JUNE 2019 - KUBERNETES USER GROUP

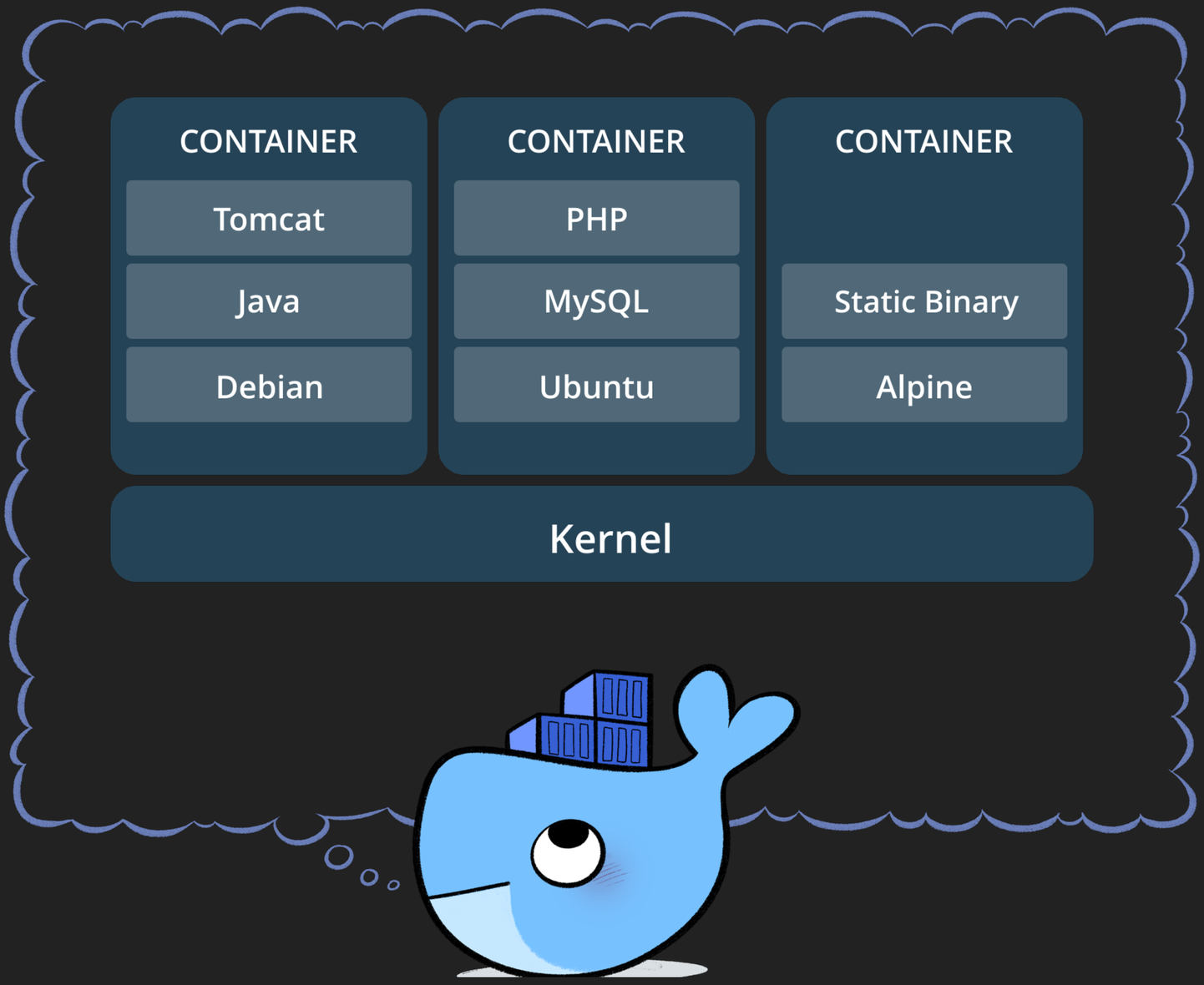
KubeCon Europe 2019

KubeCon Europe 2019 it was . . .

- 7700 attendees
- 331 talks
- 150 sponsore showcase
- 49 viewed talks
- 7 beers
- 3 days

I WANT TO
KNOW WHY!

The result from adopting container, is that application can be deployed or undeployed faster, start and stop faster, change to another “image” faster, process and do many things faster.



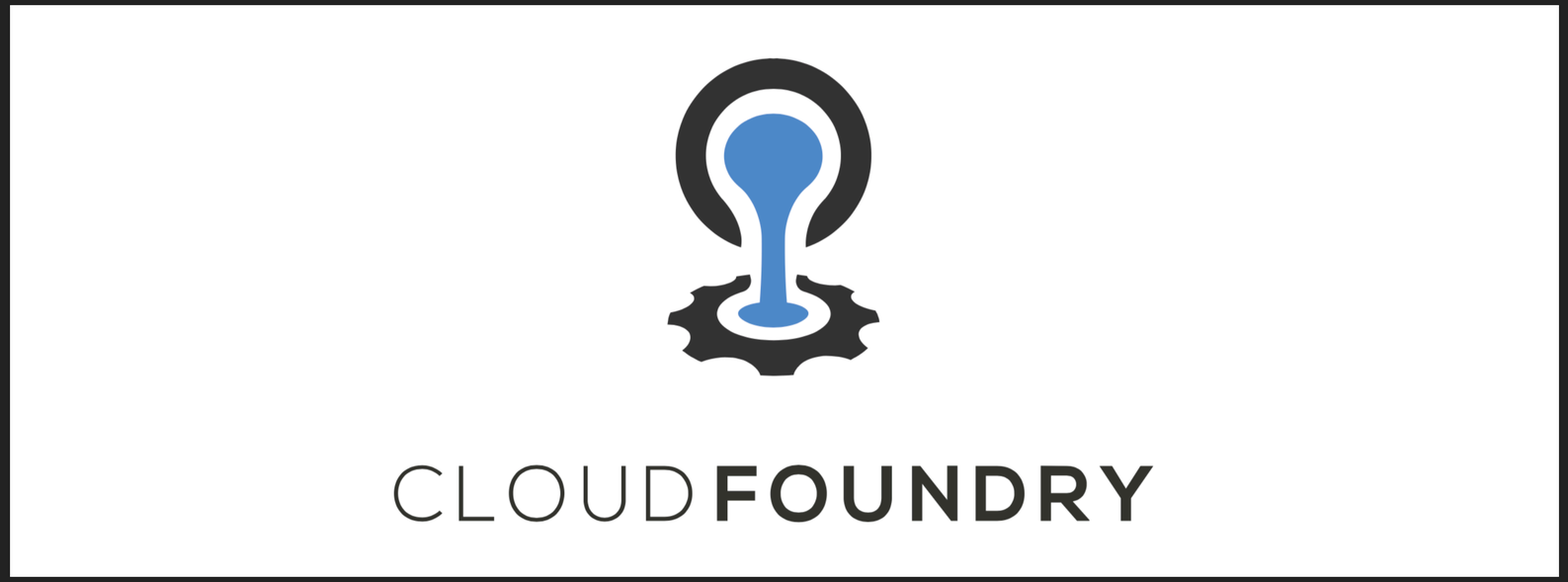
Alibaba Sigma

Amazon Apollo

Apache Mesos

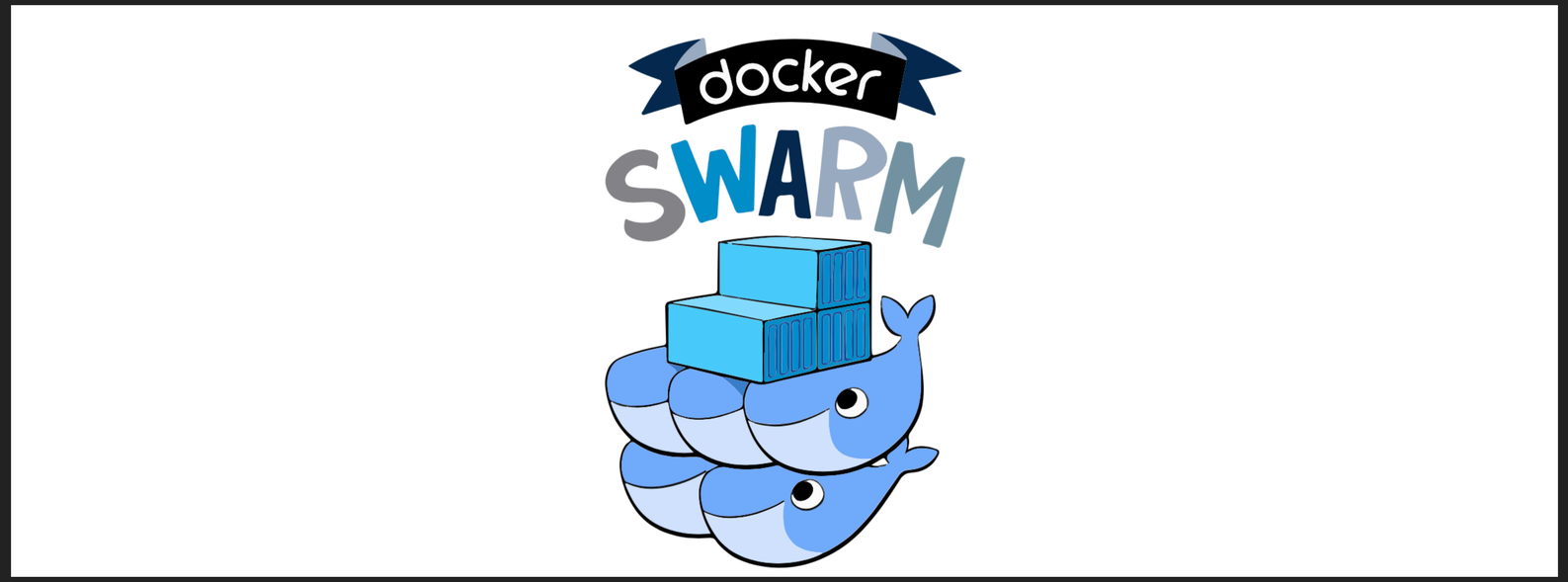
Baidu Matrix

Cloud Foundry Garden & Diego



CoreOS Fleet

Docker Swarm

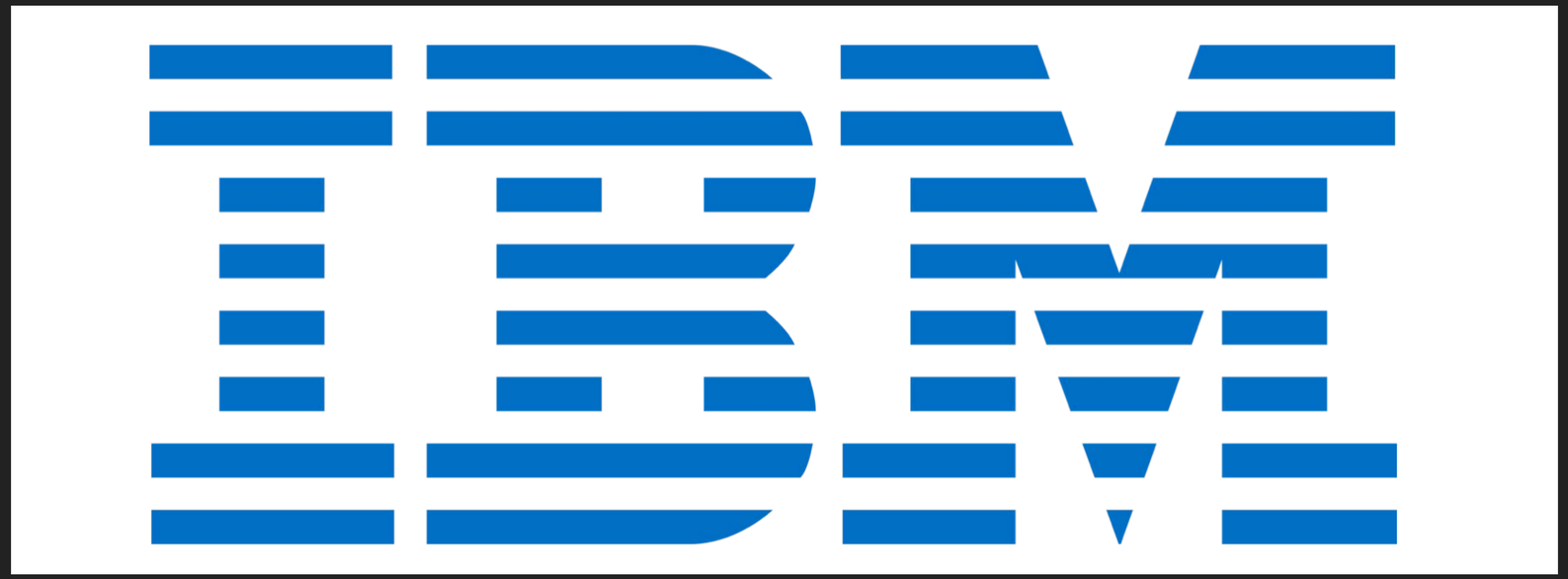


Facebook Tupperware

Google Borg & Omega

HashiCorp Nomad

IBM Platform Symphony

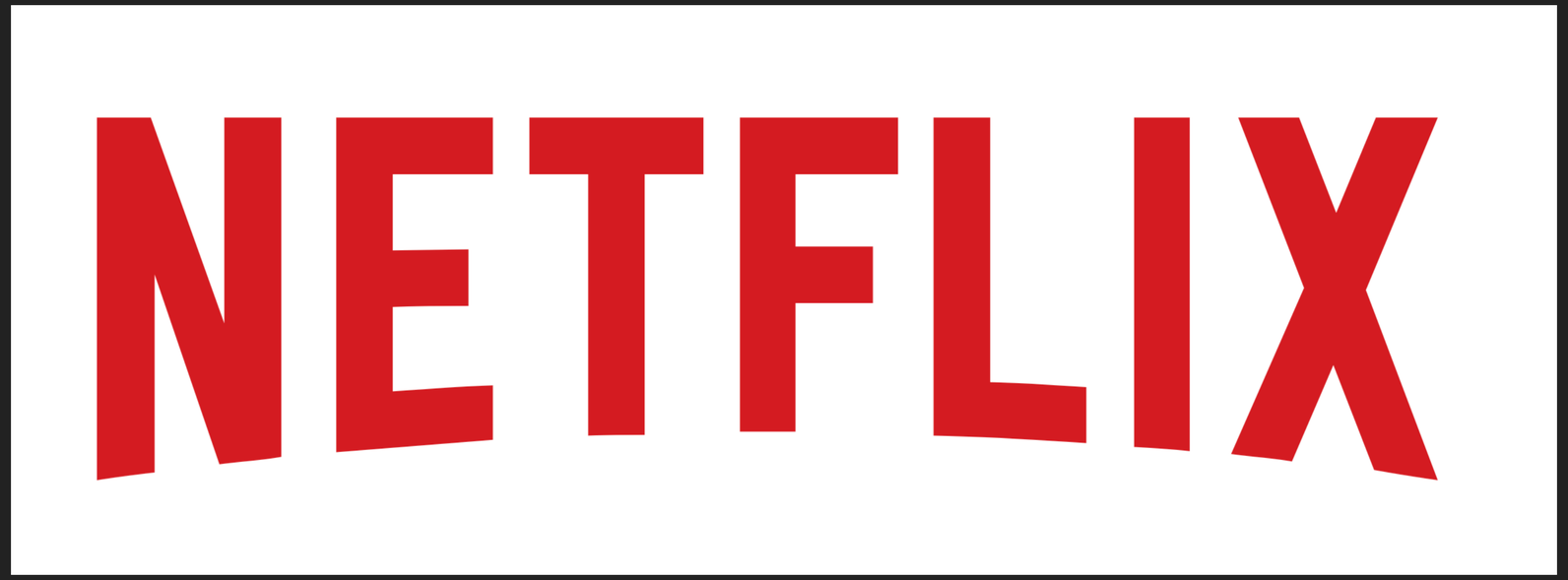


Joyent Triton

Lyft v3 Infra

Microsoft Service Fabric

Netflix Titus



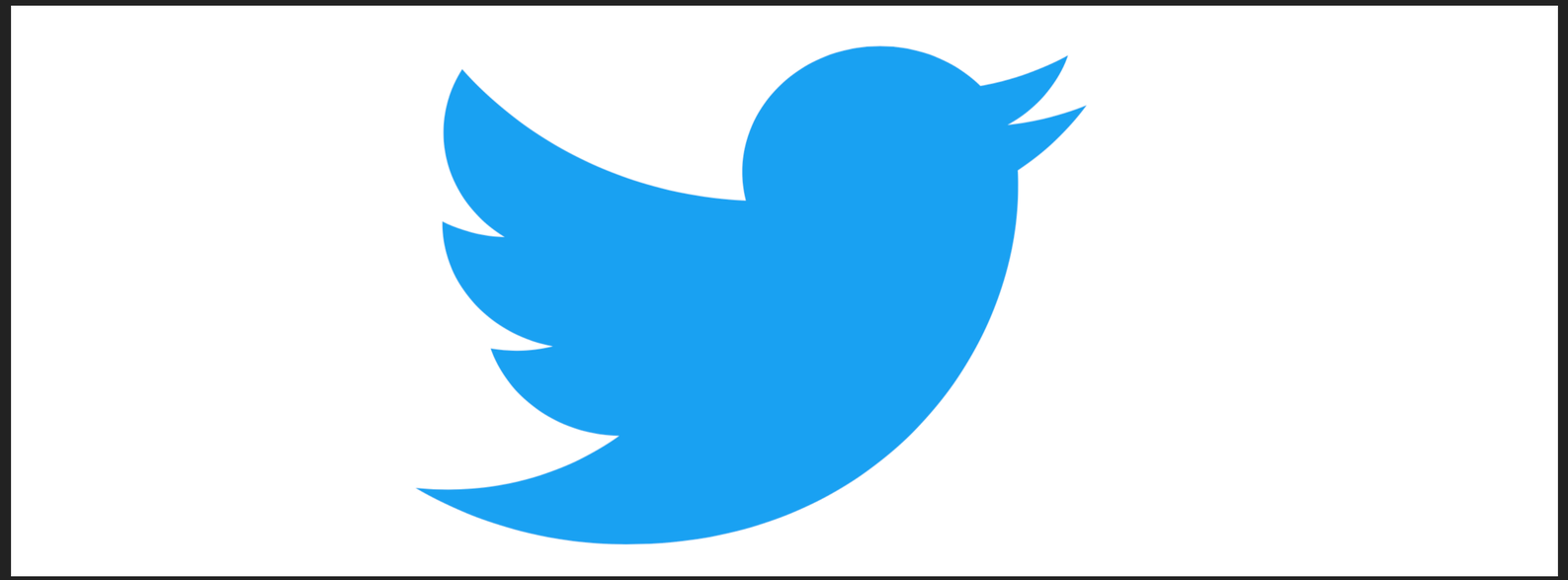
Rancher Cattle

Red Hat OpenShift v2 Broker

Spotify Helios

Tencent Gaia

Twitter Aurora

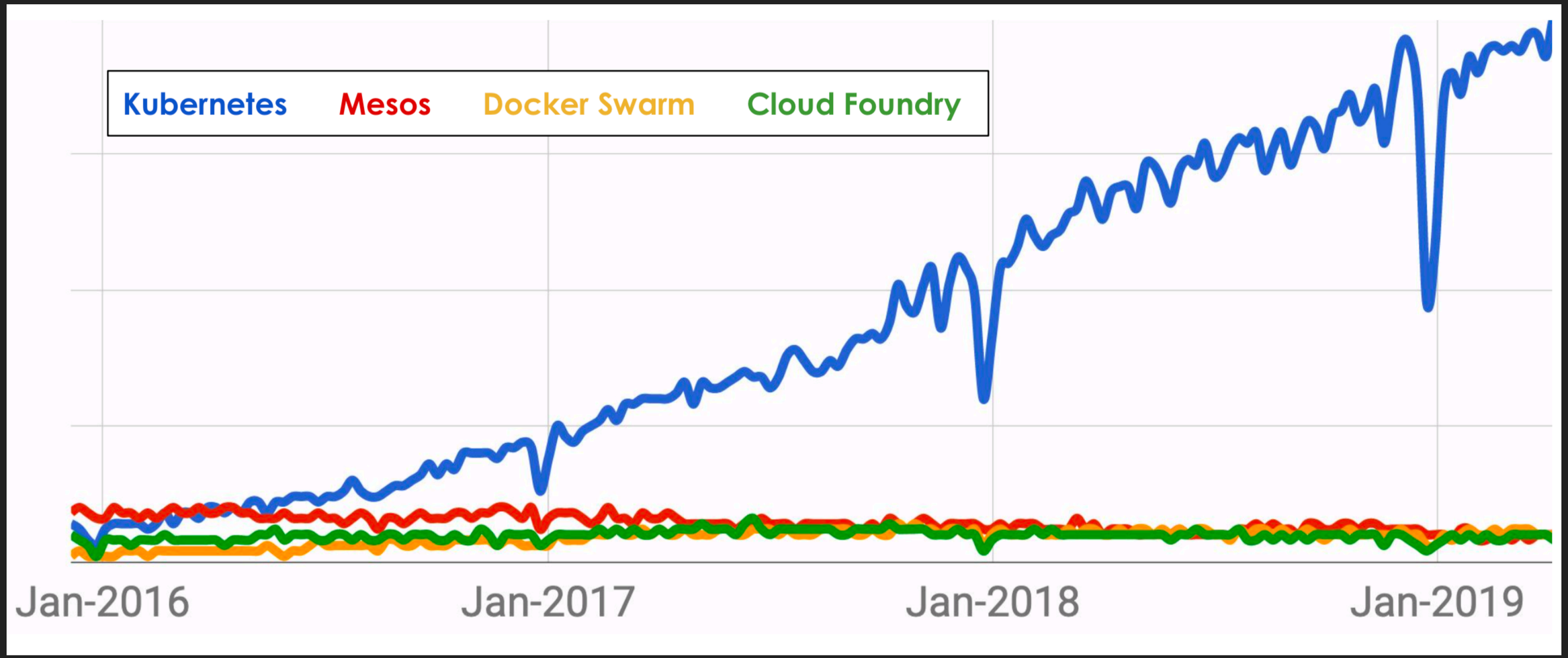


Uber Peloton

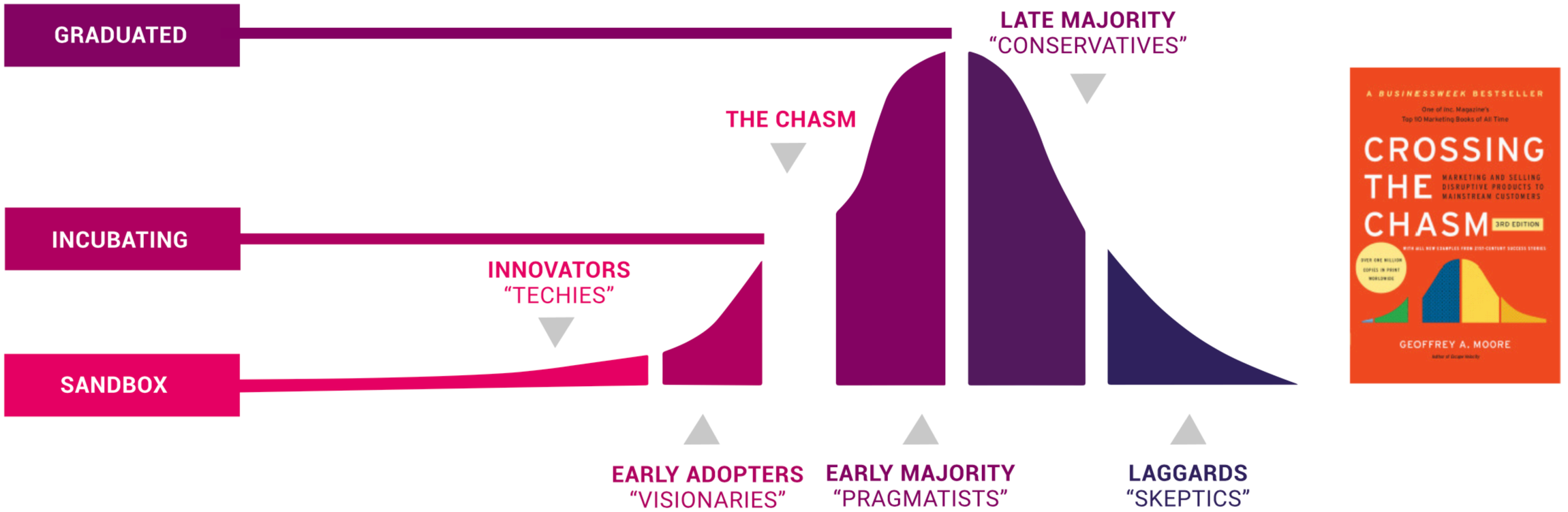
- 2014: Google Introduces Kubernetes
- mid-2014: Google introduced Kubernetes as an open source version of Borg
- June 7: Initial release - first github commit for Kubernetes
- July 10: Microsoft, RedHat, IBM, Docker joins the Kubernetes community.

K8S USER GROUP

- 2015: The year of Kube v1.0 & CNCF
- July 21: Kubernetes v1.0 gets released. Along with the release, Google partnered with the Linux Foundation to form the Cloud Native Computing Foundation (CNCF). The CNFC aims to build sustainable ecosystems and to foster a community around a constellation of high-quality projects that orchestrate containers as part of a microservices architecture.
- November 3: The Kubernetes ecosystem continues to grow! Companies who joined: Deis, OpenShift, Huawei, and Gondor.
- November 9: Kubernetes 1.1 brings major performance upgrades, improved tooling, and new features that make applications even easier to build and deploy.
- November 9-11: KubeCon 2015 is the first inaugural community Kubernetes conference in San Fransisco. Its goal was to deliver expert technical talks designed to spark creativity and promote Kubernetes education.


Kubernetes
Mesos
Docker Swarm
Cloud Foundry
Jan-2016
Jan-2017
Jan-2018
Jan-2019

CNCF : Project Services and Maturity Levels



CNCF Hosted Projects

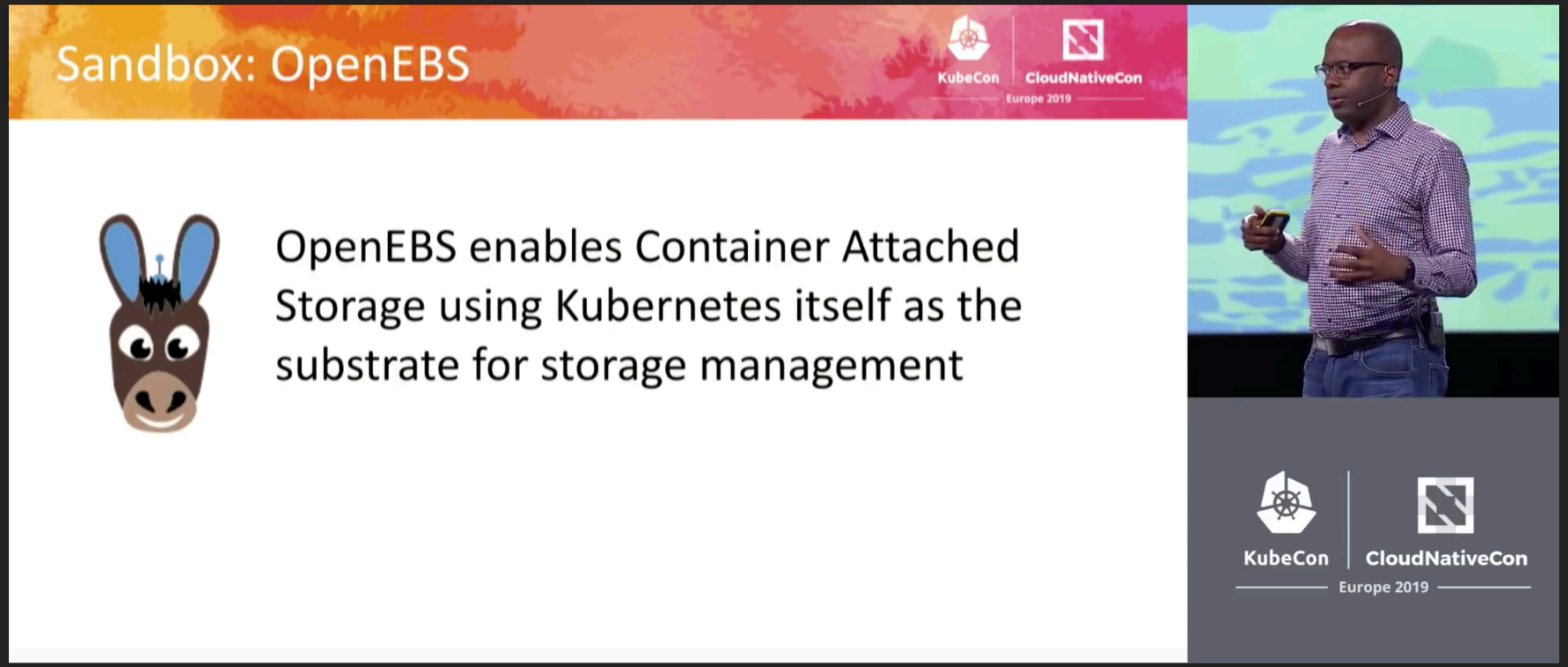
KubeCon Europe 2019

- Kubernetes
- Service Mesh
- Storage
- Monitoring + Tracing
- Machine Learning + Data

2.66 Million – Cheryl Hung, Director of Ecosystem, Cloud Native Computing Foundation

- https://www.youtube.com/watch?v=w62T1SN4g6Y

CNCF Project Update – Bryan Liles, Senior Staff Engineer, VMware



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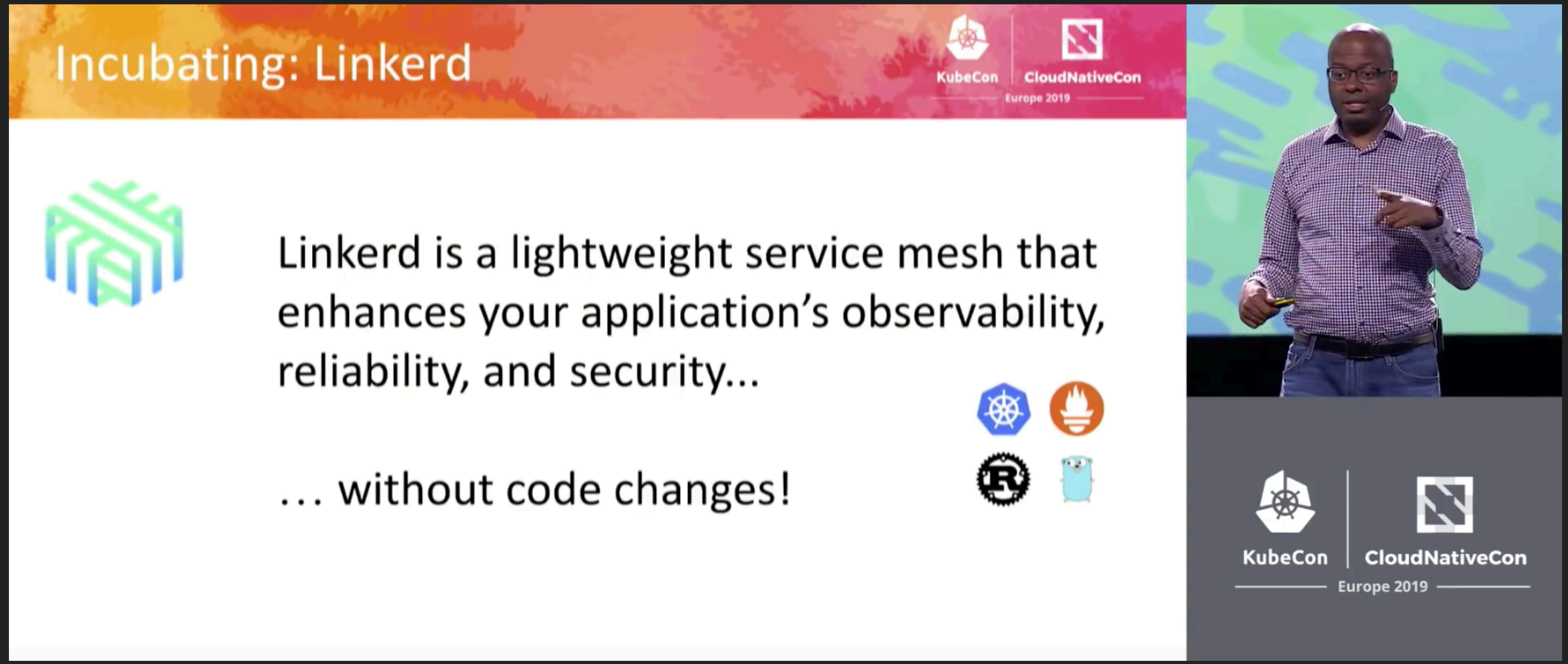

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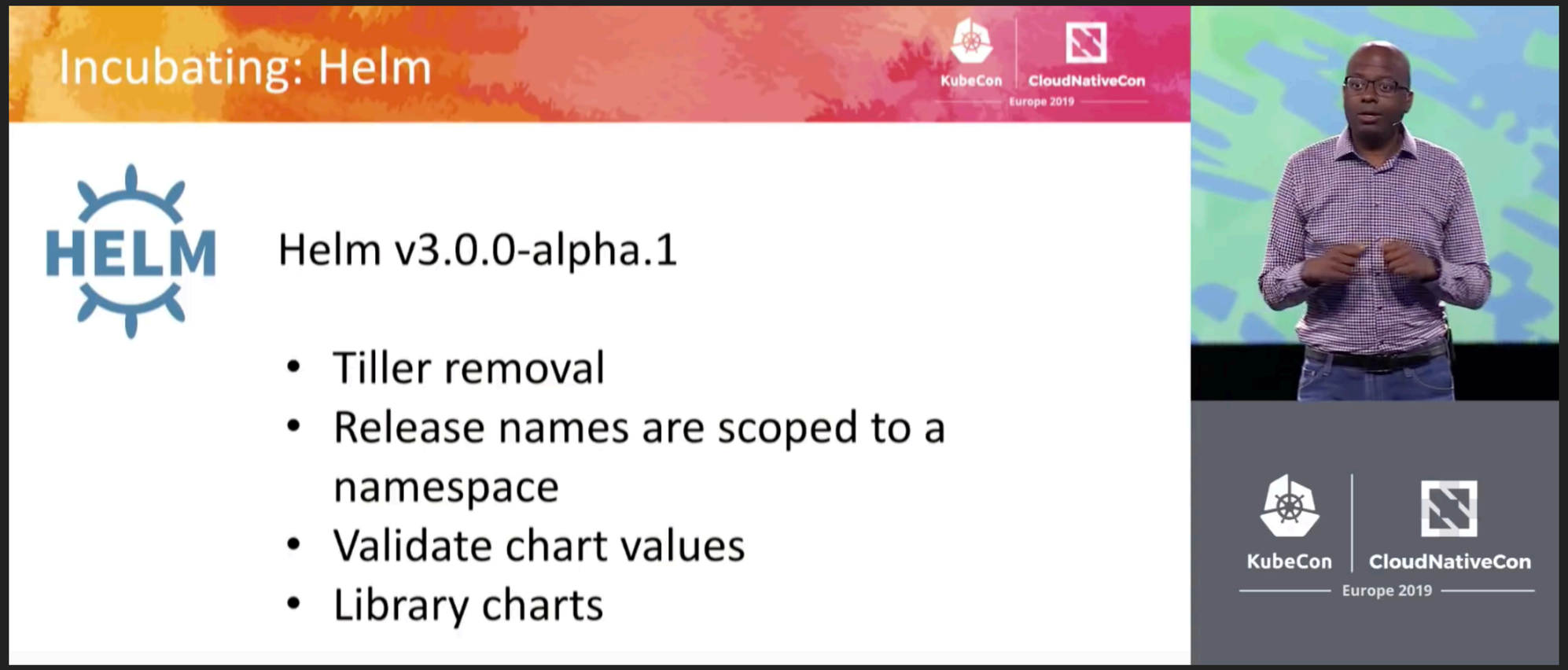

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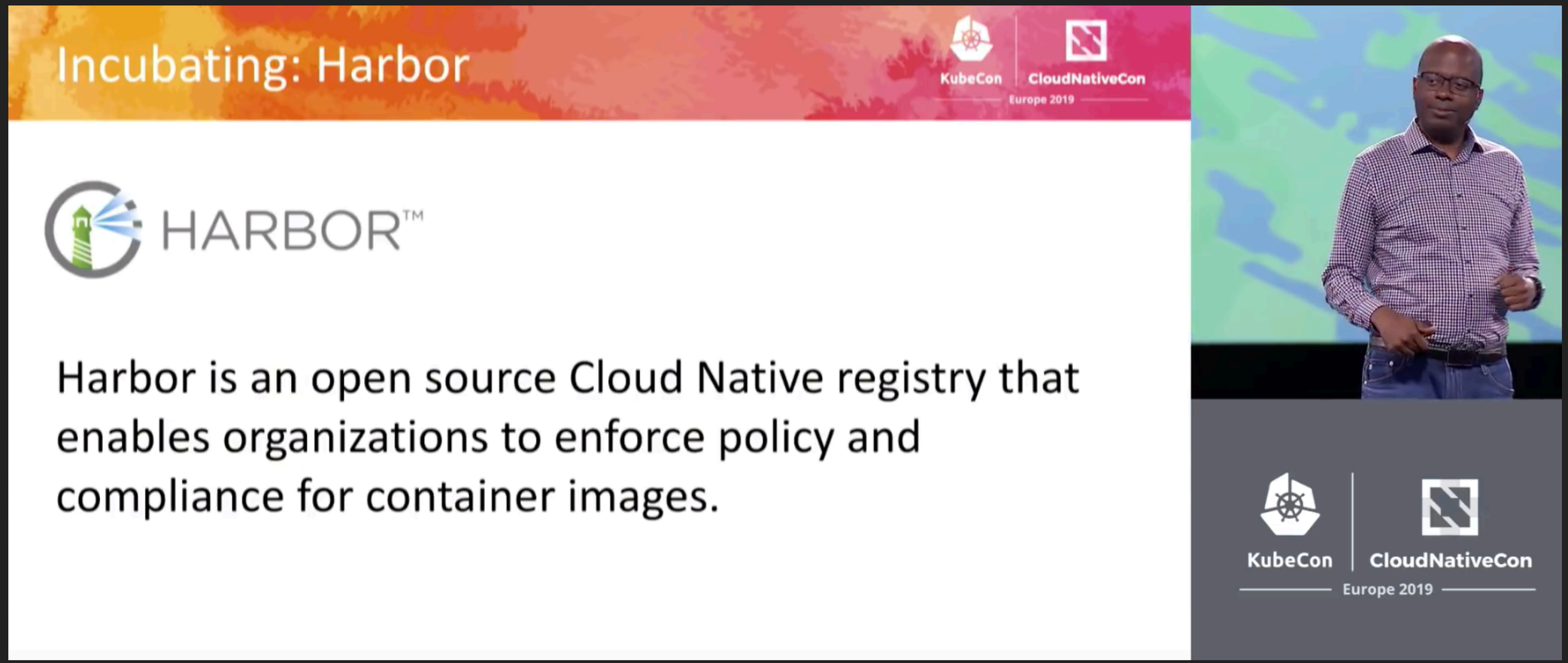

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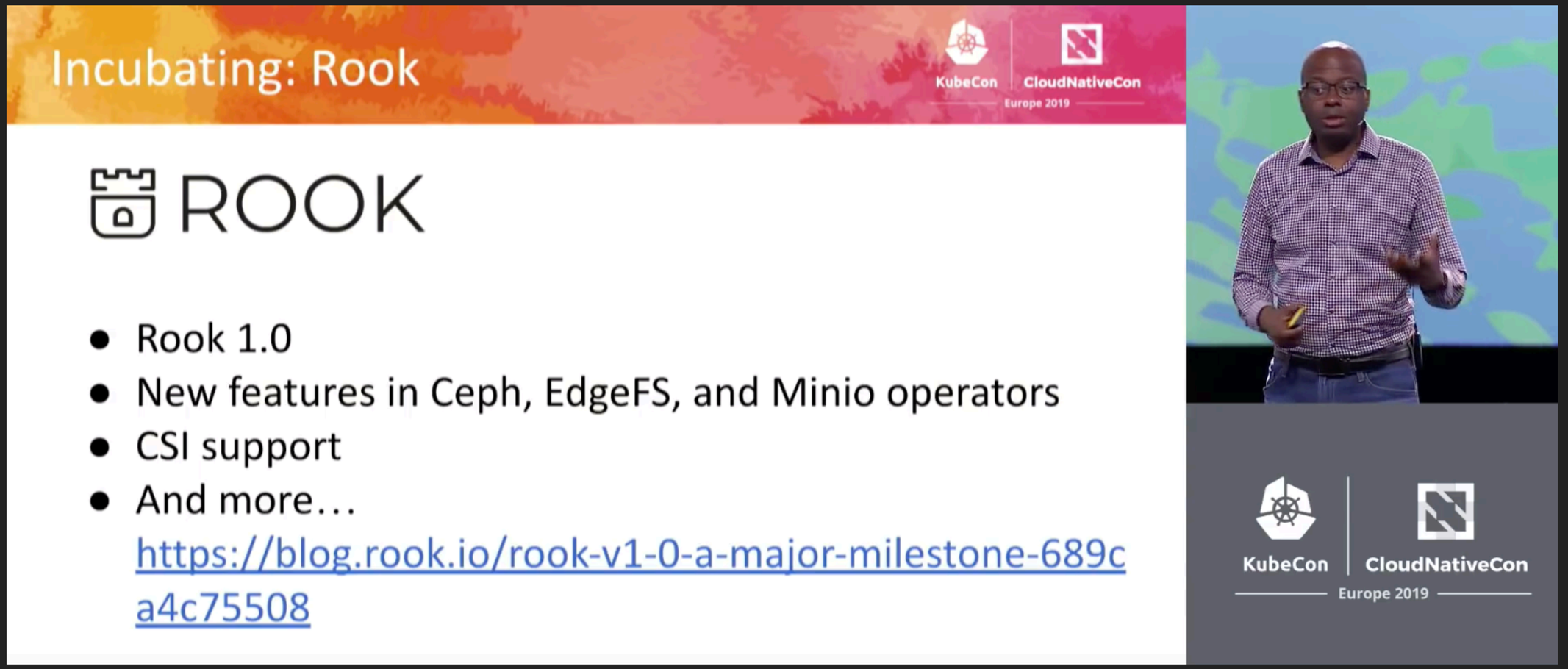

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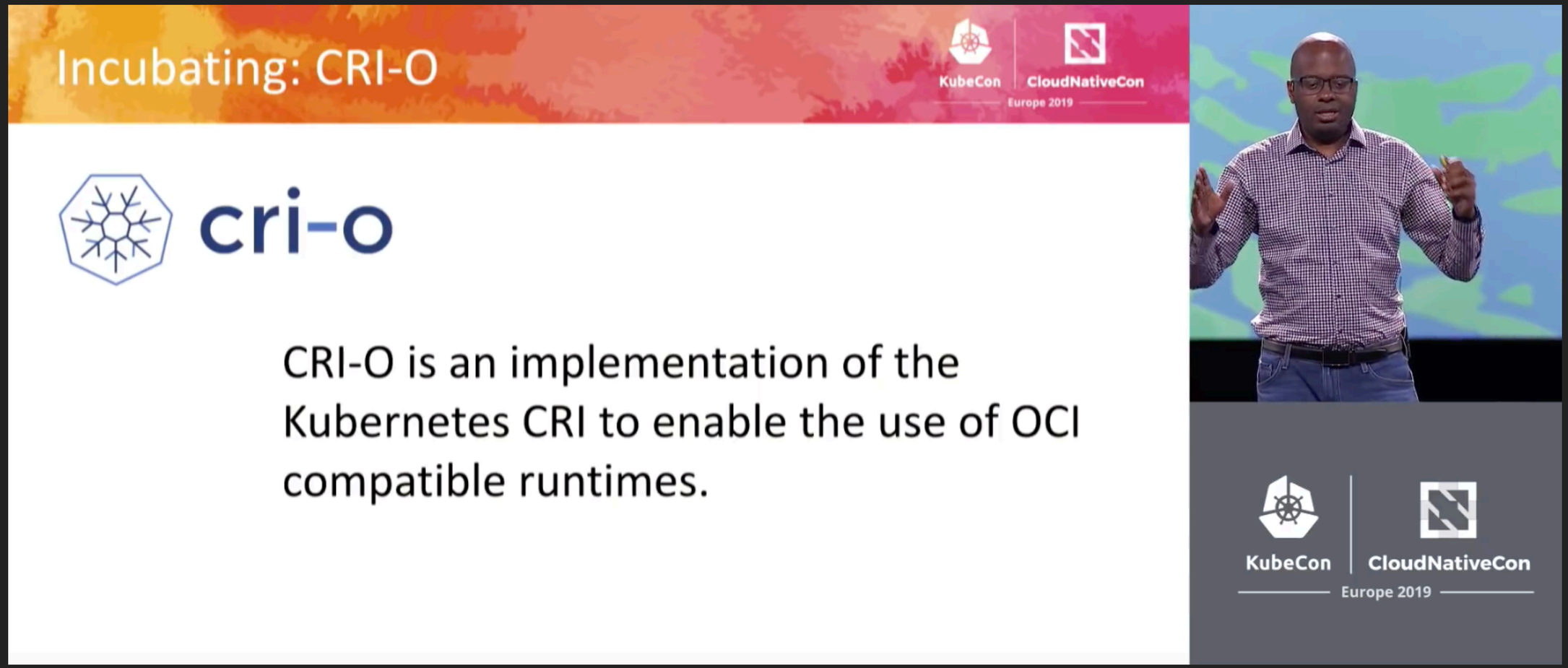

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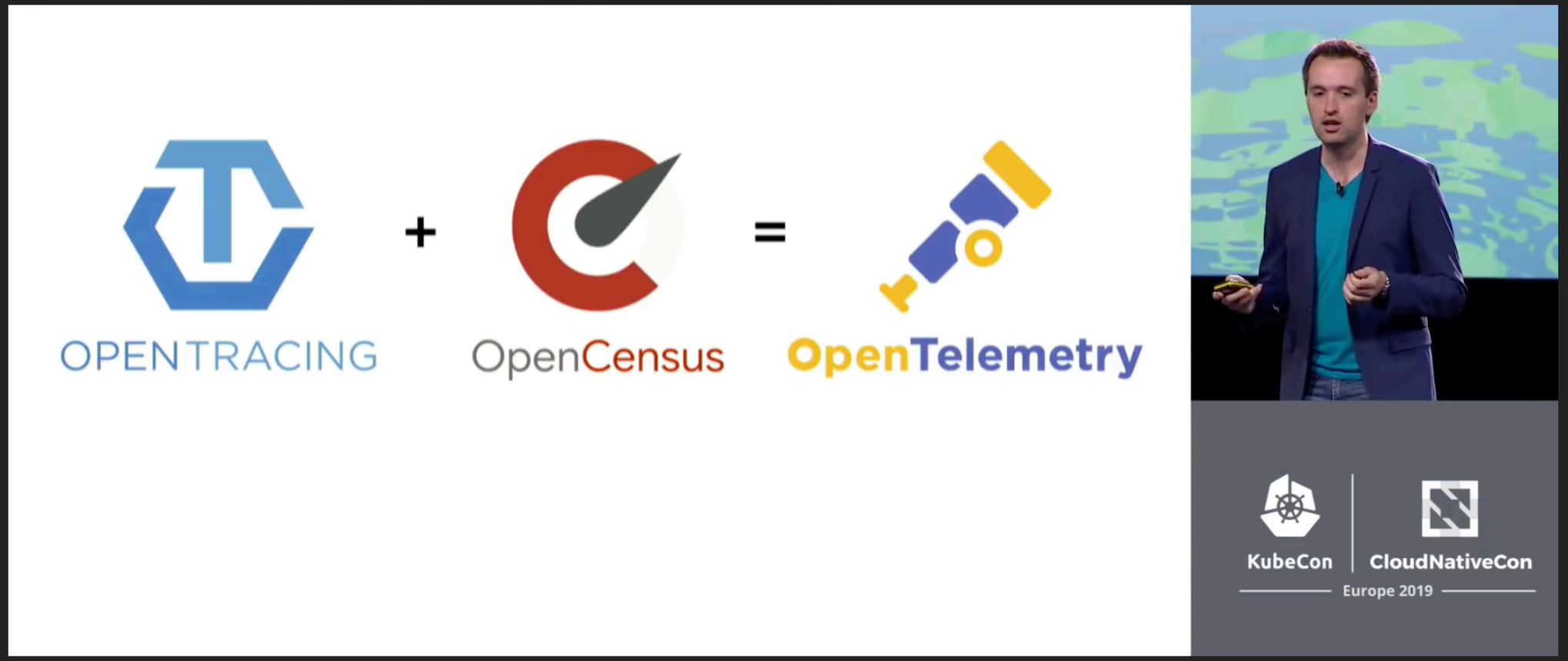

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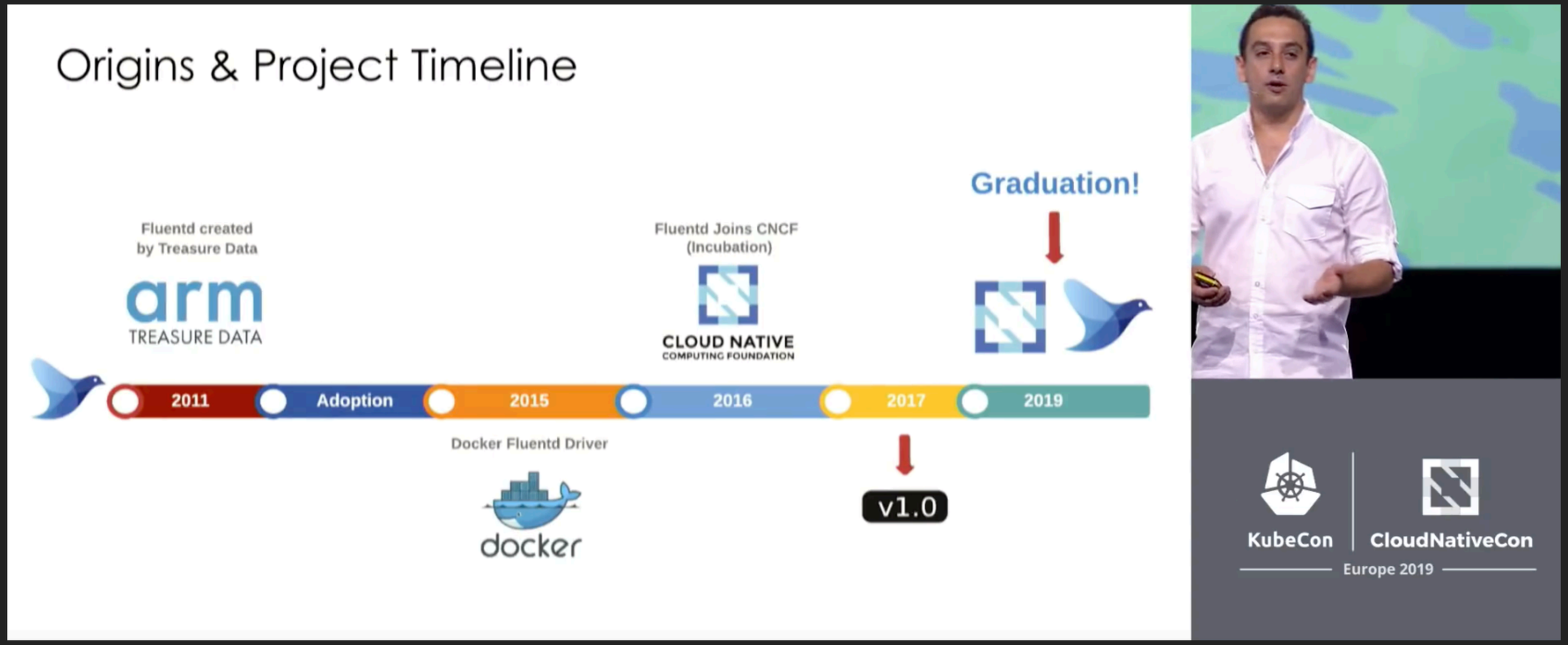

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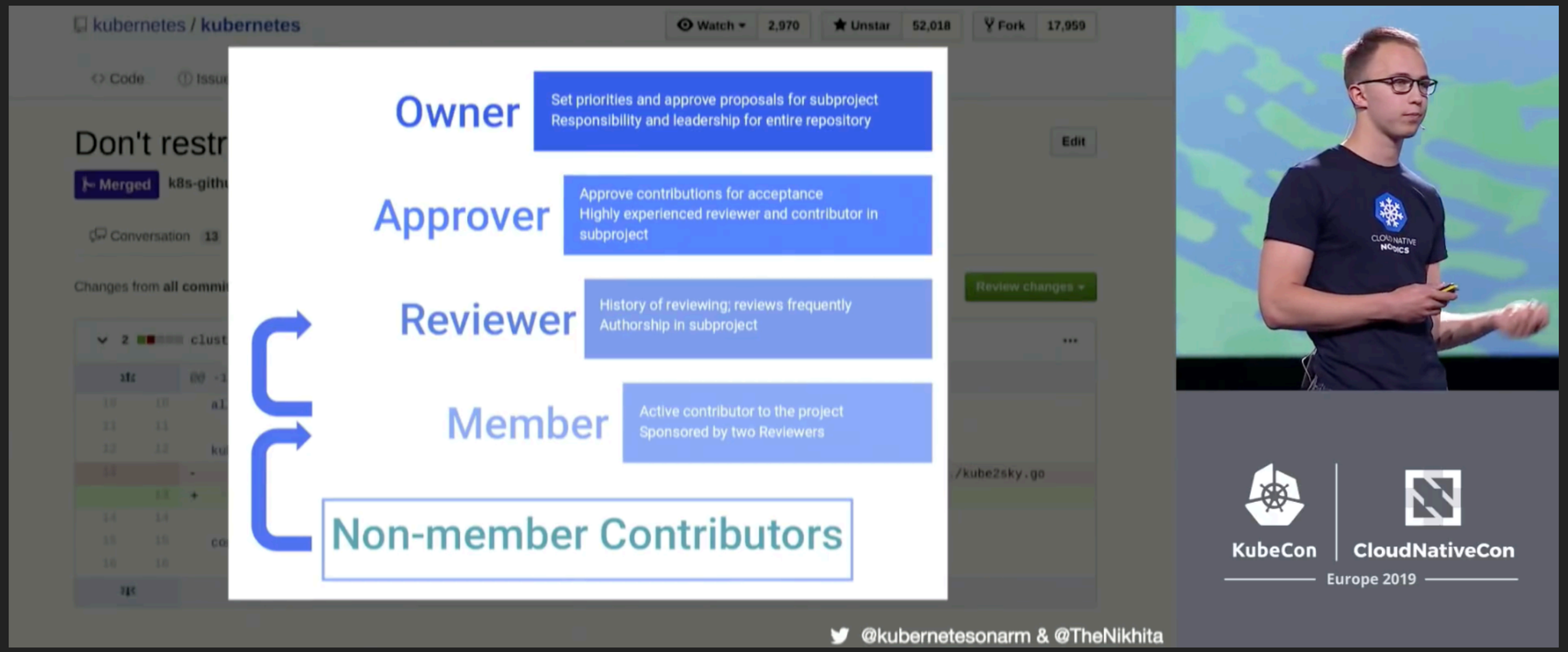
Getting Started in the Kubernetes Community – Lucas Käldström & Nikhita Raghunath



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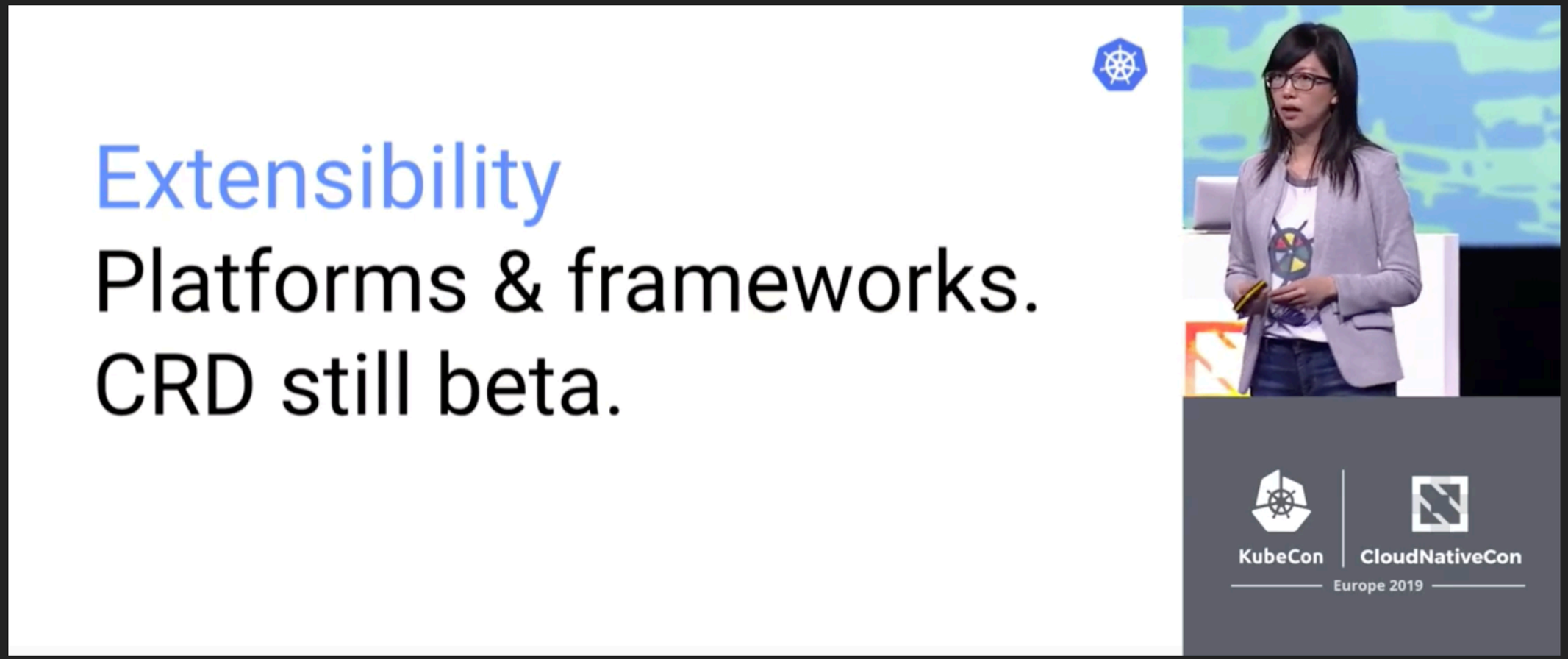
Kubernetes Project Update – Janet Kuo, Software Engineer, Google



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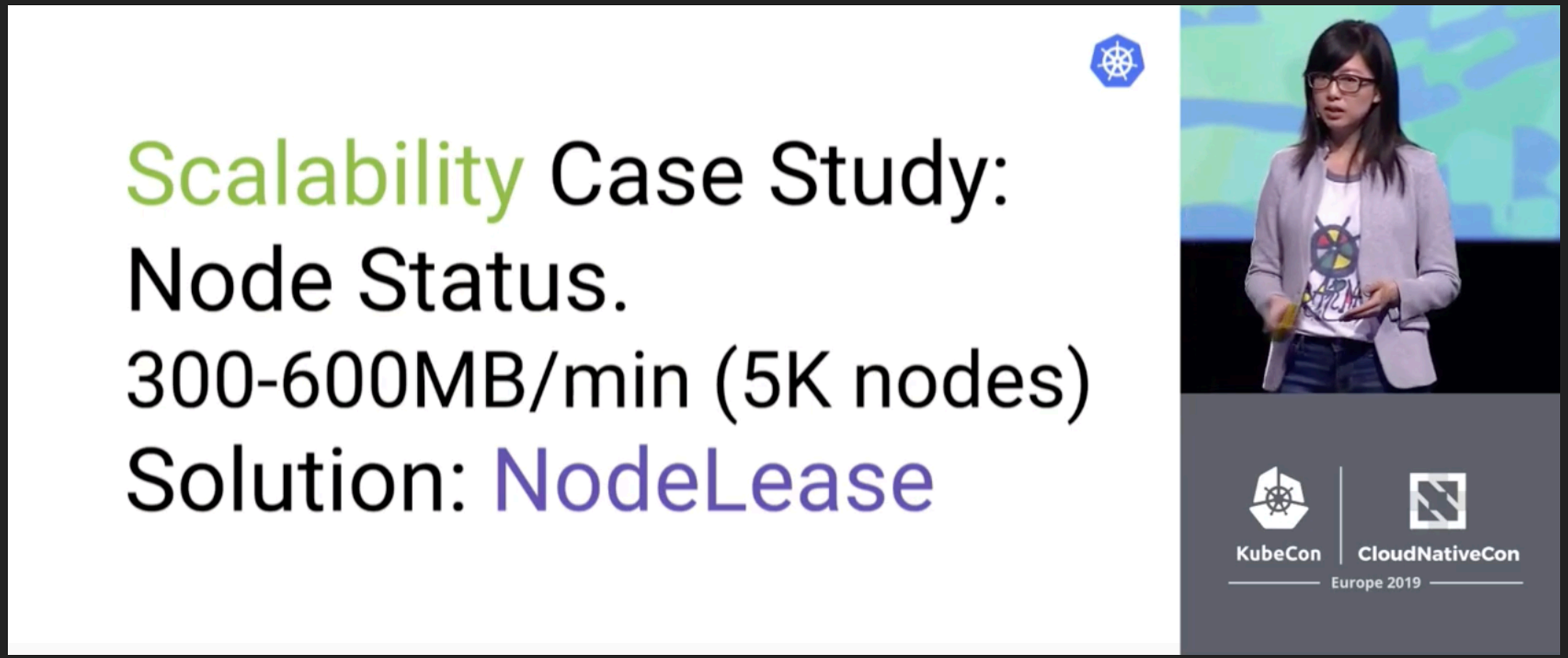

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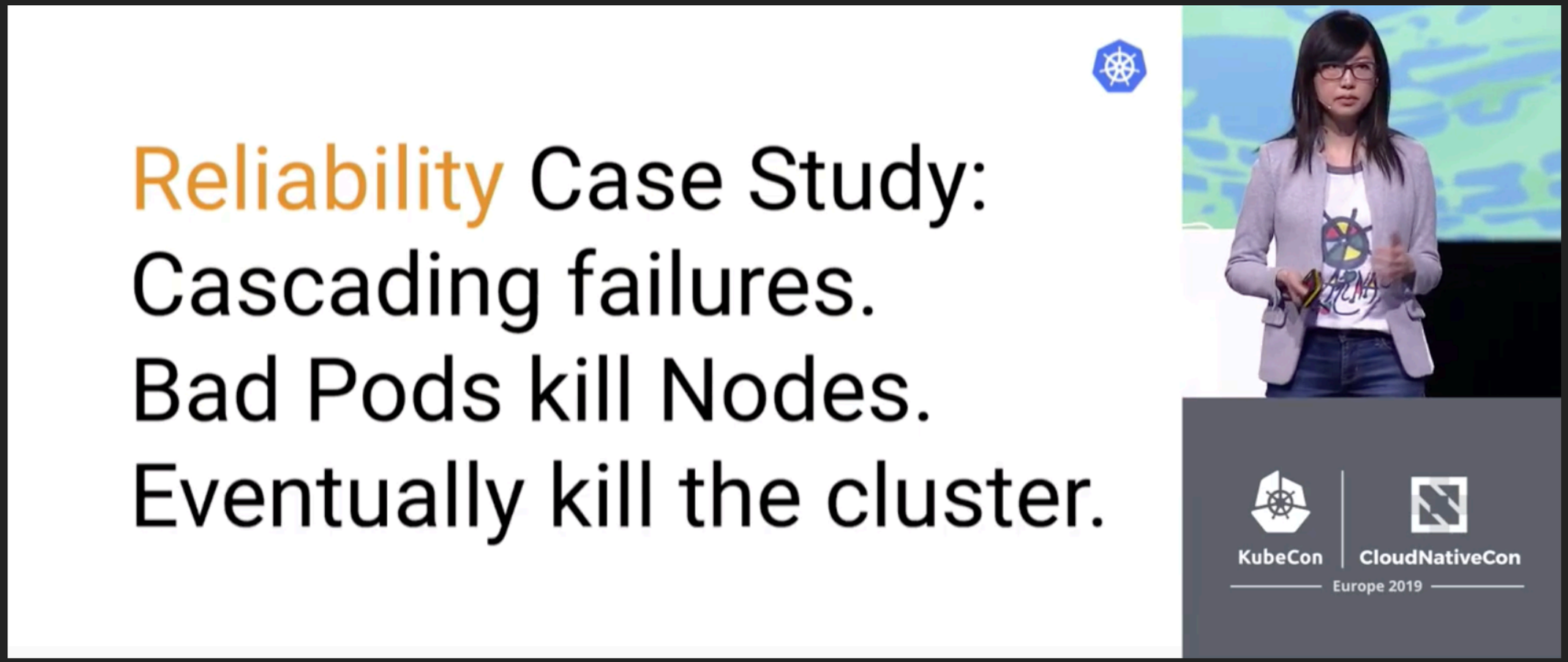

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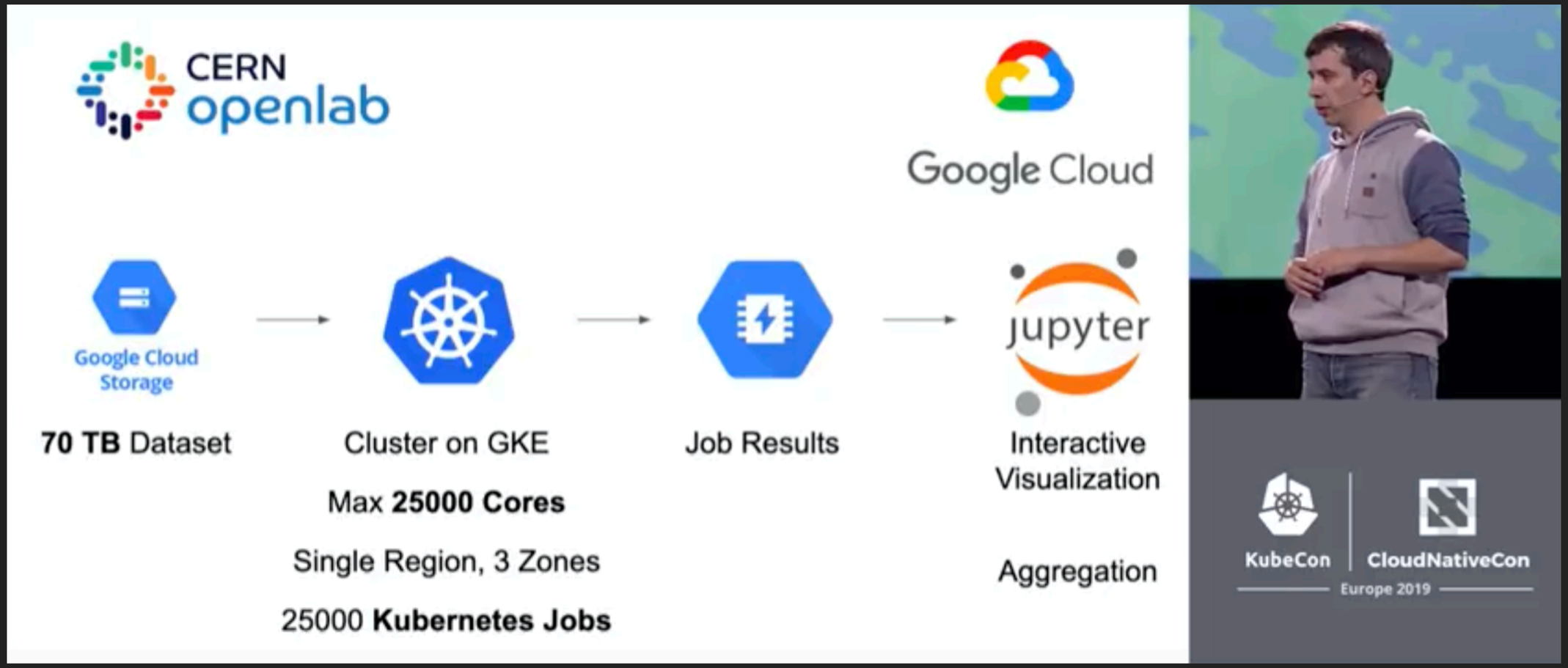
Reperforming a Nobel Prize Discovery on Kubernetes – Ricardo Rocha & Lukas Heinrich



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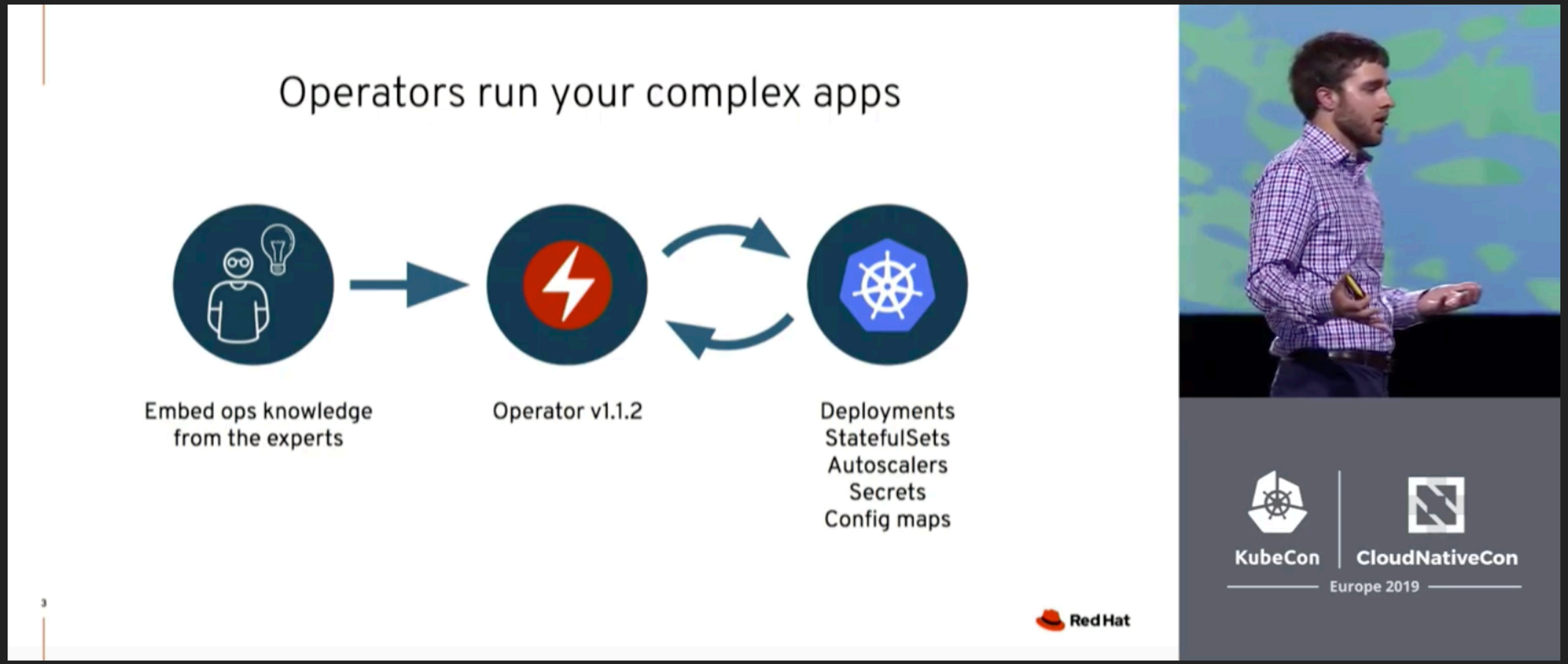
Expanding the Kubernetes Operator Community – Rob Szumski



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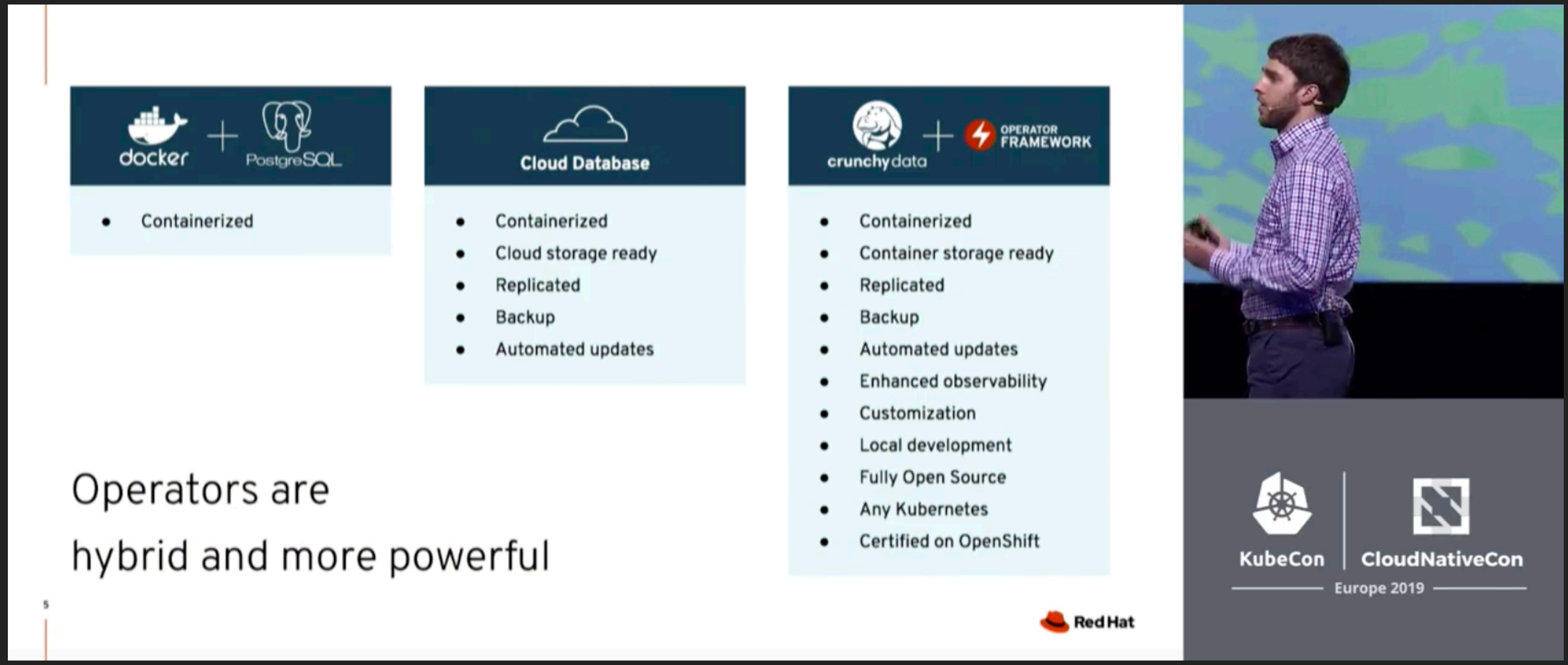

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Opening Remarks – Bryan Liles, Senior Staff Engineer, VMware

- https://www.youtube.com/watch?v=5IvT80d8YVU

How Spotify Accidentally Deleted All its Kube Clusters with No User Impact

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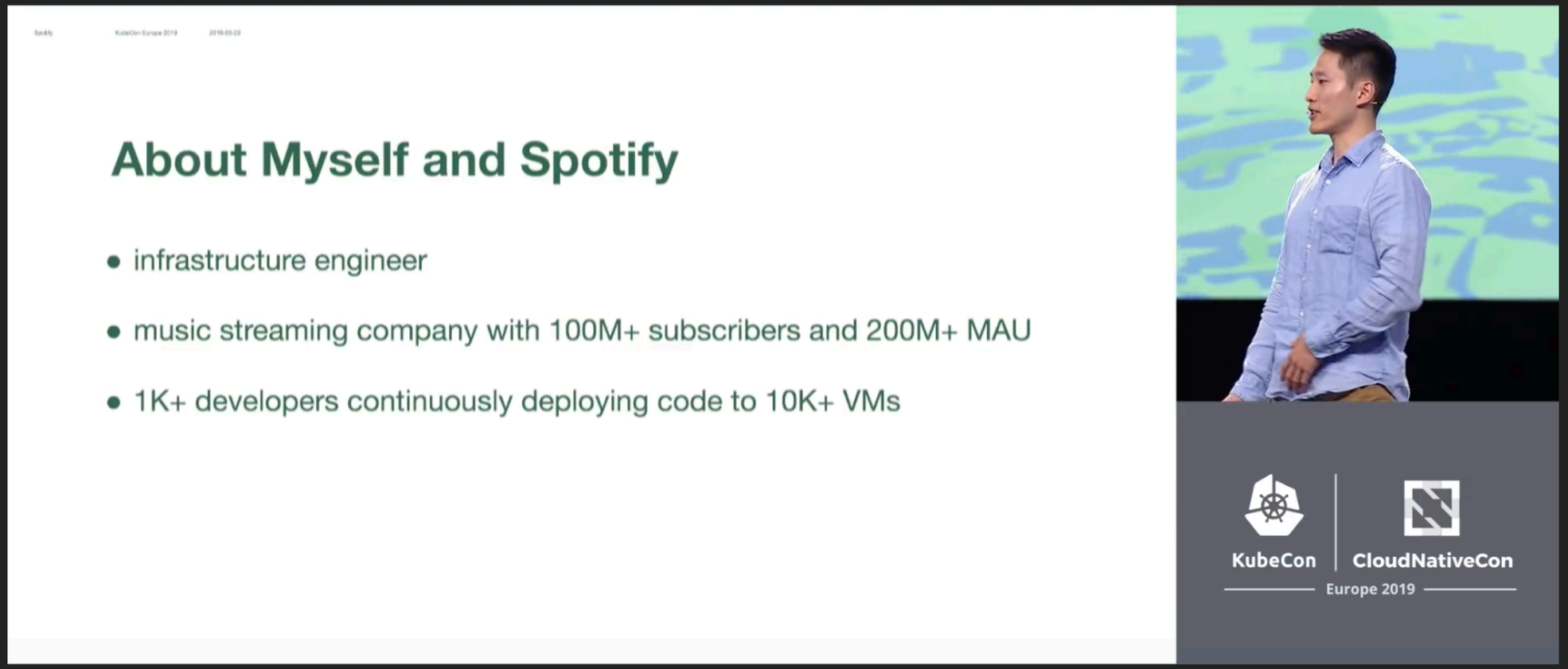

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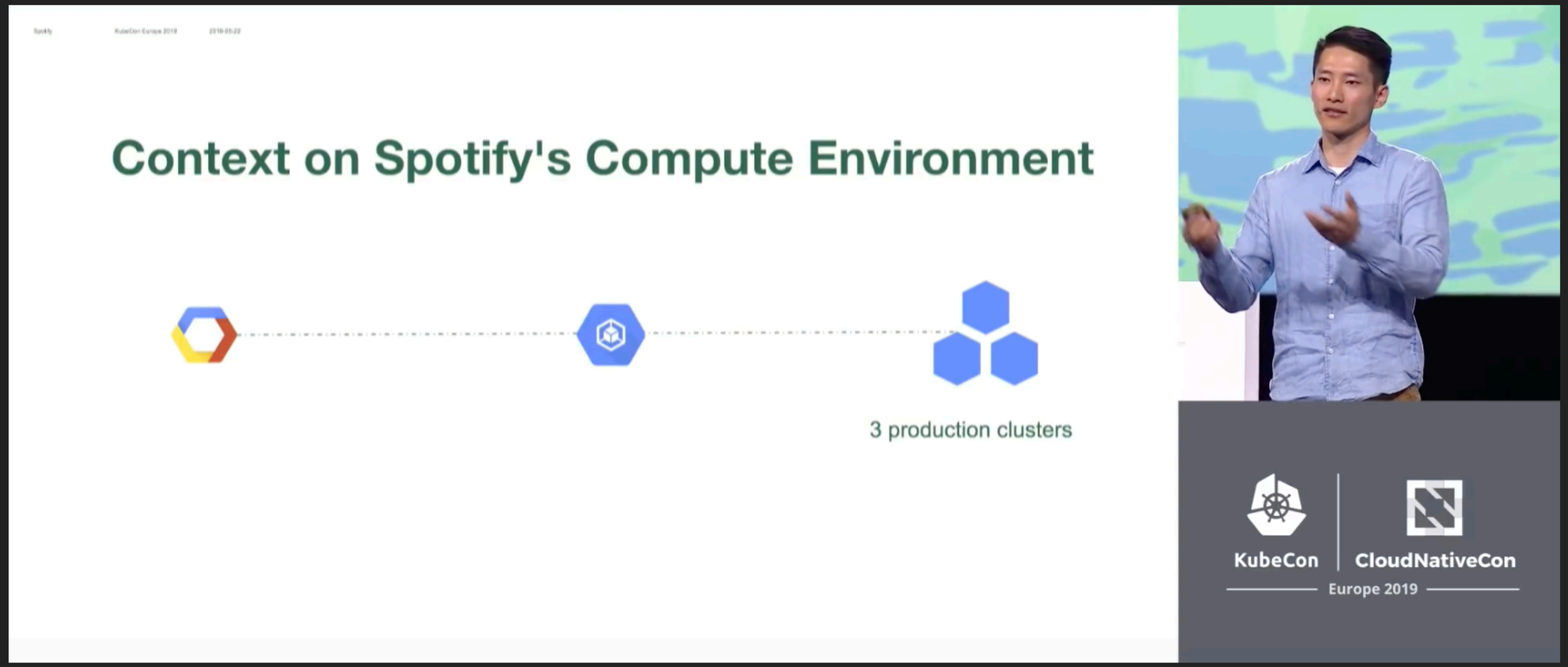

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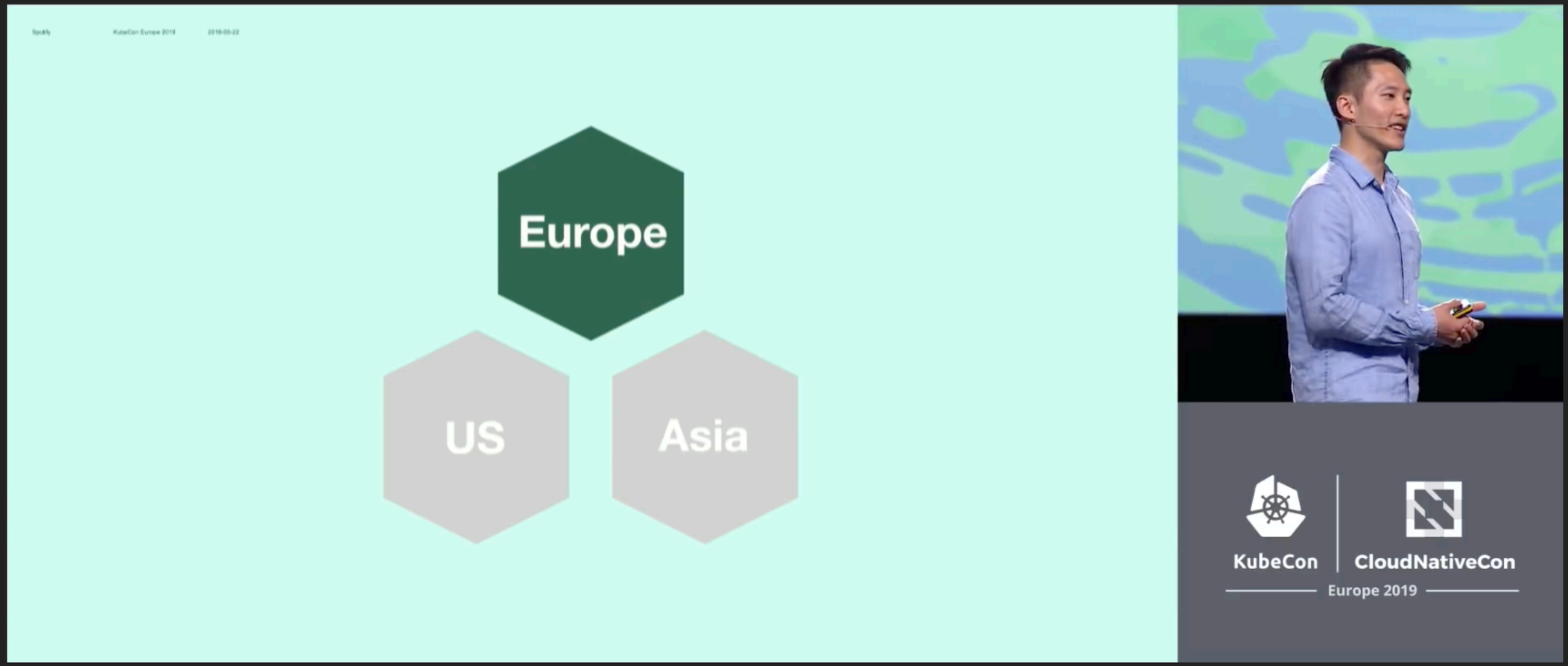

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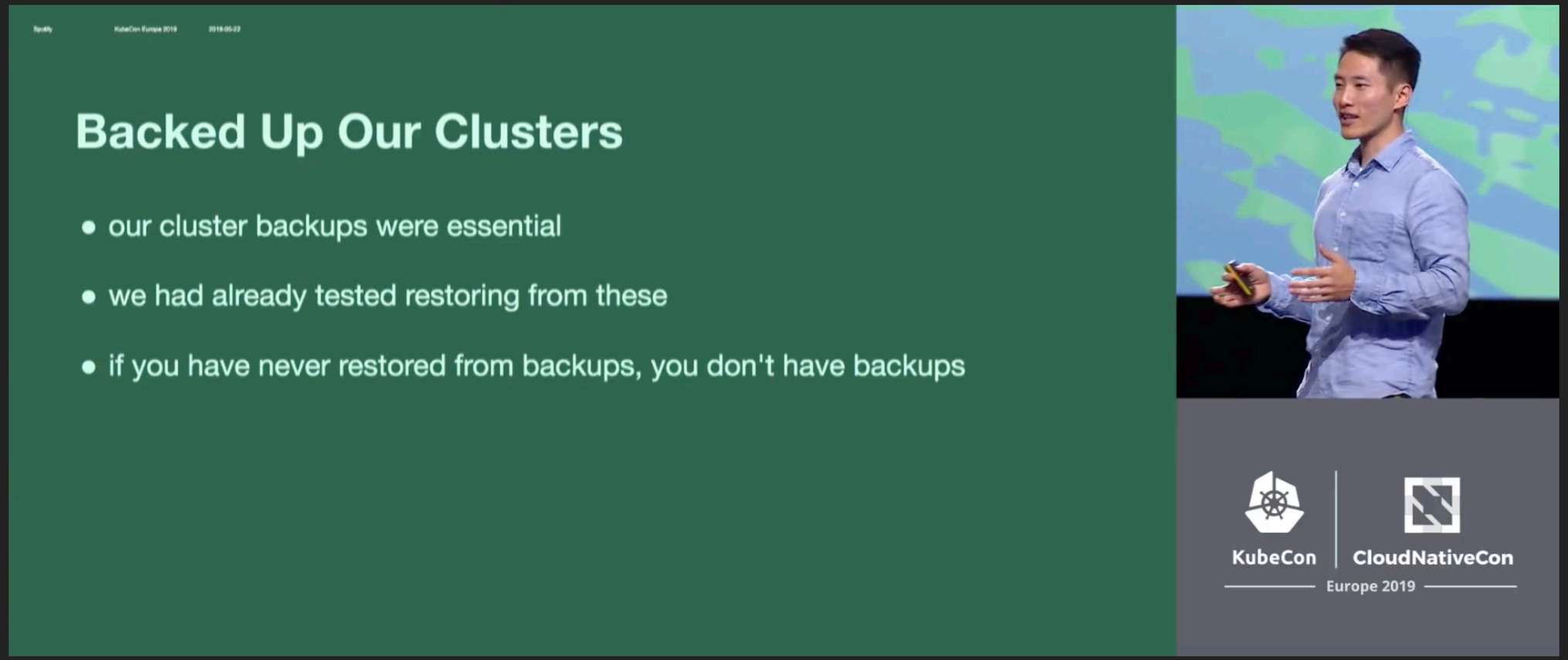

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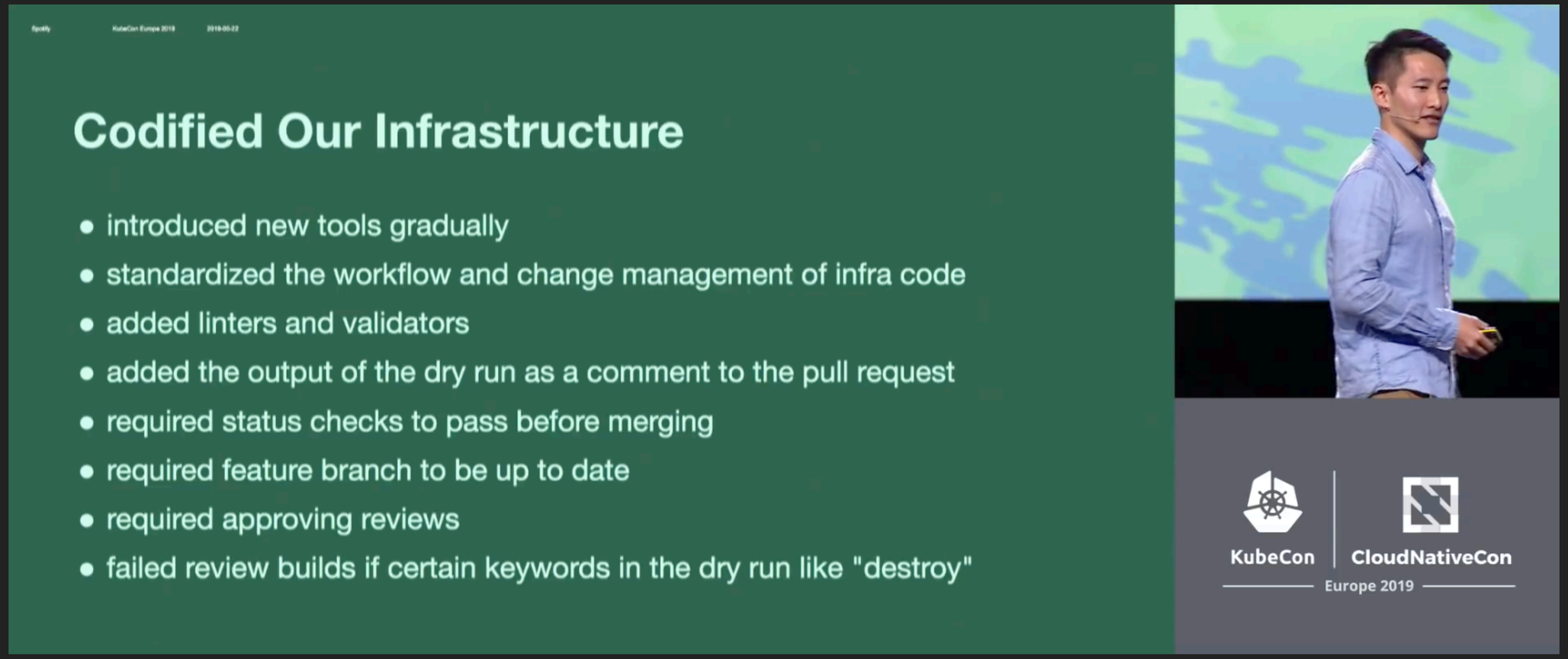

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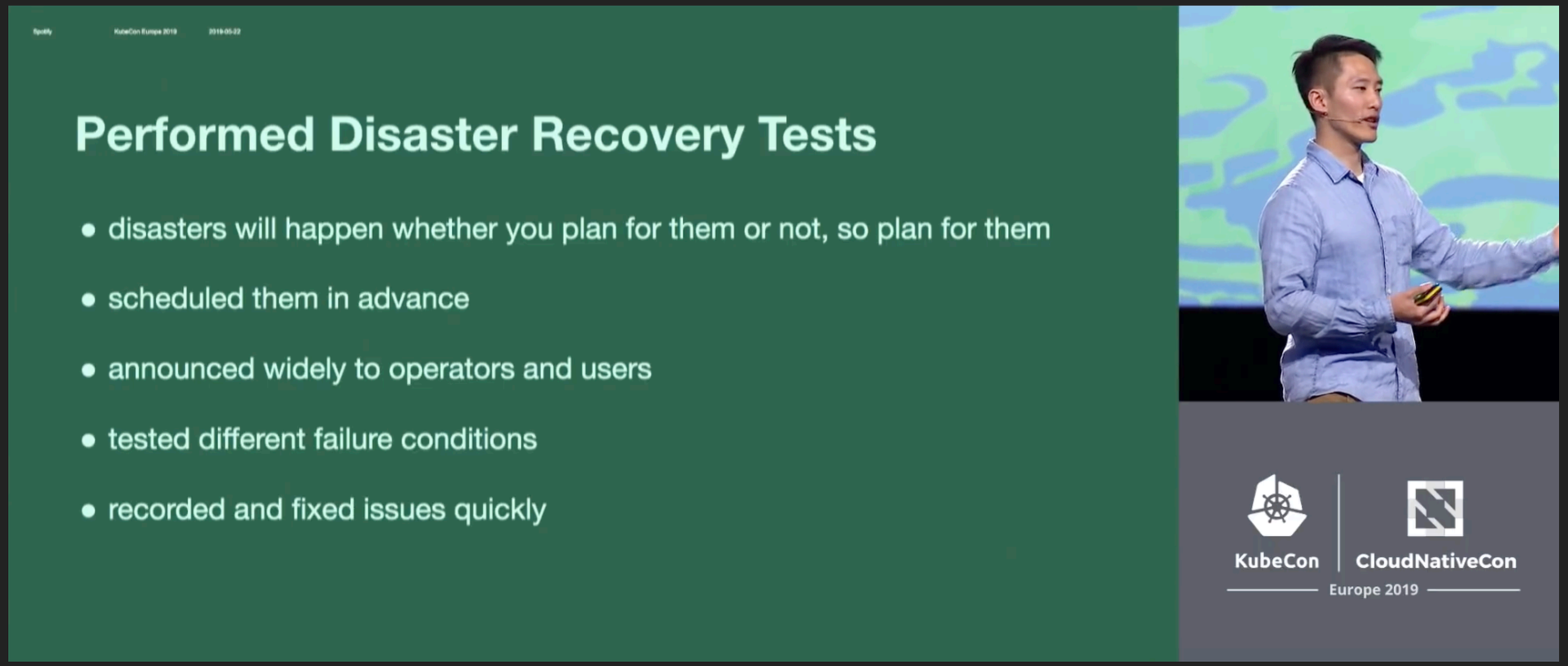

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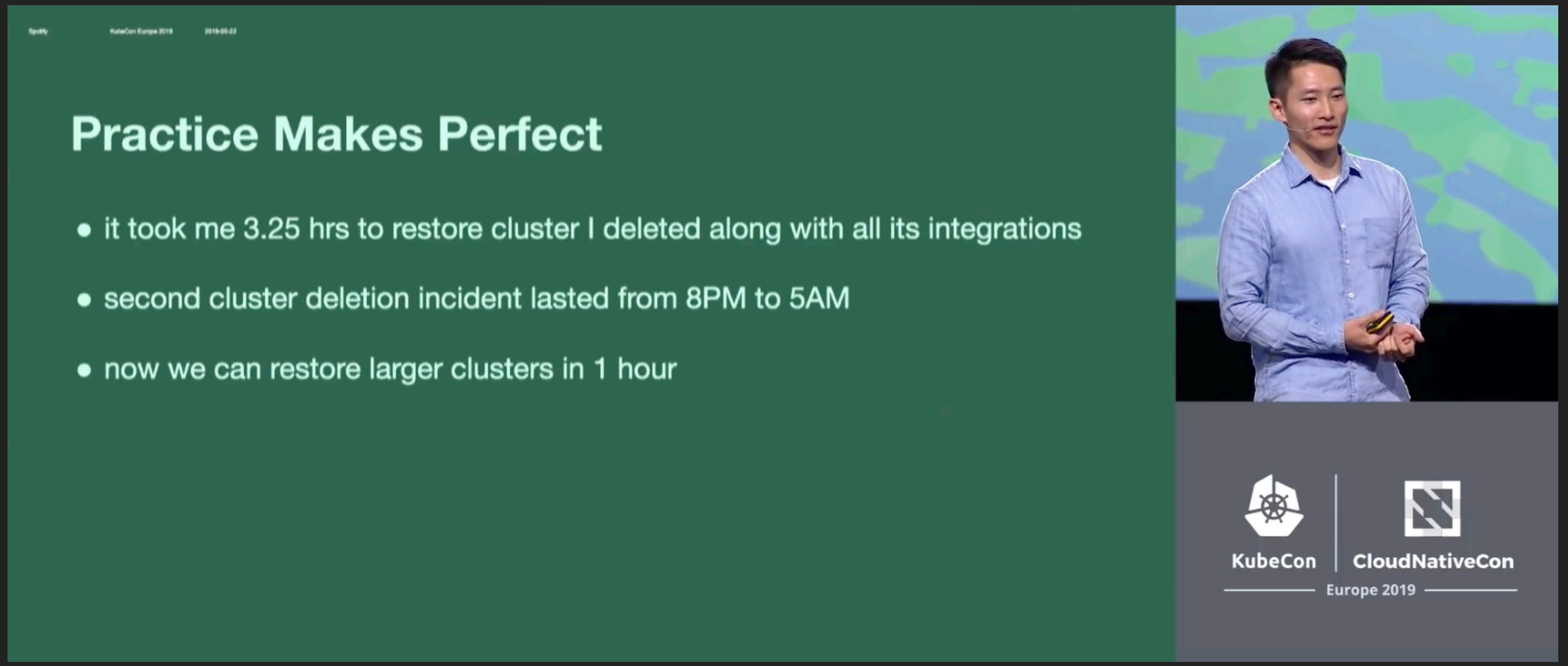

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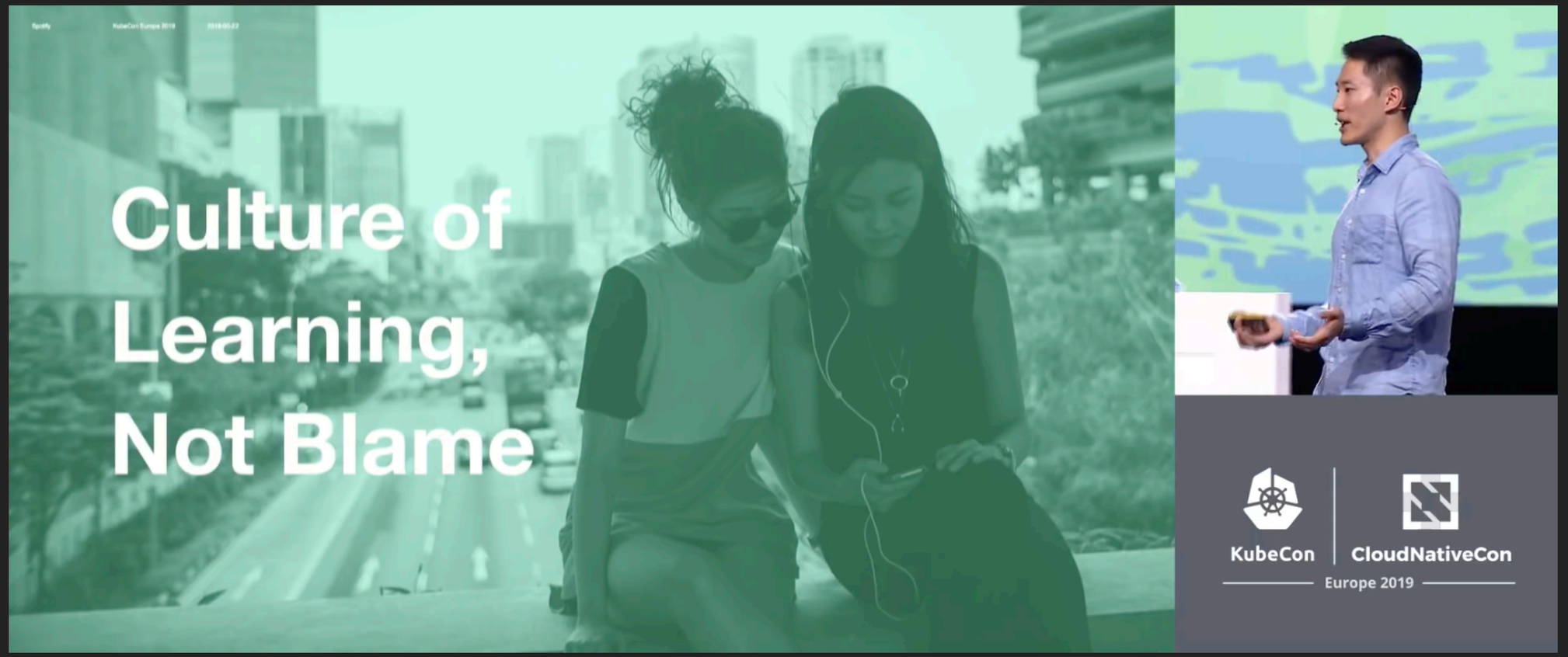

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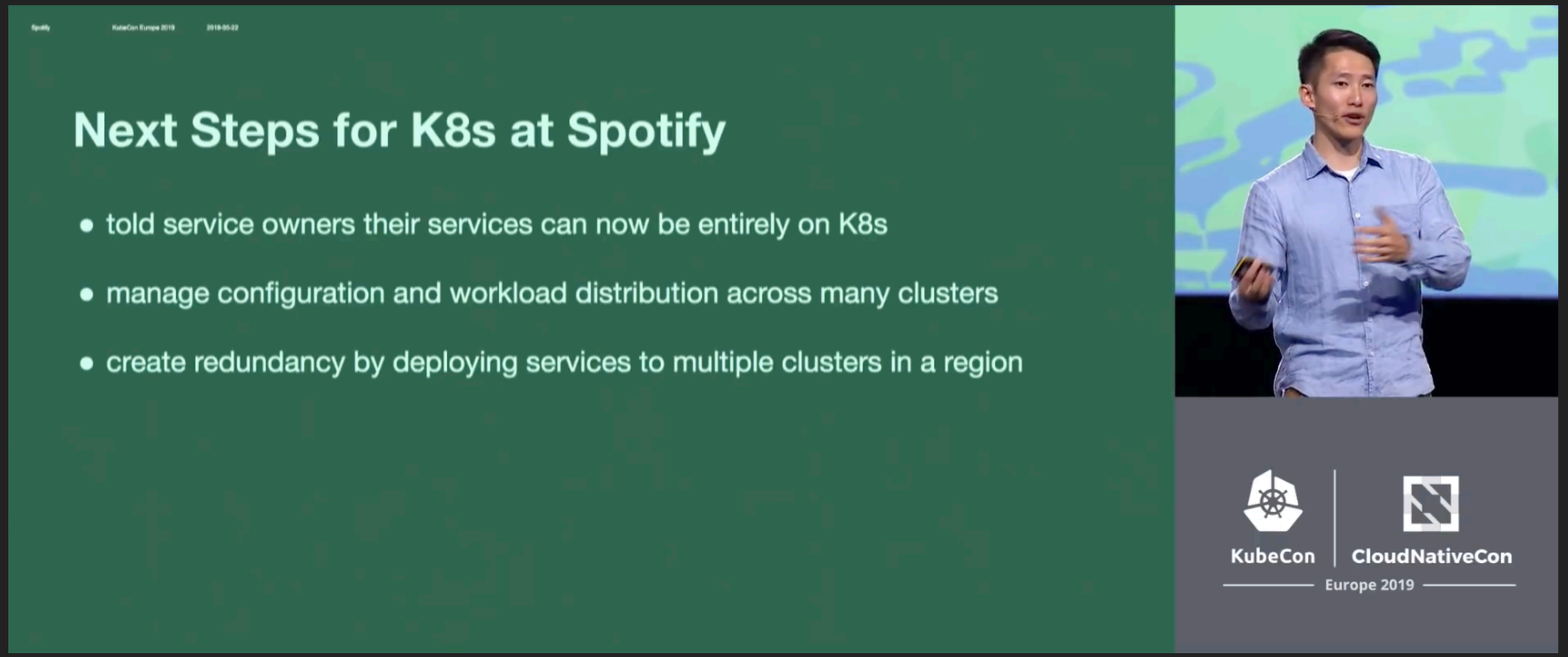

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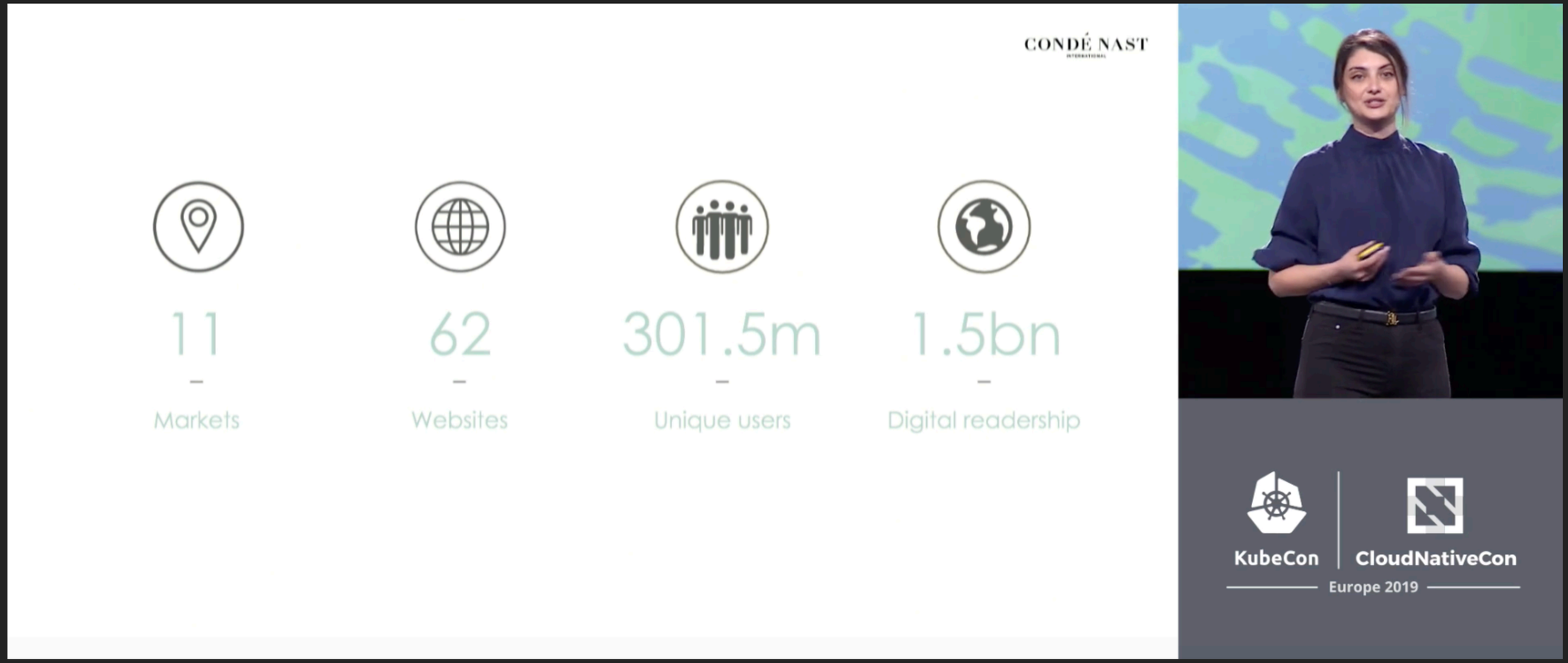
A Journey to a Centralized, Globally Distributed Platform – Katie Gamanji



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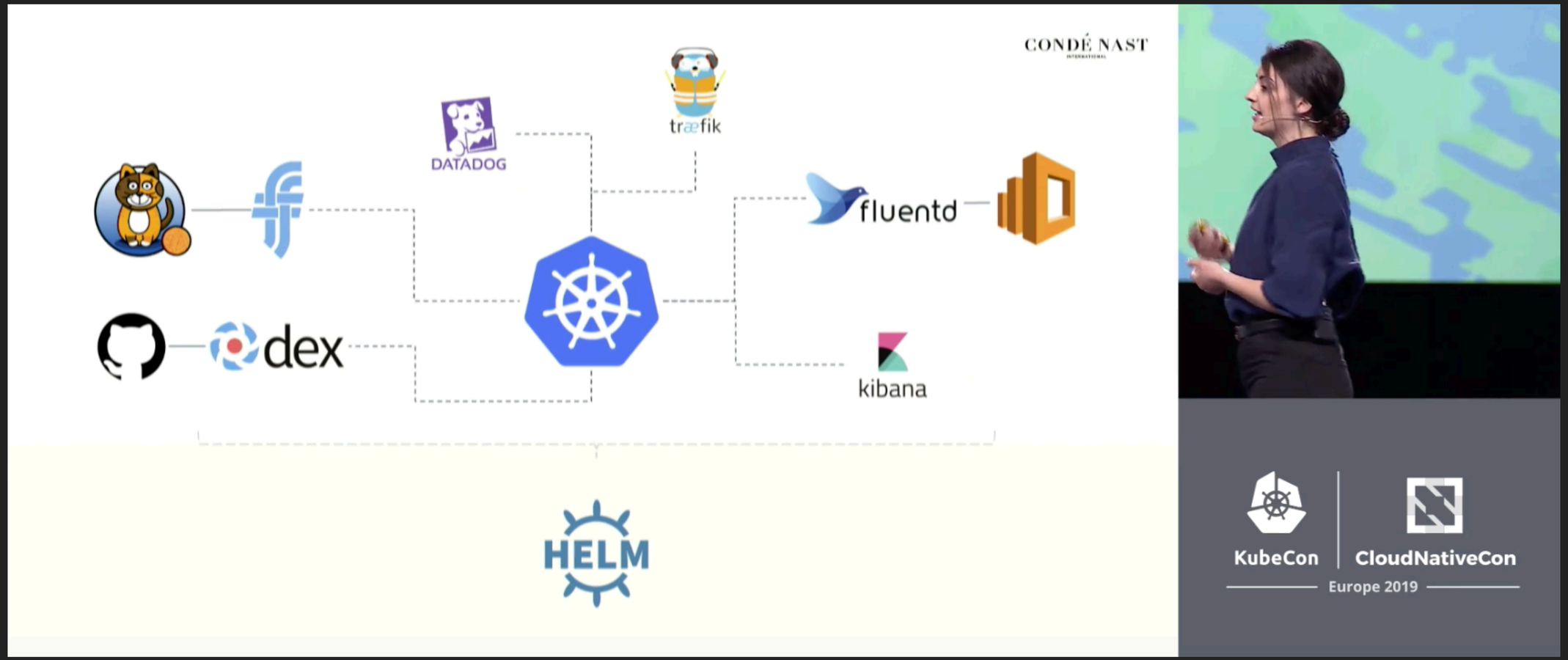

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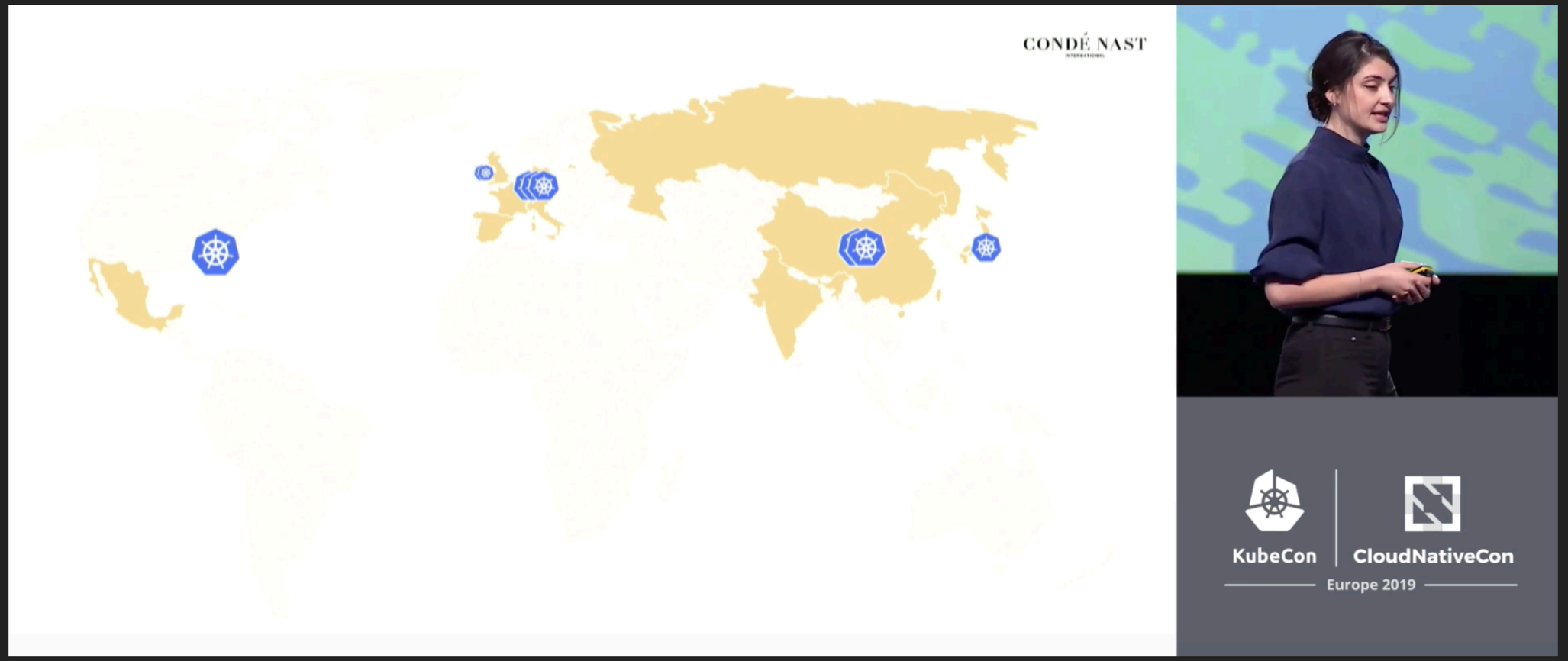

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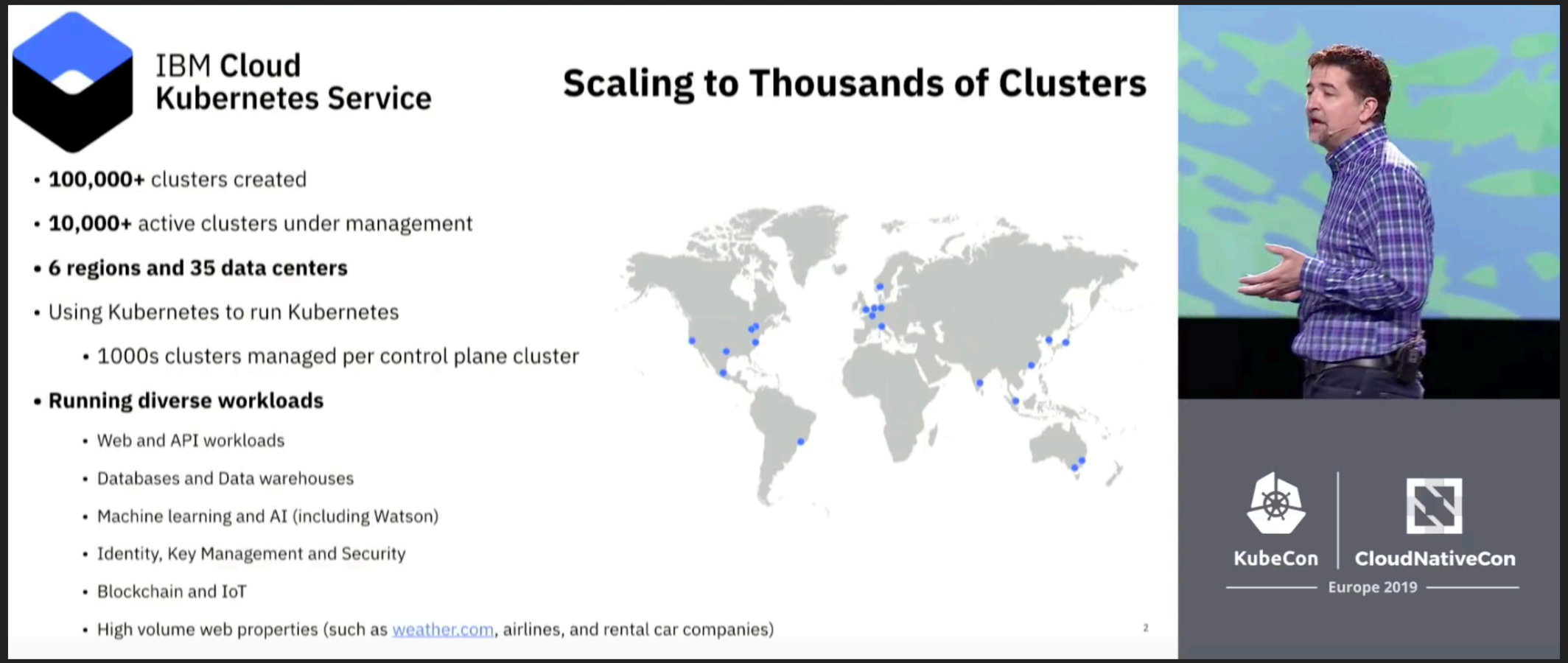
What I Learned Running 10,000+ Kubernetes Clusters - Jason McGee, IBM



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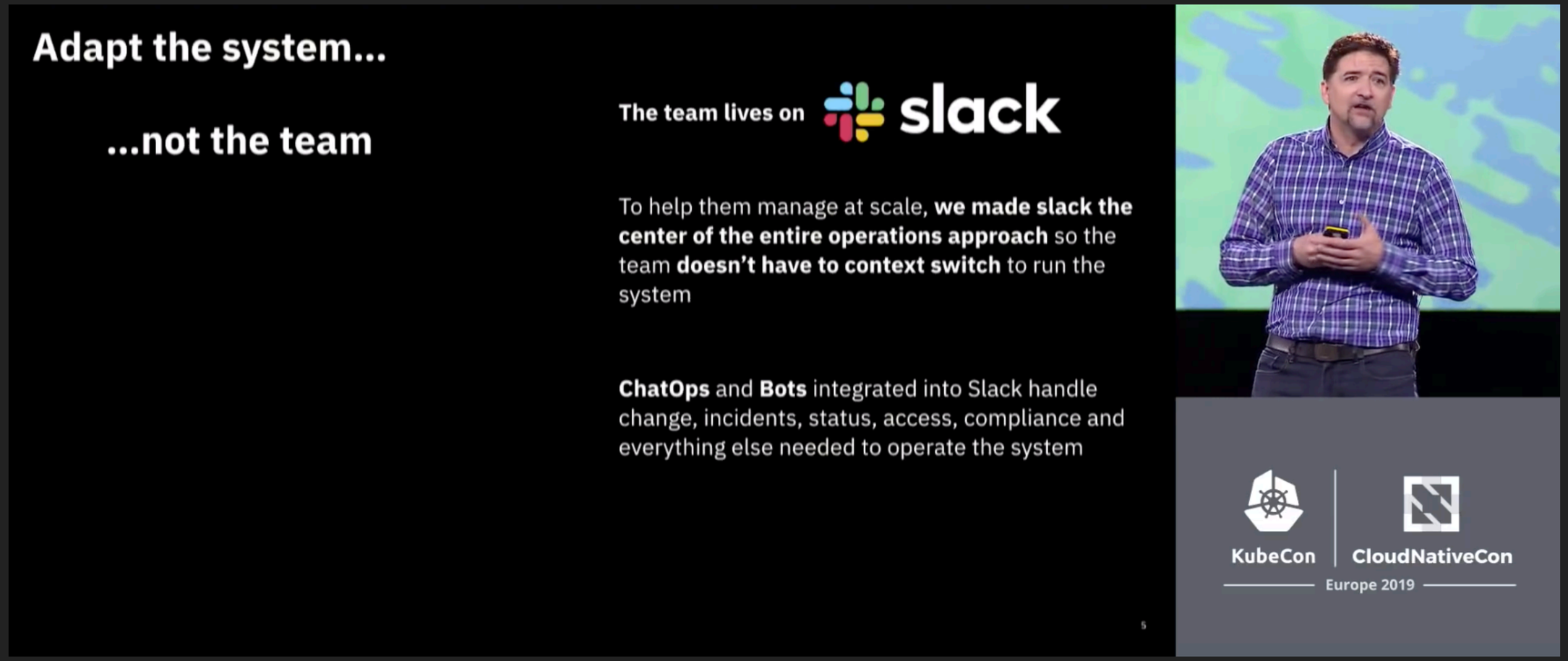

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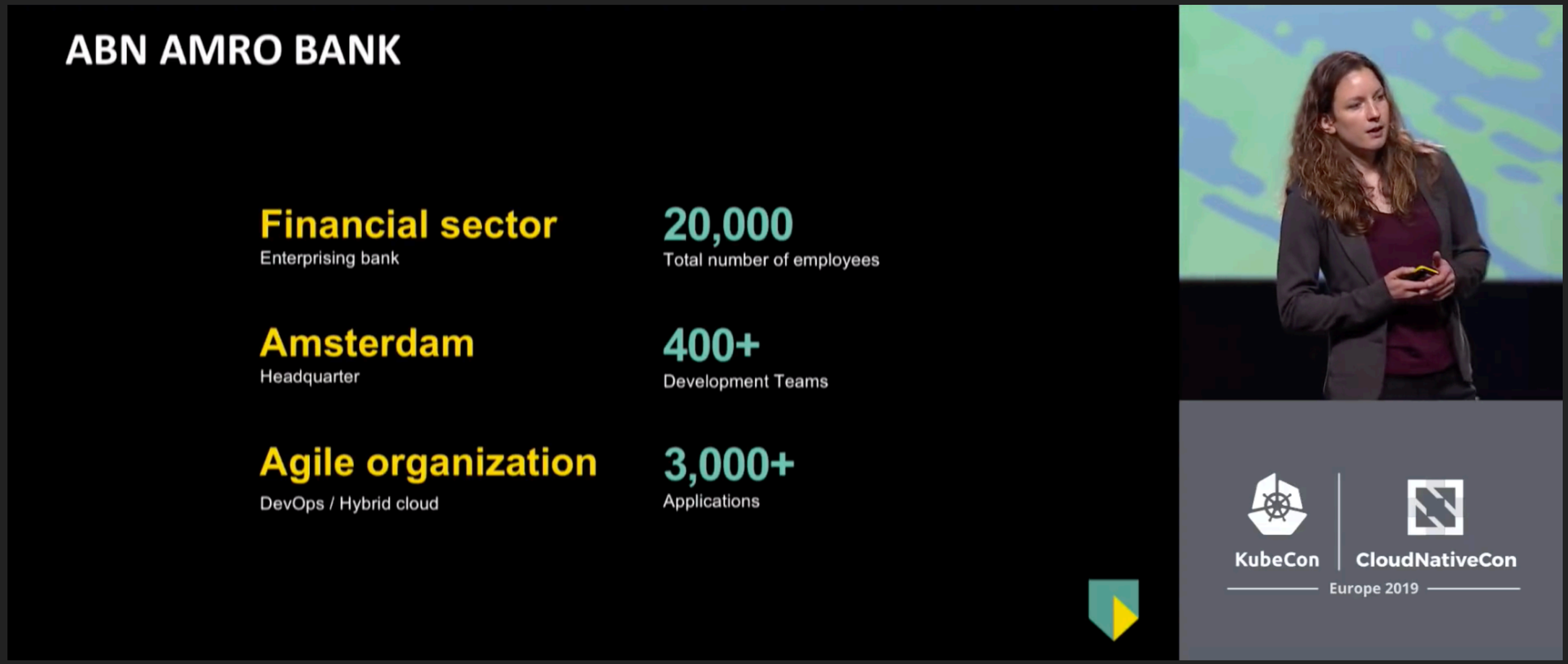
KEYNOTE THEME

KubeCon | CloudNativeCon
Europe 2019

Cloud Native / Kubernetes is a Journey and Not a Destination

KubeCon | CloudNativeCon
Europe 2019

From COBOL to Kubernetes: A 250 Year Old Bank's Cloud-Native Journey – Laura Rehorst



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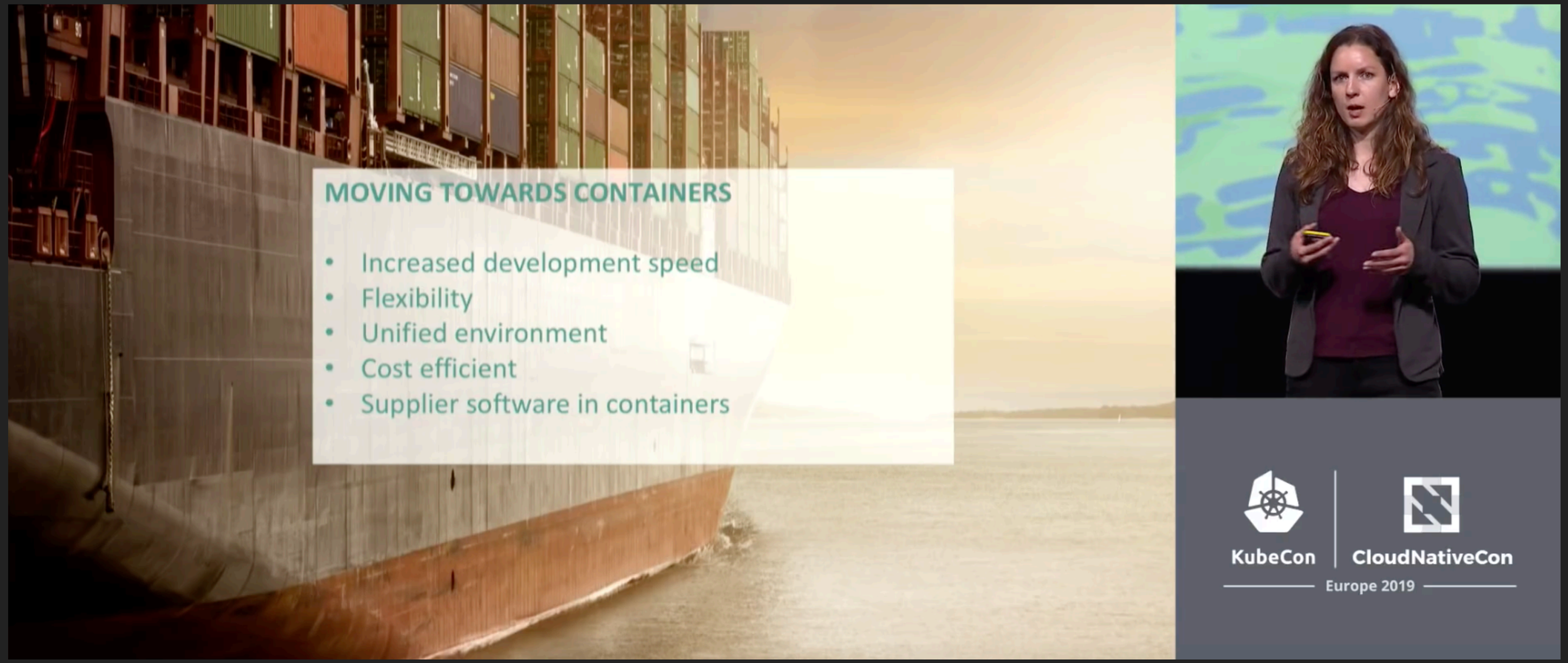

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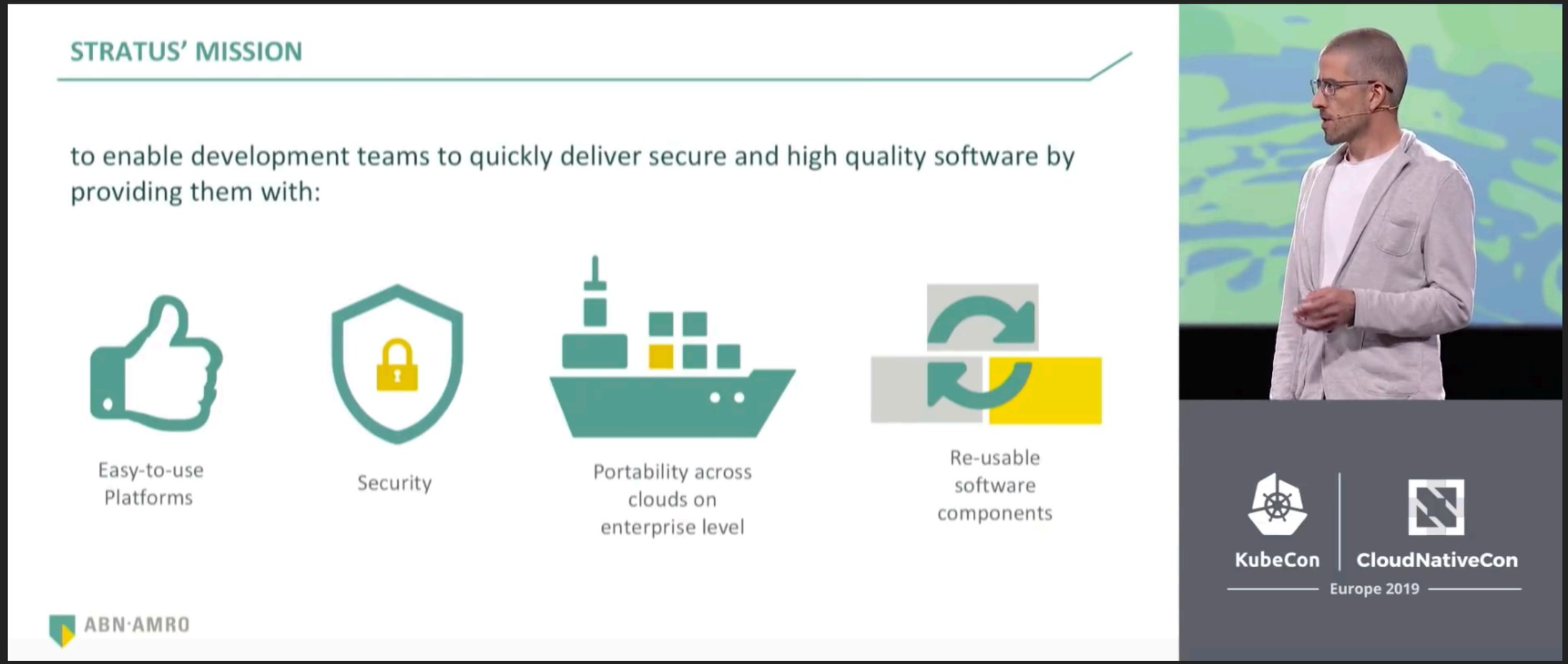

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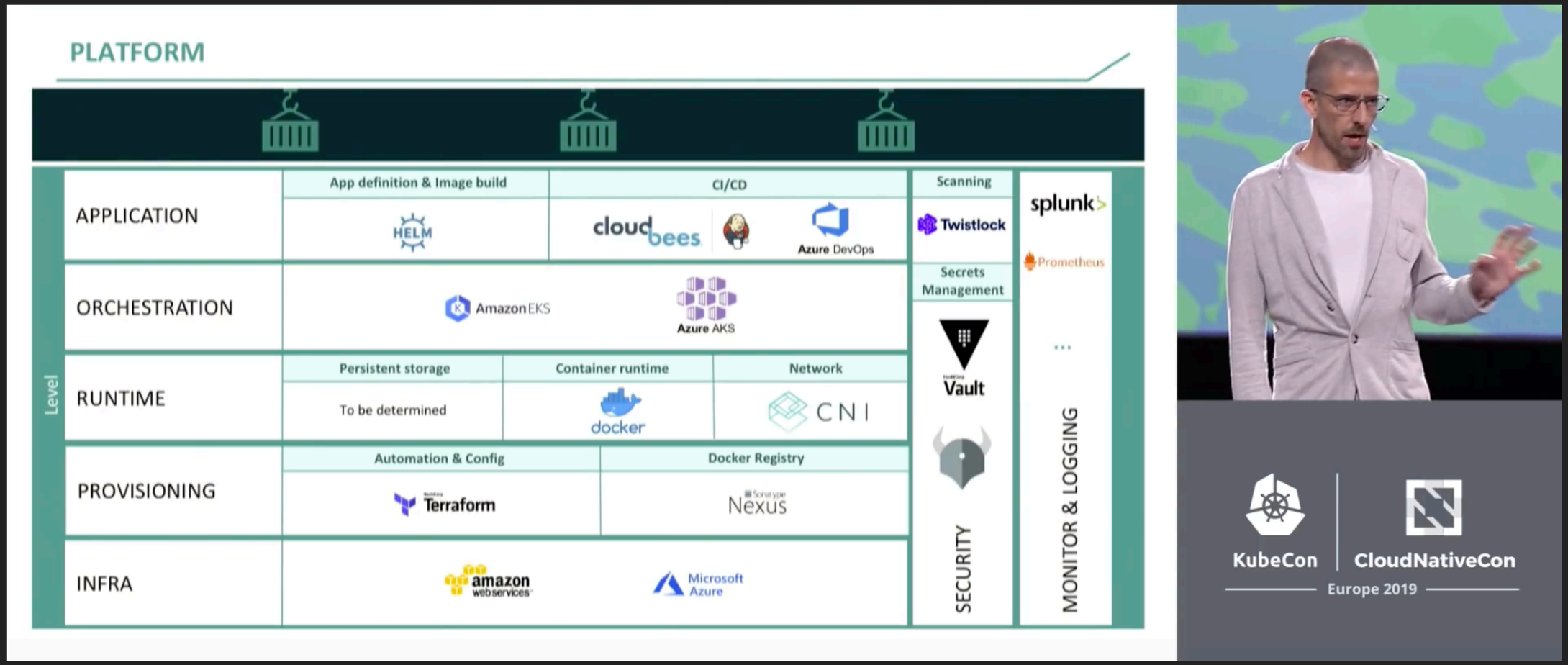

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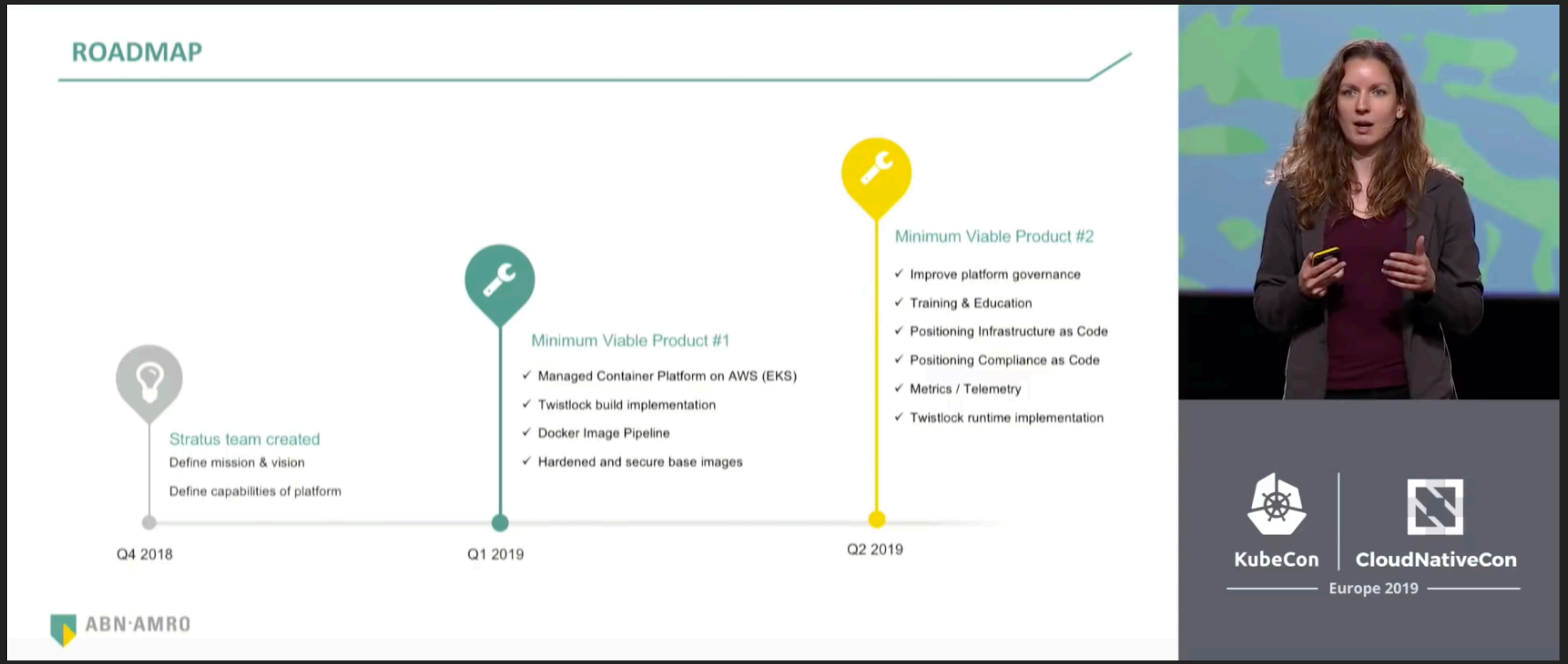

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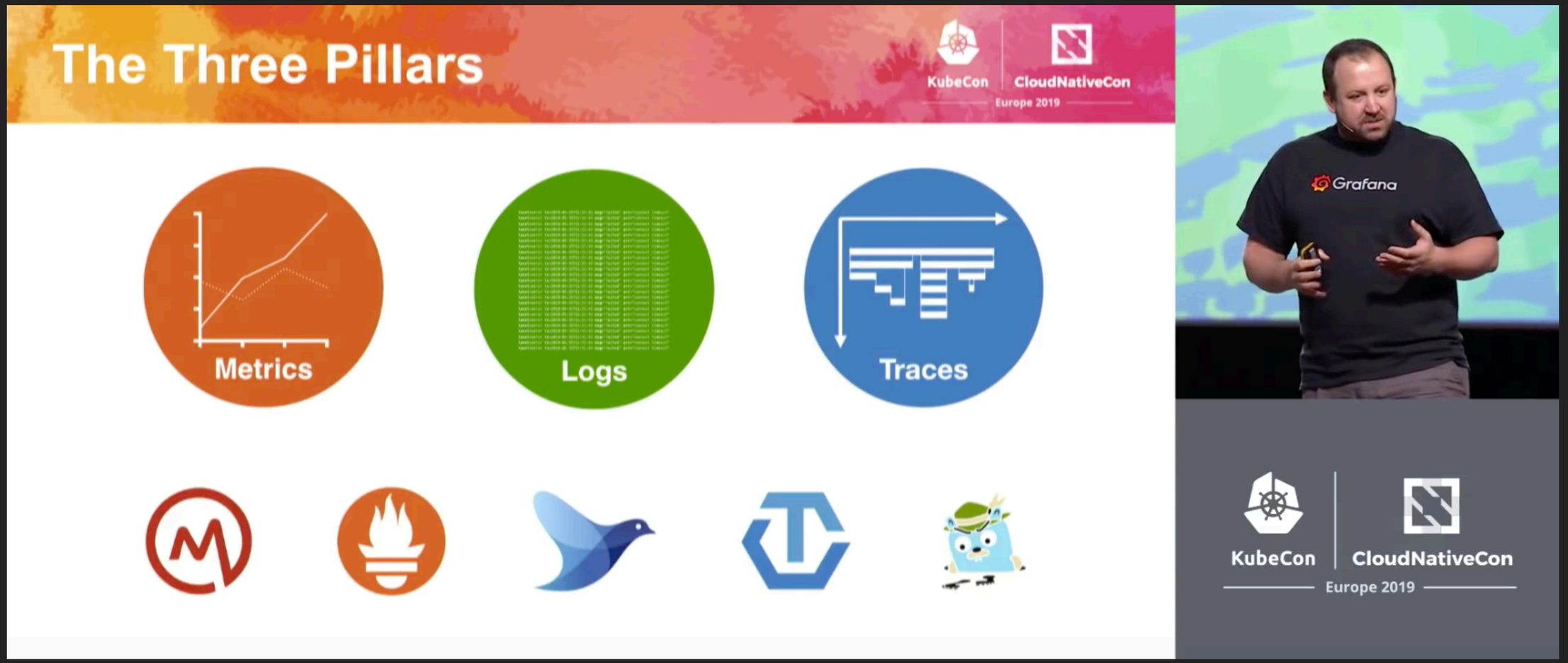
Metrics, Logs & Traces: What Does the Future Hold for Observability? – Tom Wilkie



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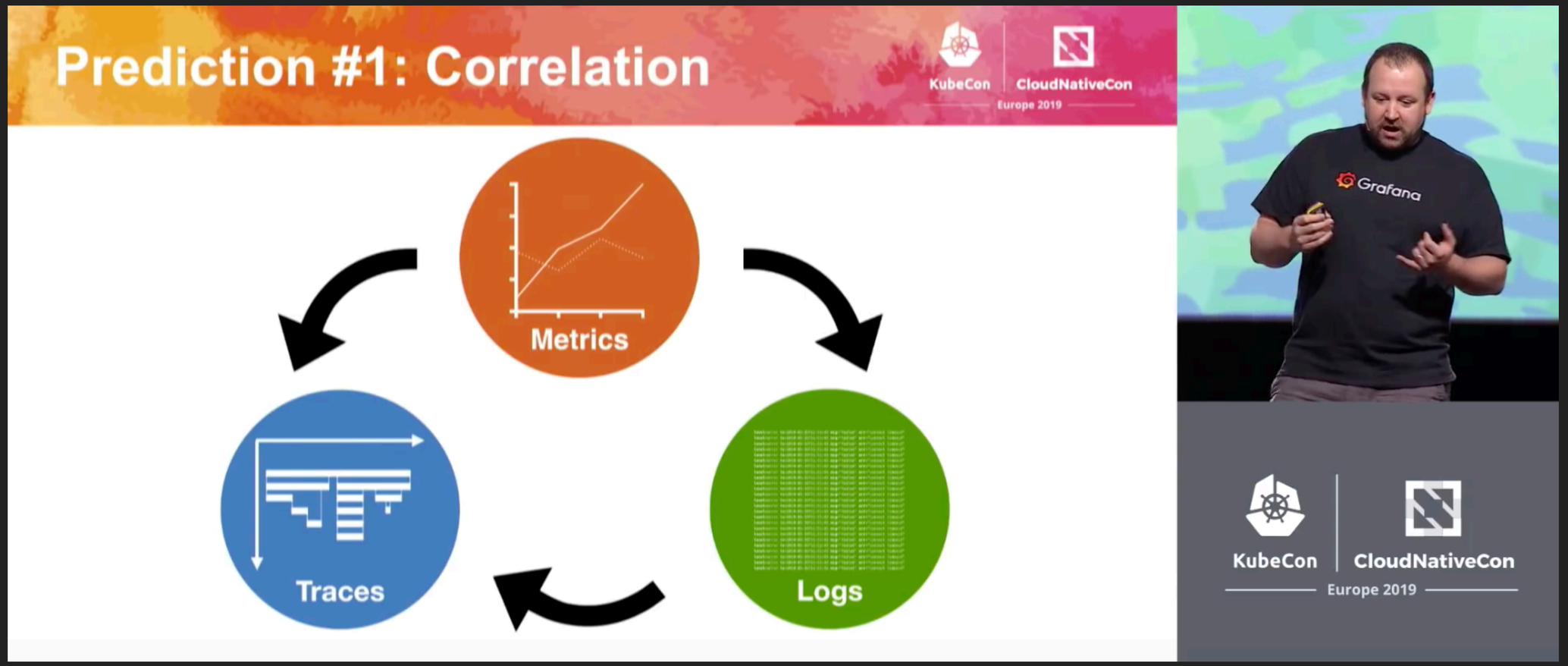

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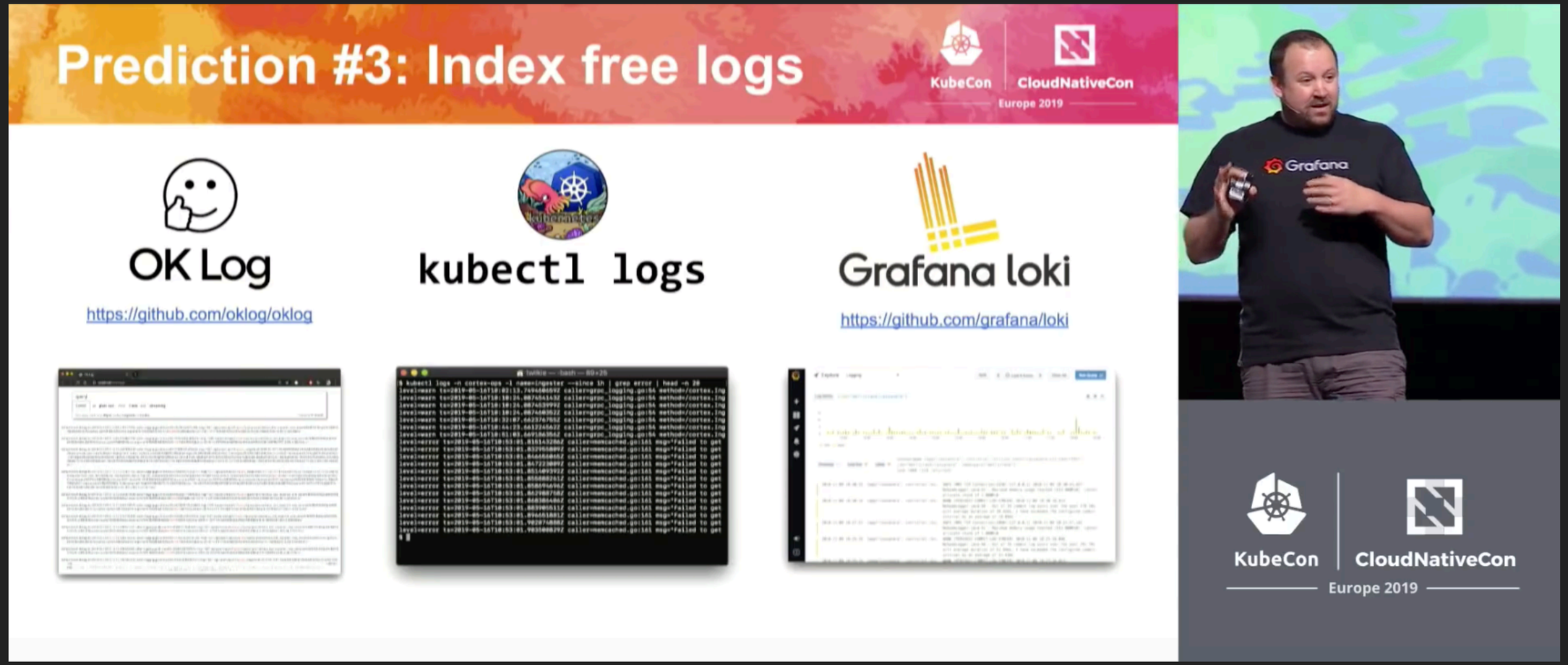

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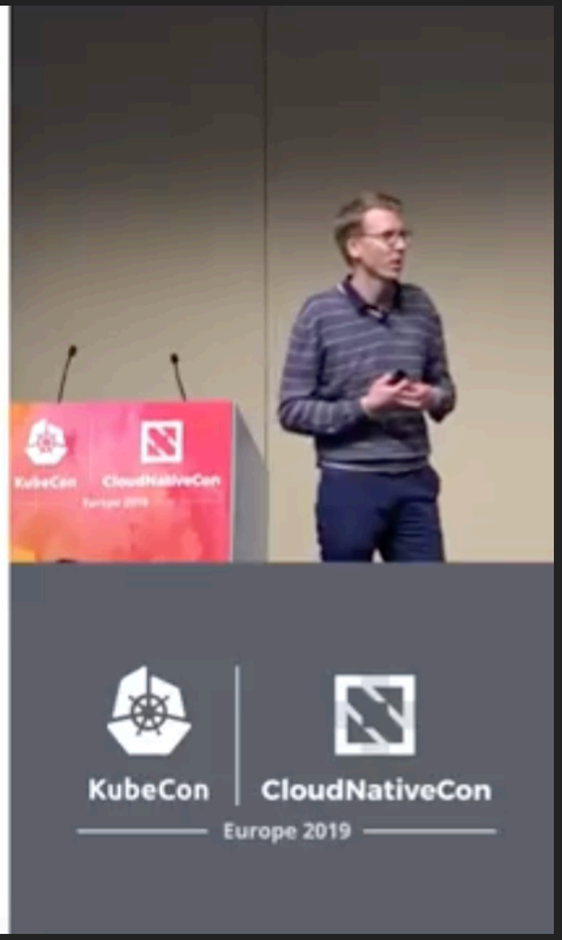
FAILURE STORIES

Kubernetes Failure Stories and How to Crash Your Clusters – Henning Jacobs, Zalando SE



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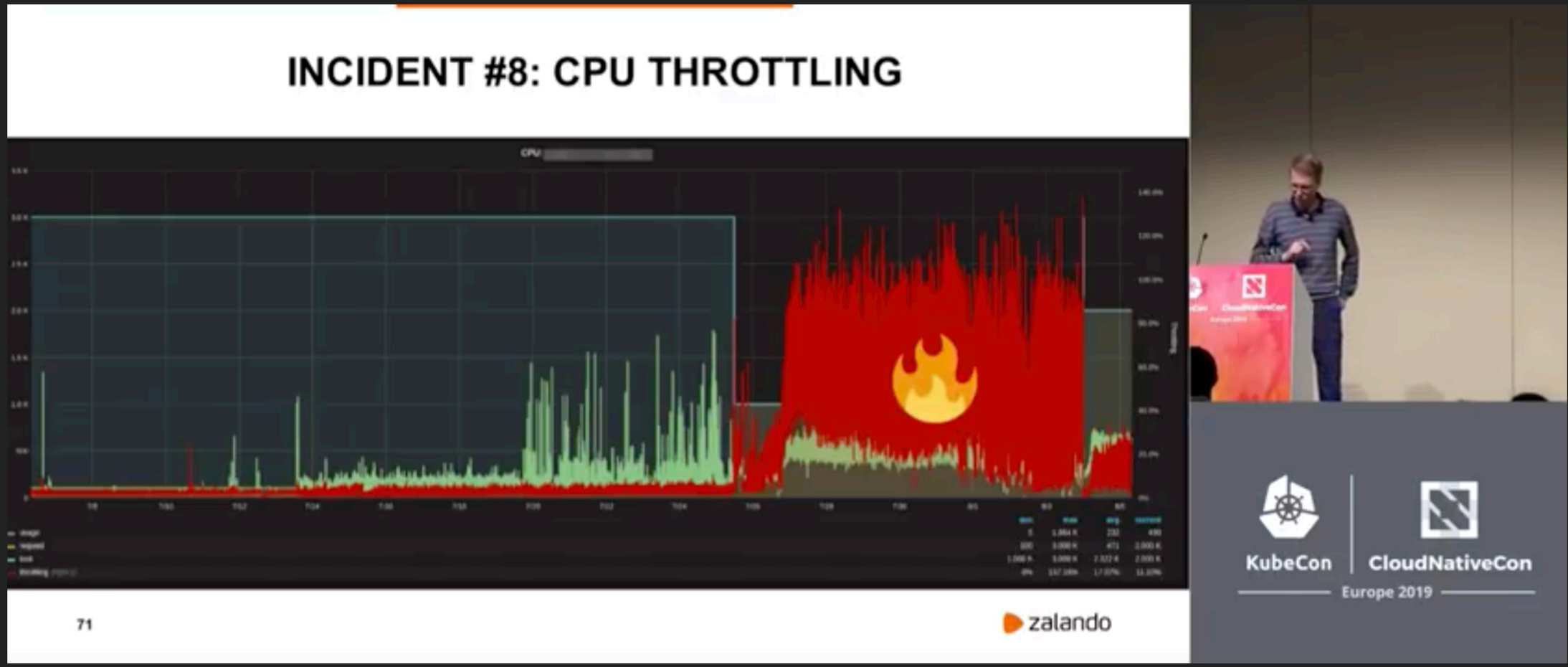

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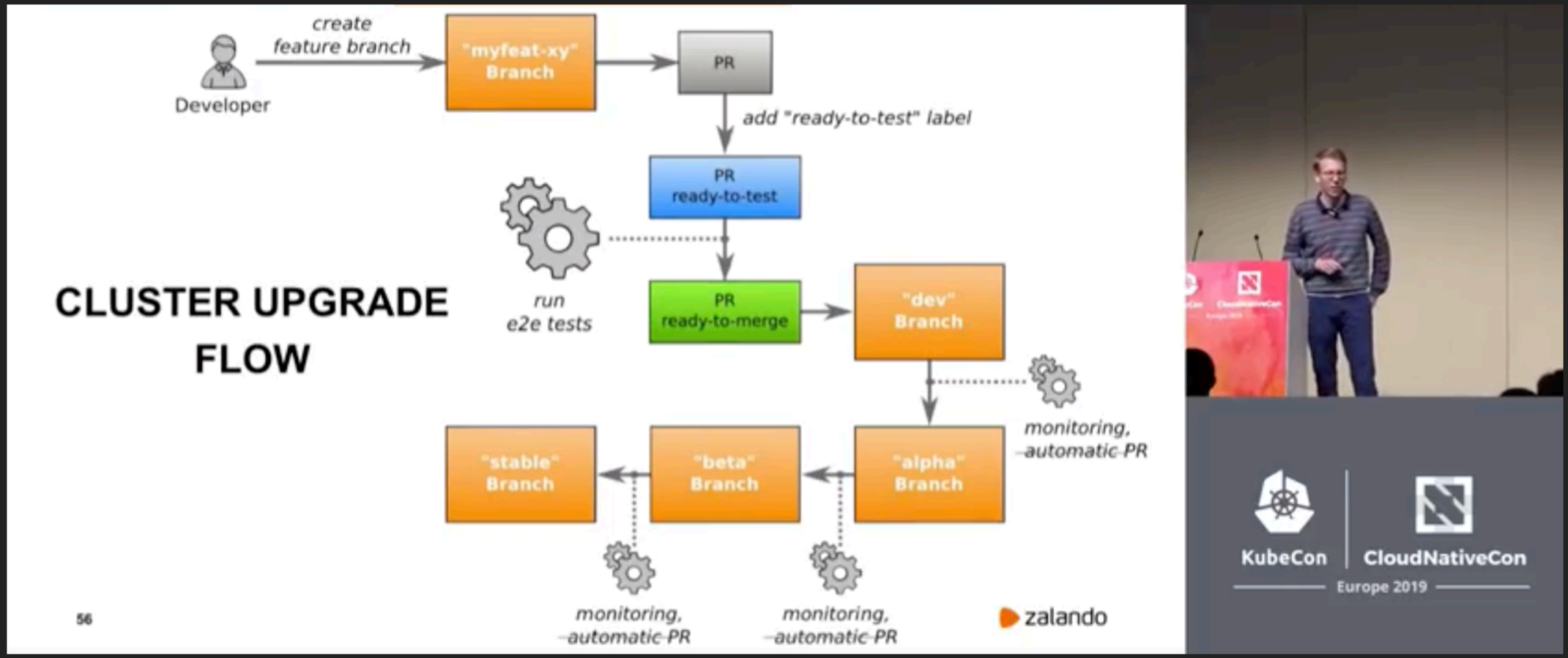

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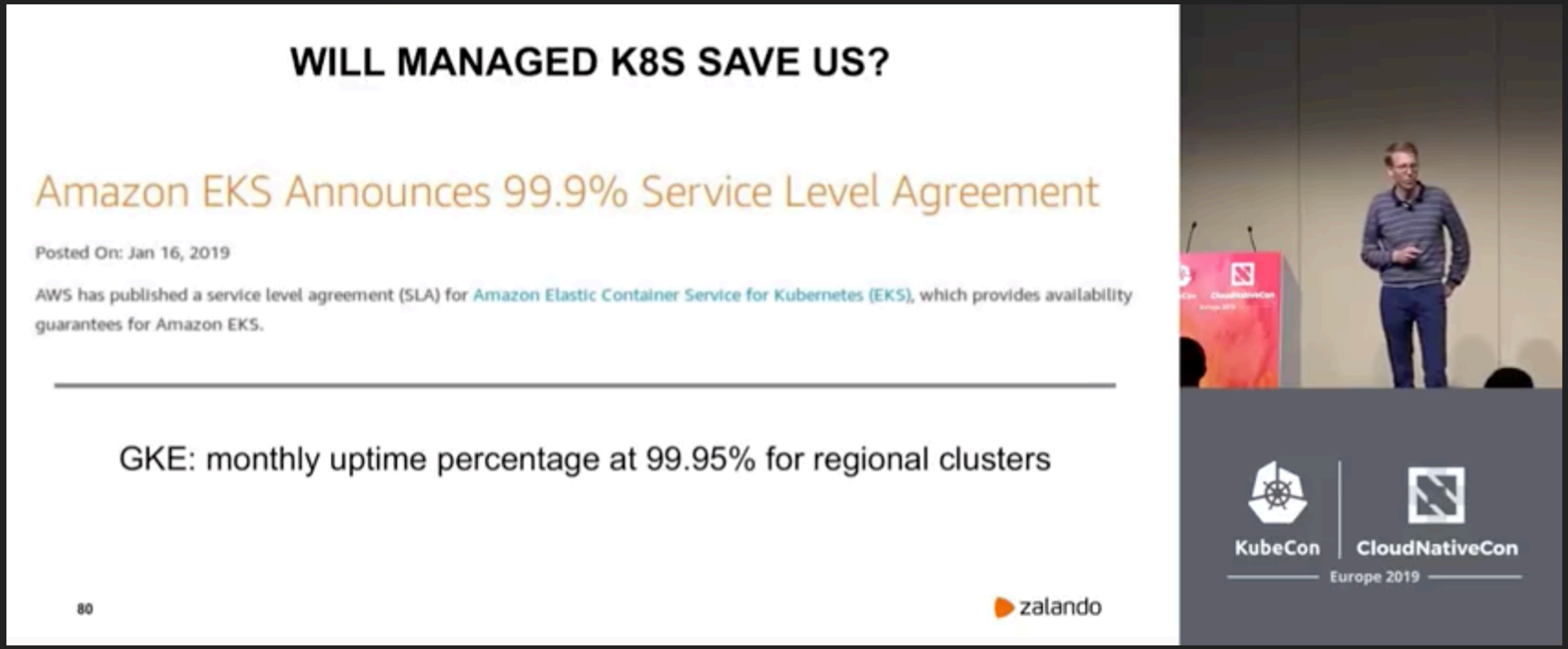

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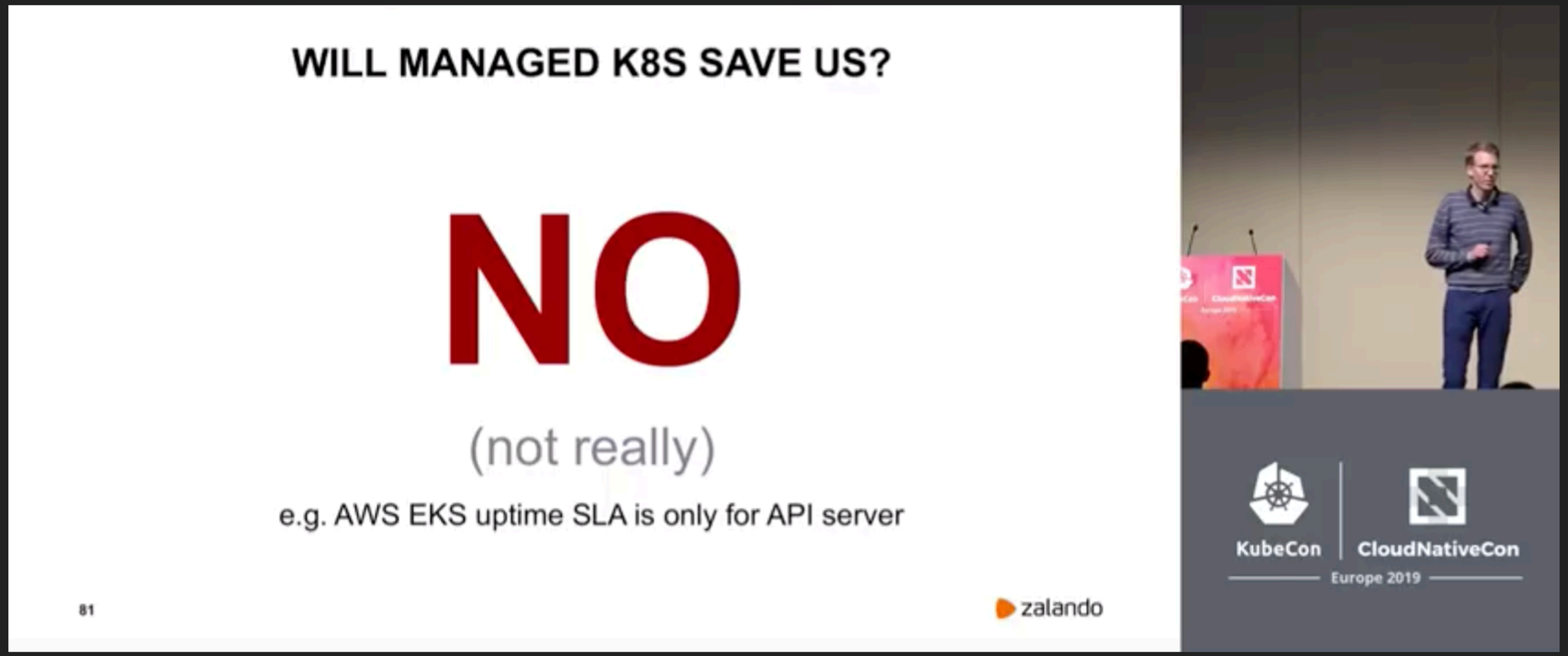

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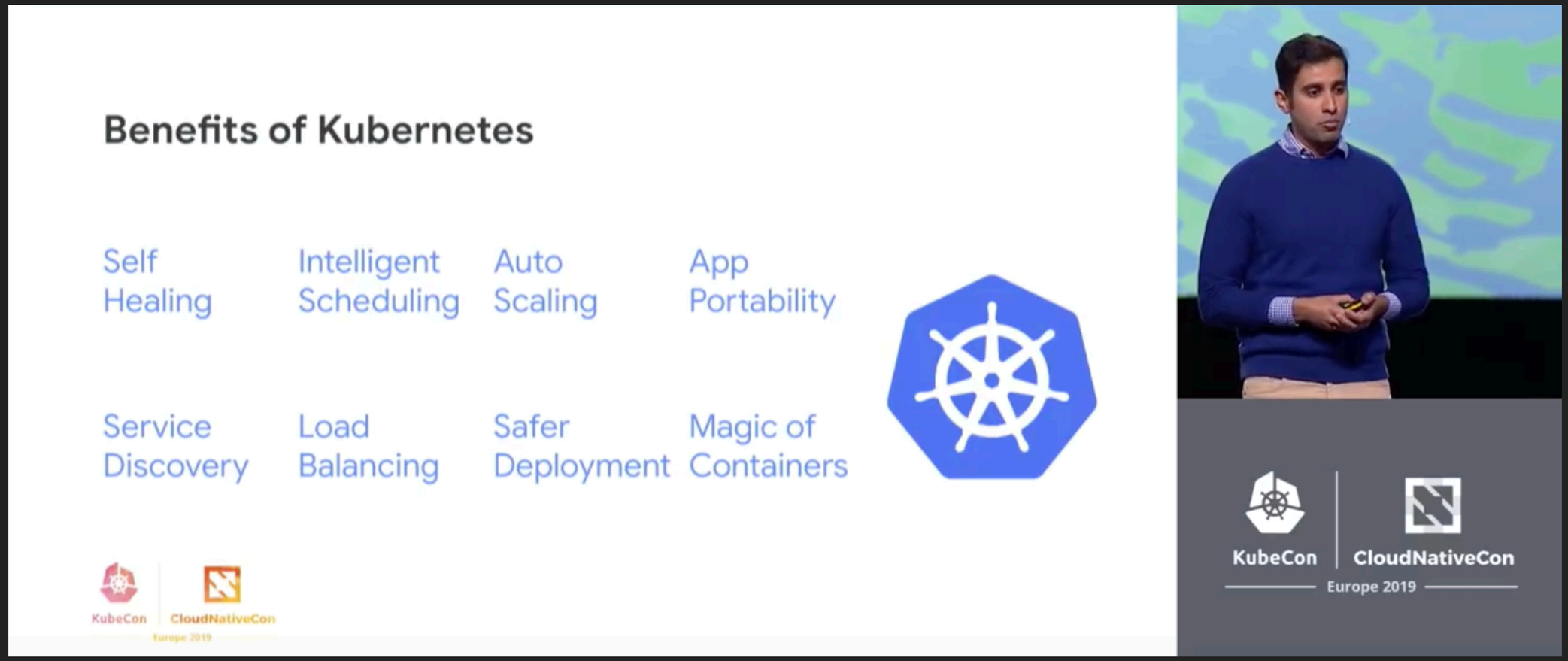
STORAGE

Debunking the Myth: Kubernetes Storage is Hard – Saad Ali, Senior Software Engineer, Google



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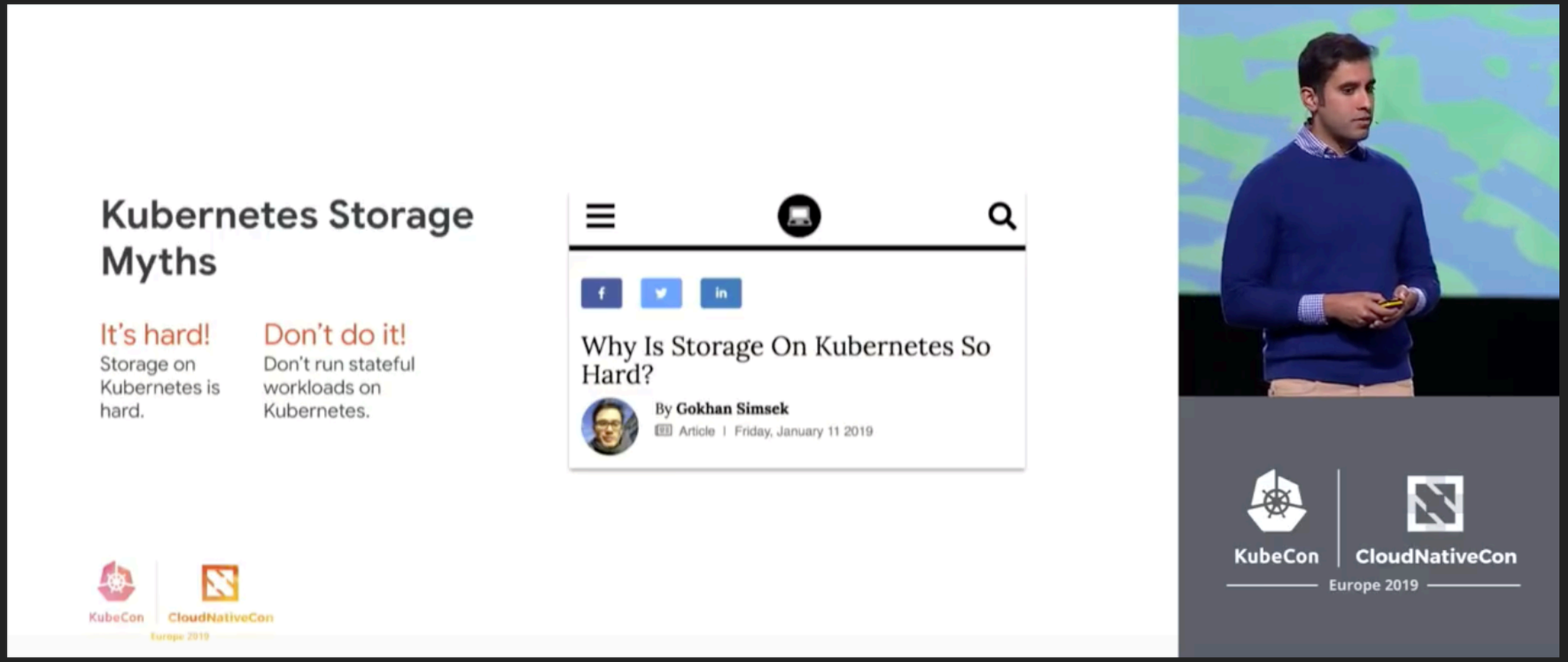

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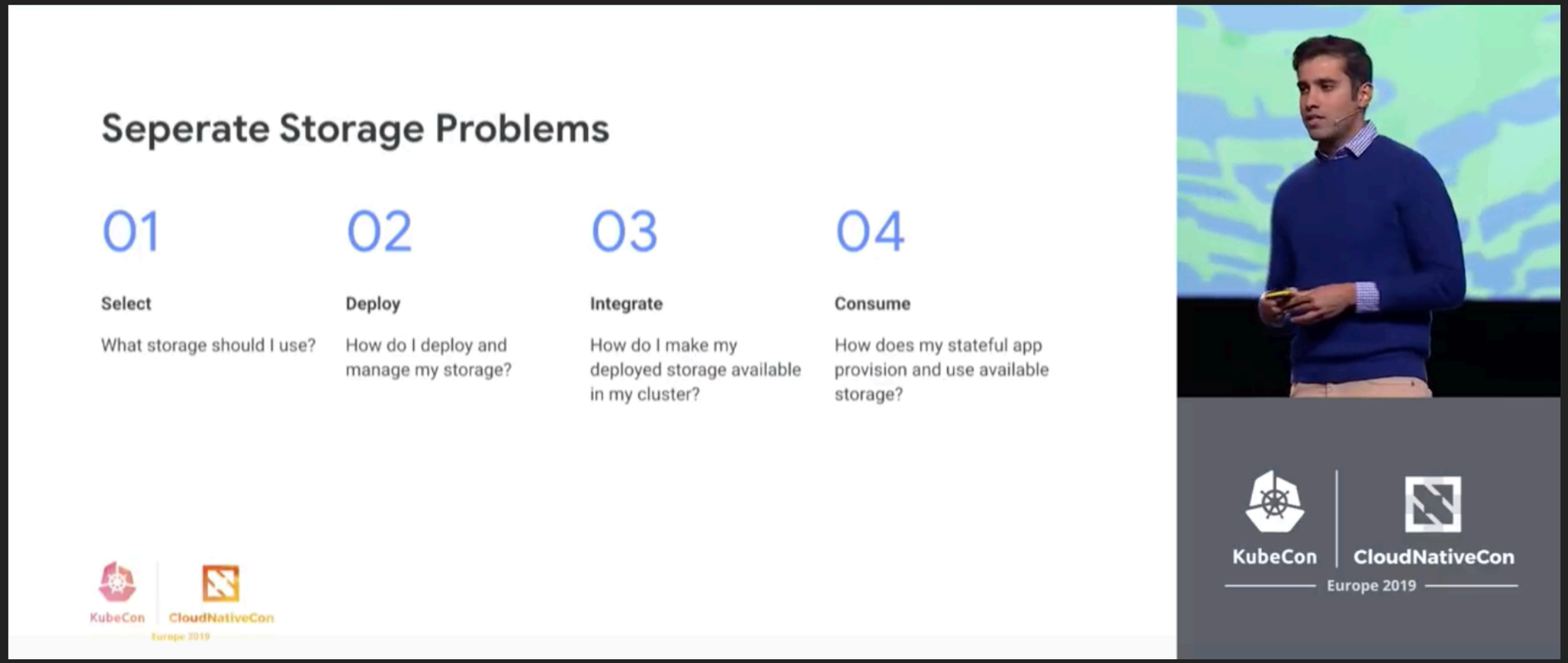

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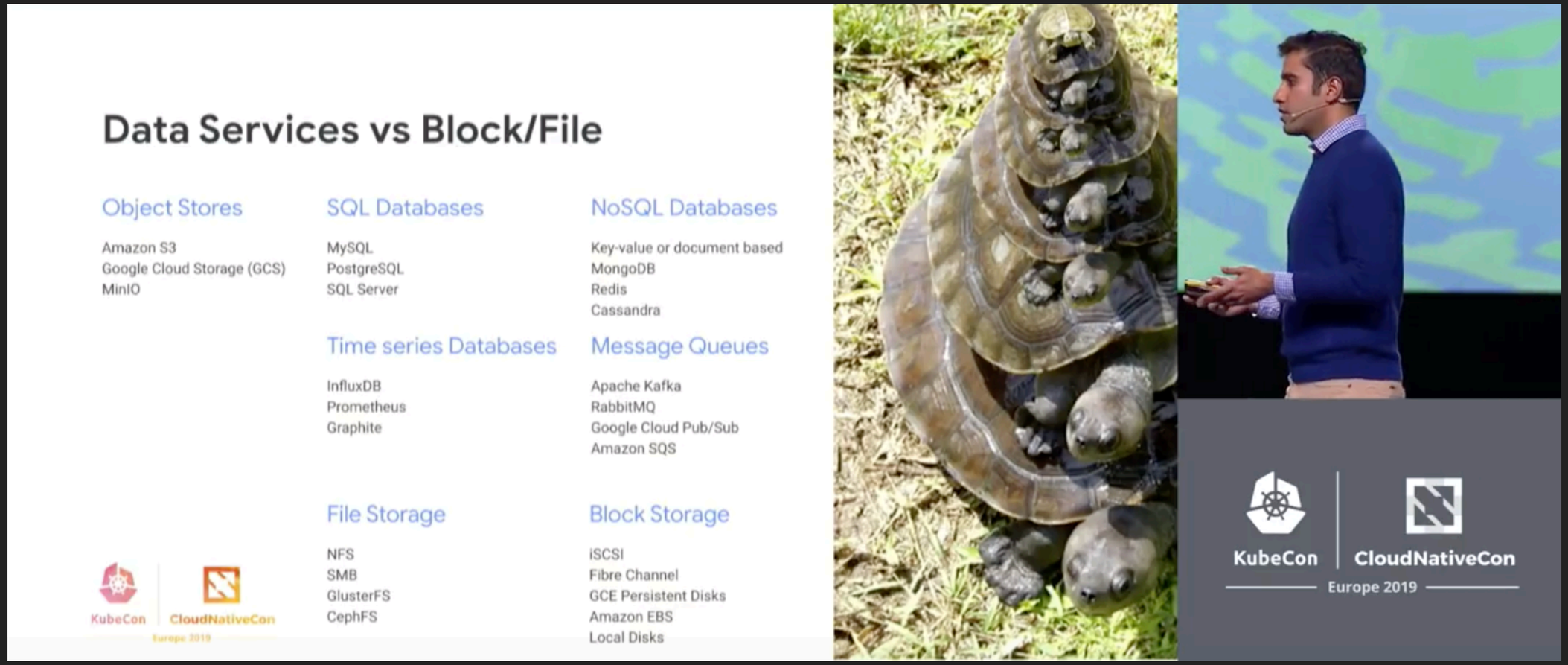

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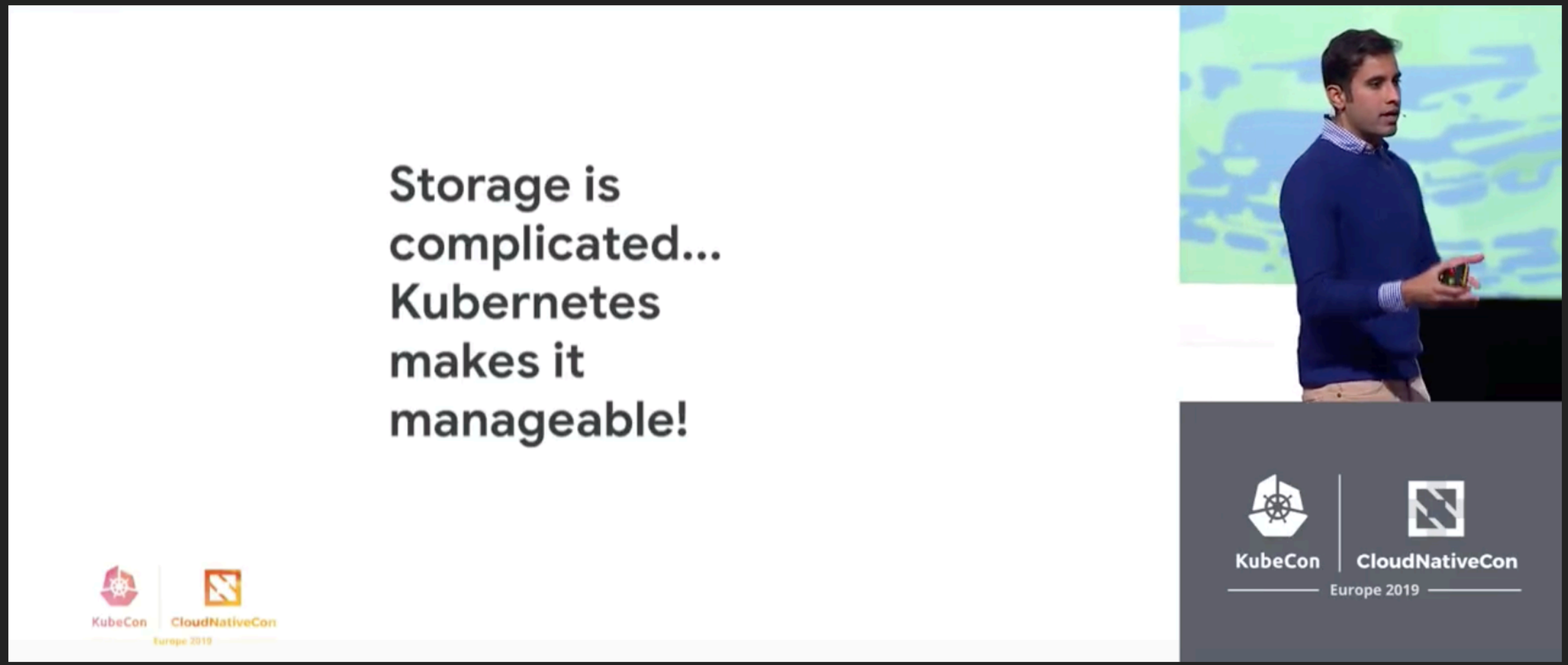

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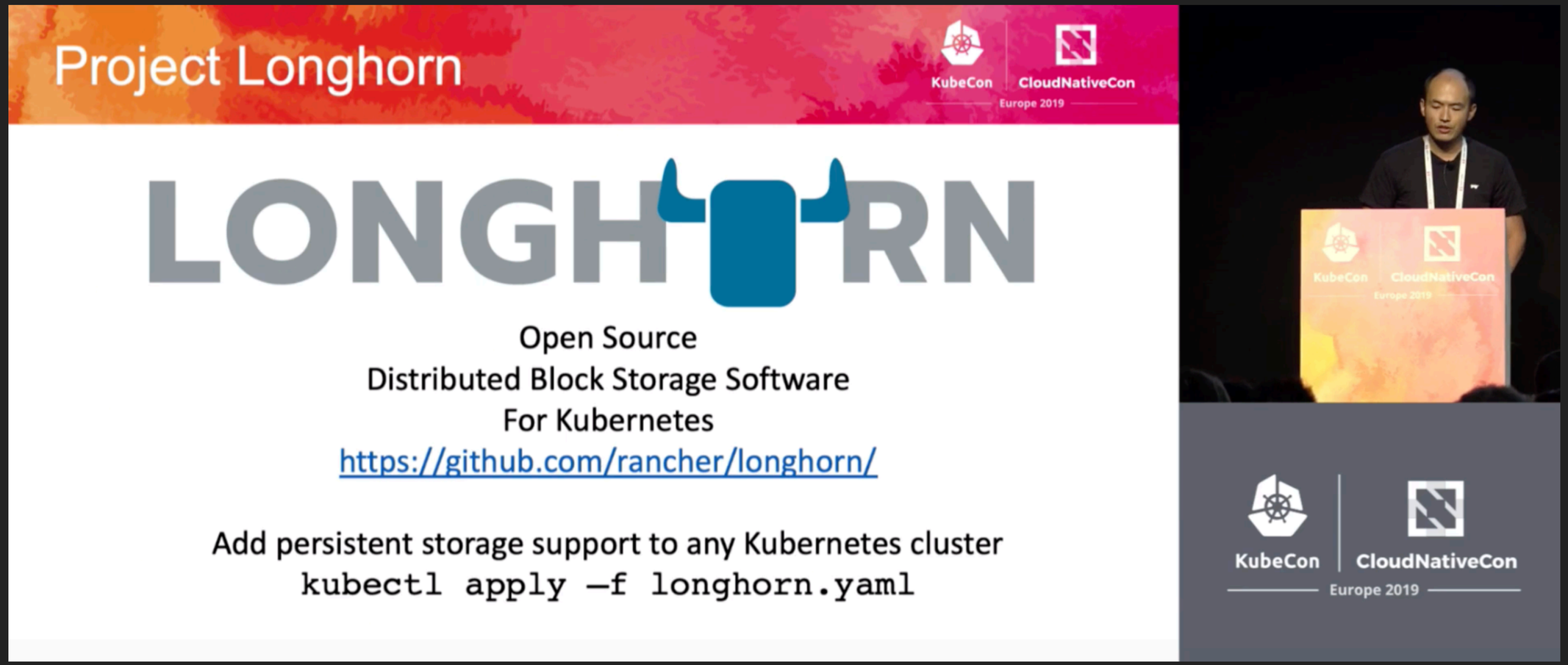
Build a Kubernetes Based Cloud Native Storage Solution From Scratch – Sheng Yang, Rancher Labs



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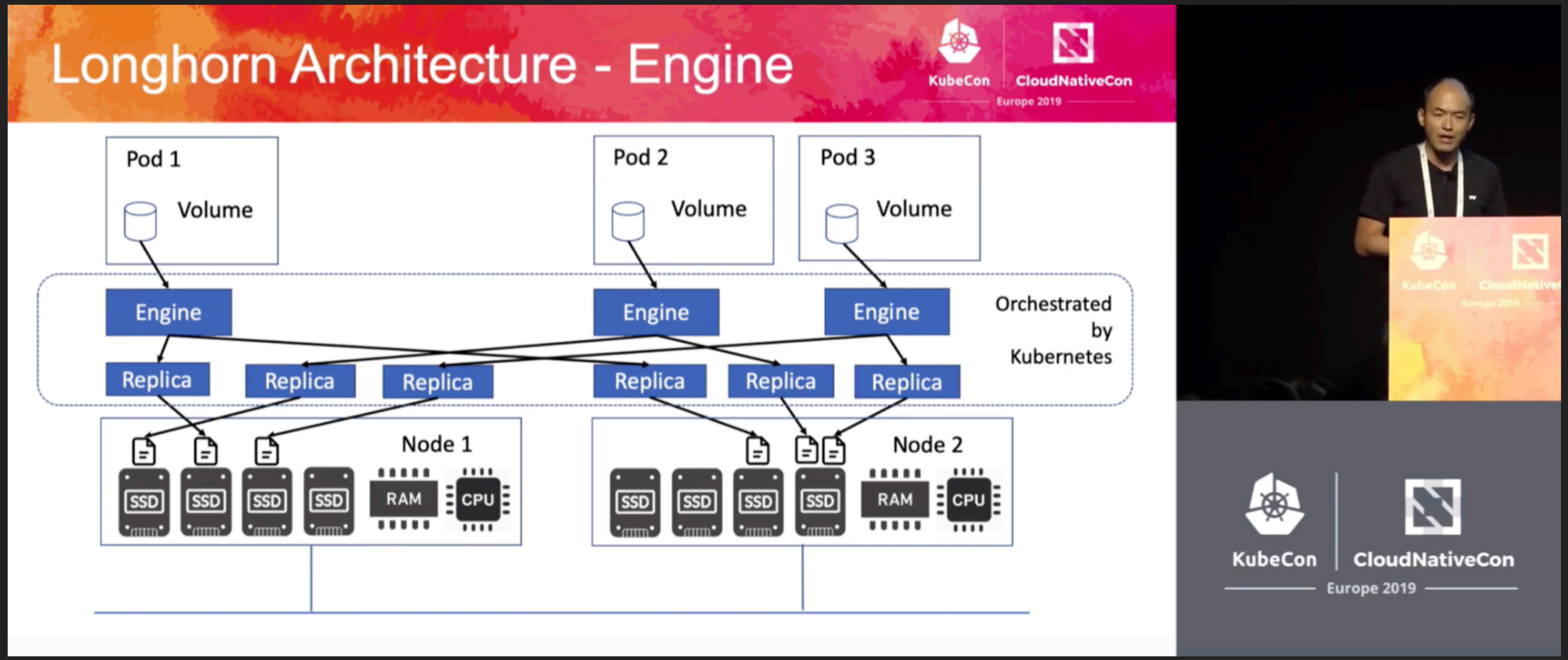

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Improving Availability for Stateful Applications in Kubernetes – Michelle Au, Google

Examples

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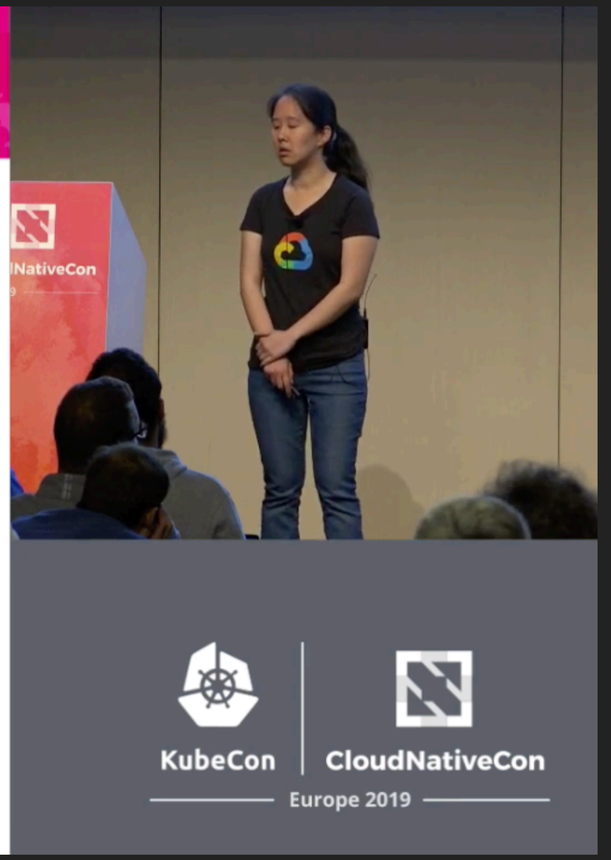
Example	Accessibility	Availability	Durability	Access Mode	Performance	Cost
Local disk	Single node	Single node	Single disk*	Single node	Best	$
Cloud disk	Single zone	Single zone	3x	Single node	Better	$$
Replicated cloud disk	Multi zone	Multi zone	3x	Single node	Good	$$$
Single NFS	Global	Single server	Varies	Multi node	Good	$$$
Scaleout/HA Filer	Global	Global	Varies	Multi node	Varies	$$$$

* Most cloud local disks are not durable beyond VM



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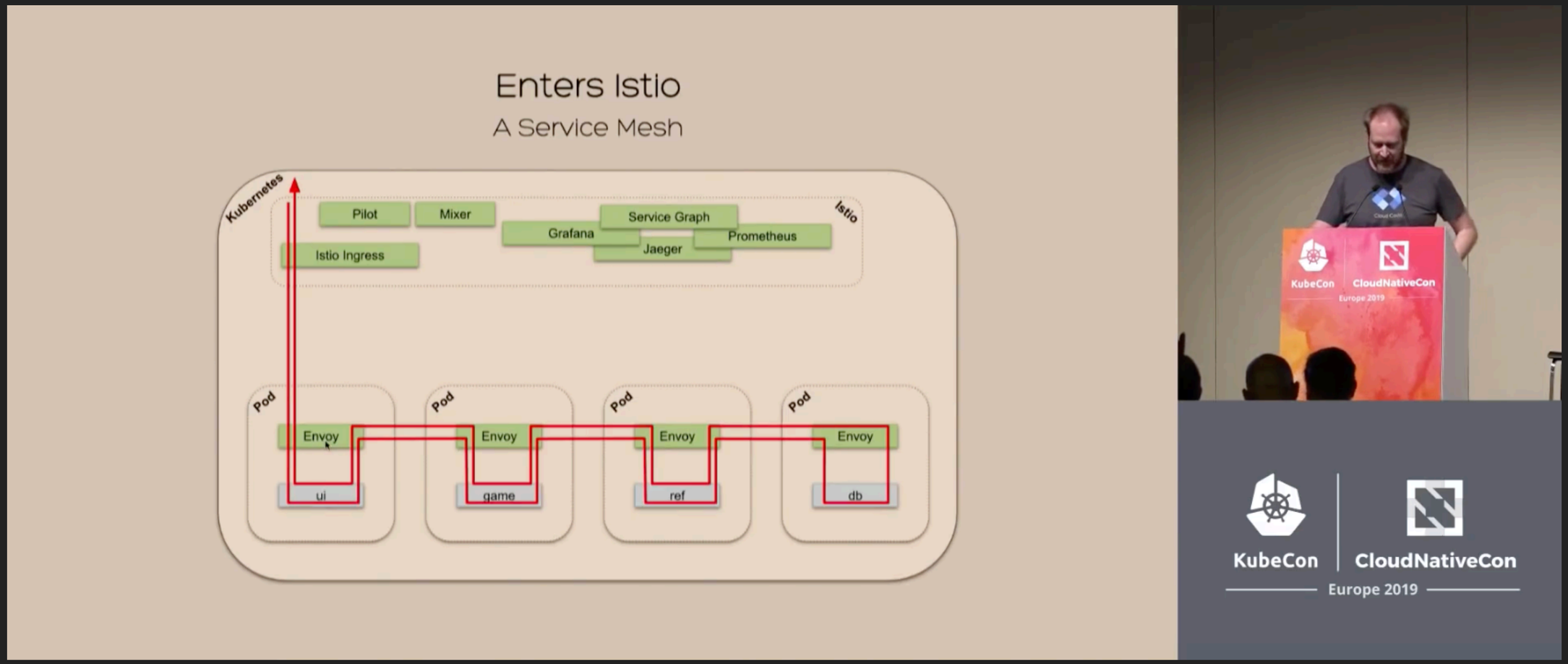
SERVICE MESH

Istio, We Have a Problem! Understanding and Fixing Bugs with a Service-Mesh - David Gageot, Google



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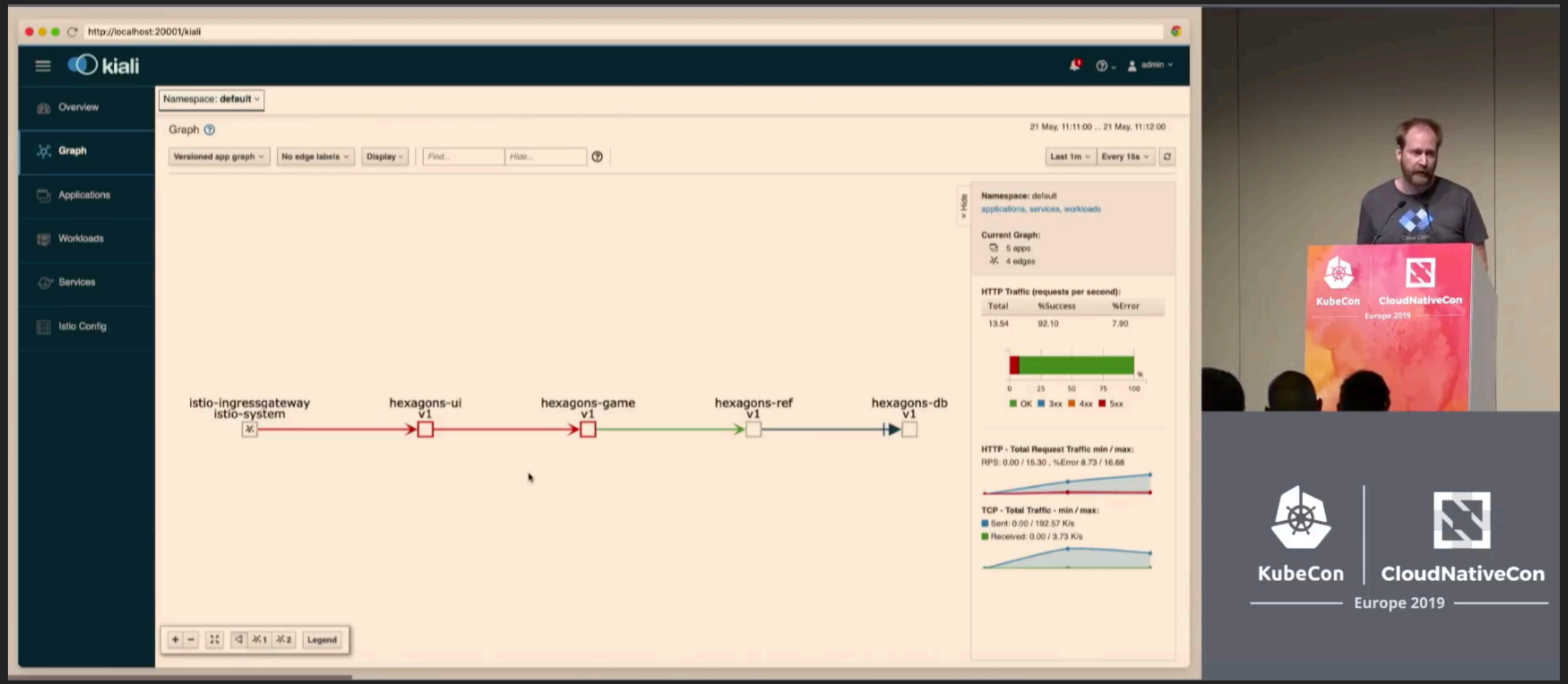

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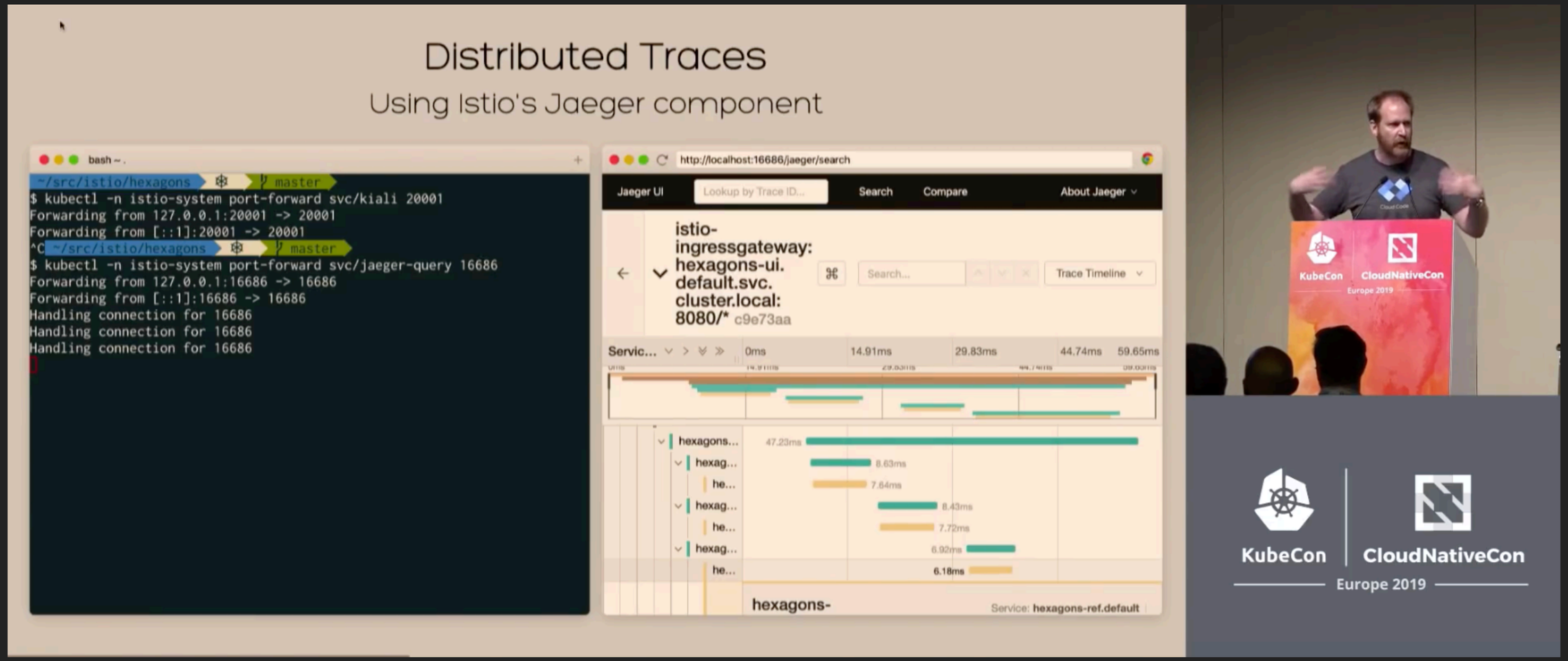

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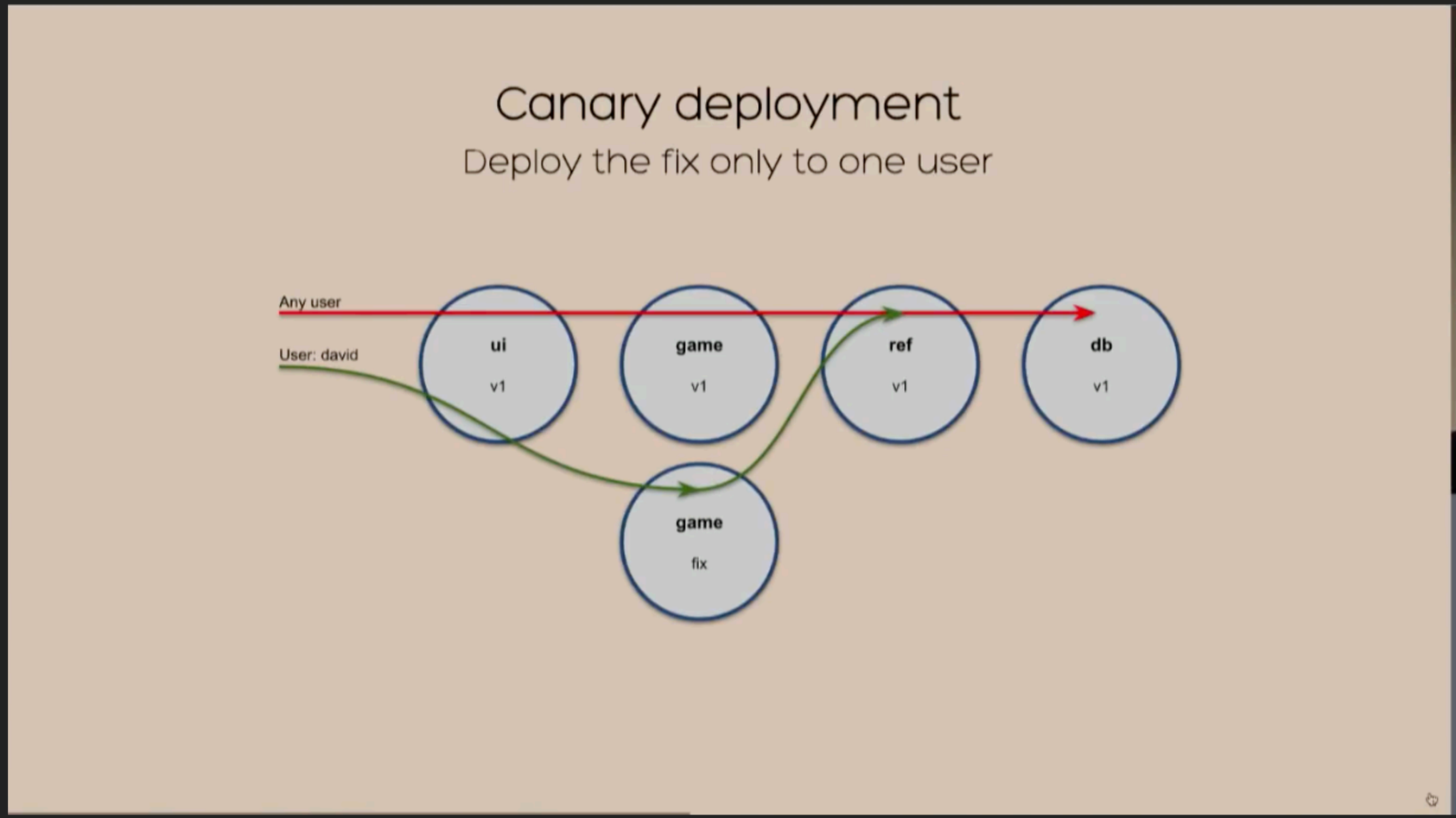

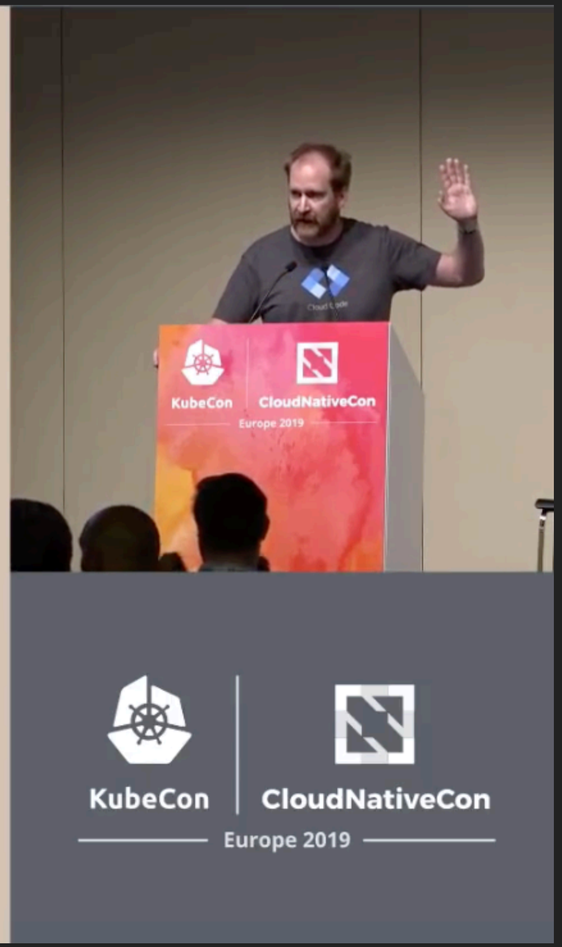

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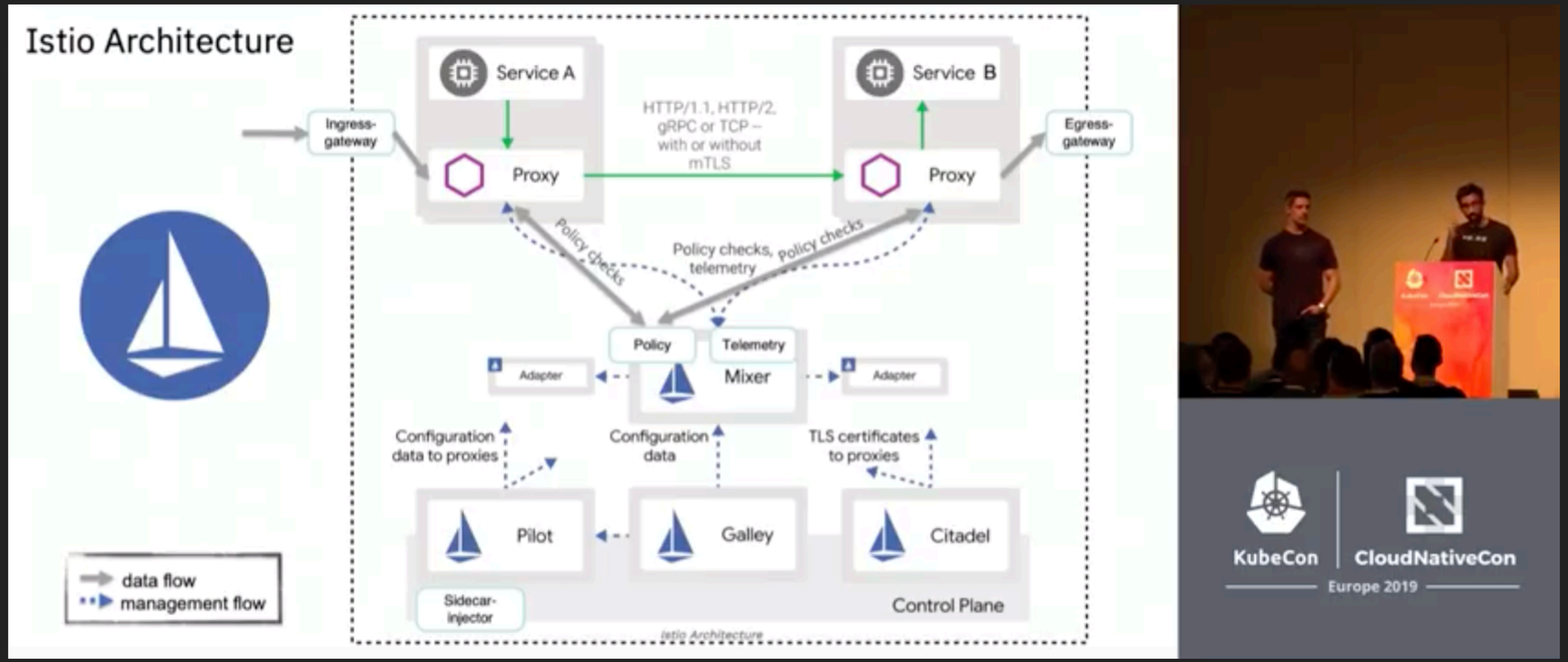
Istio Multi-Cluster Service Mesh Patterns Explained - Daniel Berg & Ram Vennam, IBM



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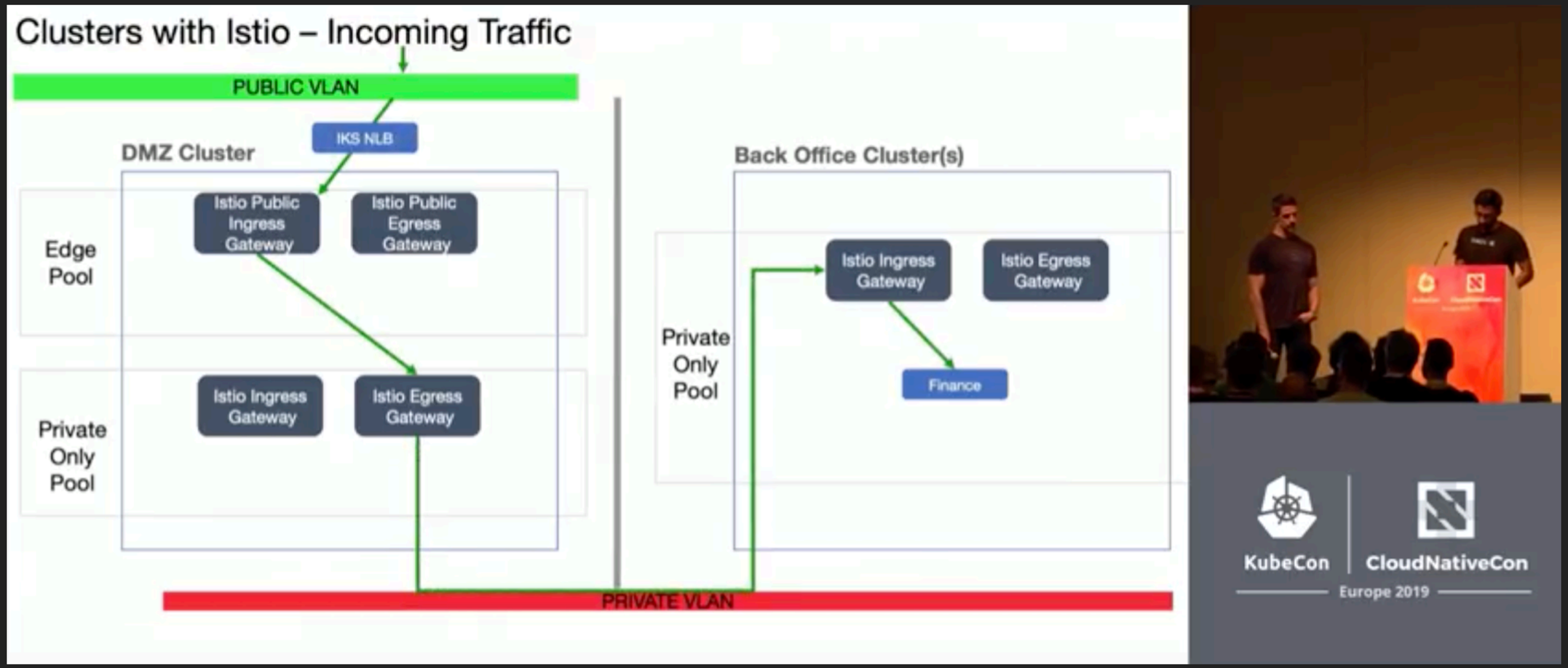

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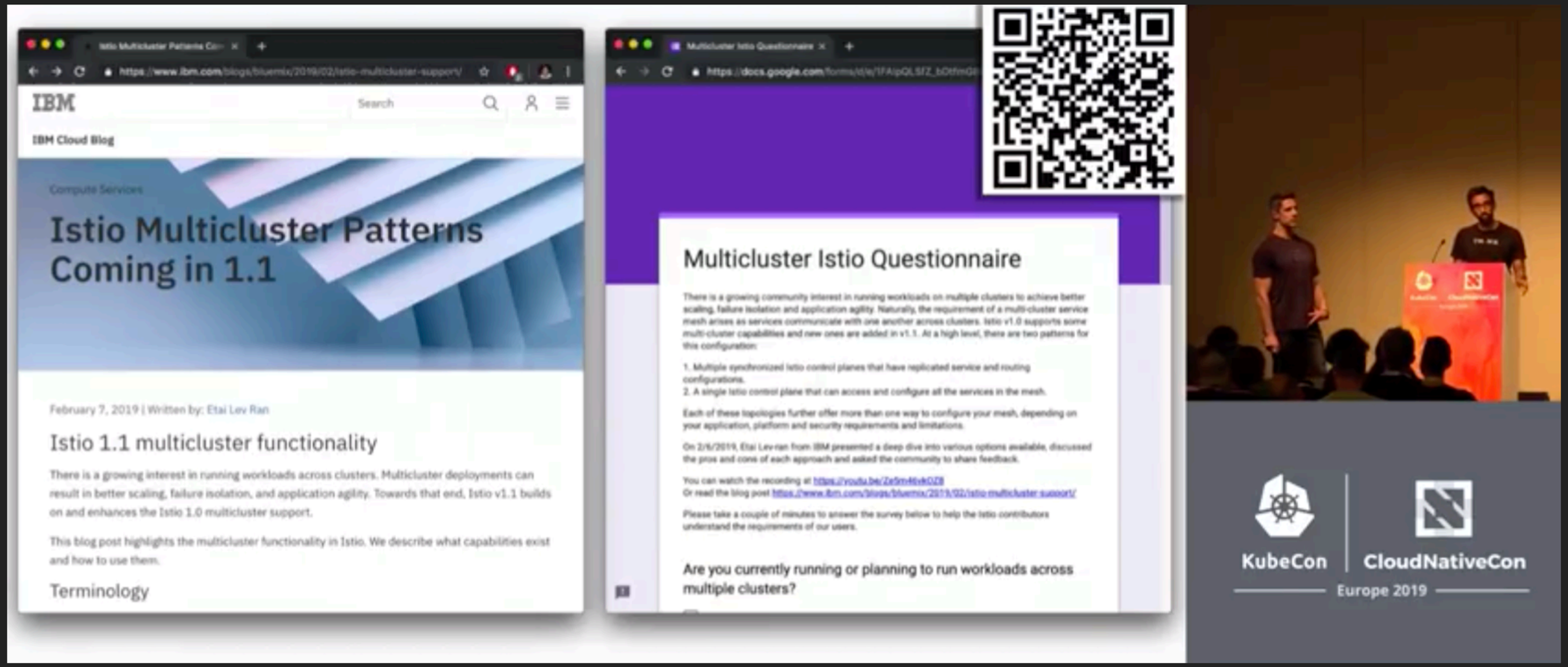

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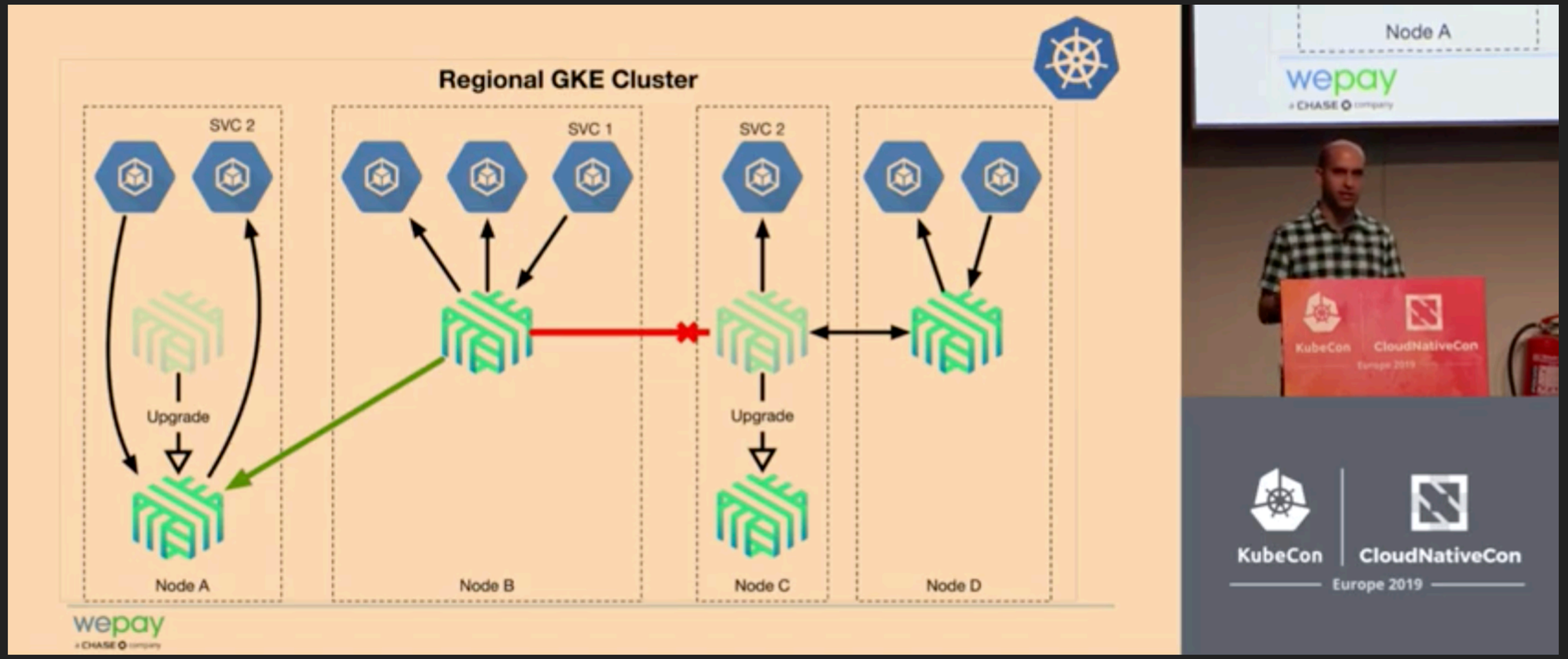
What WePay Learned From Processing Billions of Dollars on GKE Using Linkerd – Mohsen Rezaei, WePay



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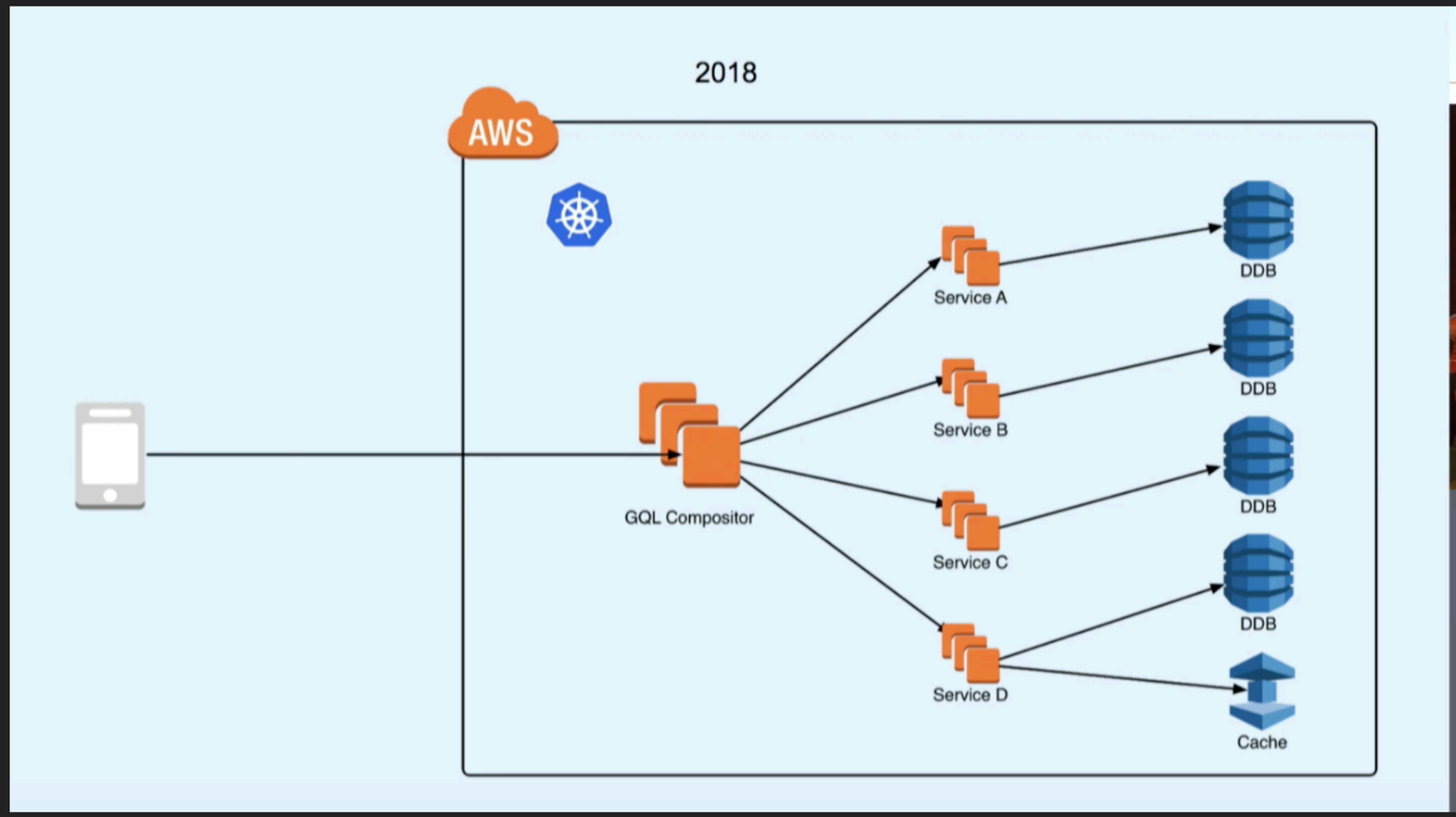
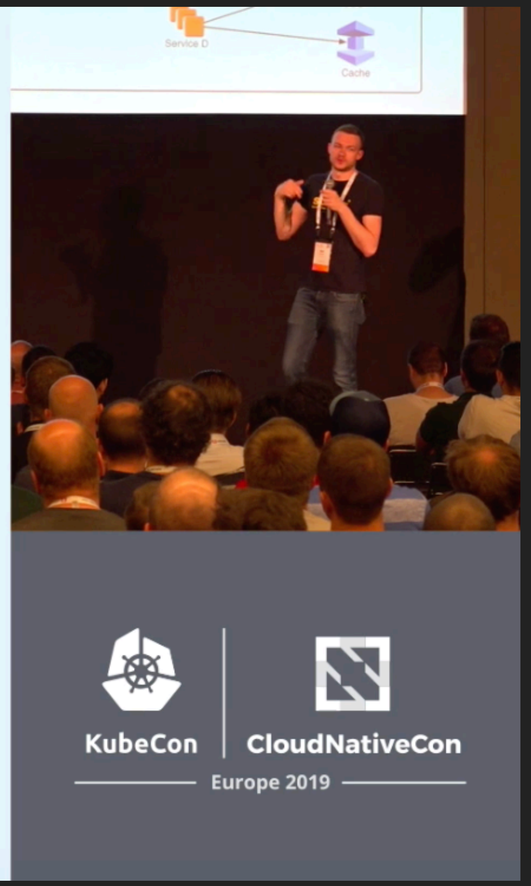
JustFootball's Journey to gRPC + Linkerd in Production – Ben Lambert, & Kevin Lingerfelt





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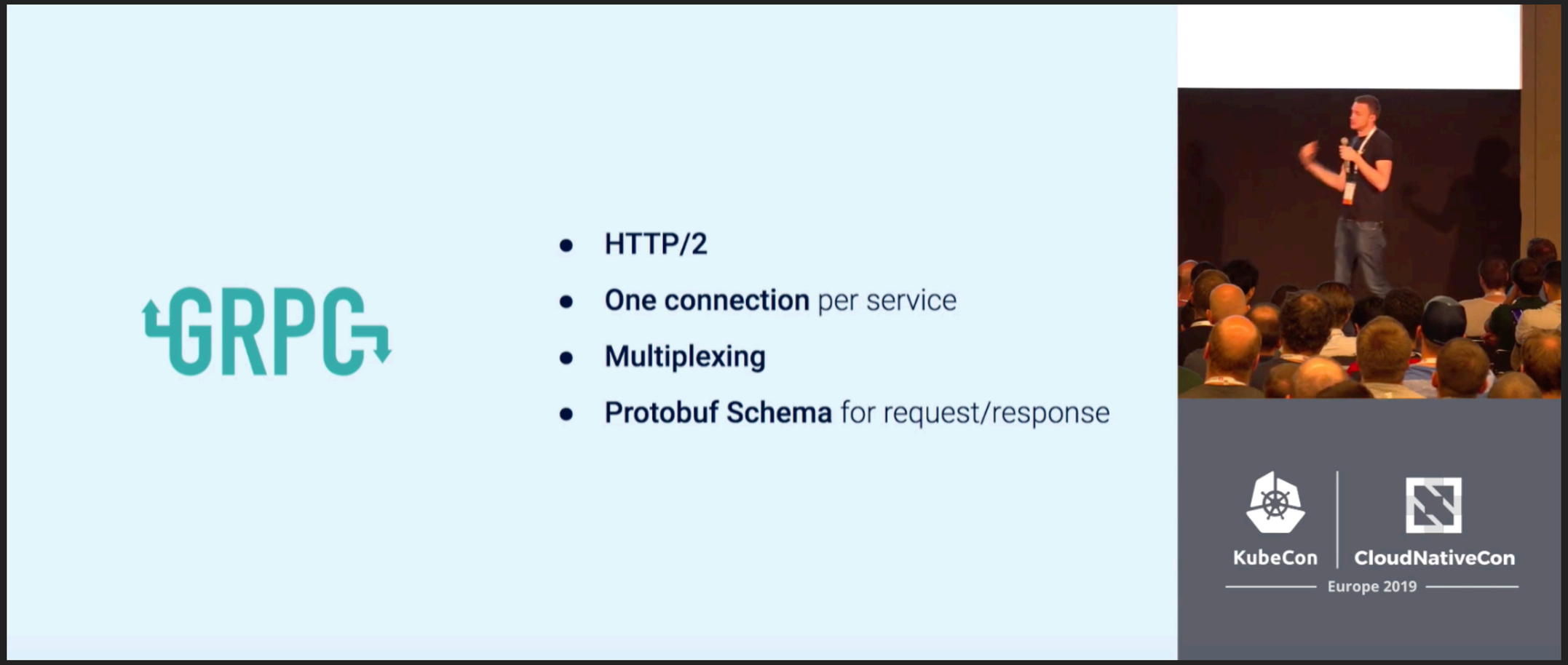

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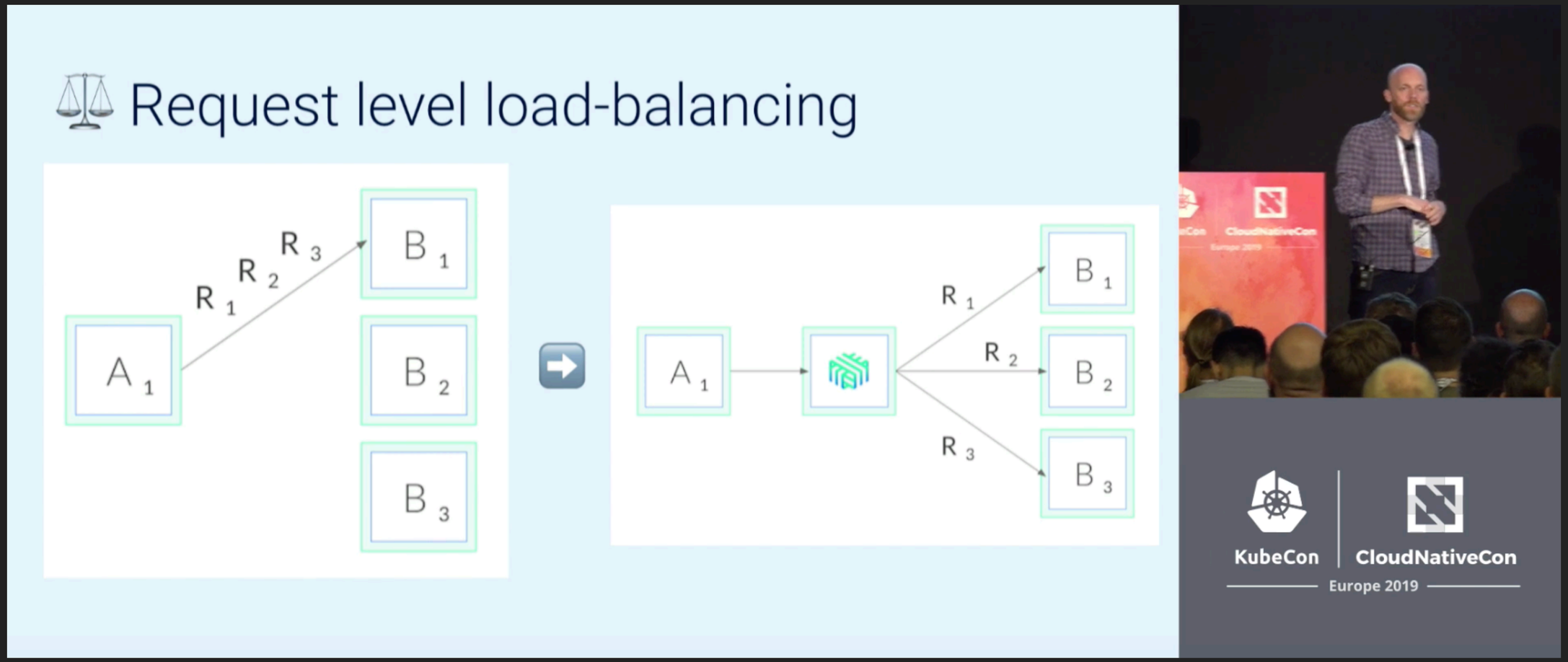

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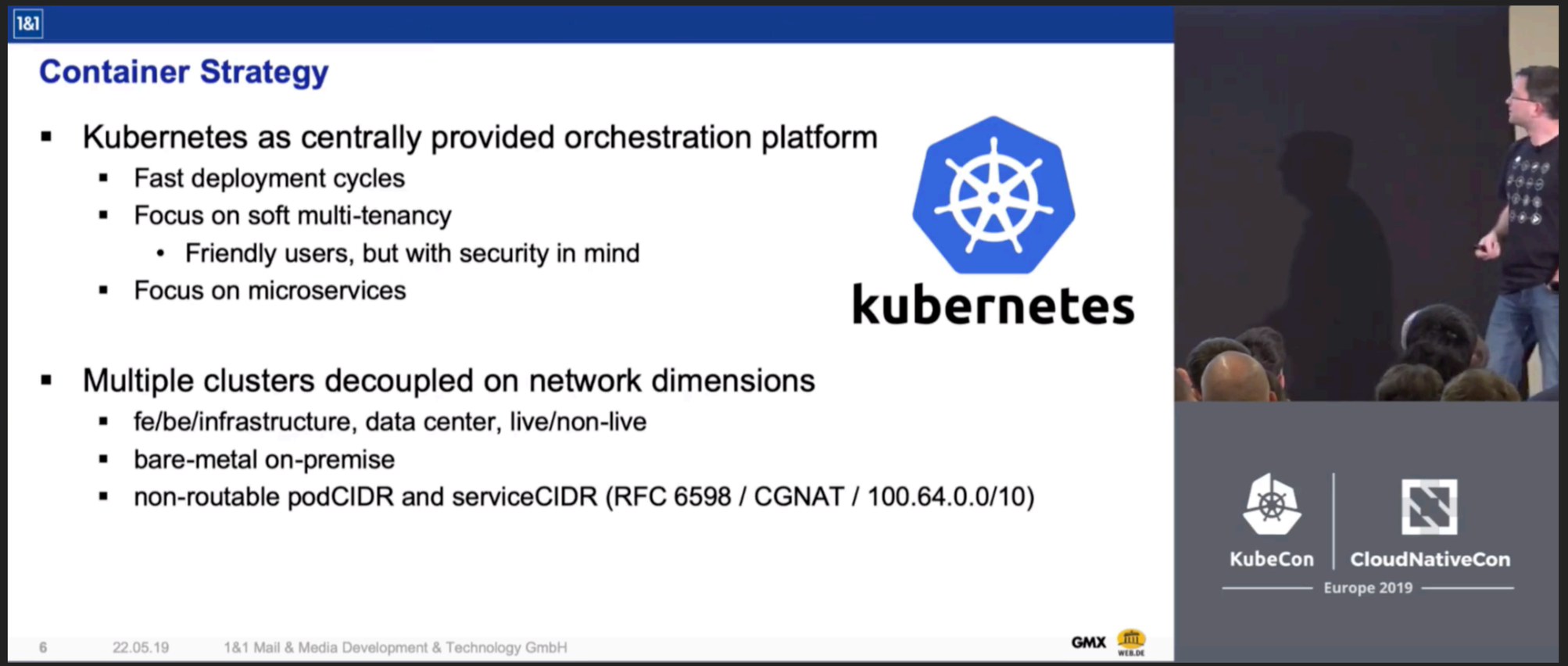
Benefits of a Service Mesh When Integrating Kubernetes with Legacy Services – Stephan Fudeus



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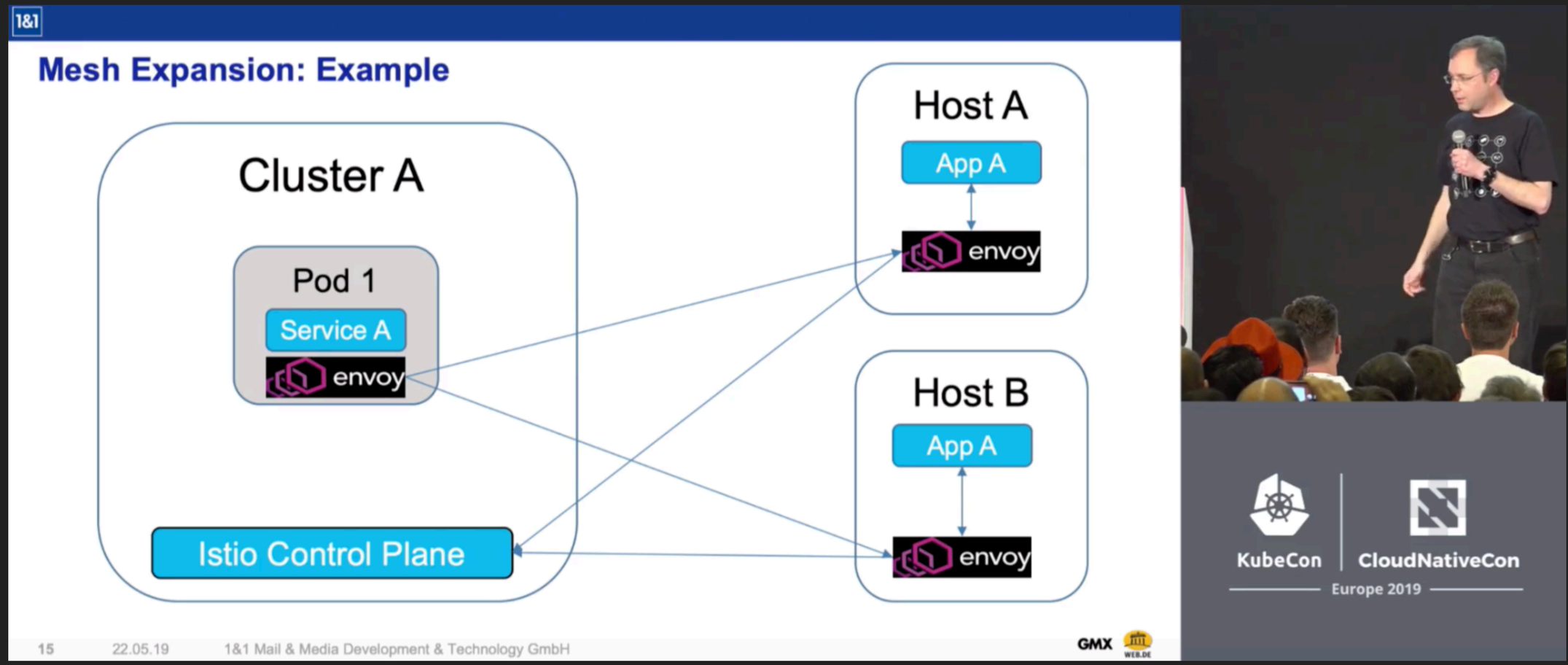

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Benefits of a Service Mesh When Integrating Kubernetes with Legacy Services – Stephan Fudeus

1&1

Problems with Operating Istio

- Security concerns
  - High privileges for control plane components
    - run as root
    - writable root filesystem
  - High privileges for admins and serviceaccount
    - net_admin capabilities
    - run as root
  - Same problem with bookinfo sample application
- Sidecar injection
  - Problematic order of automatic sidecar injection vs. PSP evaluation

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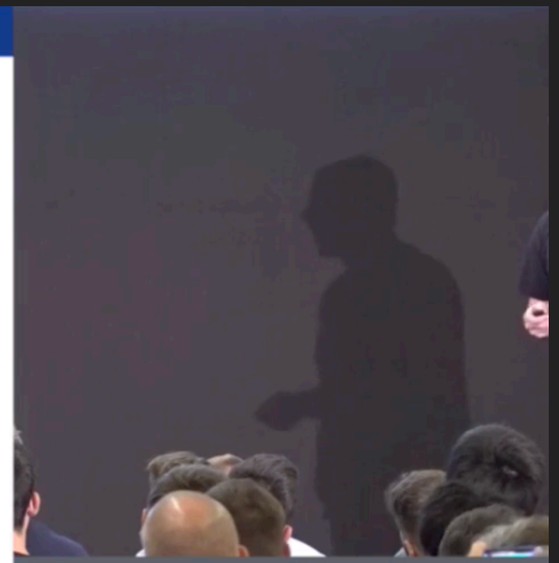

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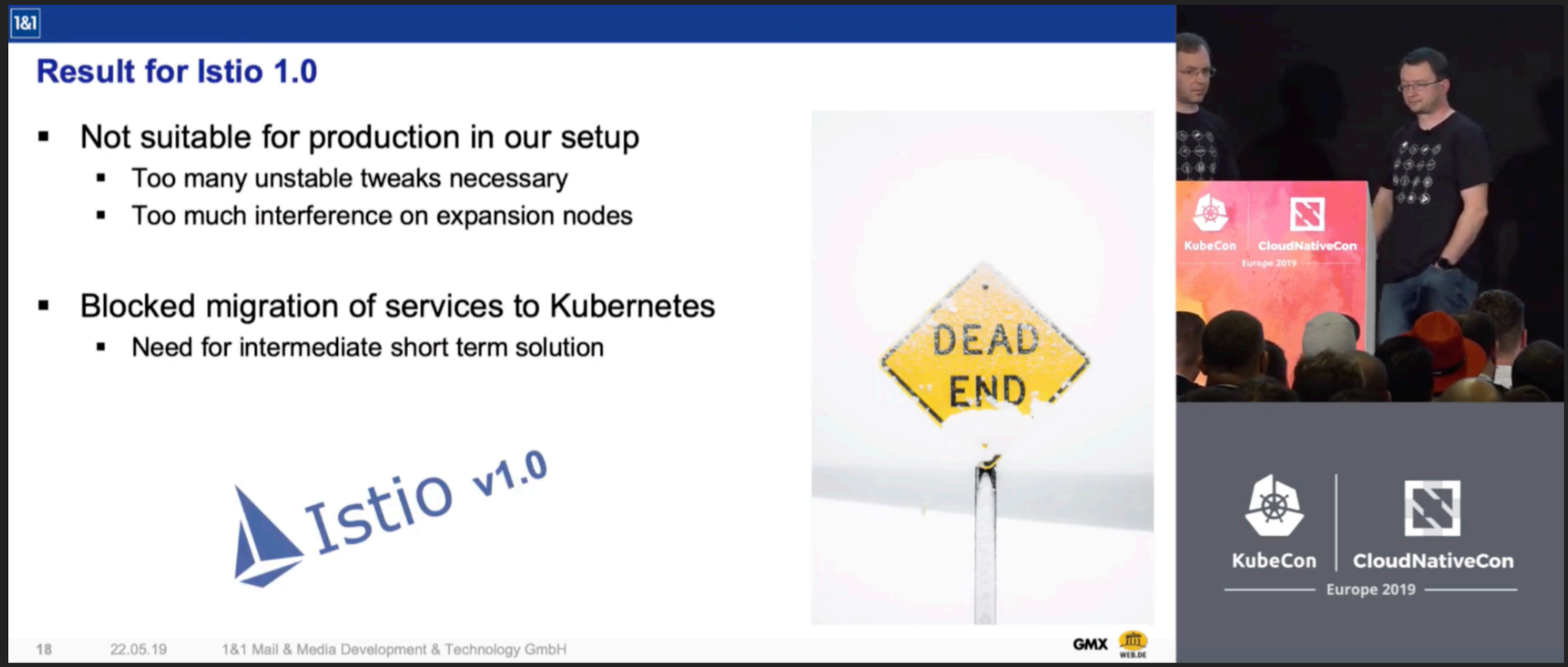

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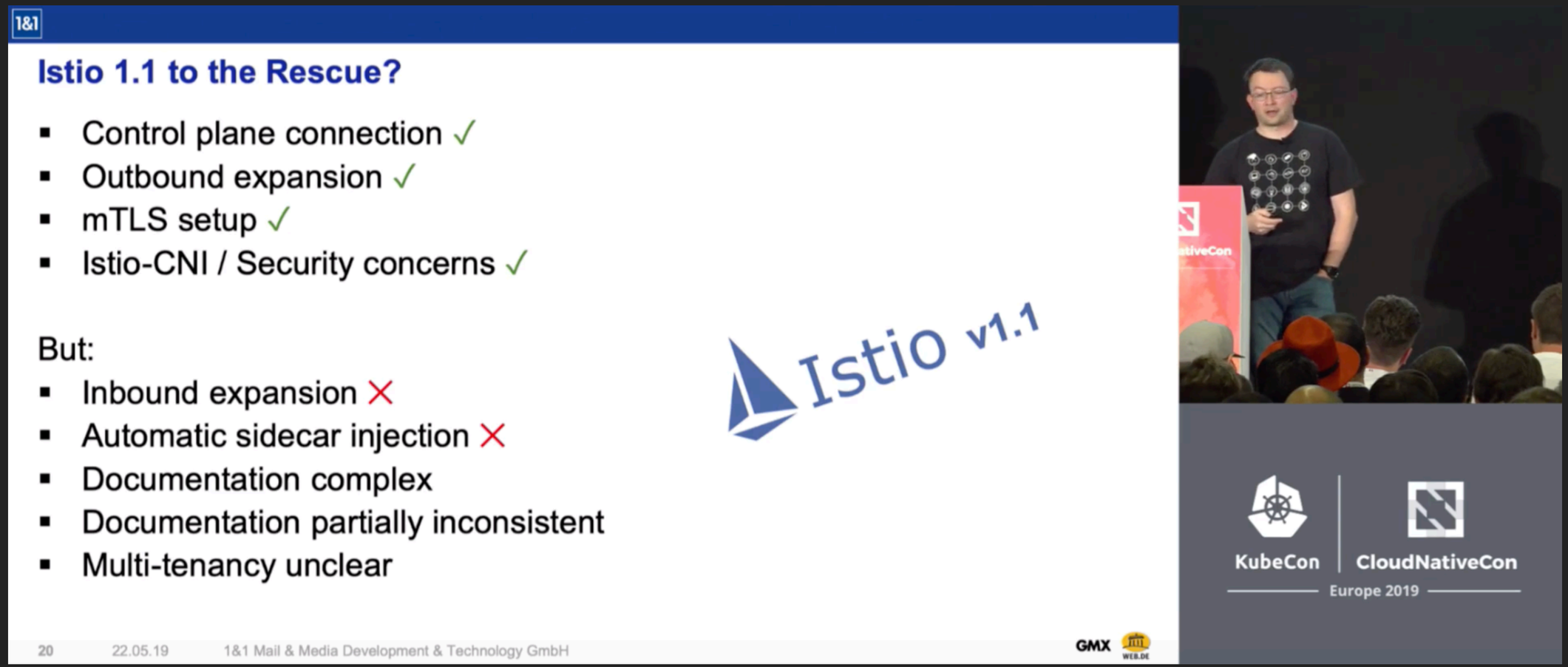

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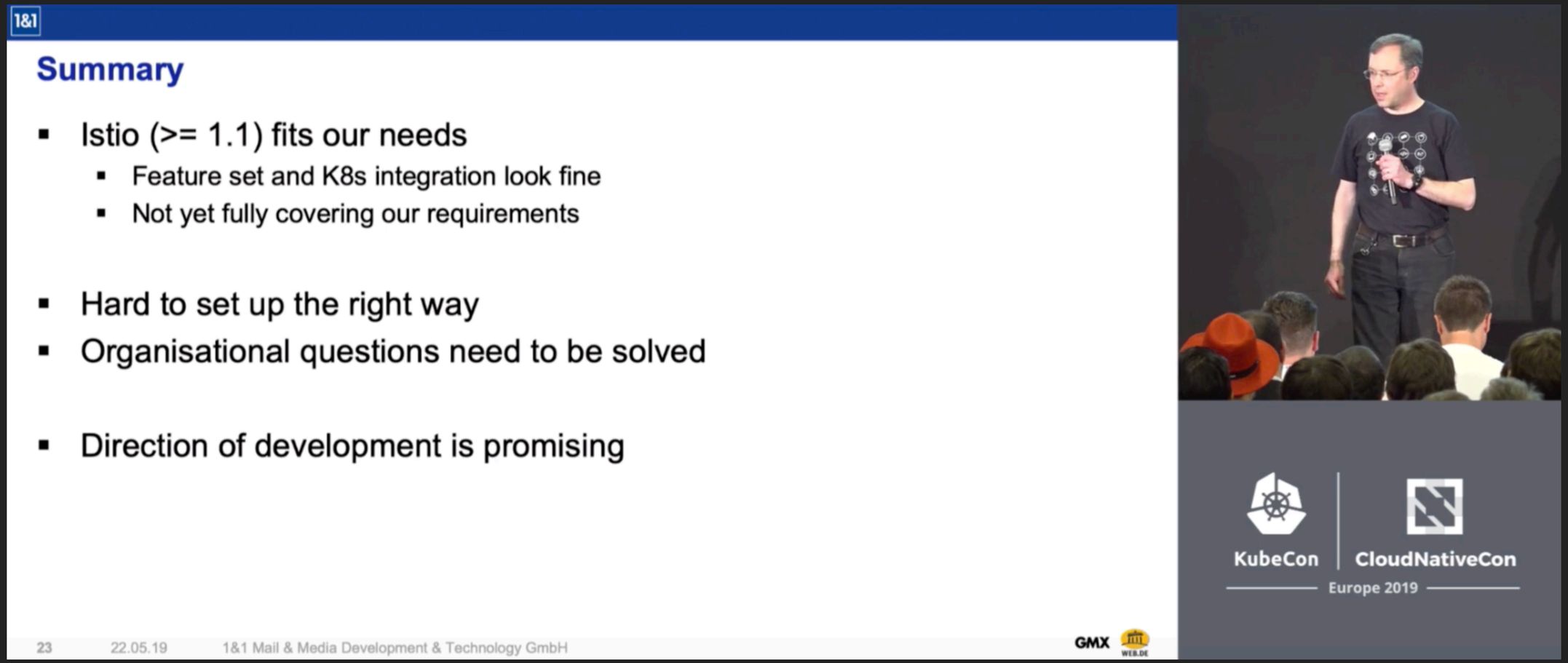

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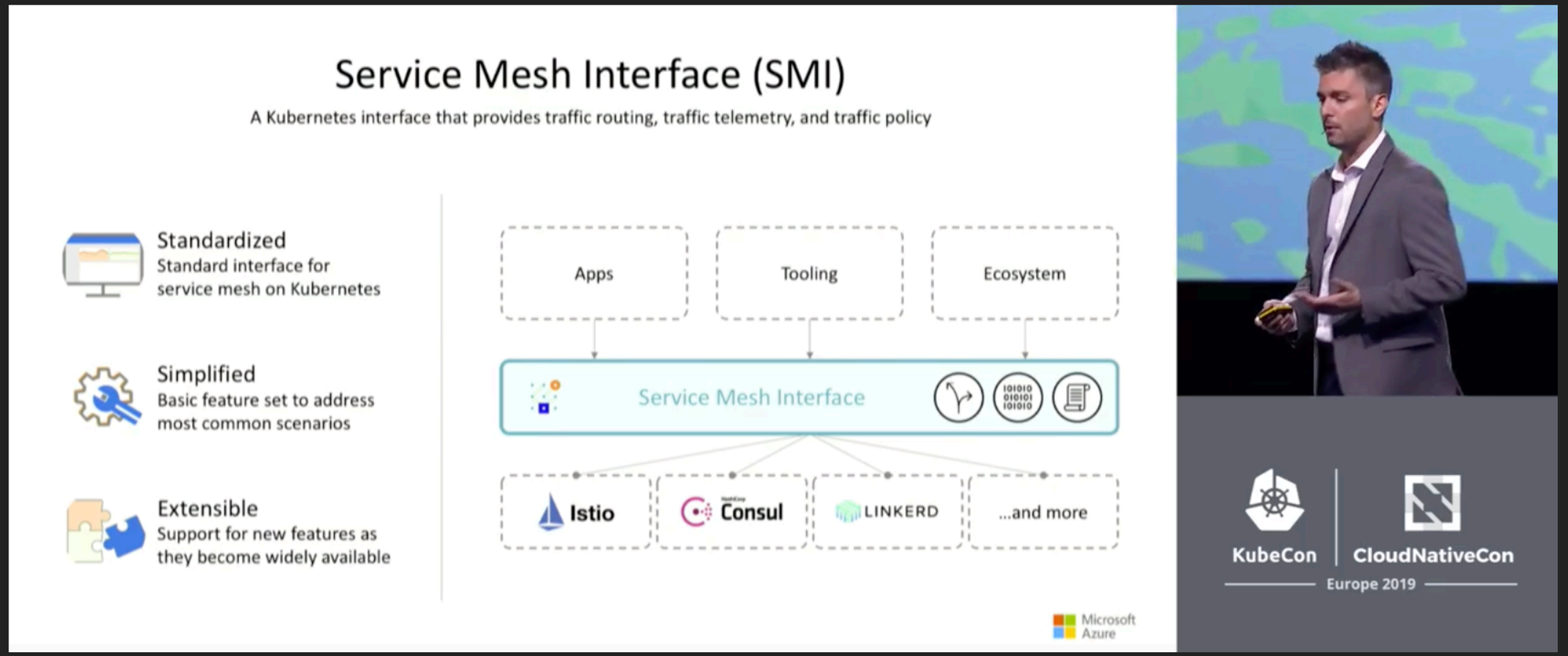
Democratizing Service Mesh on Kubernetes – Gabe Monroy, Microsoft & CNCF Board Member



- https://www.youtube.com/watch?v=gDLD8gyd7J8

Learn how to Leverage Kubernetes to Support 12 Factor for Enterprise Apps

- https://static.sched.com/hosted_files/kccnceu19/6c/Learn%20how%20to%20Leverage%20Kubernetes%20to%20Support%2012%20Factor%20for%20Enterprise%20Apps.pdf

MACHINE LEARNING + DATA

Protecting the Data Lake – Ash Narkar, Styra, Inc

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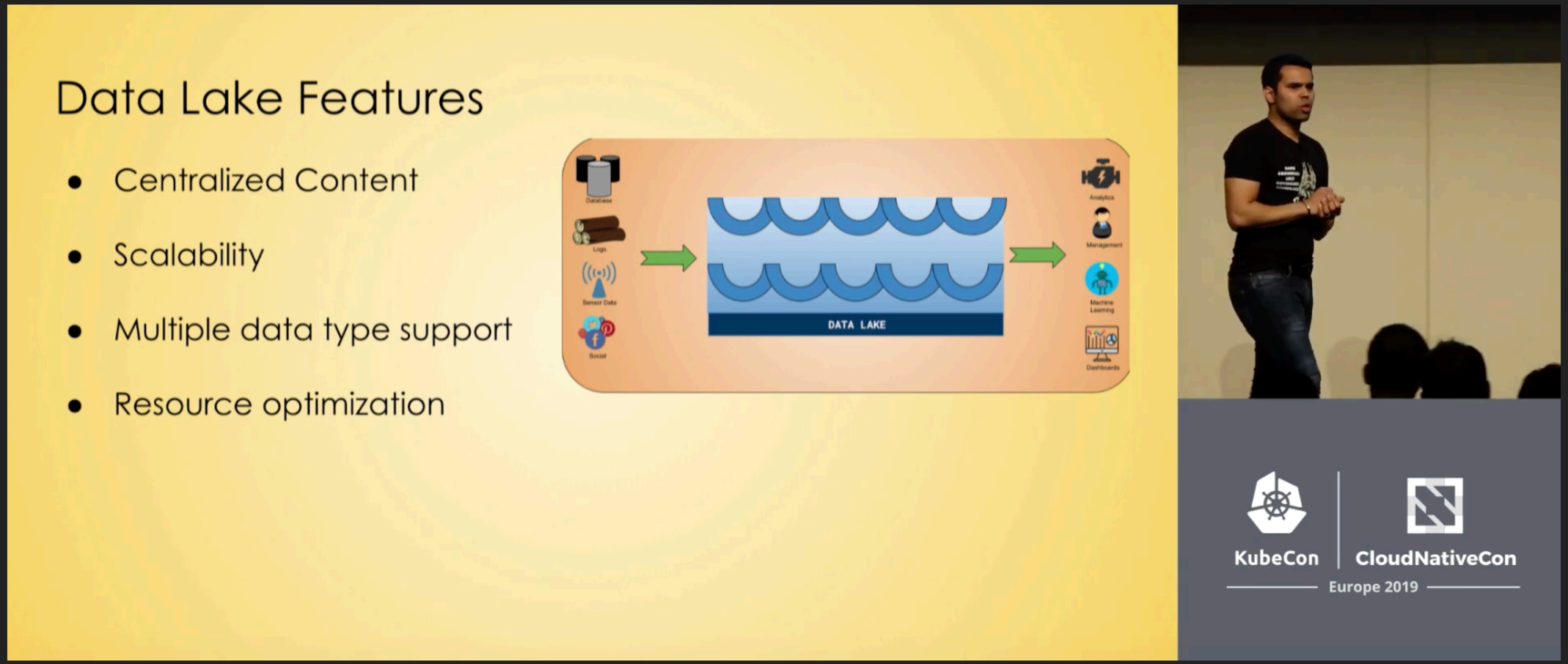

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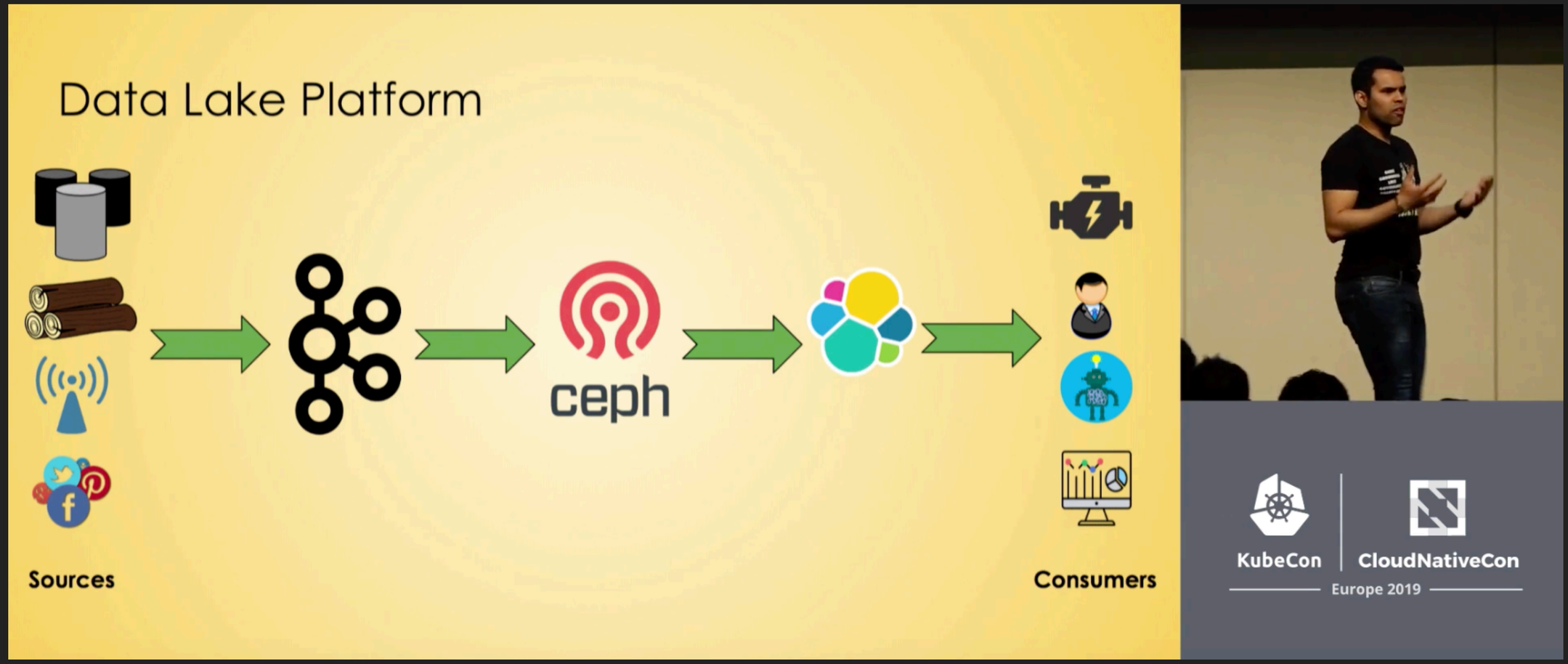

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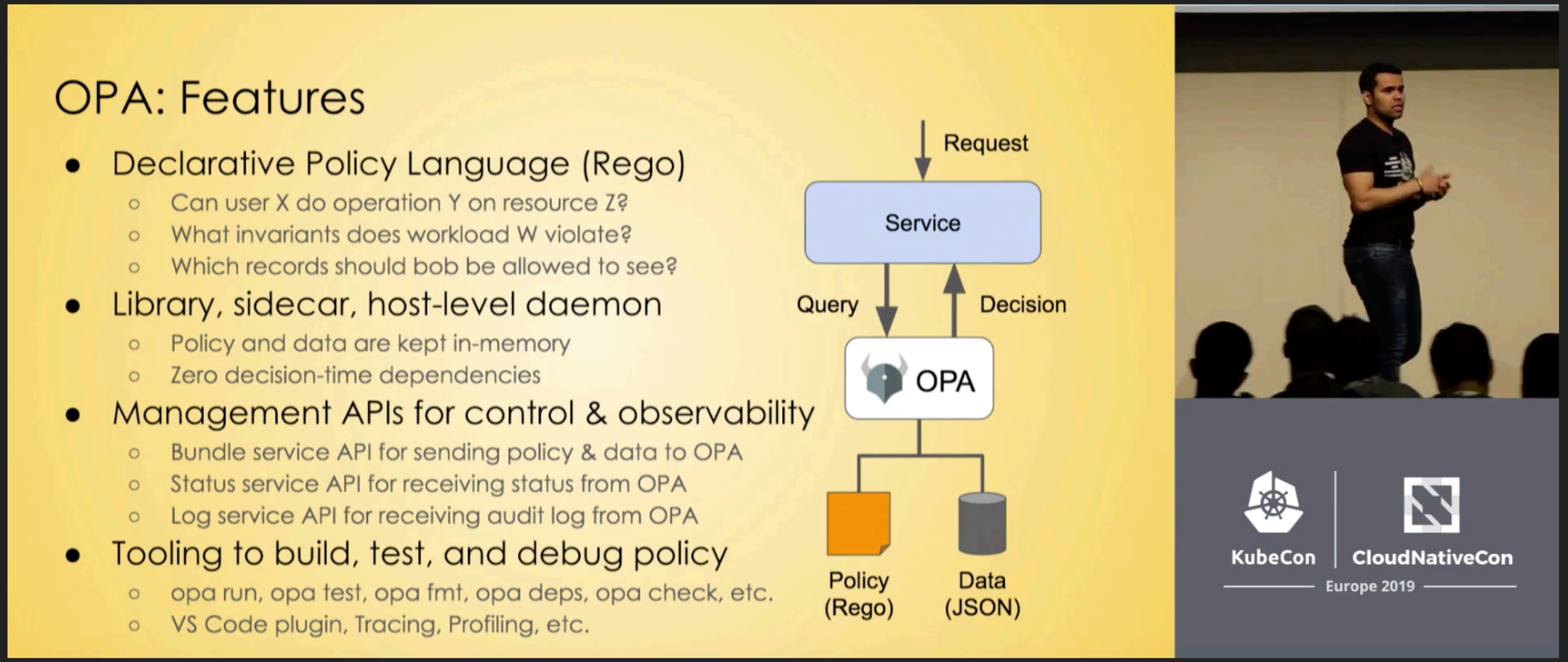
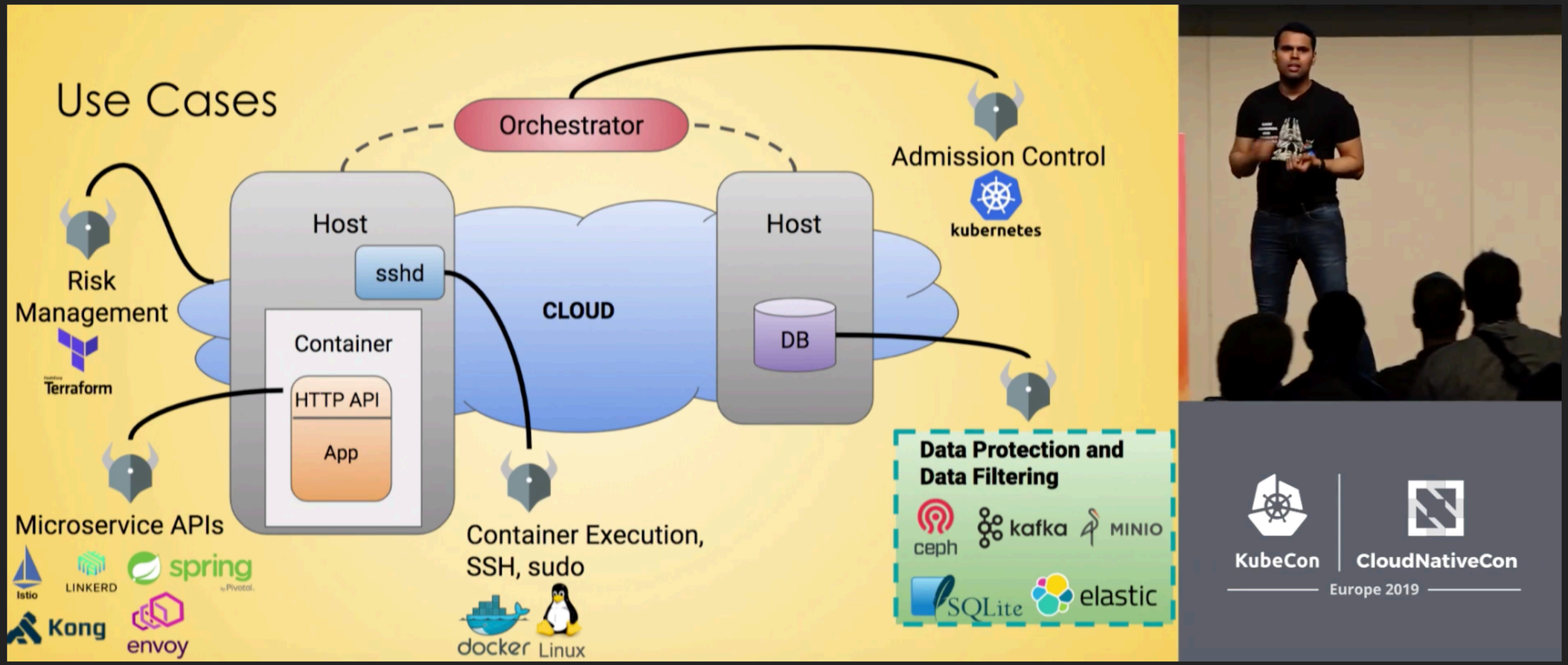


- https://www.youtube.com/watch?v=9m4FymEvOqM

Protecting the Data Lake - Ash Narkar, Styra, Inc



- https://www.youtube.com/watch?v=9m4FymEvOqM

The Data Analytics Platform or How to Make Data Science in a Box Possible – Krzysztof Adamski

- https://www.youtube.com/watch?v=8cE9ppbnDPs

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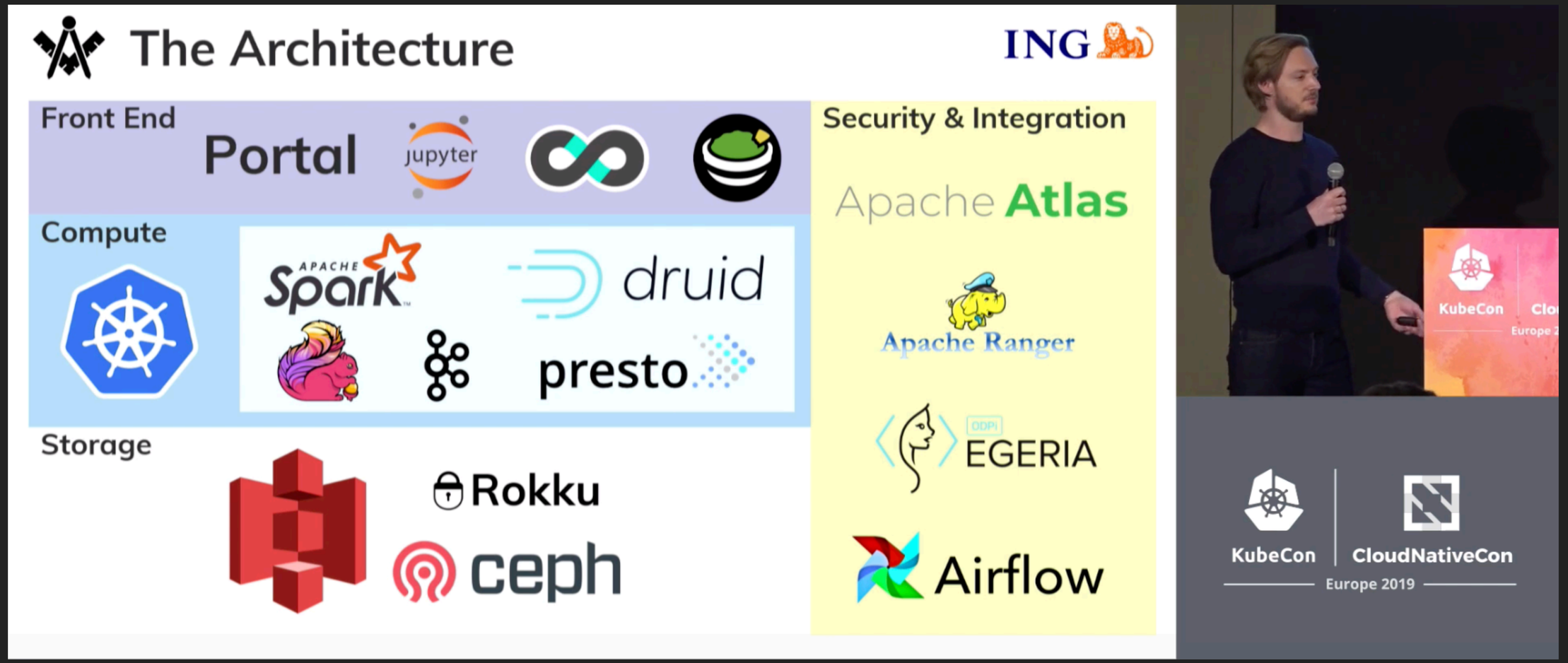

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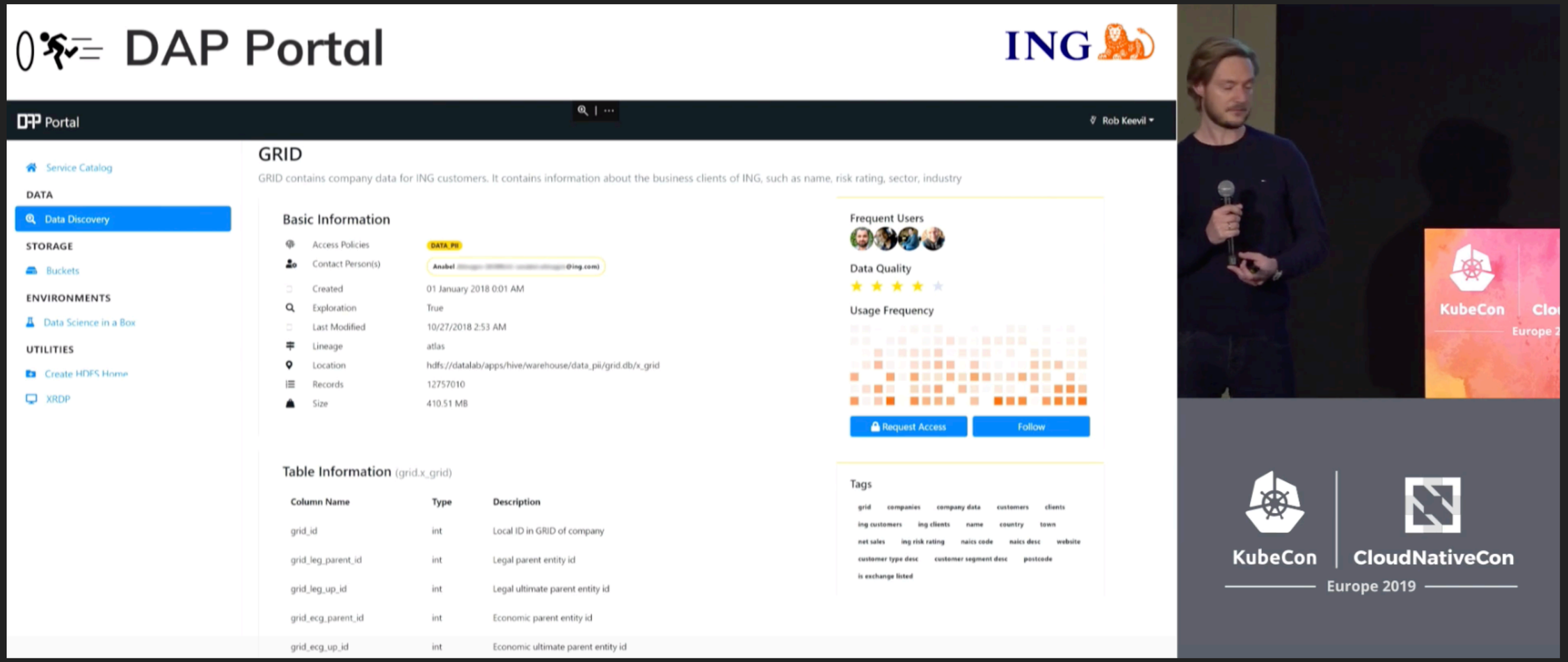


- https://www.youtube.com/watch?v=8cE9ppbnDPs

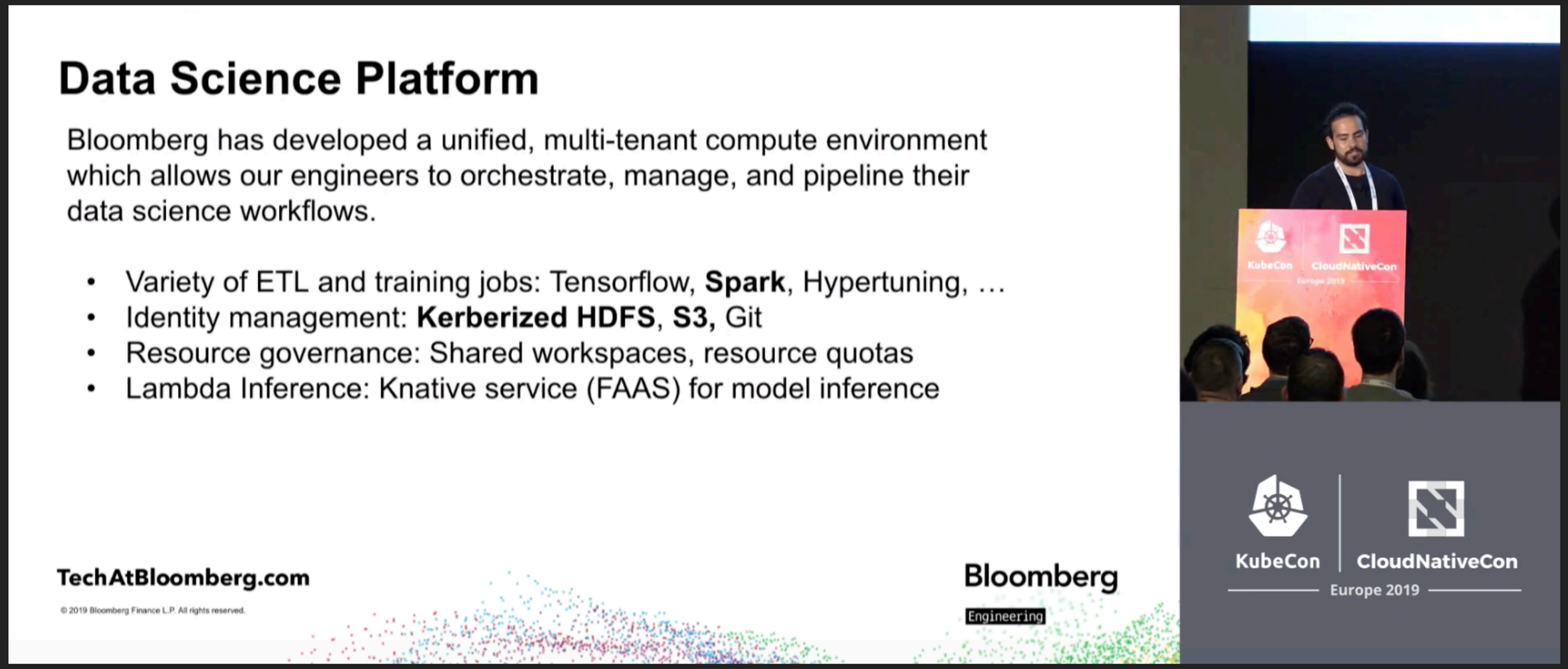
AMUNDSEN

- Amundsen is a metadata driven application for improving the productivity of data analysts, data scientists and engineers when interacting with data.
- https://github.com/lyft/amundsen

The Data Analytics Platform or How to Make Data Science in a Box Possible – Krzysztof Adamski

- https://www.youtube.com/watch?v=8cE9ppbnDPs

Scaling and Securing Spark on Kubernetes at Bloomberg – Ilan Filonenko, Bloomberg



- https://www.youtube.com/watch?v=GbpMOaSIMJ4

LINKS

- Barcelona '19: KubeCon + CloudNativeCon
- Helm 3: Navigating To Distant Shores - Bridget Kromhout & Jessica Deen, Microsoft
- APIs, Microservices, and the Service Mesh (Cloud Next '19)
- M3 and Prometheus, Monitoring at Planet Scale for Everyone - Rob Skillington, Uber

THANK YOU !