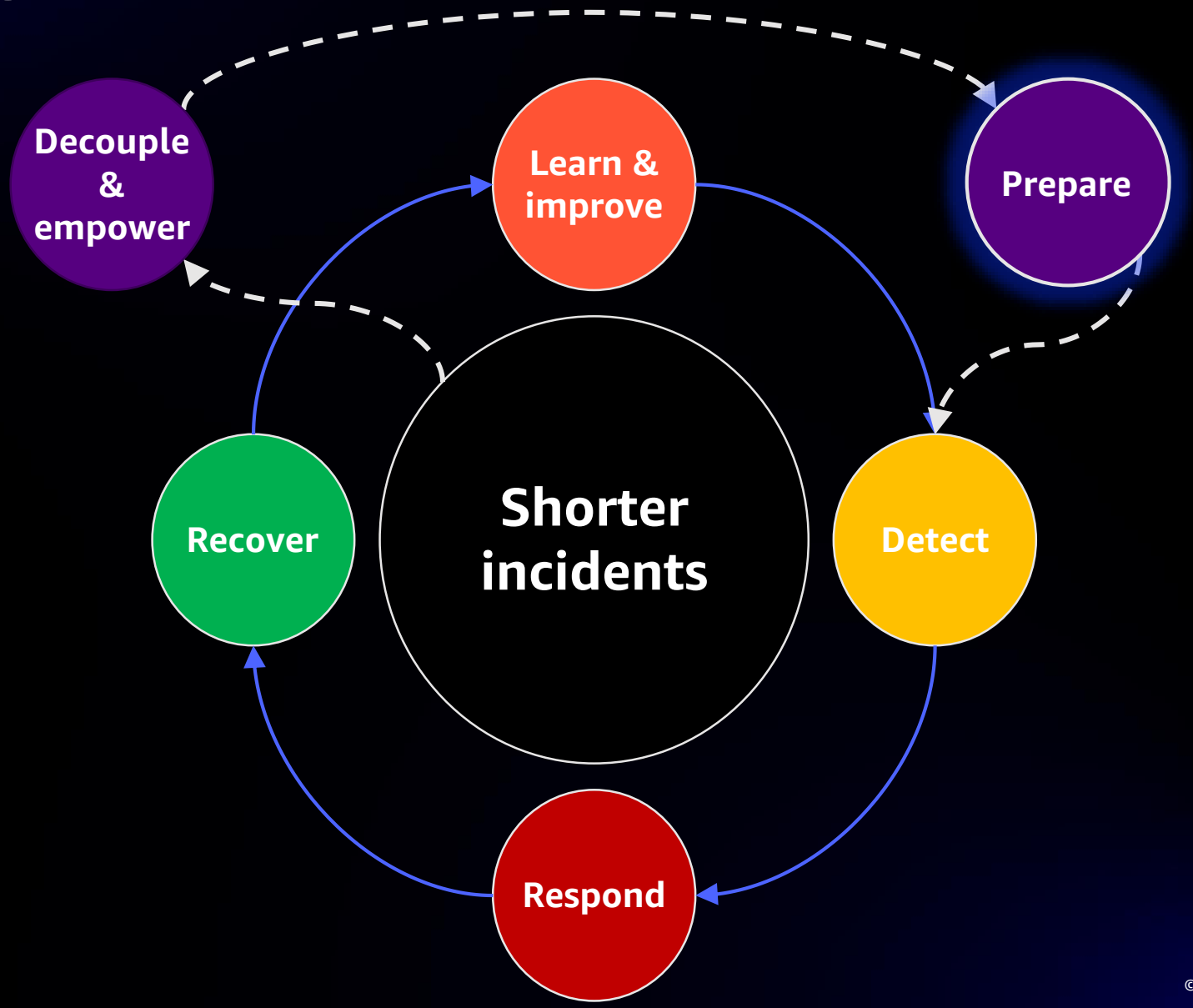
Incident management

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Enabling faster response to incidents



Application owners



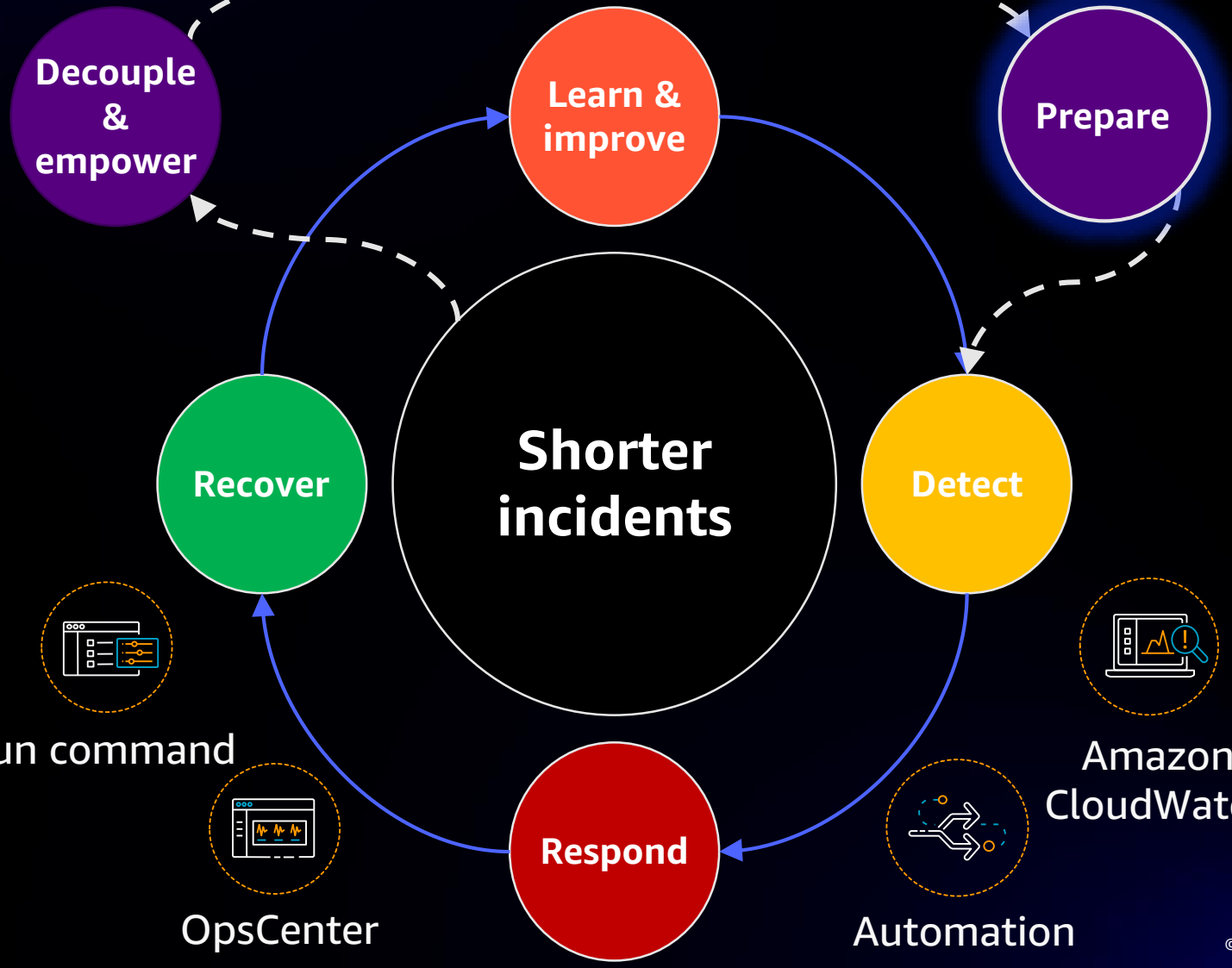
Cloud operations

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Incident management with AWS



Application owners



Run command

OpsCenter

Automation

Amazon CloudWatch



Cloud operations

AWS Systems Manager Incident Manager

New in 2021!

Built for:

- Preparation
- Automation
- Learning

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Prepare for incidents

1. Detect
   - What could go wrong?
   - How would I know?
2. Respond & recover
   - Who needs to be engaged?
   - What do they need to do to diagnose and mitigate?
     - Procedures and scripts
     - Where do we collaborate?
3. Learn & improve
   - How did we respond?
   - What actions will we take?



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Compliance management

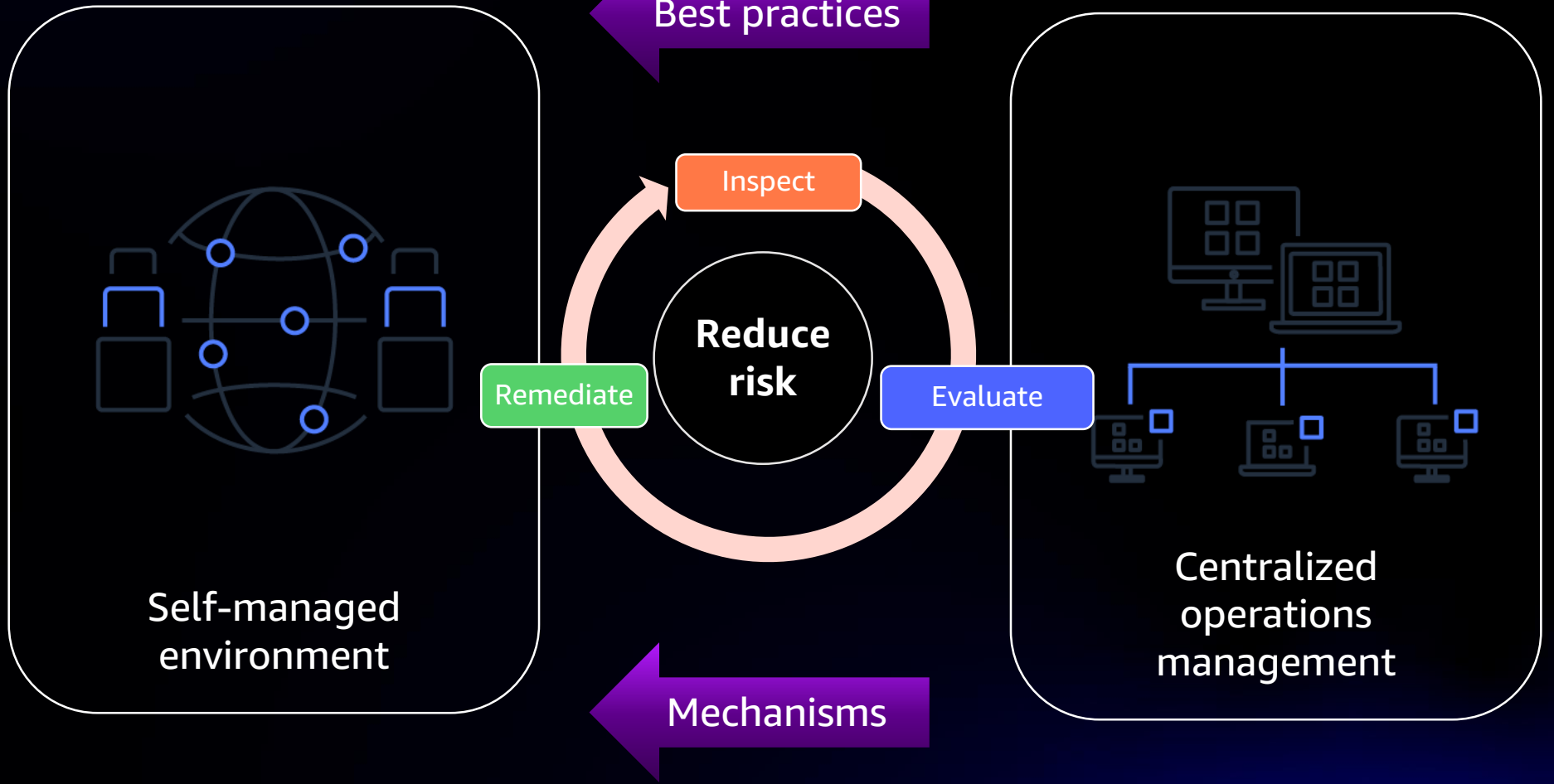
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Enabling risk management for compliance





Application
owners



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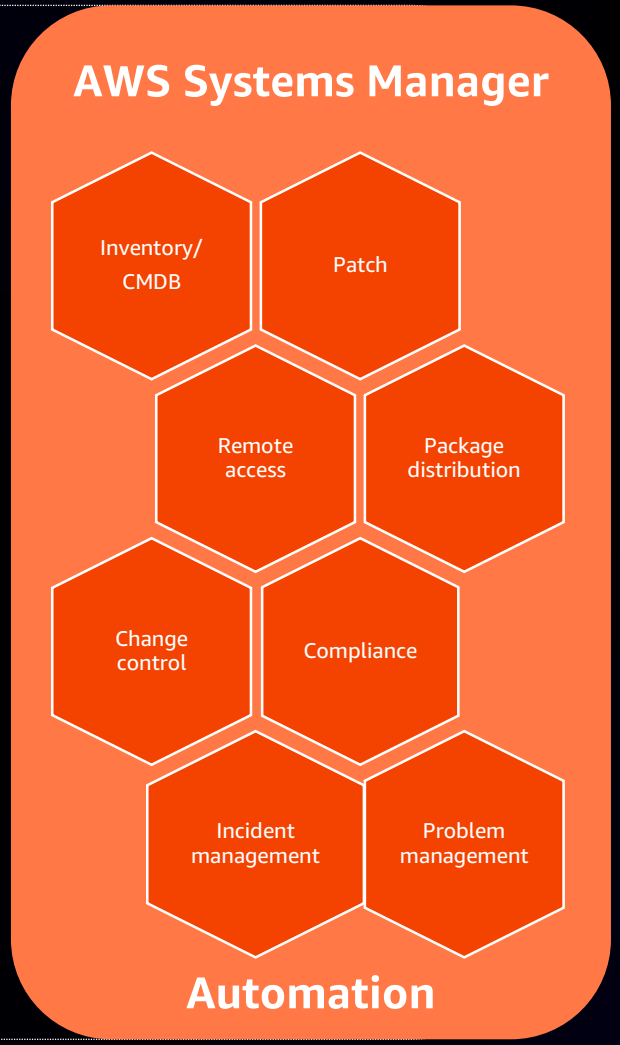
Compliance management with AWS

AWS Config
Configuration history

Amazon EventBridge
Notification and remediation

AWS CloudTrail
Audited actions

AWS IAM
RBAC





Quick setup



Explorer



OpsCenter



Patch Manager



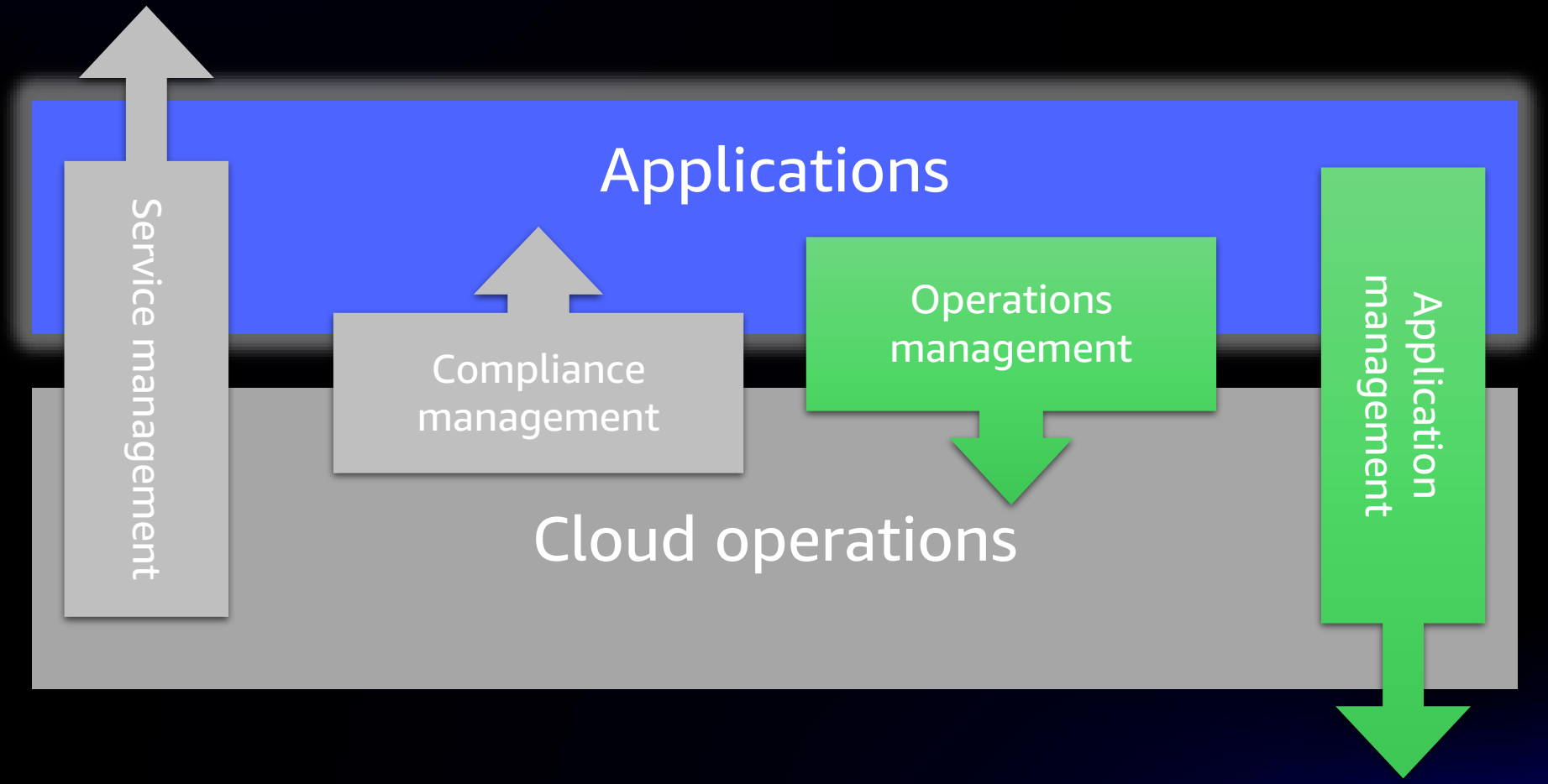
Change Manager

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Application management

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Application teams



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I’m an application team – What do I do?

- Remember that ”launching” is the start of a project, not the end
- Work backward from your customer: ops team is your customer

1. Review operational readiness, stress test the system
2. Predict the future, operationally
3. Use continuous configuration to manage changes



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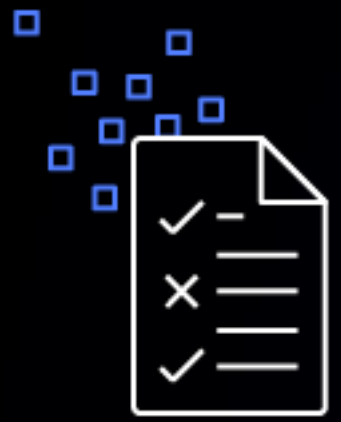
Operational readiness review (ORR)

ORR = Catalyst for centralized ops

Conducted once per year, and before major launches

Reflects your org values

Forces connection between app and ops teams



Sample ORR items

- ✓ Are you gradually rolling out your changes?
- ✓ What metrics trigger a rollback?
- ✓ If you needed to scale up 50%, could you?
- ✓ If your resources are exhausted, does your service continue to operate?

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Predicting the future, operationally

wcgw (what could go wrong?)

Add operational levers and switches using runtime config

App teams should gather requirements from foundation teams about what is needed to operate the app

Practice, practice, practice . . . and game days





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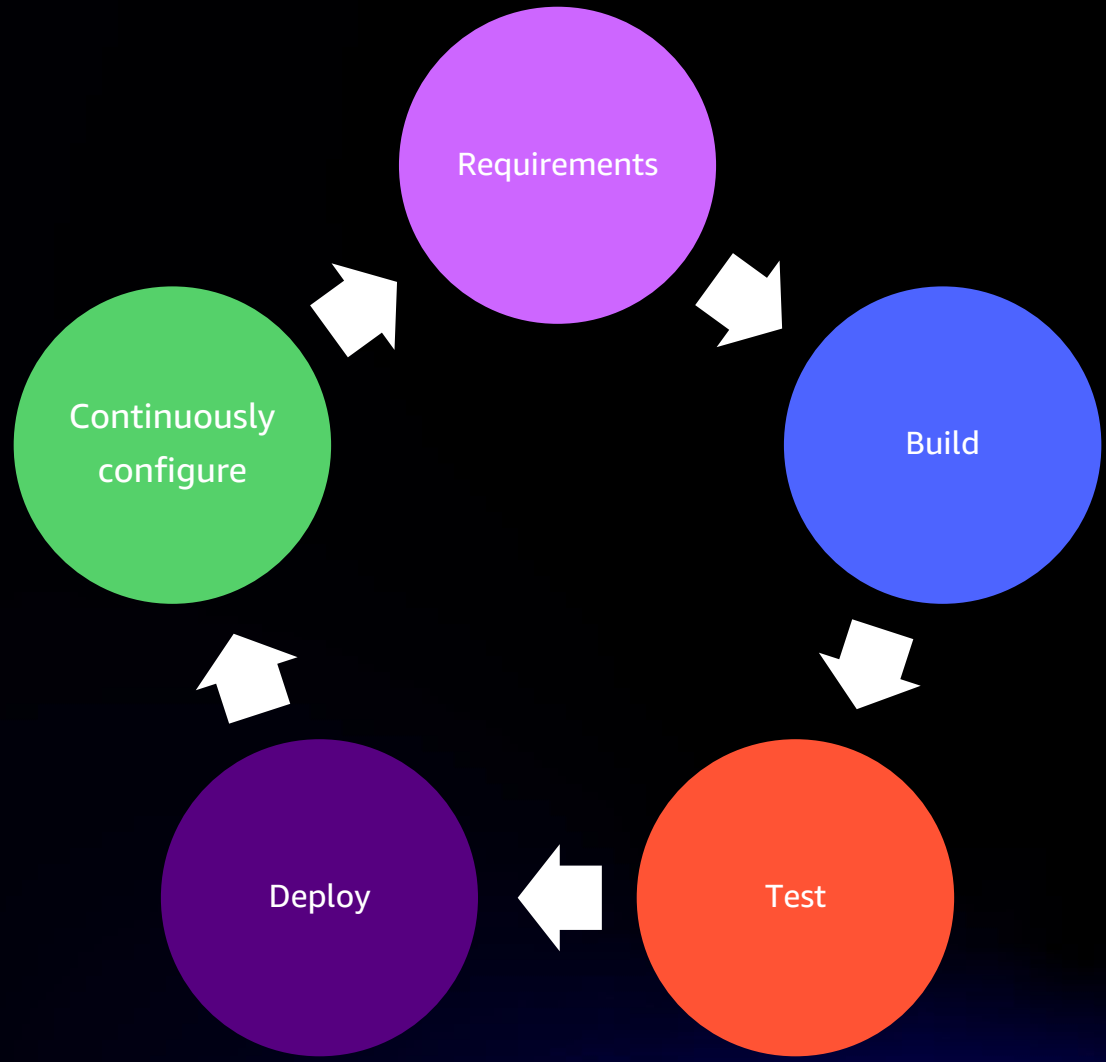
CI/CD is great, but does not go far enough

An engineer's job does not end at launch

Add dynamic configuration ahead of time to allow fast and safe updates

Use continuous configuration to change the software behavior on production

#CI/CD/CC



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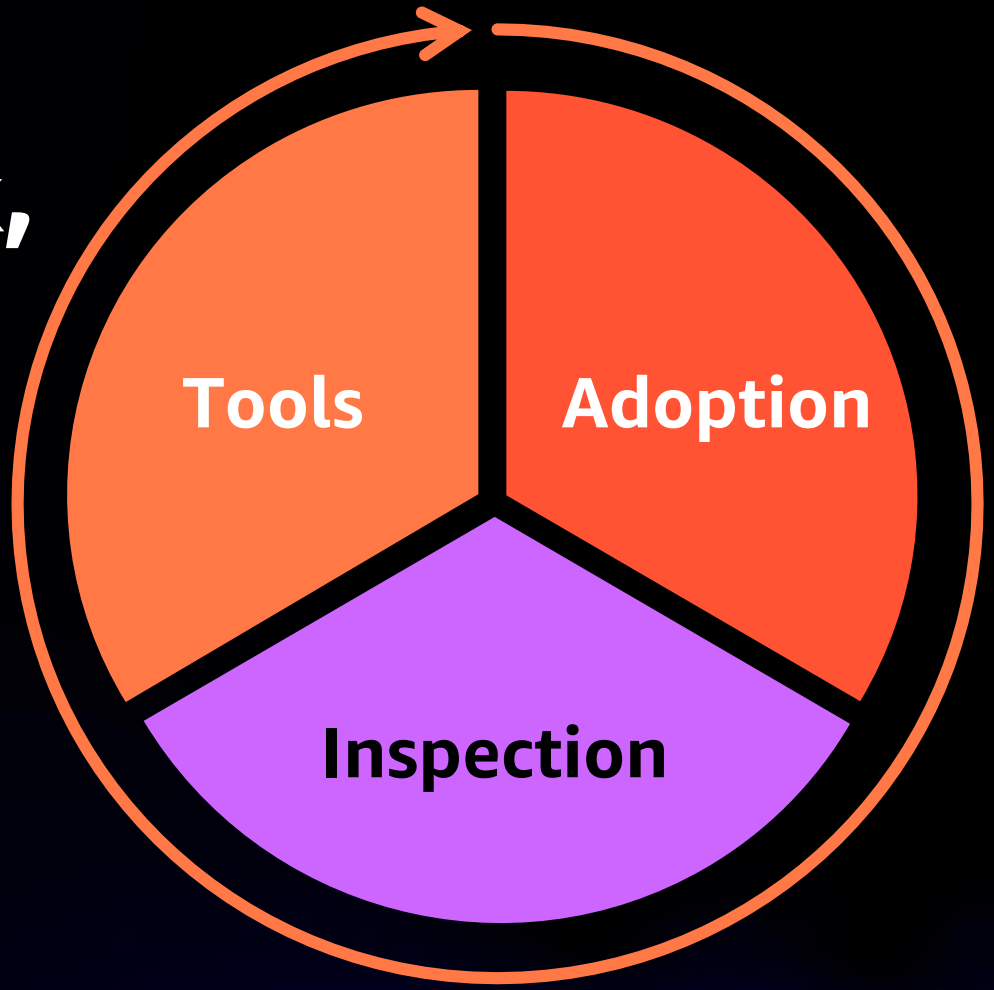
Other AWS “isms” to consider adopting

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"Good intentions never work, you need good mechanisms to make anything happen."

Jeff Bezos

Founder and Executive Chair, Amazon



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Spin the Ops Wheel



Keeps all teams prepared

Shares operational wins and learnings

Scales operational excellence

Available as open source

github.com/aws/aws-ops-wheel

Photo of original AWS Ops Wheel in Seattle © 2020 Oren Nachman. Used with permission.

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Sound the alarm to raise awareness



Use visual cues to drive immediacy

Raise visibility where people are – in ticketing, chat systems, etc.

. . . THIS IS NOT A DRILL!

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Key takeaways

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Key takeaways

- Work backward from your customer – no matter what layer you are
- Use AWS Systems Manager to reinforce your best practices
- Communication between layers is key, and your tools should help
- Prioritize operational excellence – start small if you have to

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Related sessions

Breakout sessions

- COP201 – Gain enterprise visibility with AWS Cloud operation dashboards
- COP206 – Observability the open-source way

Chalk talks

- COP304 – Application management best practices on AWS
- COP306 – Observability best practices on AWS
- COP315 – Observability on a single platform on AWS
- COP317 – Governance and application management on AWS
- COP318 – Best practices for effective application management on AWS

Workshops

- COP307 – Observability best practices for modern & traditional applications
- COP308 – Cloud operations on AWS

Builders' sessions

- COP320 – Application management on AWS

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Thank you!

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