# Cloudy with a Chance of Chaos

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Chaos and Resilience Engineering at Vanguard

# What is Chaos Engineering?

"Breaking things on purpose"

"I know it's something Netflix does, but we could never do that here!"

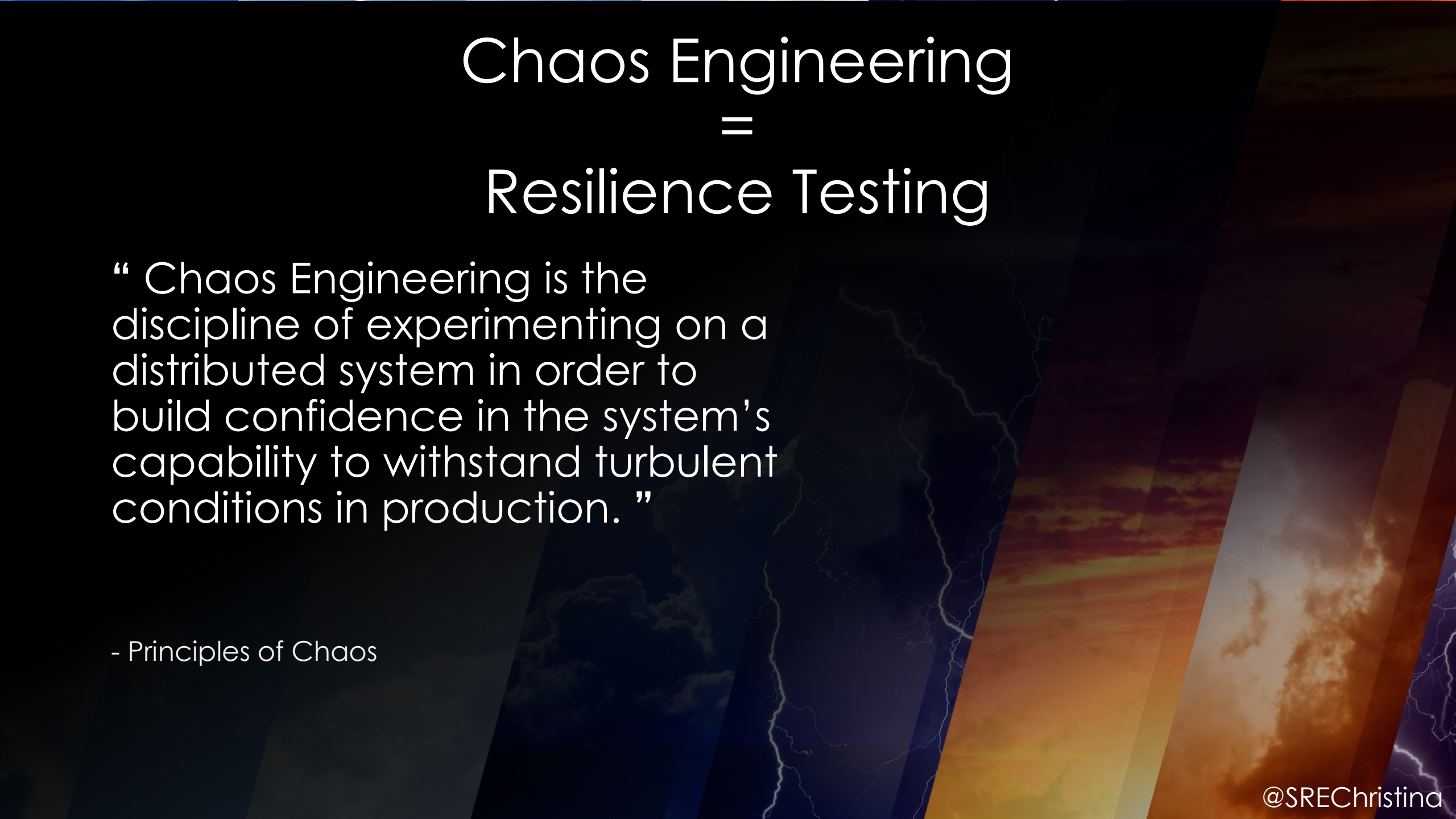
"Isn't that just a fancy name for performance testing? It's another buzzword."

"Um.. what the heck is that?"

# Chaos Engineering
# =
# Resilience Testing

“ Chaos Engineering is the discipline of experimenting on a distributed system in order to build confidence in the system’s capability to withstand turbulent conditions in production. ”

- Principles of Chaos



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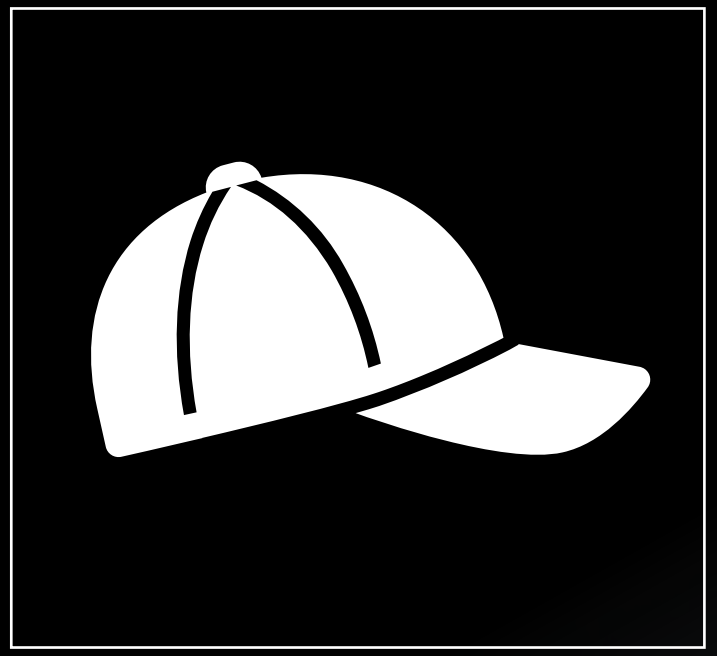

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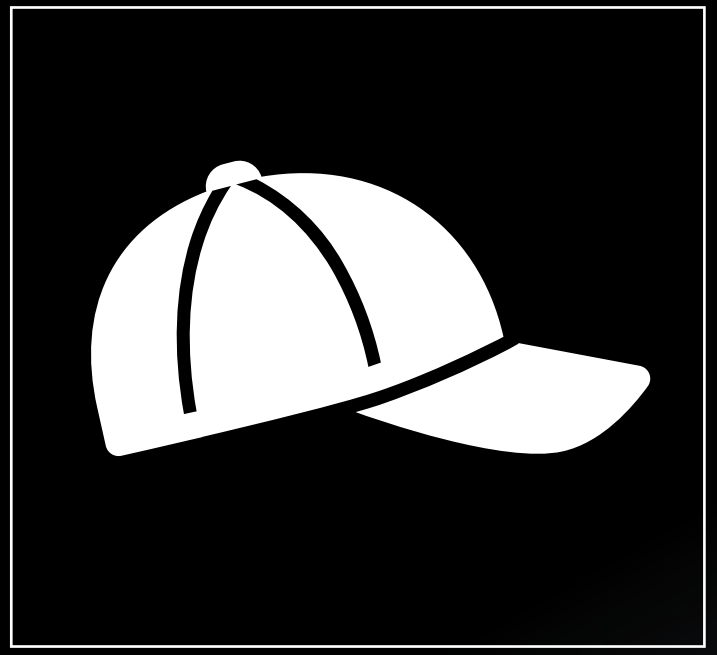

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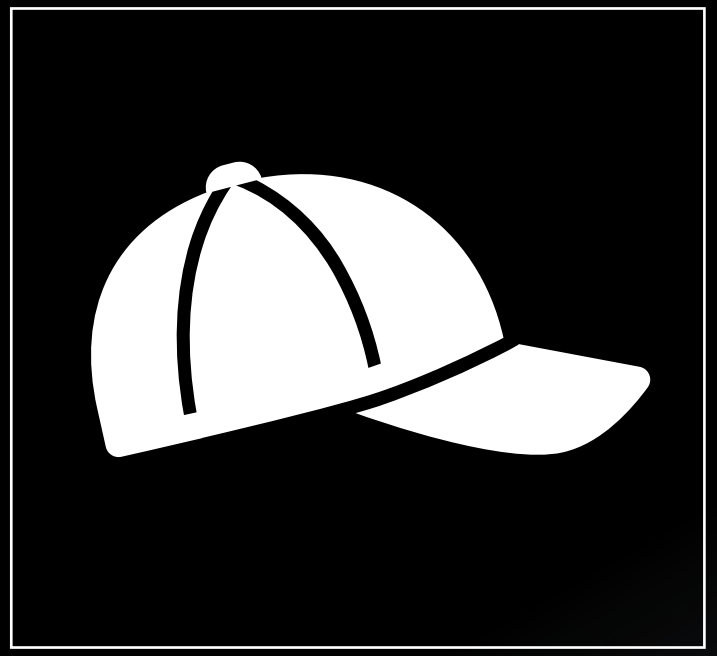

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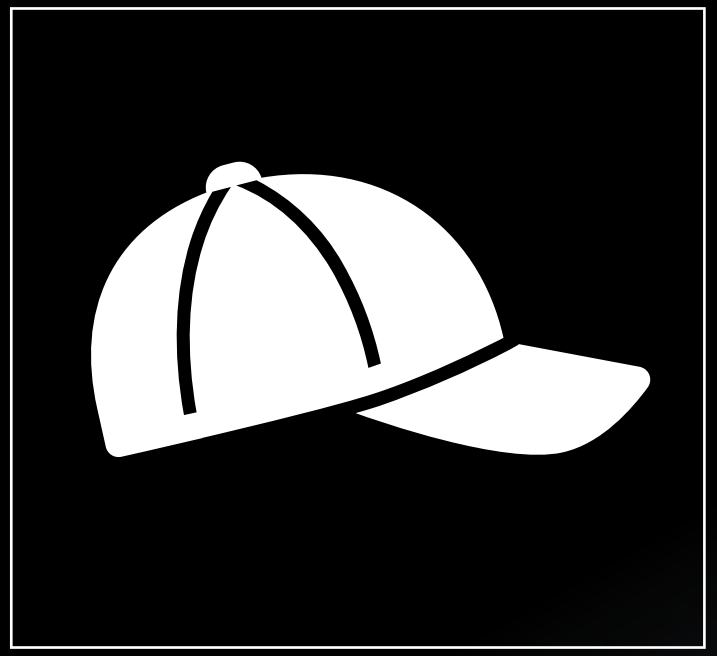

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# Why is Chaos Engineering Valuable?

Infrastructure fails all the time

Validate automated resilience mechanisms

Train incident responders and engineers on-call

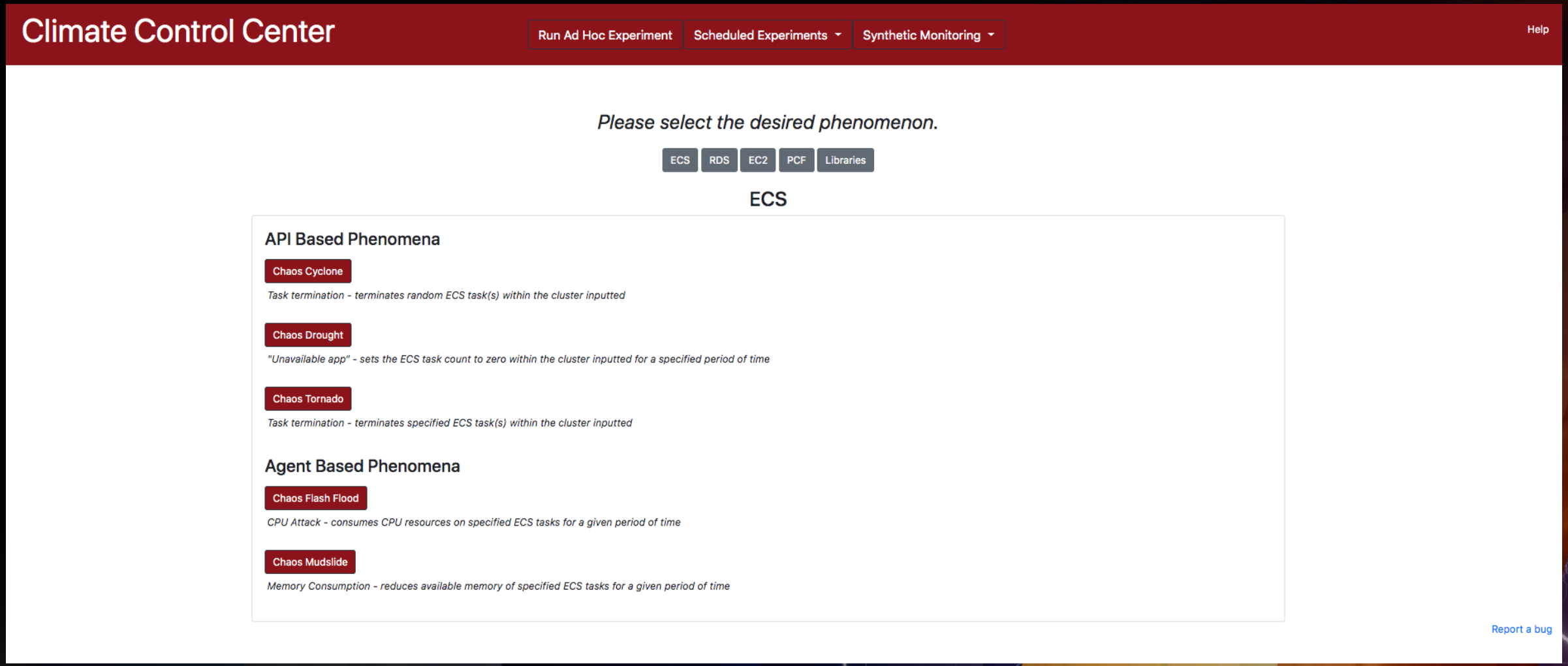
# Build vs. Buy

~~Open Source Tool~~

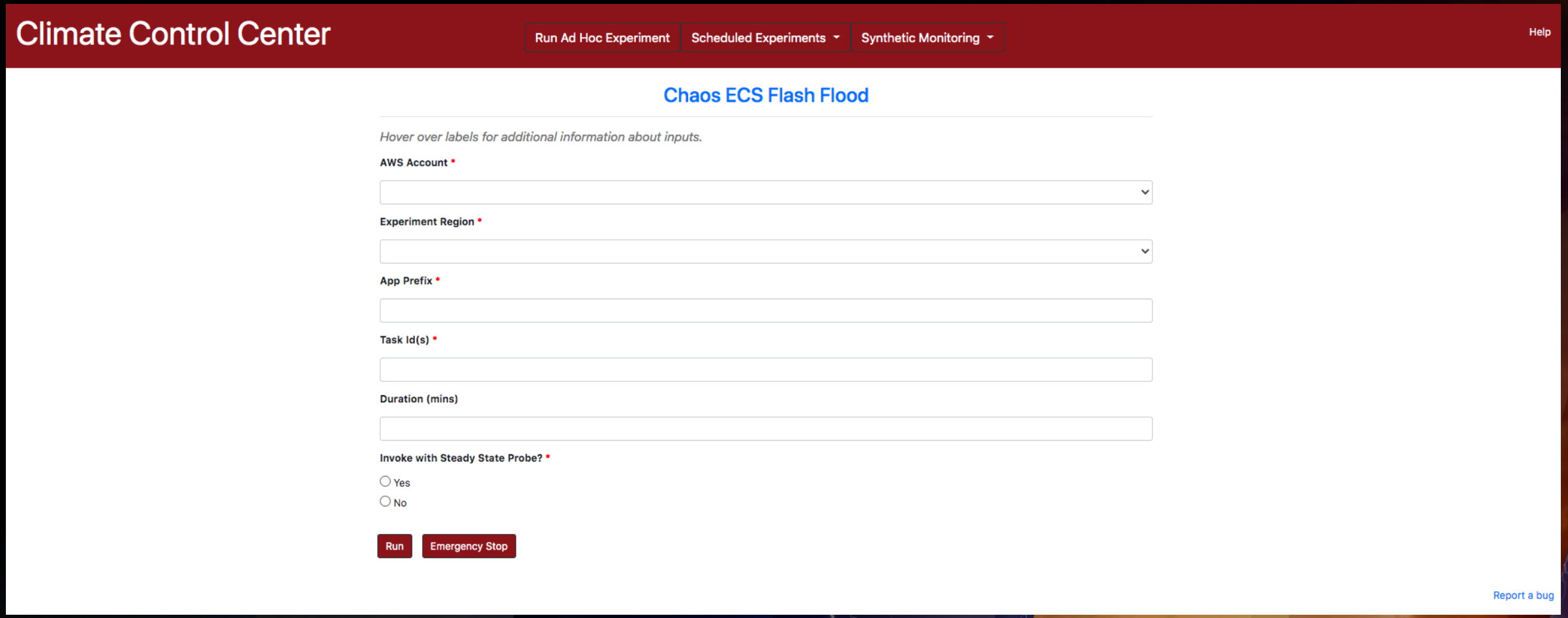
~~Vendor Product~~

Build our own lean MVP

# The Climate of Chaos



# The Climate of Chaos



# Our Guiding Principles

Serverless

Easy Adoption

Defined Guardrails

Integrated Reporting

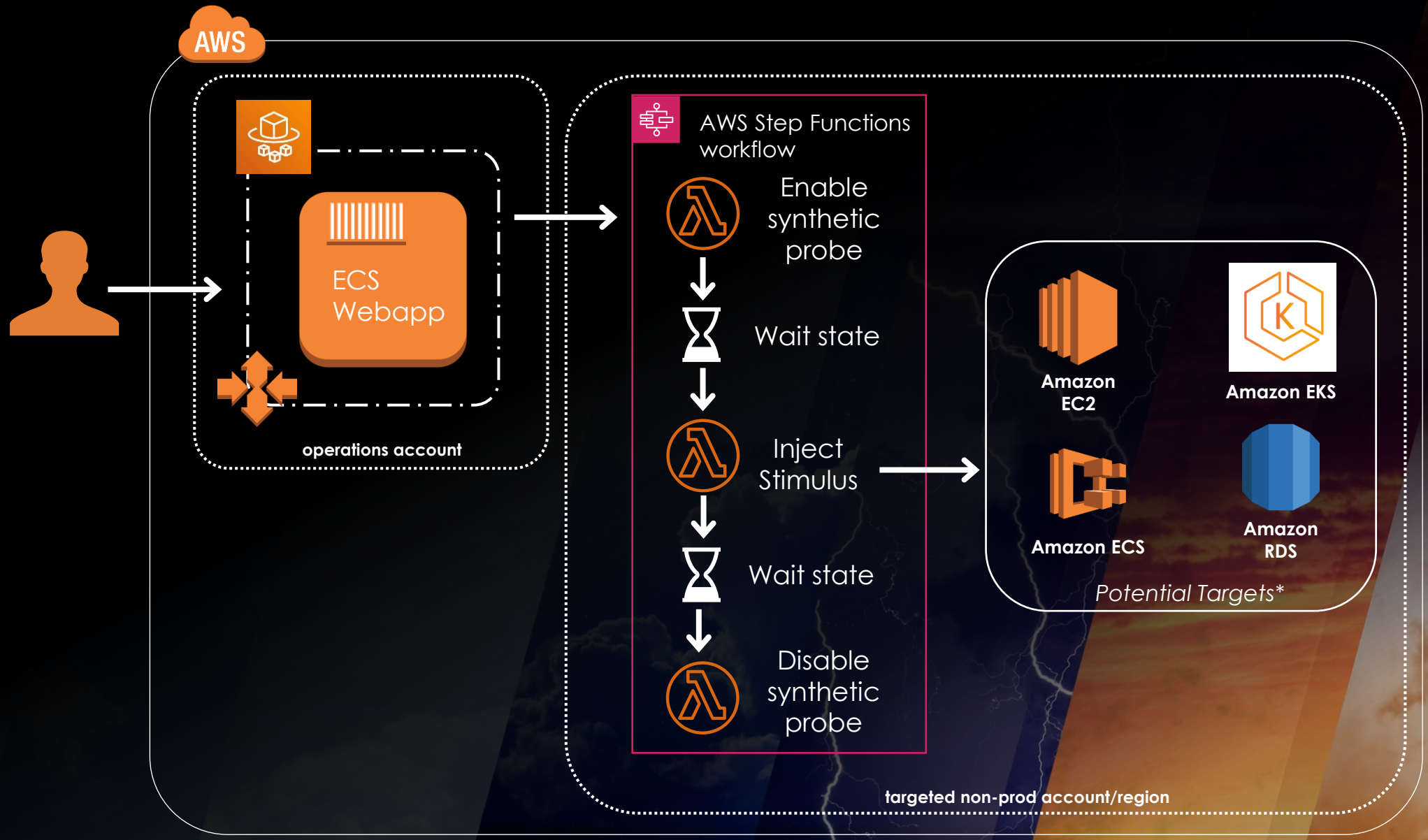
# Serverless Architecture

AWS ECS Fargate web application

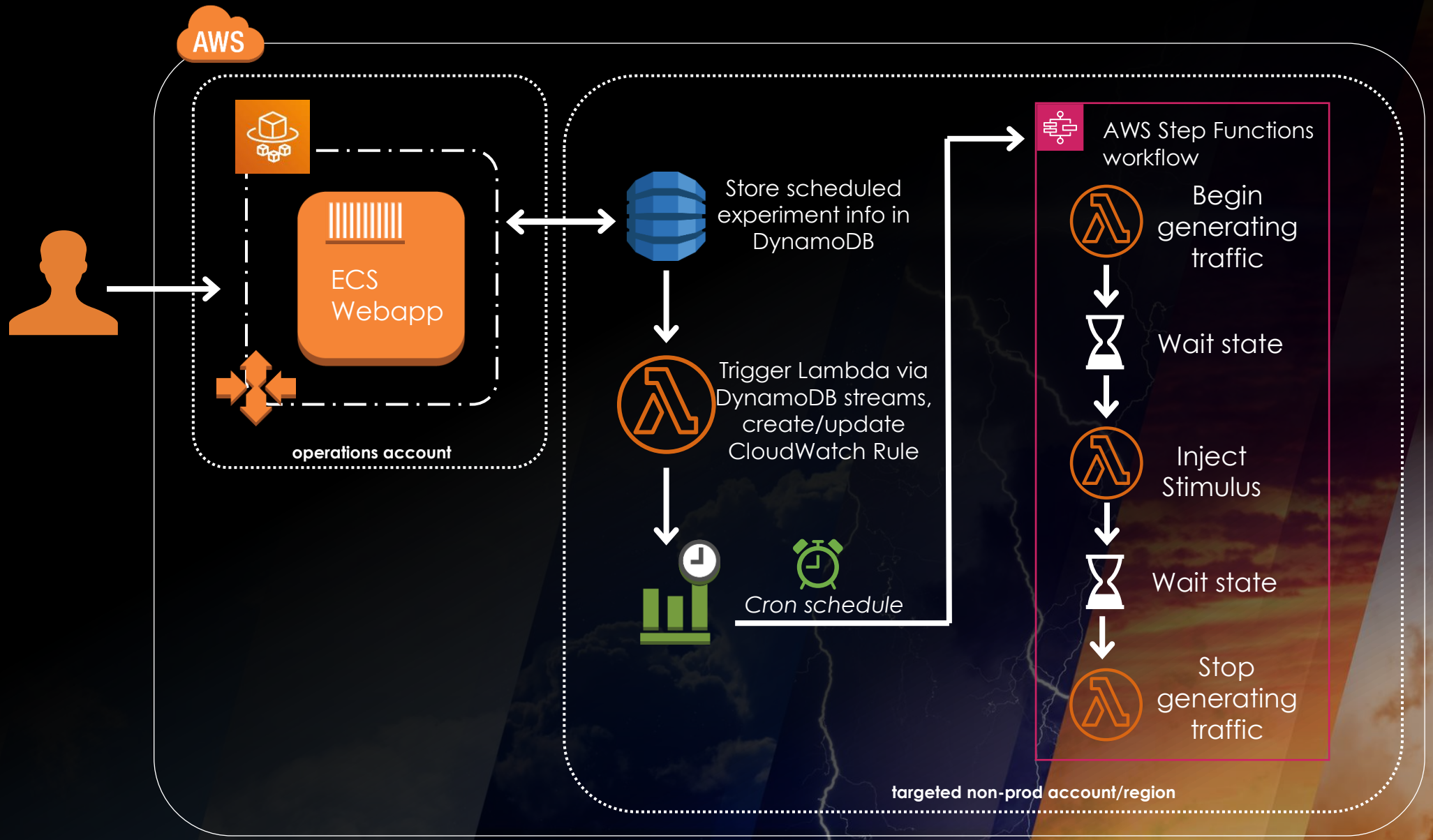
AWS Lambda with Step Functions

AWS DynamoDB

AWS CloudWatch Events




* planning to add EKS in 2021


AWS
ECS
Webapp
operations account
Store scheduled experiment info in DynamoDB
Trigger Lambda via DynamoDB streams, create/update CloudWatch Rule
Cron schedule
AWS Step Functions workflow
Begin generating traffic
Wait state
Inject Stimulus
Wait state
Stop generating traffic
targeted non-prod account/region

# Climate Control State Machine

# Easy Adoption

Self-service model

No code changes needed!

Well-documented tool

# Defined Guardrails

Minimize blast radius

Tag-based permissions

Non-production only, for now…

# Integrated Reporting

Fault injection is only useful if you can see the results!

Enable creation of “steady state probes”

Common dashboards for visualization

# What's next for our team?

Continue to develop new phenomena

Focus on coaching to encourage broader adoption

Introduce more complex tools that *do* require minor code changes

More advanced automation and scheduling

# Thank you!!

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