

Serverless Beyond the Hype





GOTO Copenhagen 2018

Alex Ellis - Founder - @alexellisuk
Senior Staff Engineer, VMware

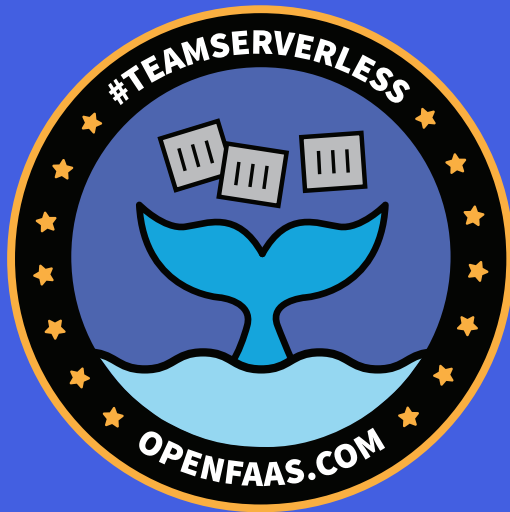


OPENFAAS

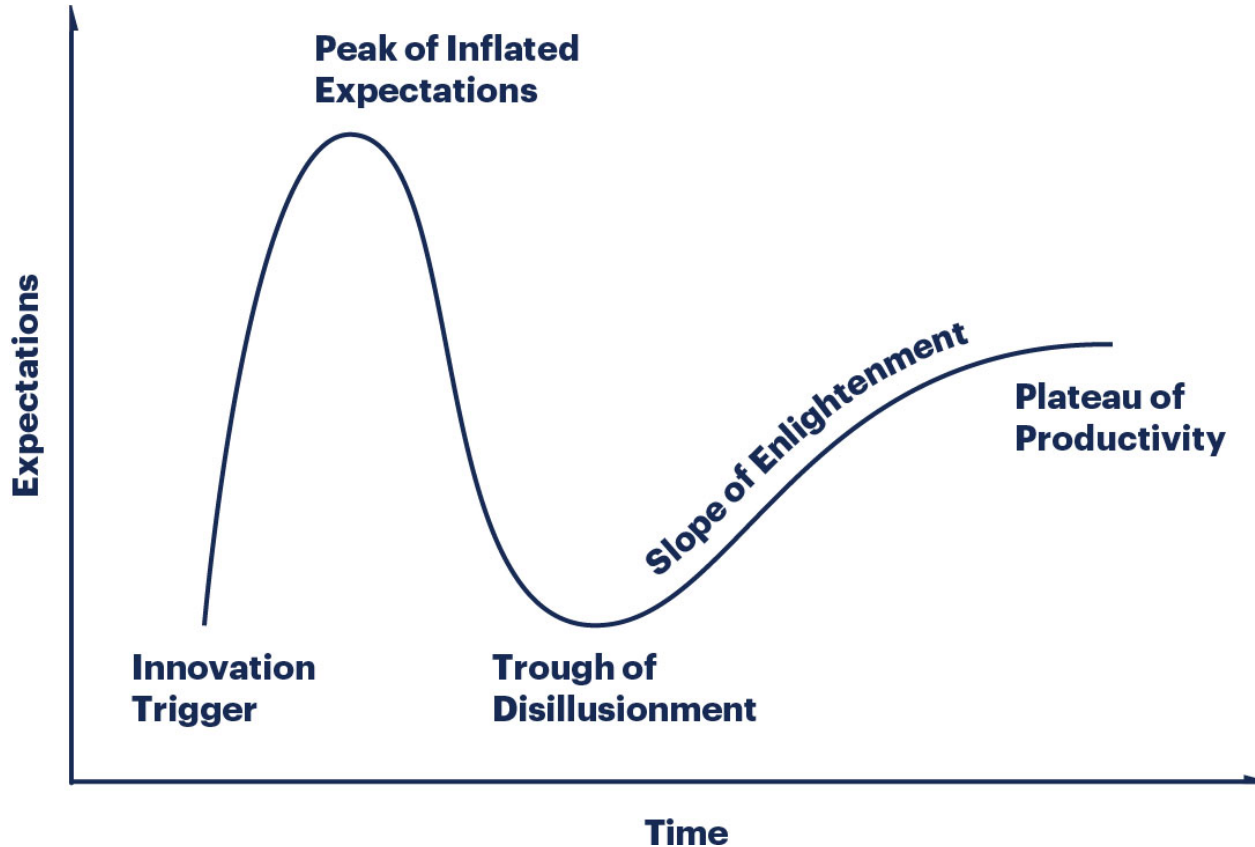
The session

- What hype? 
- Making sense of the landscape
- Portable Serverless with Kubernetes
- Live demo  
- Get involved 

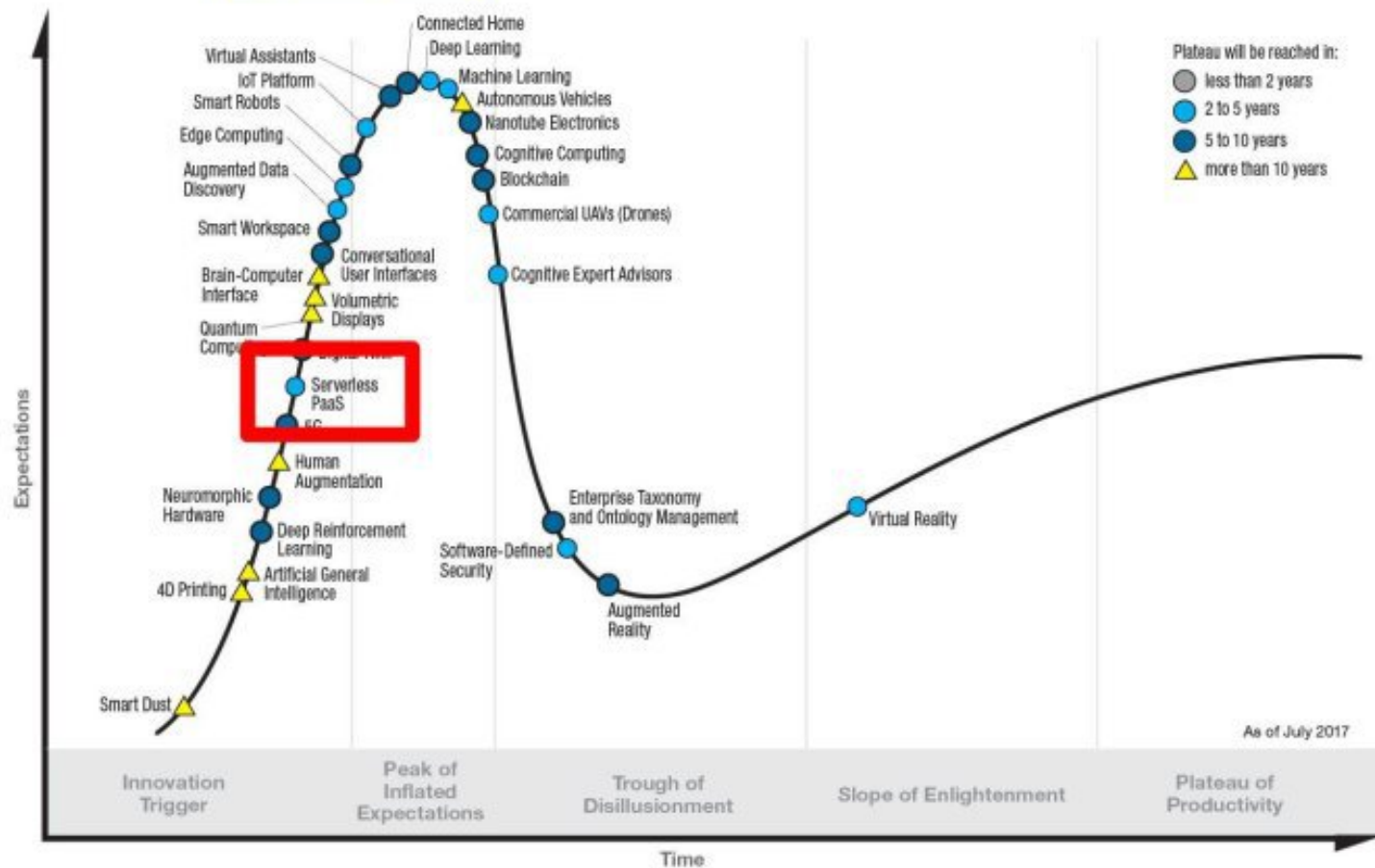
Tweet @alexellisuk  



Gartner Hype Cycle



Gartner **Hype Cycle** for Emerging Technologies, 2017



Lock-in



DevOps

'Lambda and serverless is one of the worst forms of proprietary lock-in we've ever seen in the history of humanity'

CoreOS on AWS, Kubernetes, and more

By [Thomas Claburn](#) in [San Francisco](#) 6 Nov 2017 at 07:03

58 SHARE ▼



TECHNOLOGY RADAR

- The problem of lock-in is real.
- Organizations want to avoid lock-in at all costs
- Generic, complex abstractions

111111111 vs.



- Evaluate the migration cost & effort

“We recommend increasing the portability of the workloads by shipping the applications as widely adopted **Docker** containers.”

Container wars



the developer-focused industry analyst firm

[Videos](#) [Research](#) [Events](#) [About](#) [Team](#) [Services](#) [Clients](#)

JAMES GOVERNOR'S MONKCHIPS

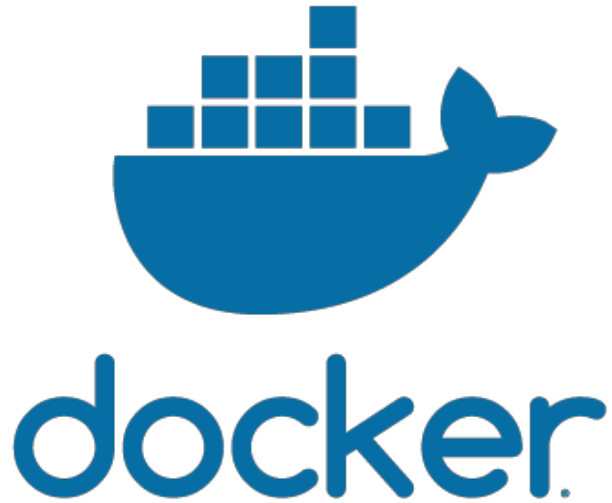
Kubernetes won – so now what?

By [James Governor](#) | [@monkchips](#) | May 25, 2018

Kubernetes is now the **defacto standard** for container orchestration, given support from pretty much the **entire vendor industry**.

Kubernetes is chosen for deployment and operations..

Serverless Portability



+





Theo Pack
@FuriKuri

Following



Replying to @wauwuff

Finally do not forget:

[#serverless](#), is made of servers 😏



2:51 PM - 8 Sep 2016



Master version

1.11.2-gke.18

Node pools

Node pools are separate instance groups running Kubernetes in a cluster. You may add node pools in different zones for higher availability, or add node pools of different machine types. To add a node pool, click Edit. [Learn more](#)

default-pool

Number of nodes

3

Machine type ?

Customise to select cores, memory and GPUs

2 vCPUs

8 GB memory

[Customise](#)

Auto-upgrade: On

Create

Reset

Equivalent [REST](#) or [command line](#)

Serverless is an architectural pattern



Serverless & Kubernetes



KubeCon



CloudNativeCon

Europe 2018

By 2020

In the cloud platform, serverless & k8s will essentially converge:

“Kubernetes, just run my code”

Alexis Richardson - CEO Weaveworks



Nathan LeClaire

@dotpem

Following



all this "is kube too complicated" talk makes me think it's starting to go past the peak of inflated expectations on the hype cycle.



Isaac Hepworth @isaach · May 18

got my yaml indenting wrong and now my kubernetes cluster is self-aware :(



7



12



80



Joe Beda ✓

@jbeda

Following

Replying to @isaach

I'm so sorry. It really did seem like a good idea at the time.

4:54 PM - 18 May 2018 from [Seattle, WA](#)

2 Retweets 40 Likes



4



2



40



Tools



Security



Framework



Platform



s.cncf.io

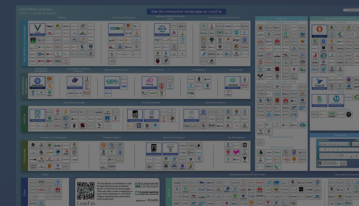
Serverless computing refers to a new model of cloud native computing, enabled by architectures that do not require server management to build and run applications. This landscape illustrates a finer-grained deployment model where applications, bundled as one or more functions, are uploaded to a platform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

CLOUD NATIVE
Landscape

CLOUD NATIVE
COMPUTING FOUNDATION

Redpoint

Cloud Native Landscape



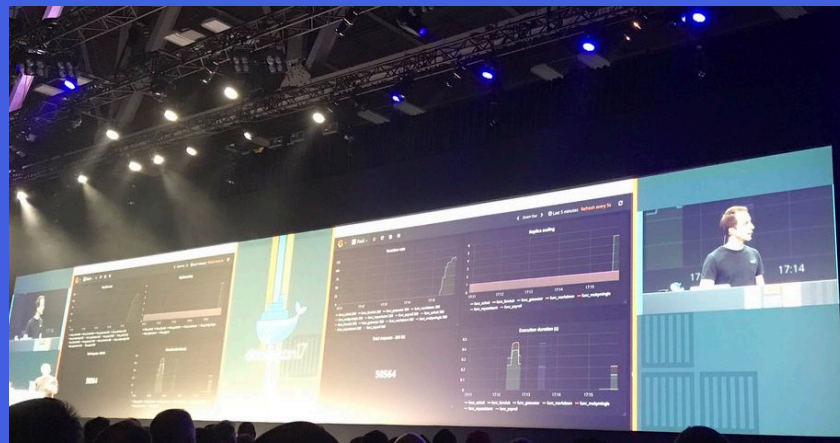
Kubernetes FaaS compared

	OpenFaaS	Kubeless	Knative
Vendor	Community	Bitnami	Google
Maturity	2yr	2yr	3mo
Stable	✓	✓	✗
Docker	✓	✗	✓
YAML	Stack/CRD	CRD	CRD
Lightweight	✓✓	✓	✗
Code limits	✗	50kb/1mb	✗
Zero-scale	✓	✗	✓



OpenFaaS - Functions as a Service

- Started in Nov 2016
- Containers, Alexa, Swarm 🐳
- Full time team @ VMware
- Production users 🖥️
- Bossie awards 🏆 🥈



Serverless Functions Made Simple

Easy to use

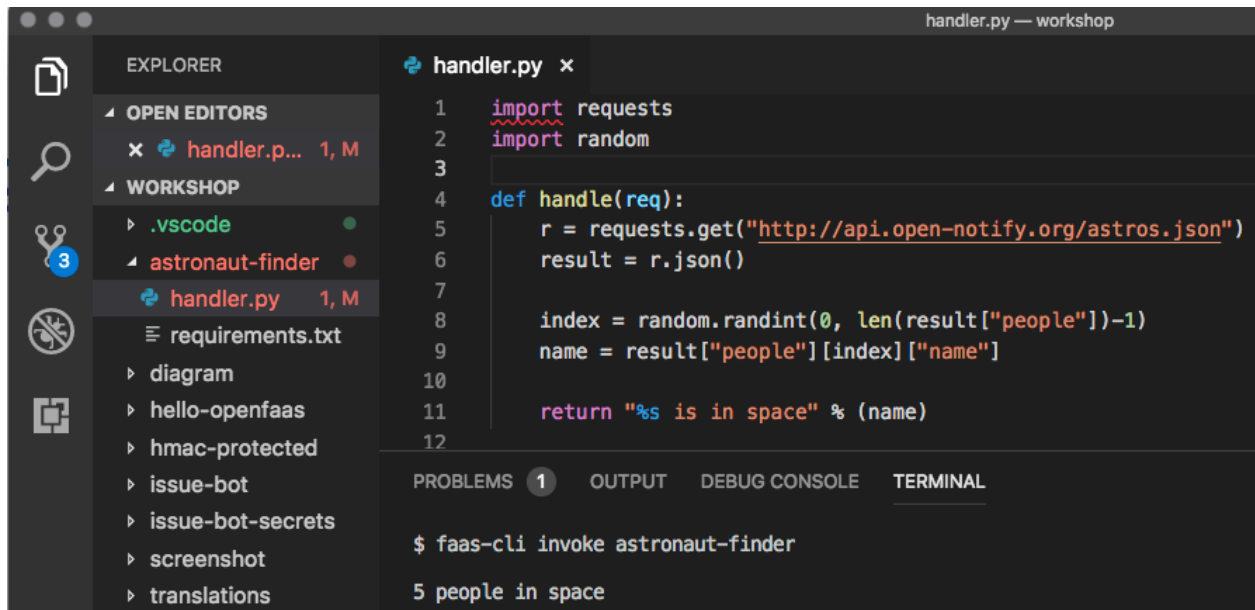
Any code
Anywhere
Any scale

You decide the limits

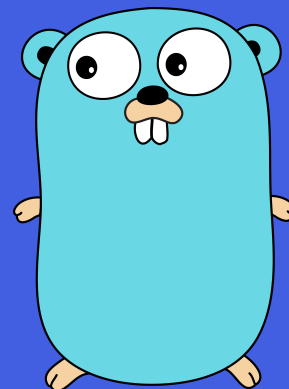


Developer-first

Gets out your way



Templates for most popular languages*



* DigitalOcean Currents report <https://do.co/2wjzUyR>



Write a function

1. `$ faas new --lang python3 http-status`

```
def handler(req):  
    r = requests.get(req)  
    return str(r.status_code)
```

handler.py

requests

requirements.txt

2. `$ faas up`

Handler

+

*Python
Template*



Docker
Image



Registry



Stack files (YAML)

```
functions:
  move-money:
    lang: go
    handler: ./move-money
    image: move-money:0.1

  register-user:
    lang: go
    handler: ./register-user
    image: register-user:0.2
  environment:
    http_proxy: http://corp.ad.com:3128
  secrets:
    - bank-api-key
```



Demo

What you saw:

- Created a new function
- Function Store
- Machine-learning



Any language

```
IDENTIFICATION DIVISION.
```

```
PROGRAM-ID. HELLO-WORLD.
```

```
PROCEDURE DIVISION.
```

```
    DISPLAY 'Back to the future with OpenFaaS!'.
```

```
    STOP RUN.
```



Any language (Dockerfile)

```
FROM toricls/gnucobol:latest

ADD https://github.com/openfaas/faas/releases/download/0.9.6/fwatchdog >
/usr/bin/fwatchdog

COPY handler.cob .

RUN cobc -x handler.cob

ENV fprocess="./handler"

CMD ["fwatchdog"]
```



Any binary, container or code



Lukas Heinrich

@lukasheinrich_

Following



Replying to [@lukasheinrich_](#) [@alexellisuk](#) and 5 others

one think that is *great* for us is [@openfaas](#)' approach to allow custom images (instead of fixed runtimes) .. our s/w stack is very custom (a while ago we exchanged tweets about running F77 code on faas) so that will help w/ adoption

8:33 AM - 8 Nov 2018

Particle Physicist @ CERN



Operator-friendly

- Cloud native
- Simple to deploy & operate
- Light-weight

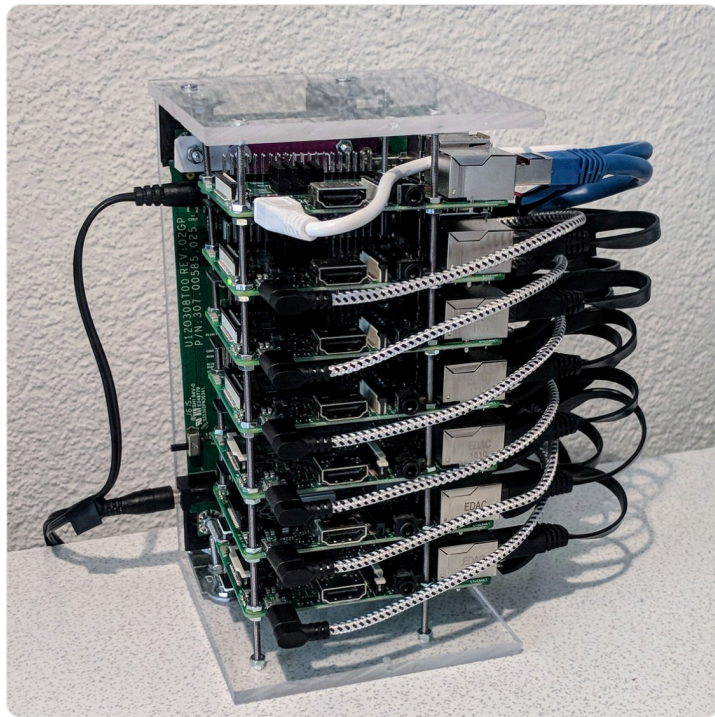


Alex Müller
@alexarnimuller

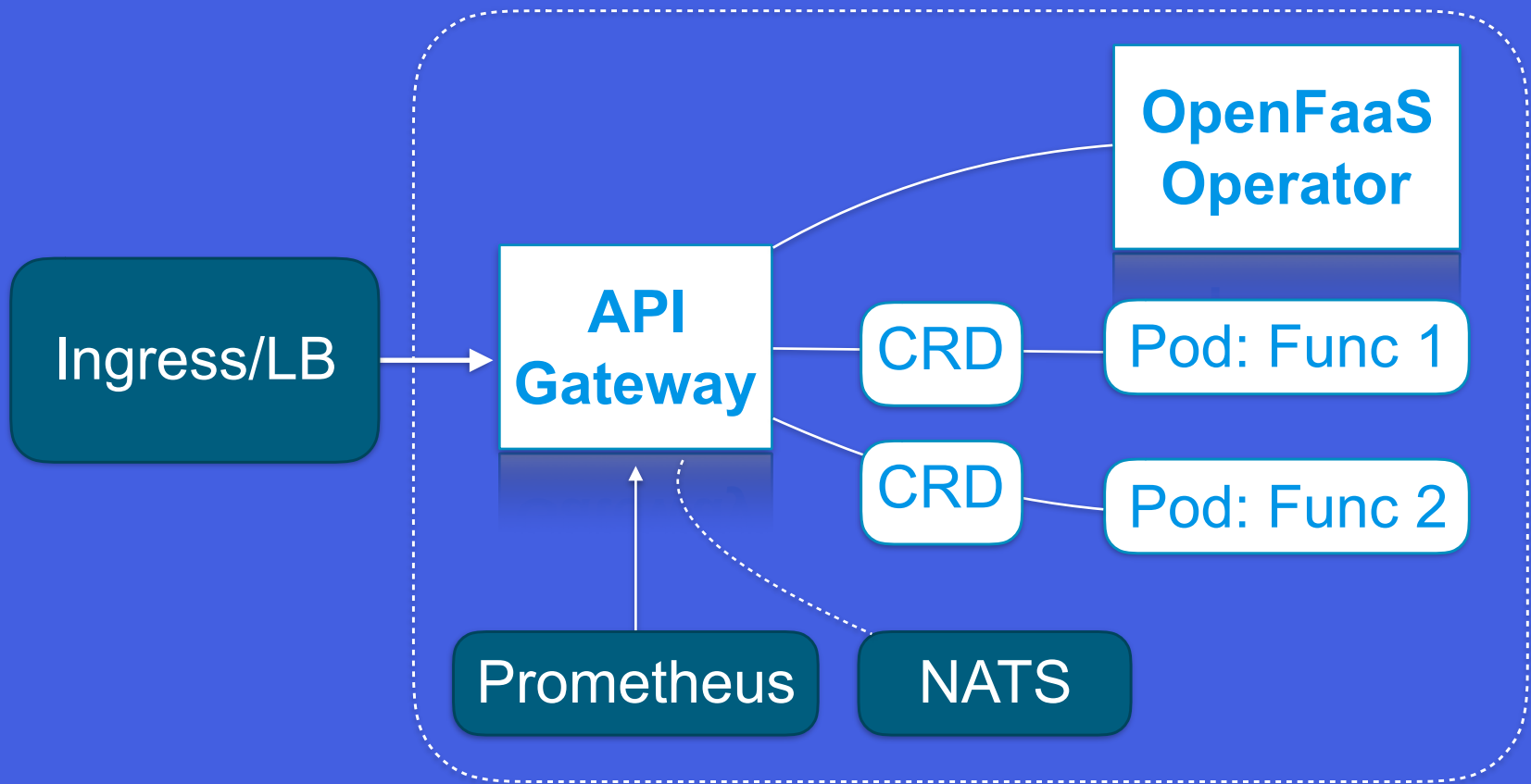
Following



Thanks [@alexellisuk](#) for the great instructions on how to build a serverless raspberry pi cluster with [@Docker](#) , [@openfaas](#) and [@PrometheusIO](#)



Architecture: Kubernetes-native



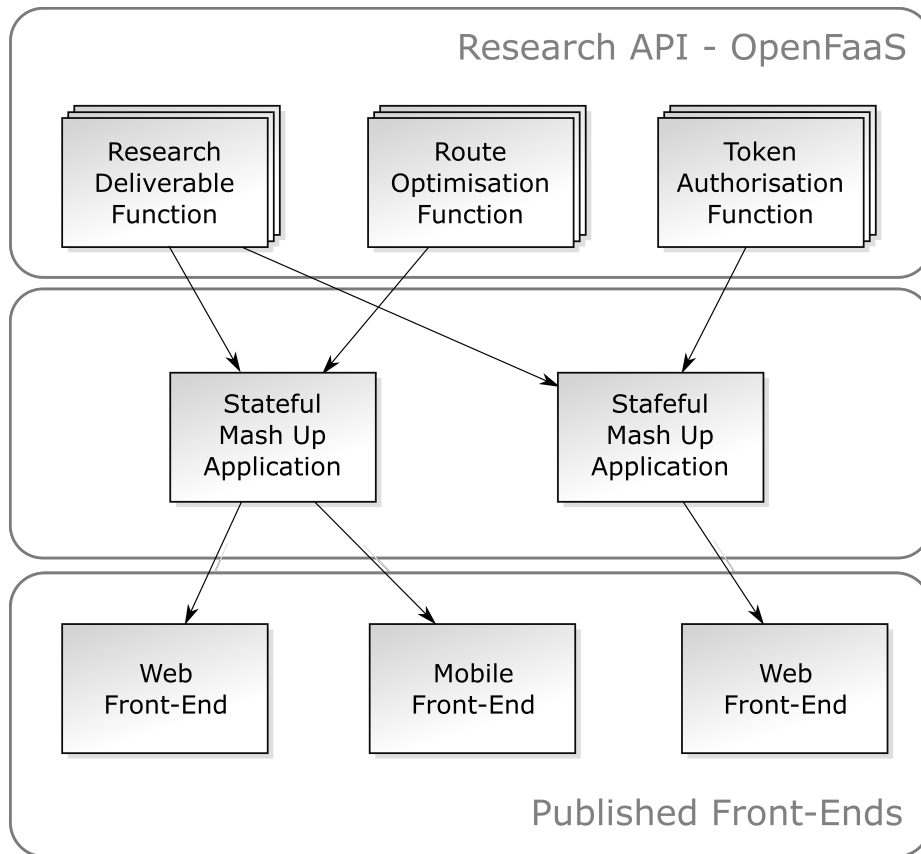
End-users



Case-study 1: BT Research, UK



- Production usage
- Heavily reliant
- Research platform & internal tools
- Shrink-wrap into products
- KPIs



Case-study 2: Vision Banco, Paraguay



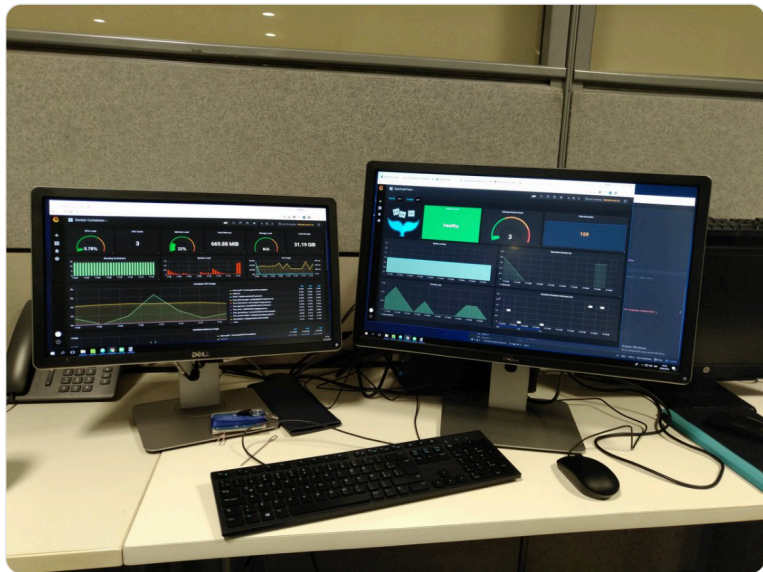
Pato Díaz

@padiazg

Following



Just switched to production one of our functions, the first one. Monitoring how it performs. [@alexellisuk](#) [#FaaSFriday](#)
twitter.com/padiazg/status...



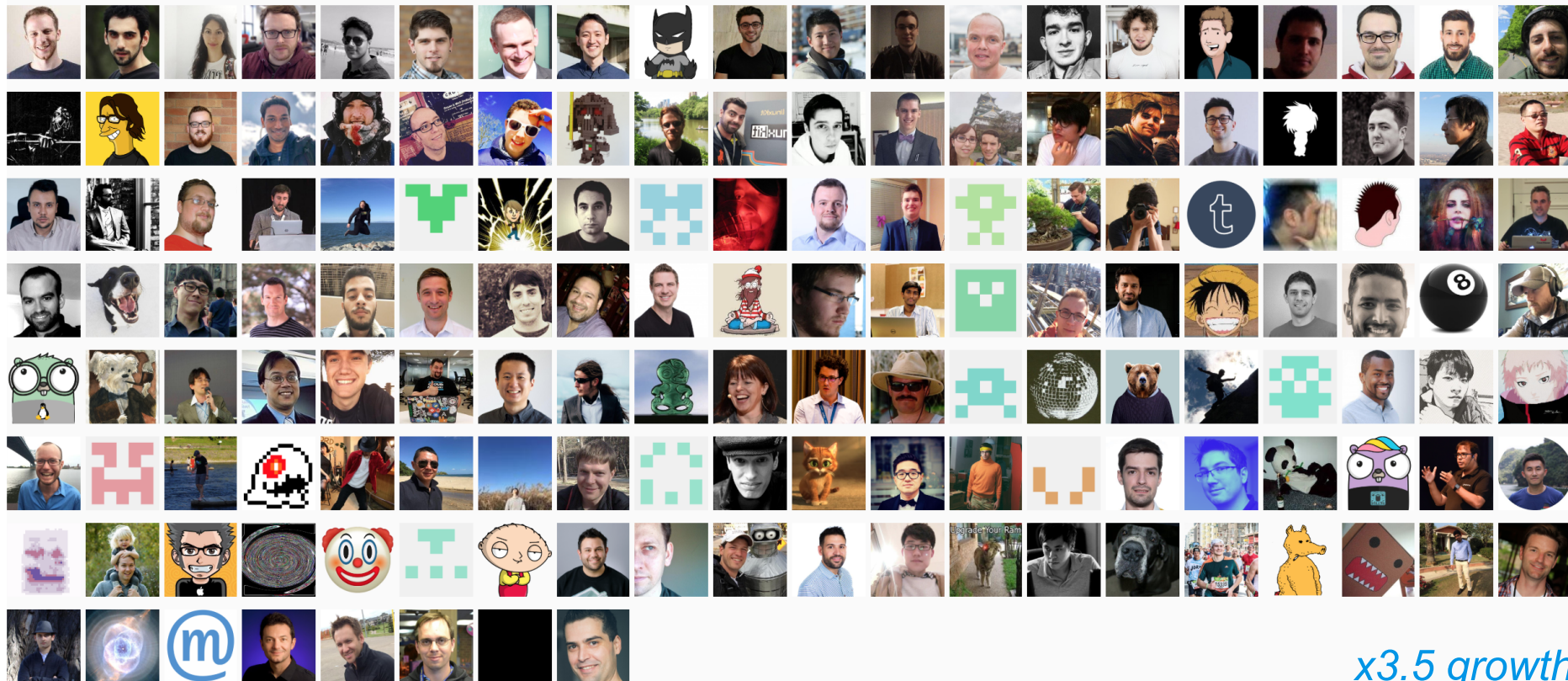
9:25 PM - 22 Jun 2018



- Digital Transformation
- OpenFaaS in production with HomeServe
- KubeCon talk @ Seattle
- Completely on-prem with GitLab

Community Centric

★ 14k 



x3.5 growth



Are you in?

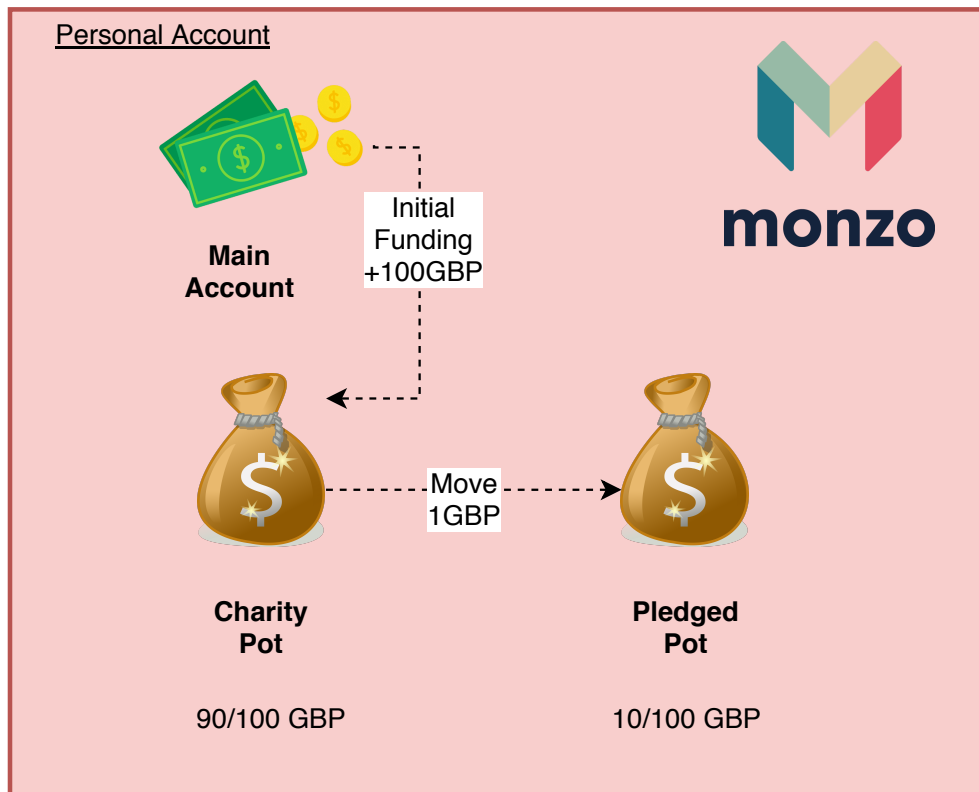
The bank of the future

This isn't banking as you know it.
Monzo is a bank for everyone,
that works with you, for you.

Join today for your own UK
current account.



Working with my bank's API



You register with the App and I'll pledge

børne cancer fonden

Søg

Q


Støt nu

Menu

200 børn får hvert år kræft

De har brug for håb og omsorg. Det samme har deres familier. Vi finansierer forskning i børnekrebs og støtter familierne gennem den sværeste tid i deres liv. Vi giver håb.

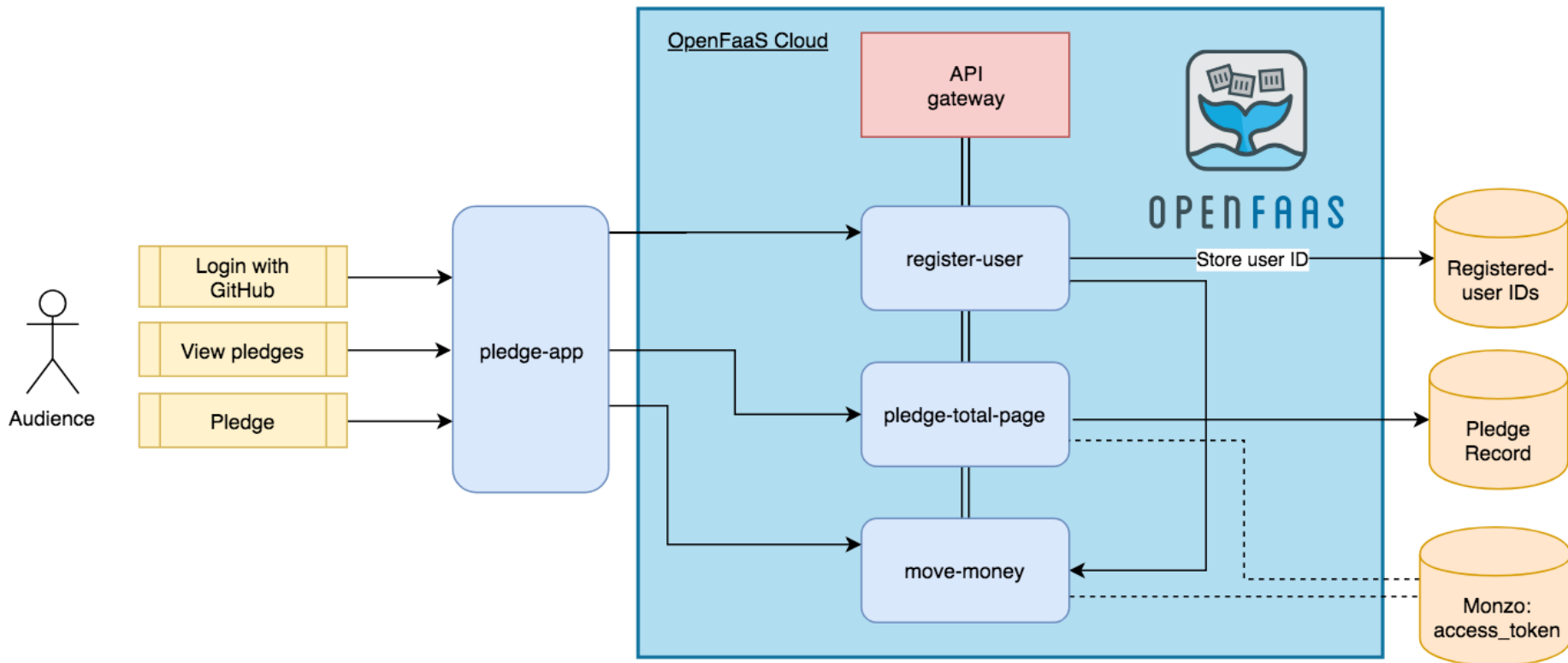
Vil du også hjælpe?



<https://boernecancerfonden.dk>

Pledge via this URL:

How it works



OpenFaaS Cloud ☁️



- Managed
- Multi-user
- Personal dashboard
- CI/CD (git push)
- Feedback via *GitHub/*
GitLab

Free Community Cluster*

OpenFaaS Cloud Dashboard



OpenFaaS Cloud

Home

 GitHub

alexellis

Functions for alexellis

Welcome to the OpenFaaS Cloud Dashboard! Click on a function for more details.

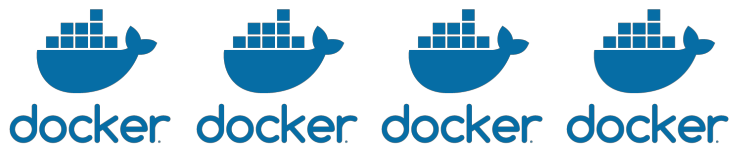
Name		Repository		SHA	Deployed	Invocations	Replicas	
move-money		pledge-fn		1d7ed84	18 hours ago	87	<div><div></div></div> 1/4	
register-user		pledge-fn		1d7ed84	18 hours ago	315	<div><div></div></div> 1/4	
pot-total		pledge-fn		1d7ed84	18 hours ago	646	<div><div></div></div> 1/4	

Summing up

Don't get locked-in:

- Kubernetes & Docker
- Existing microservices and functions
- OpenFaaS/Cloud with GitHub or GitLab

Serverless 2.0



Get involved

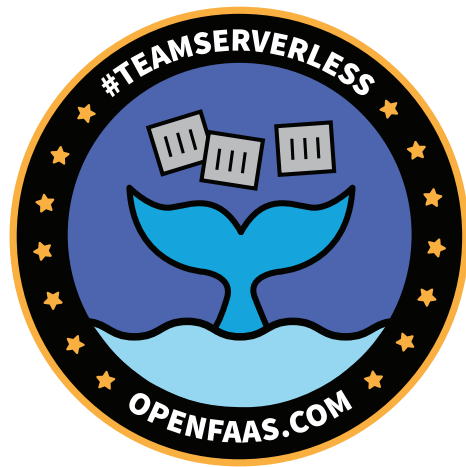
1. Join Slack 🙌

<https://docs.openfaas.com/community>

2. Try the self-paced workshop! 💻

<https://github.com/openfaas/workshop>

3. Instructor-led workshop: Serverless OpenFaaS with Python
[Sign-up today!](#)





OPENFAAS

Thank you!

www.openfaas.com

@alexellisuk