

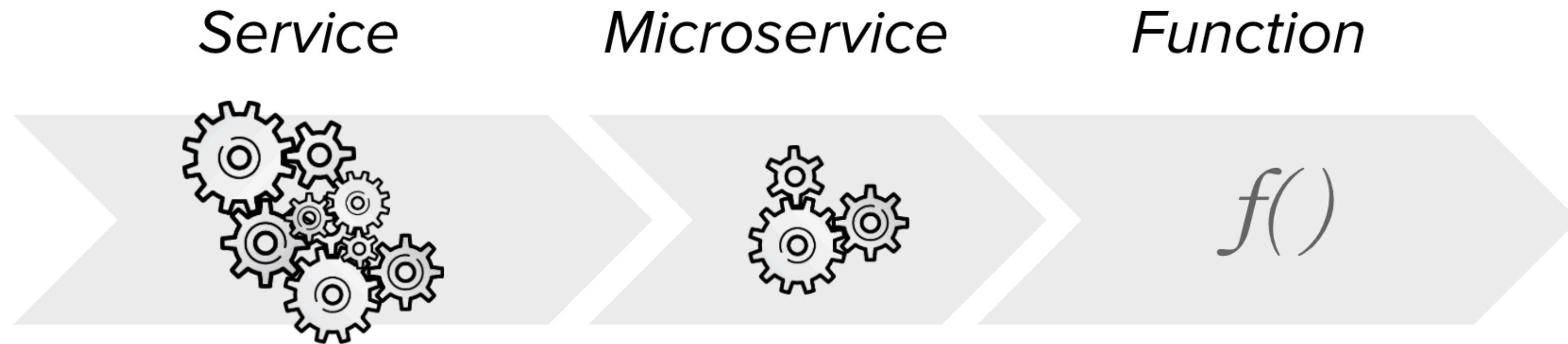


# The State Of Function-as-a-Service On Kubernetes

Michael Hausenblas, Developer Advocate at Red Hat

2018-05-01, KubeCon+CloudNativeCon Europe, Copenhagen

# The evolution

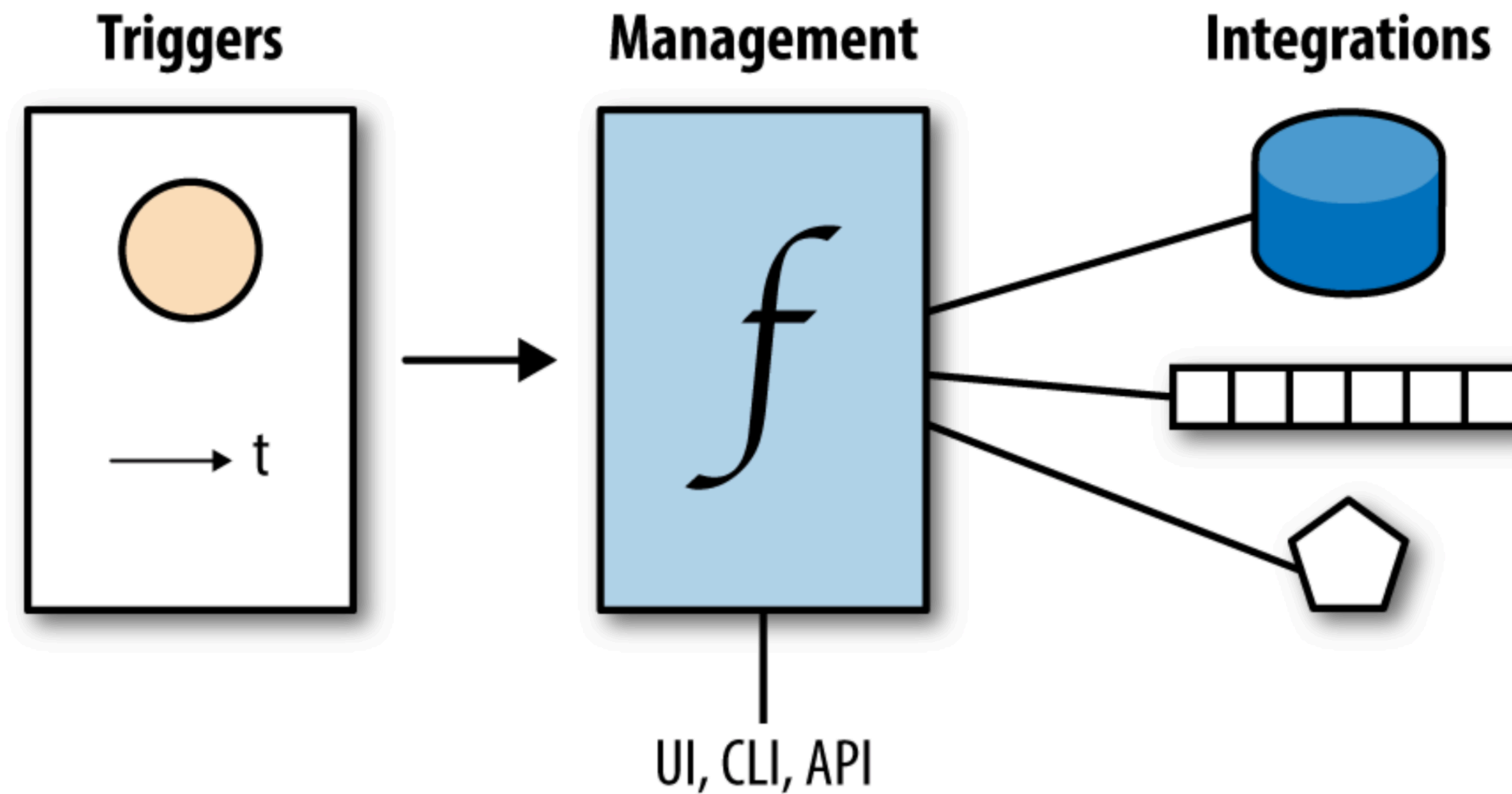


- Autonomous
- Semi-loosely coupled

- Single purpose
- Loosely-coupled
- Independently scalable
- Automated

- Single action
- Stateless
- Event-driven
- Ephemeral
- Elastic

# Function-as-a-Service concept



# Use cases

- cron job replacements
- backups
- pipelines/ETL jobs
- latency-tolerant sensor readings
- image thumbnails, extracting keyframes
- Slack bots

Sources: [AWS Lambda](#), [IBM](#), [serverless framework](#),  
[Contino](#), [TNS](#), [programmableweb.com](#)



[twitter.com/patrickdebois/status/734459440603275264](https://twitter.com/patrickdebois/status/734459440603275264)

# General landscape

Serverless Cloud Native Landscape  
v20180425

See the serverless interactive landscape at [s.cncf.io](https://s.cncf.io)

Greyed logos are not open source

**Tools**

- dashbird
- Epsagon
- event gateway
- IO|pipe
- Iron.io
- Node Lambda
- OVERCLOCK
- python-λ
- STACKERY
- THUNDERA

**Security**

- intrinsic
- PURESEC
- snyk

**Framework**

- ΔPEX
- .arc Architect
- aws Chalice
- AWS SAM
- Claudia.js
- FLOGO™
- gun.io
- serverLess
- Shep
- SPARTA
- Spring Cloud Function

**Platform**

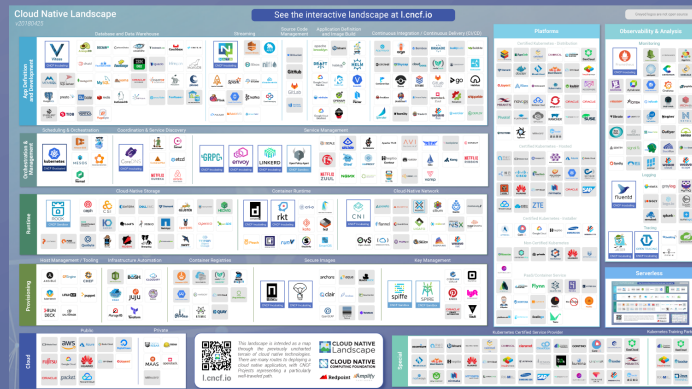
Hosted


- ALGORITHMIA
- AWS Lambda
- Azure Functions
- BINARIS
- Clay
- cloudboost
- CLOUDFLARE
- Google Cloud Functions
- HUAWEI
- HYPER.SH

Installable

- APACHE OpenWhisk™
- AppScale
- DISPATCH
- fission
- fn
- GALACTIC FOG
- Kubeless
- LunchBadger
- nuclio
- OPENFAAS
- OpenLambda
- riff

Cloud Native Landscape



  
s.cncf.io

Serverless computing refers to a new model of cloud native computing, enabled by architectures that do not require server management to build and run applications. This landscape illustrates a finer-grained deployment model where applications, bundled as one or more functions, are uploaded to a platform and then executed, scaled, and billed in response to the exact demand needed at the moment.

**CLOUD NATIVE Landscape**  
**CLOUD NATIVE COMPUTING FOUNDATION**  
**Redpoint**

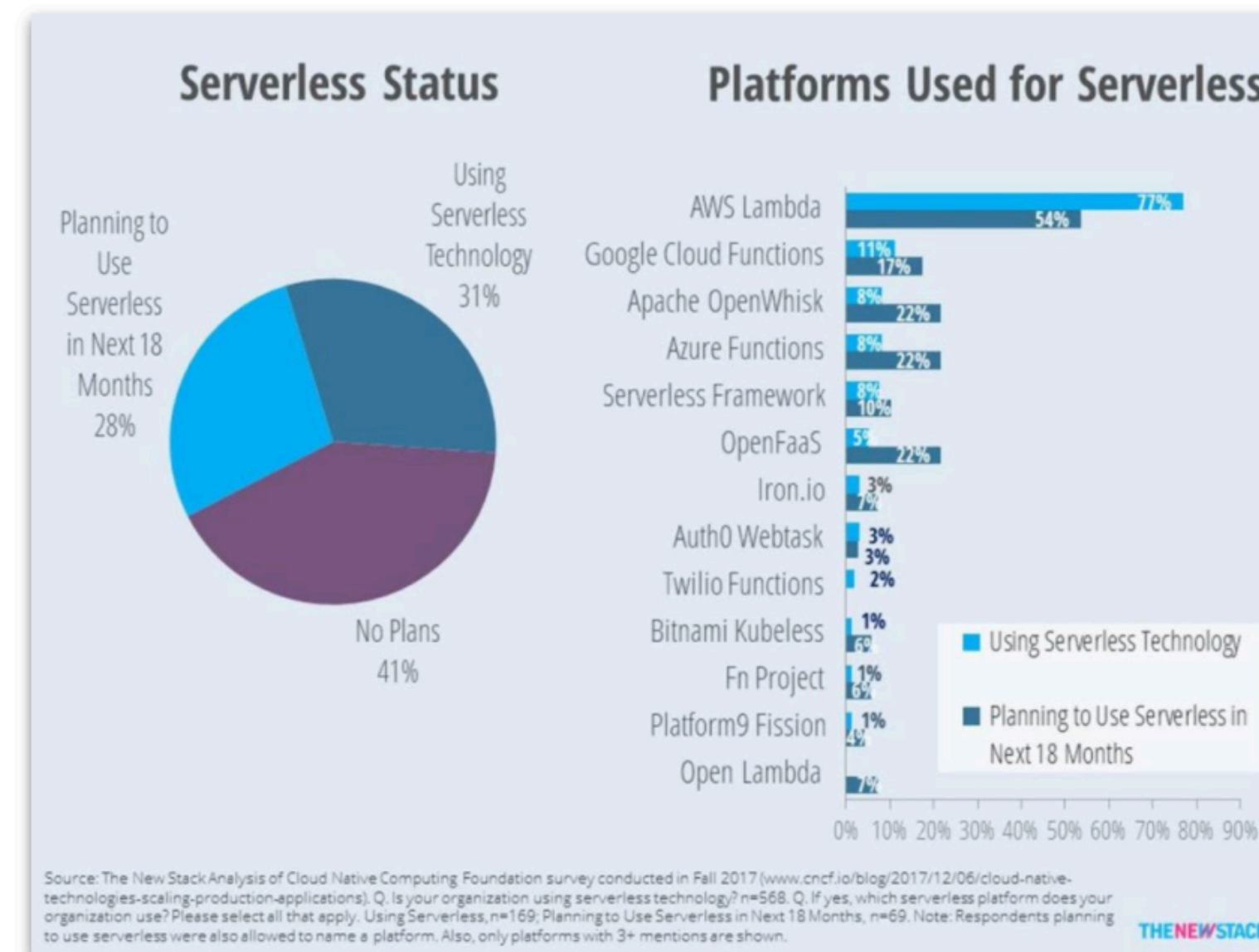
Source: [landscape.cncf.io](https://landscape.cncf.io)

# Kubernetes landscape

Project	Backed by	Claim to fame	Started
Apache OpenWhisk	ASF, Adobe, IBM, Red Hat	large community, mature	2015
Azure Functions Runtime	Microsoft	ease of use	late 2017
Dispatch	VMware	meta-framework	late 2017
Fission	Platform9	performance	2016
Fn	Oracle	supported languages/envs	late 2017
Funktion	Red Hat/Fabric8	integration	2017
Kubeless	Bitnami	UX, monitoring	2017
Nuclio	iguazio	performance	mid 2017
OpenFaaS	VMware	large community, UX	late 2016
Project Riff	Pivotal	event-centric	late 2017

# Challenges & Opportunities

# Does non-public cloud FaaS make sense?

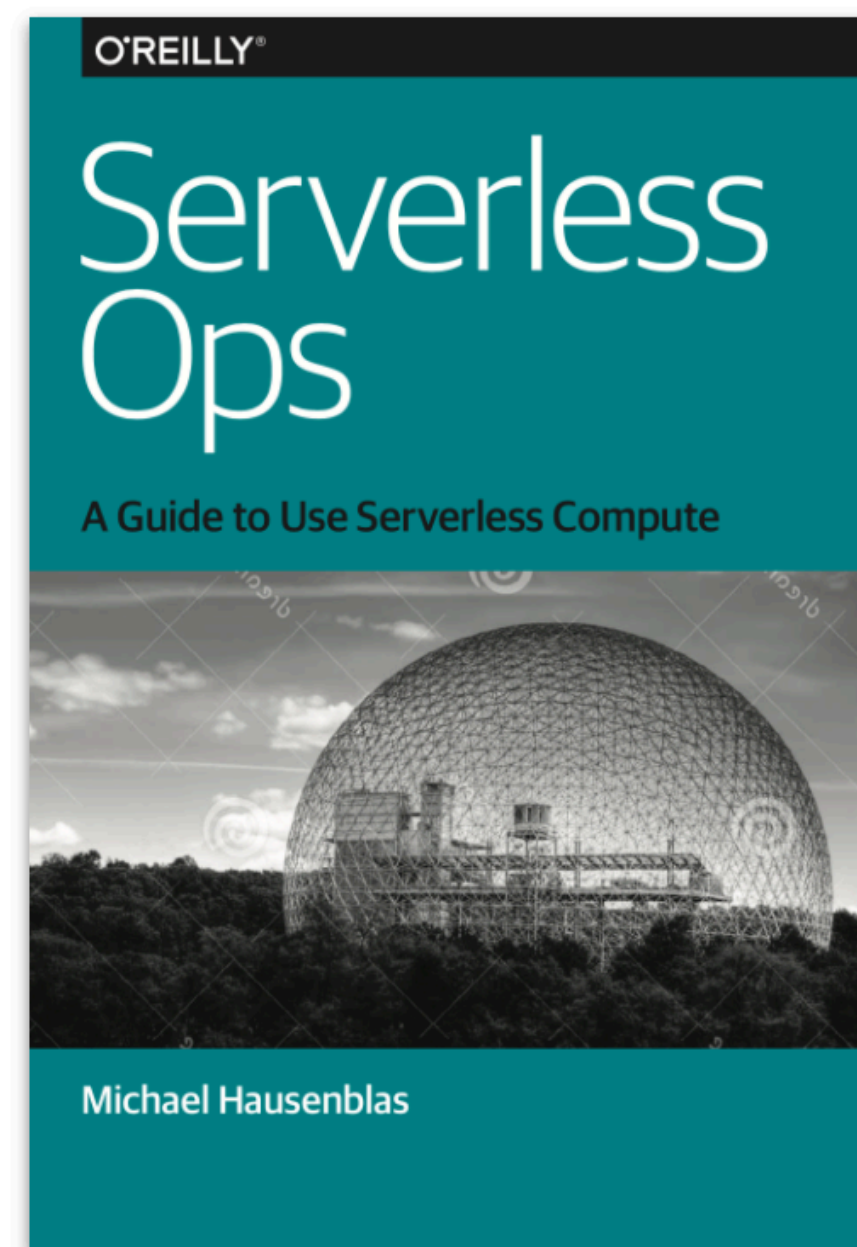


Most of production deployments currently using proprietary (public cloud) offerings:

- New Relic survey 11/2017
- TNS blog post 12/2017



# Developers on call



ServerlessOps

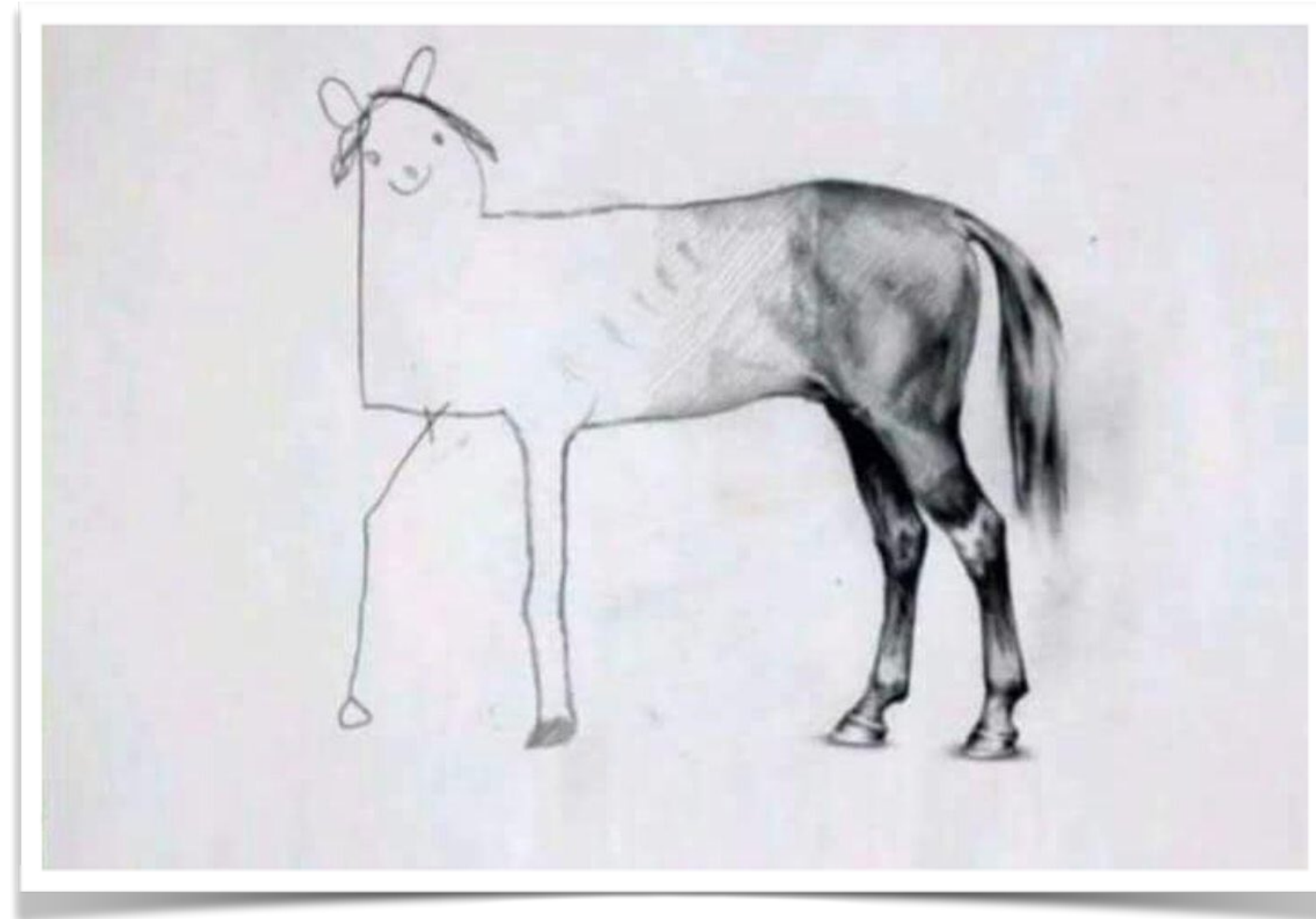
O'Reilly book, 2016



Serverless: who's on call now?

Medium post, 2018

# Orchestration, anyone?



- A handful of functions? No problem
- Breaking up a monolith into 200 functions? Hmmm ...
- So far, a rather underdeveloped space (e.g. [ibm-functions/composer](#))

# Summing up

- Is Function-as-a-Service really the “VBA of cloud native computing”?
- It's great tool, but it's **one** tool in the toolbox, not a silver bullet
- Tradeoffs: convenience (lock-in) vs. control (effort)

# Resources

- CNCF Serverless Working Group

[github.com/cncf/wg-serverless](https://github.com/cncf/wg-serverless)

- FaaS on Kubernetes inventory

[github.com/cpswan/FaaSonK8s](https://github.com/cpswan/FaaSonK8s)

- The State of OpenWhisk

[medium.com/@rabbah/the-state-of-openwhisk-ae8c129e8a48](https://medium.com/@rabbah/the-state-of-openwhisk-ae8c129e8a48)

# Kudos go out to

- Chris Swan for creating and maintaining the [FaaS on Kubernetes inventory](#)
- My colleague William Markito Oliveira for input and OpenWhisk insights
- Folks at meetups, various Slack communities such as #serverless on CNCF Slack, as well as on Twitter, especially:
  - Alex Ellis
  - Mark Peek
  - Yaron Haviv



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