Kong SUMMIT DIGITAL 2021

Top new CNCF projects to look out for

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What value do you get by attending this talk?

- Get inspired
- Get to know cool CNCF projects

Who am I?

@AnnieTalvasto

CNCF Ambassador & Product Marketing Manager at CAST AI

- Kubernetes & CNCF meetup co-organizer
- Azure MVP
- Startup-coach
- Co-host of Cloudgossip podcast - cloudgossip.net

CLOUD NATIVE COMPUTING FOUNDATION

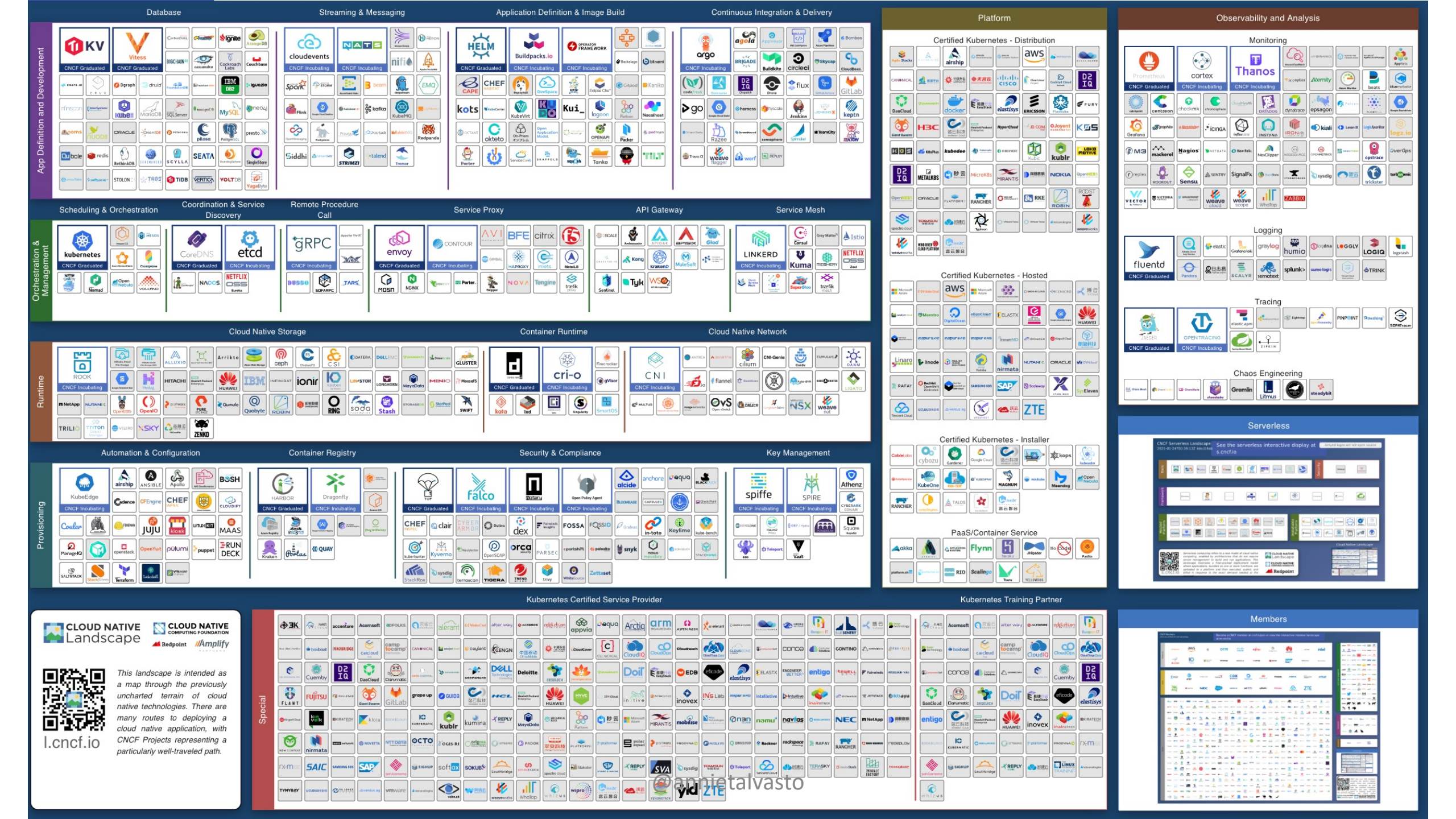
Building sustainable ecosystems for cloud native software

The Cloud Native Computing Foundation (CNCF) hosts critical components of the global technology infrastructure. CNCF brings together the world's top developers, end users, and vendors and runs the largest open source developer conferences. CNCF is part of the nonprofit Linux Foundation.

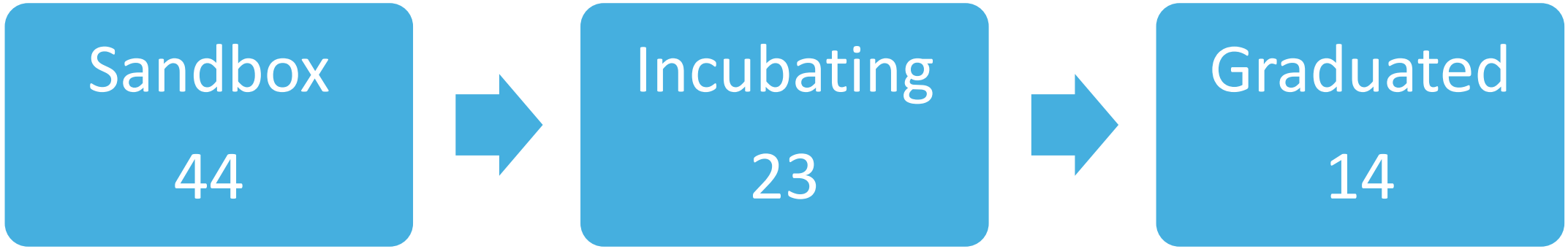
Impact of cloud native

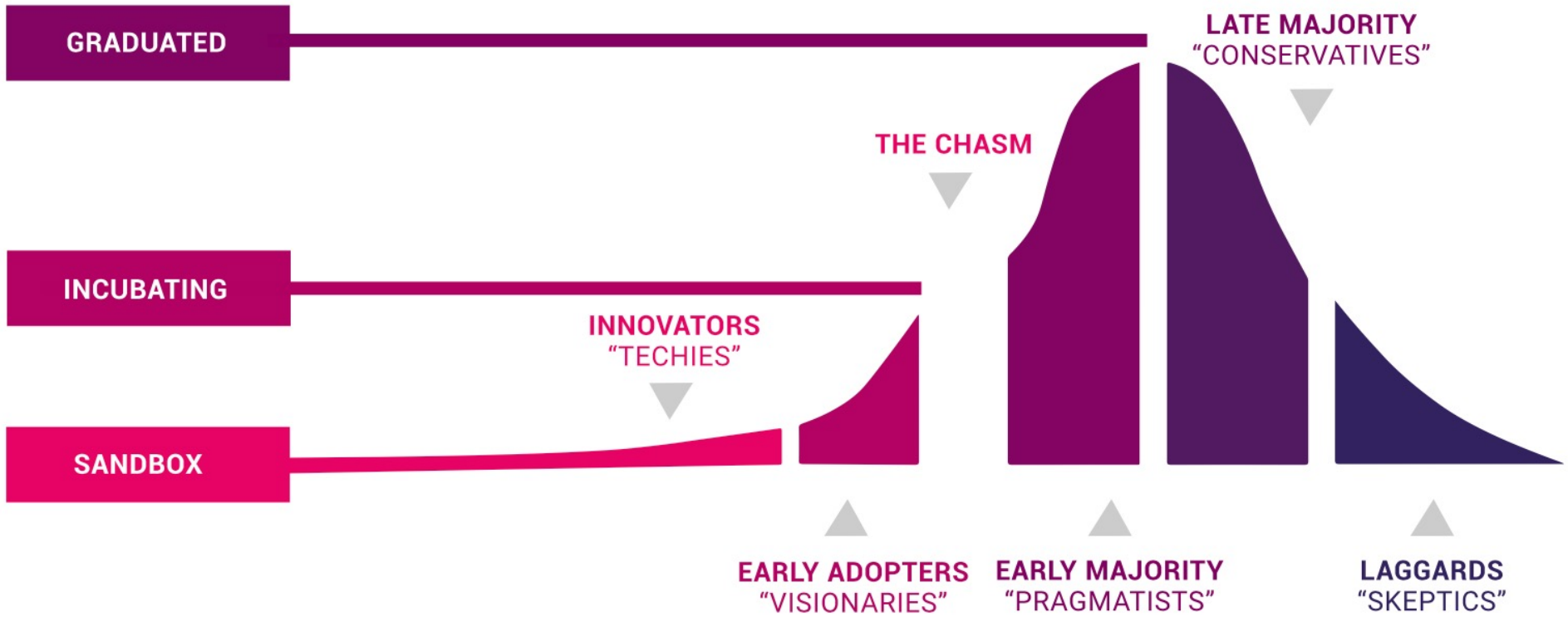
- The use of containers in production has increased to 92%, up from 84% last year, and up 300% from our first survey in 2016.
- Kubernetes use in production has increased to 83%, up from 78% last year.

- CNCF 2020 Survey


Database
Streaming & Messaging
Application Definition & Image Build
Continuous Integration & Delivery
App Definition and Development
Scheduling & Orchestration
Coordination & Service Discovery
Remote Procedure Call
Service Proxy
API Gateway
Service Mesh
Orchestration & Management
Cloud Native Storage
Container Runtime
Cloud Native Network
Runtime
Automation & Configuration
Container Registry
Security & Compliance
Key Management
Provisioning
Platform
Certified Kubernetes - Distribution
Certified Kubernetes - Hosted
Certified Kubernetes - Installer
PaaS/Container Service
Observability and Analysis
Monitoring
Logging
Tracing
Chaos Engineering
Serverless
Kubernetes Certified Service Provider
Kubernetes Training Partner
Special
Members
CLOUD NATIVE Landscape
CLOUD NATIVE COMPUTING FOUNDATION
Redpoint
Amplify
l.cncf.io
This landscape is intended as a map through the previously uncharted terrain of cloud native technologies. There are many routes to deploying a cloud native application, with CNCF Projects representing a particularly well-traveled path.
@annietalvasto

3 stages of CNCF projects




GRADUATED
INCUBATING
SANDBOX
LATE MAJORITY
"CONSERVATIVES"
THE CHASM
INNOVATORS
"TECHIES"
EARLY ADOPTERS
"VISIONARIES"
EARLY MAJORITY
"PRAGMATISTS"
LAGGARDS
"SKEPTICS"

The projects in this session

- This is not scientific selection method, nor is it fortune telling
- Expectation management: usually CNCF intro to projects talks are around 30 to 45 minutes – this is a shorter talk covering many projects.

- Helm, Keda, Flux, Meshery

Home Docs Charts Blog Community English Get Started

The package manager for Kubernetes

Helm is the best way to find, share, and use software built for Kubernetes.

What is Helm?

- Package manager for Kubernetes
- Homebrew, snap or chololatey for kubernetes

- Helm maintainer:
- Package management: Tooling that enables someone who has knowledge of an application and a platform to package up an application so that **someone else who has neither** extensive knowledge of the aplication or the way it needs to be run on the platform **can use it.**

What are the benefits of Helm?

- Manage Complexity
- Easy Updates
- Simple Sharing
- Rollbacks

What are the principles of Helm?

- Helm takes security very seriously
- Multiple maintainers, multiple companies.
- Power user email lists, release candinates.
- Supports mac, linux, windows
- Passed 1 million downloads a month already in 2019

How is Helm used?

- Charts

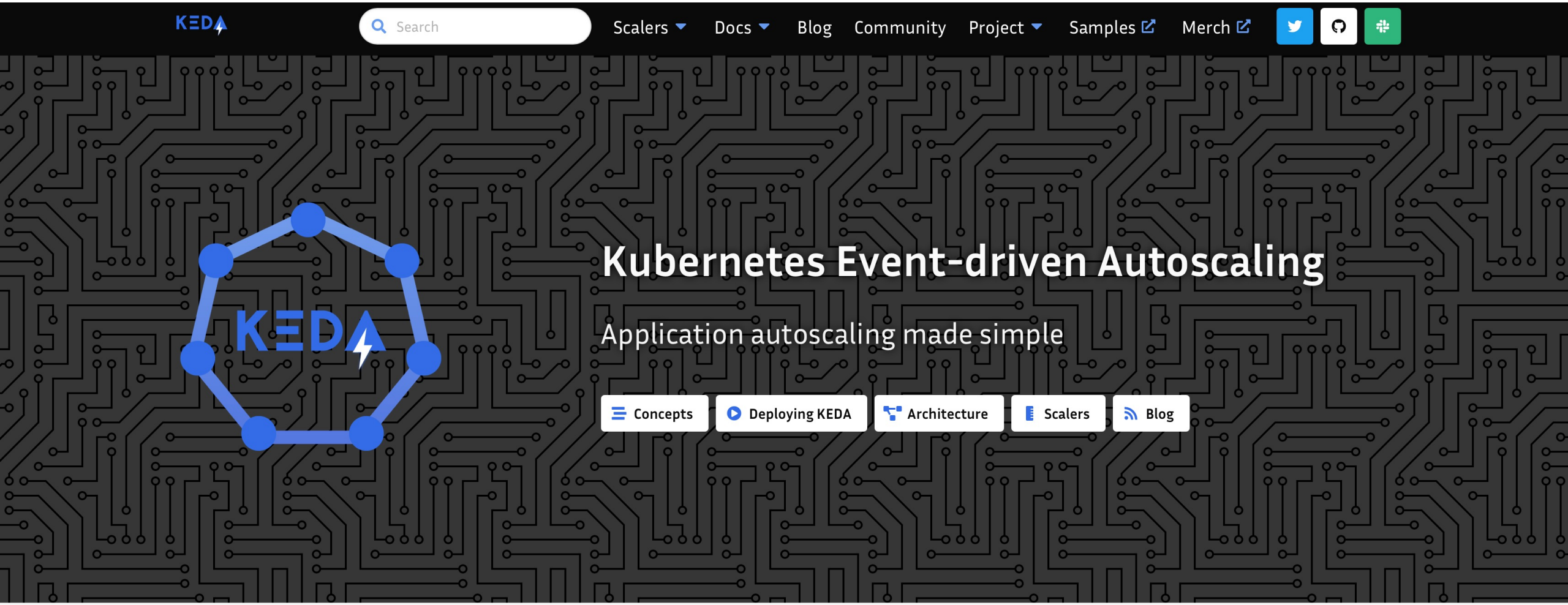
- What are the prerequisites?
  - A Kubernetes cluster
  - Deciding what security configurations to apply to your installation, if any
  - Installing and configuring Helm.

Artifact HUB - CNCF sandbox project

- Find Helm charts easily
- Find, install and publish Kubernetes packages
- The Artifact Hub goal is to provide a single experience for consumers that any CNCF project can leverage.

Helm Demo:

Easily deploy complex application (WordPress) to Kubernetes using a helm chart



What is KEDA?

KEDA is a Kubernetes-based Event Driven Autoscaler. With KEDA, you can drive the scaling of any container in Kubernetes based on the number of events needing to be processed.

KEDA is a single-purpose and lightweight component that can be added into any Kubernetes cluster. KEDA works alongside standard Kubernetes components like the Horizontal Pod Autoscaler and can extend functionality without overwriting or duplication. With KEDA you can explicitly map the apps you

What is Keda?

- Serverless – focus on your code, event driven code and scaling, on-demand compute, pay-per-use
- Default Kubernetes Scaling is not well suited for event driven applications, kubernetes is more for resource based scaling (CPU and memory).
- Event driven scale controlling that can run inside any kubernetes cluster.
- You can install it into new or existing clusters.

What are the Keda principles?

- Not rebuilding anything that Kubernetes offers out of the box.
- Single purpose, simple, non-intrusive.
- Works with any container and any workload

- Two public case studies: Alibaba Cloud & CAST AI

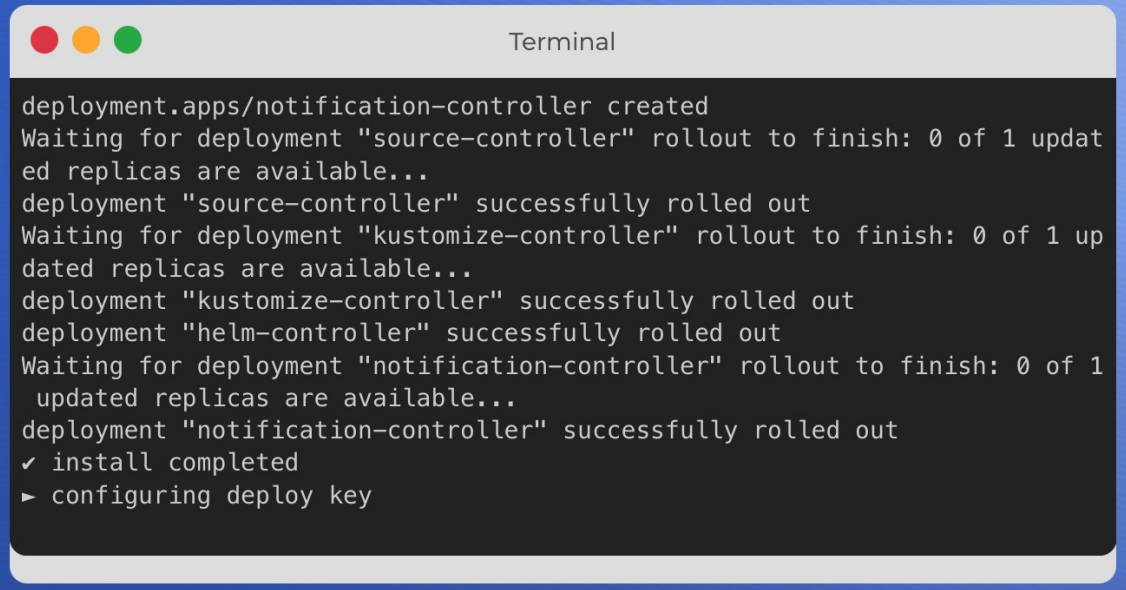
🎉 **Flux APIs are now stable!**

Flux - the GitOps family of projects

Flux is a set of continuous and progressive delivery solutions for Kubernetes, and they are open and extensible.

The latest version of Flux brings many new features and made Flux more flexible and versatile.

Get started →



Flux in short

What is Flux?

- What is GitOps?
  - Kubectl apply
  - Kubectl set image
  - Helm upgrade
  - Kubectl upgrade
  - -> git push

GitOps rovides one model for making infrastructure, apps and Kubernetes add-on changes, you have consistent end-to-end workflow across your entire organization

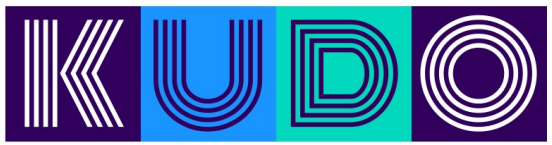
Flux practices & benefits

Defined GitOps practices:

- 1) Describe your sysem declaratively
- 2) Keep configuration under source control
- 3) Use software agents to reconcile and ensure correctness and alert for drfit

Benefits

- Collaboration on infra
- Access Control
- Auditable History
- Drift Correctin
- Clear boundaries between dev-team and kubernetes



The Kubernetes Universal Declarative Operator

⇝ Get Started ⇜

Focus on your software …

The Kubernetes Universal Declarative Operator (KUDO) is a highly productive toolkit for writing Kubernetes Operators.

… not on deploying to Kubernetes

Using KUDO you can deploy your applications, have the tools needed to operate them, and understand how they're behaving – all without a Ph.D. in Kubernetes.

Automate Day-2 Operations

KUDO lets you configure an Operator's entire lifecycle using a declarative spec, including things like backup/restore. You don't have to write Go unless you want to.

What is KUDO?

KUDO is a toolkit that makes it easy to build Kubernetes Operators, in most cases just using YAML.

It provides a set of pre-built Operators, that you can use out of the box or easily customize.

Finally, KUDO lets you standardize the way you run Operators.

What is Kudo?

- Stateless vs stateful app
- Kubernetes has been very focused on stateless apps – and stateful apps do not like it -> solution: operators.
- Building operators requires deep expertise and may require thousands of lines of code -> substantial engineering resource needed.
- Kudo = Kubernetes Universal Declarative Operator

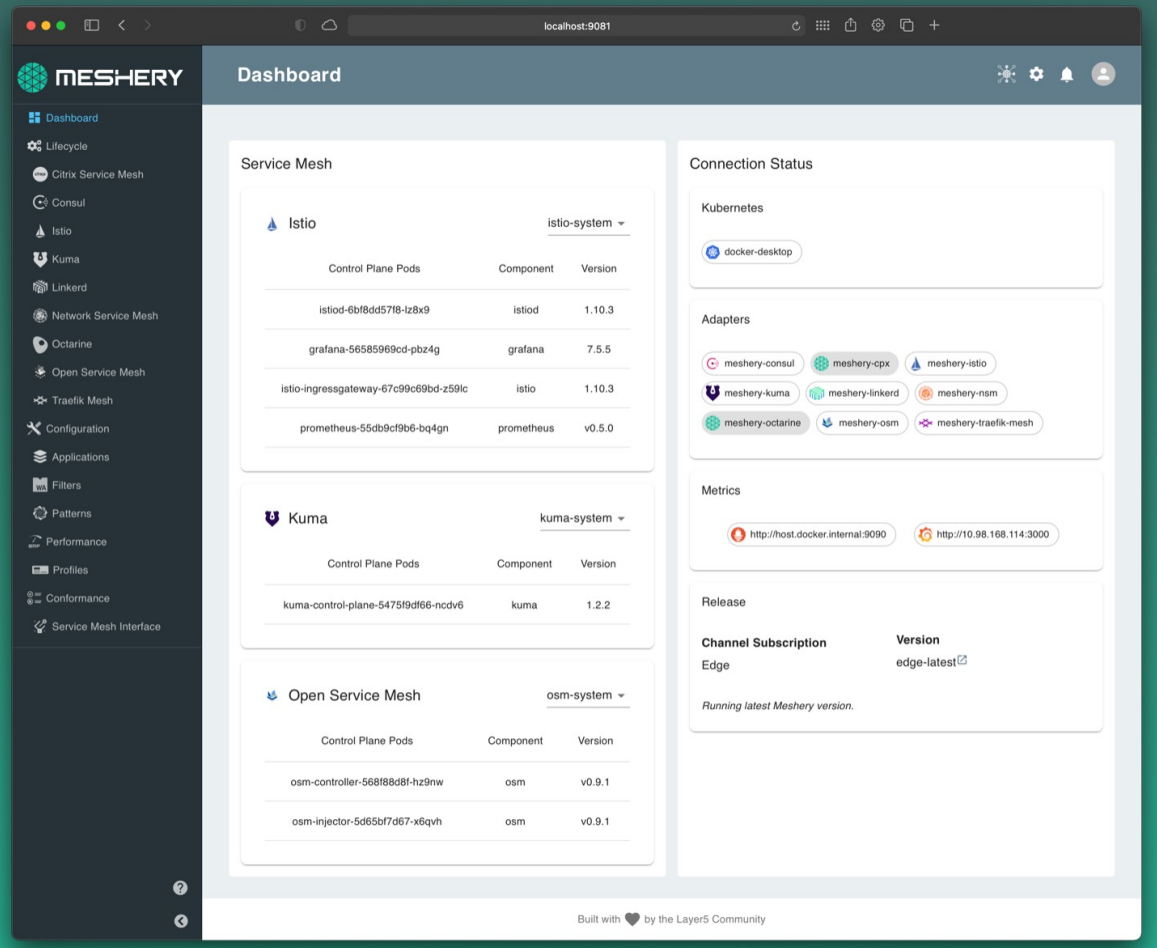
What are the benefits of Kudo?

- Kudo can create operators without needing deep knowldege of kubernetes or coding – by defining lifecycle stages.
- Just kubernetes APIs, a lot easier to learn
- Has kubernetes native managemnet, aka using of kubectl and other familiar tools

MESHERY

DOCS COMMUNITY BLOG RESOURCES RUN MESHERY

The service mesh management plane



3,833 performance tests run!

What is Meshery?

The Service Mesh Management Plane

Service mesh:

- Control plane
- Data plane

- Management plane

What is Meshery?

- Supports over 10 different service meshes

- Multi-mesh management
  - Lifecycle
  - Workload
  - Performance
  - Configuration
  - Patterns and practices
  - Chaos and filters

Wrap up

CNCF overview

Projects:

- Helm
- Flux
- Keda
- Meshery
- (+ Artifact hub)

Learn more

- CNCF survey -https://www.cncf.io/blog/2020/11/17/cloud-native-survey-2020-containers-in-production-jump-300-from-our-first-survey/
- Project sites
  - Helm - https://helm.sh
  - Keda - https://keda.sh
- Support your favorite projects in GitHub!

- CNCF End User Technology Radar: https://radar.cncf.io
- Keynote: Predictions from the Technical Oversight Committee (TOC) - Liz Rice, CNCF TOC Chair - https://www.youtube.com/watch?v=bESogtuHwX0&feature=youtu.be
- Techworld with Nana - https://www.youtube.com/channel/UCdngmbVKX1Tgre699-XLlUA
- Cncf youtube - https://www.youtube.com/channel/UCvqbFHwN-nwalWPjPUKpvTA

- Links and slides: github.com/annietalvasto

Interested in finding more about CAST AI?

Cast.ai/annie

BACK TO EPISODES

Adventures in open source with Tom Kerkhove

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EPISODE DETAILS / TRANSCRIPT

EPISODE SUMMARY

Today's guest on Cloud Gossip is Tom Kerkhove!

Tom works as an Azure Architect at Codit, he's a Github Star, CNCF Ambassador, Azure MVP and he's active as maintainer of Promitor and Keda.

Tom is going to talk to us about how the world of Open-Source projects works, the importance of supporting them, and his personal experience as a maintainer.

EPISODE NOTES

We're going to learn about KEDA and CNCF Sandbox projects, what they are and how they work, and learn about some of Tom's insights in the industry.

He's going to talk about how GitHub is helping the world of Open Source projects and how he uses the platform to engage with the users.

KubeCon | CloudNativeCon

Europe 2019

Keynote: Getting Started in the Kubernetes Community

Lucas Käldström, CNCF Ambassador, Independent & Nikhita Raghunath, Software Engineer, Loodse

One thing to take away

Got questions later?
@annietalvasto

Thank you!

Annie Talvasto
@anniettalvasto