

*Hochverfügbare*

PostGIS



*Cluster auf Kubernetes*

FELIX KUNDE

[slides.com/fxku/postgis-k8s](https://slides.com/fxku/postgis-k8s)



# ÜBER MICH

Geoinformatiker

Jetzt Database Engineer @ Zalando

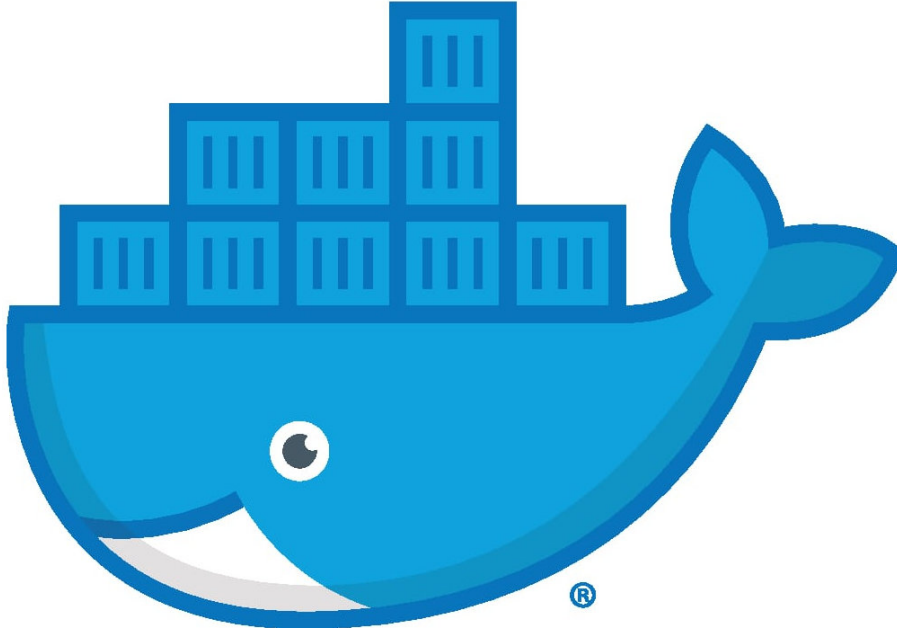
Hin und wieder Gastdozent für Datenbanken

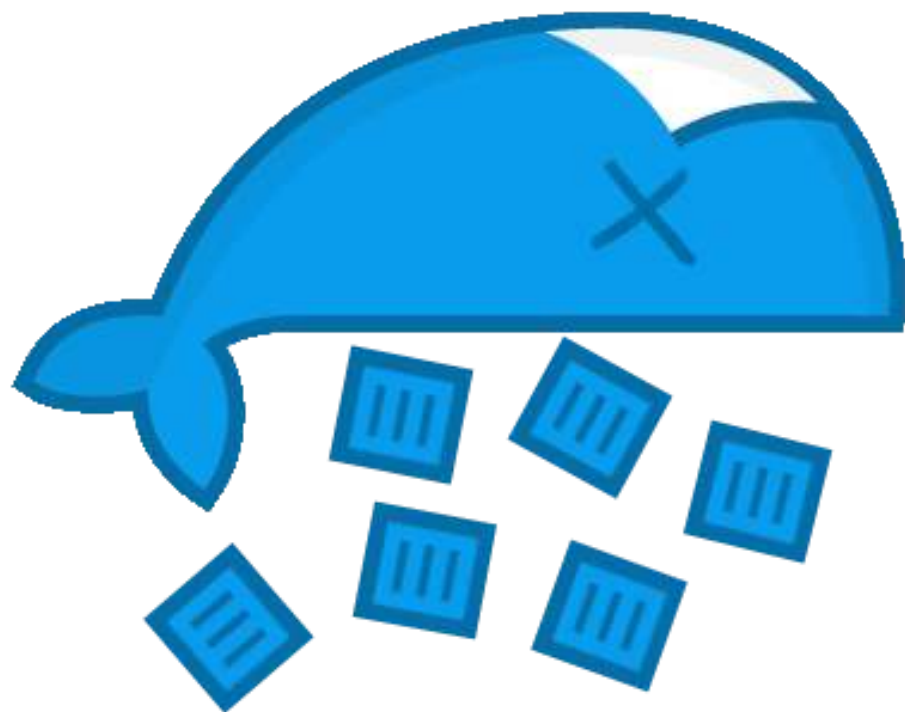
Postgres Operator, 3DCityDB and pgMemento

@FlxKu

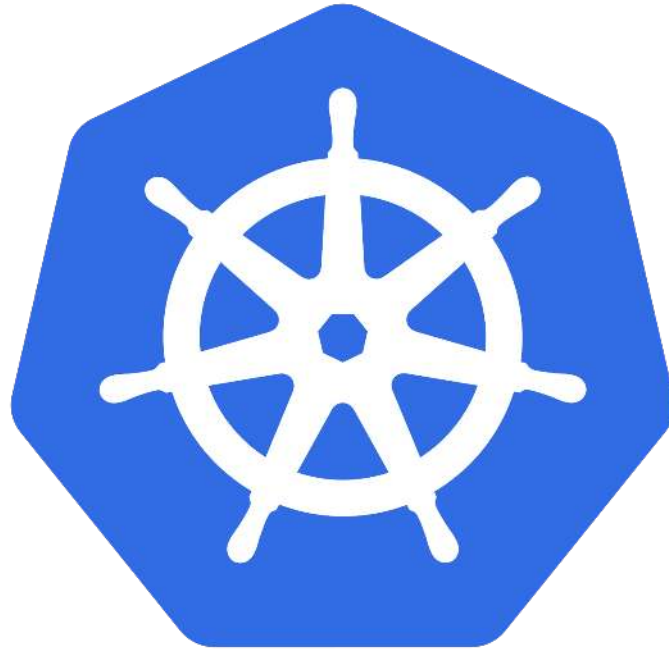


- Wenig PostGIS, aber jede Menge PostgreSQL
- Early Adopter von Kubernetes im Produktivbetrieb
- Über 1400 Postgres Cluster auf Kubernetes
- Eigenes DBaaS-Produkt / Team





# KUBERNETES?

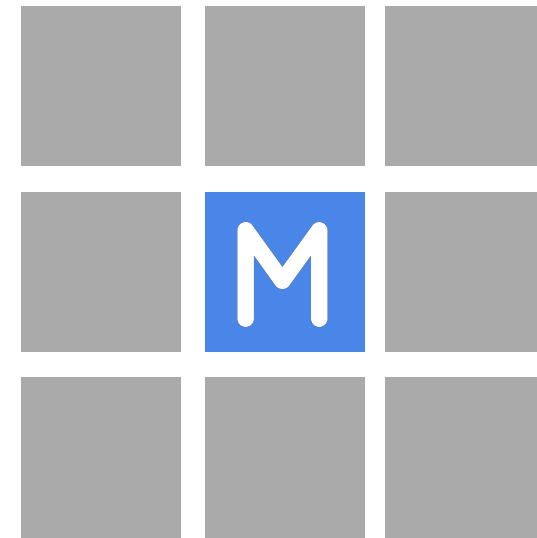


# KUBERNETES = K8S



*image: wfs:v3.0*

## Server / Cloud

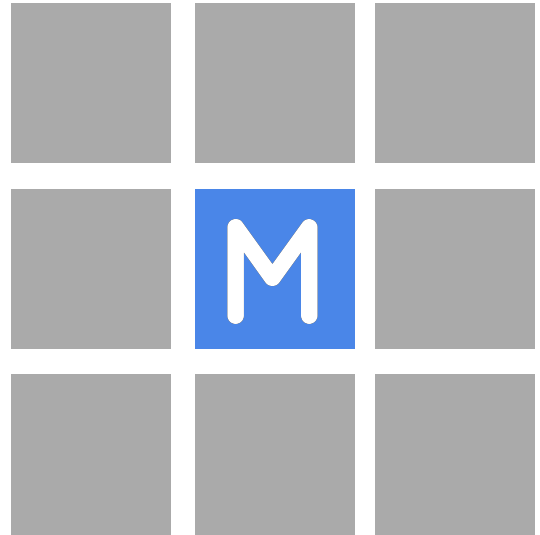


**Registry**

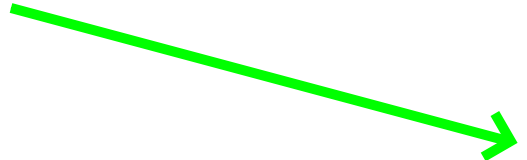




# Server / Cloud



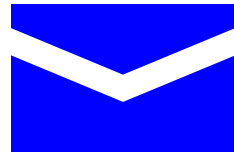
*image: wfs:v3.0*



**Registry**

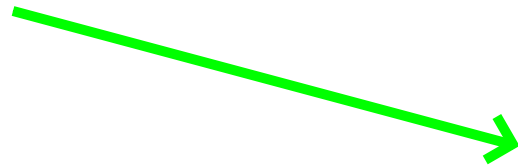


# Deployment mit Container(n)

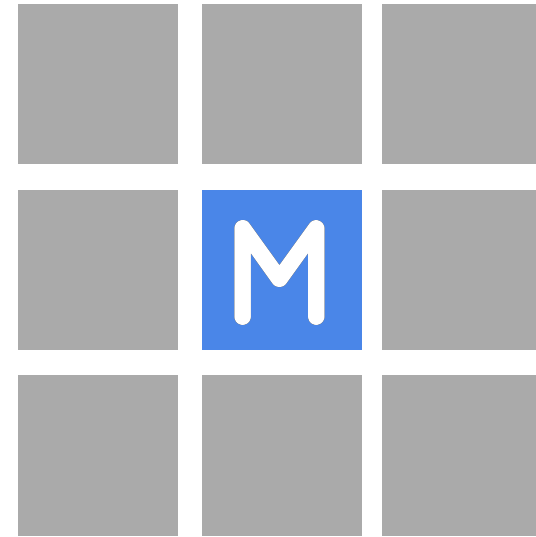


*replicas: 3*

*image: wfs:v3.0*



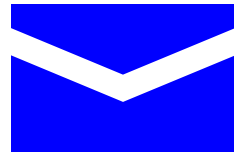
# Server / Cloud



**Registry**



# Deployment mit Container(n)

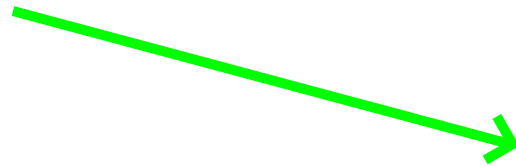
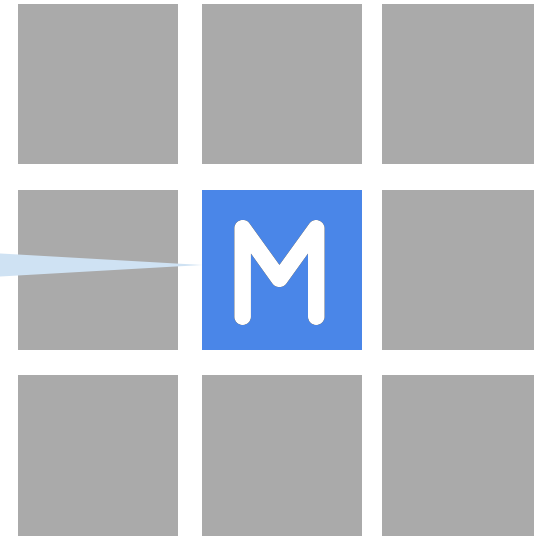


*replicas: 3*

*image: wfs:v3.0*



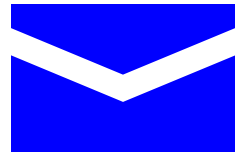
# Server / Cloud



**Registry**

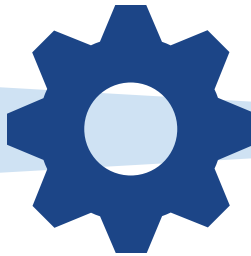


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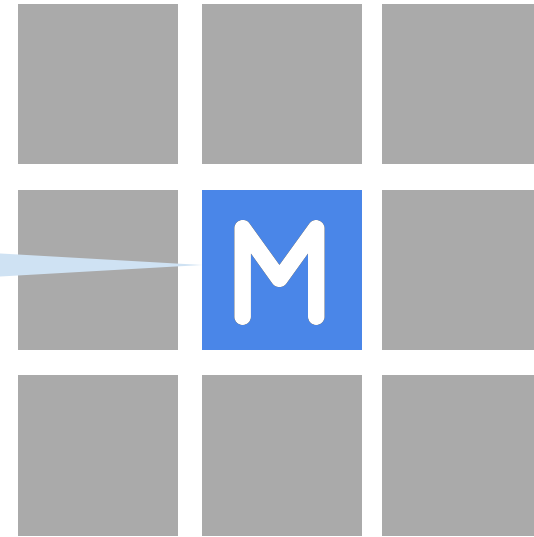
*replicas: 3*

*image: wfs:v3.0*



*Deployment  
Controller*

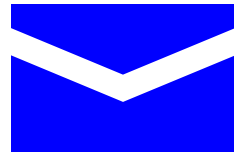
# Server / Cloud



**Registry**

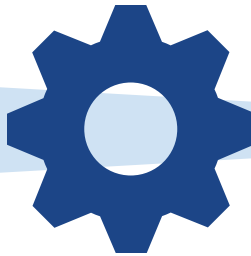


# Deployment mit Container(n)



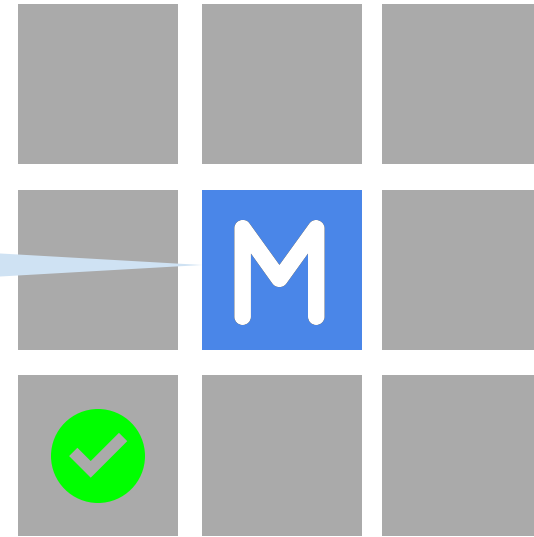
*replicas: 3*

*image: wfs:v3.0*



*Deployment  
Controller*

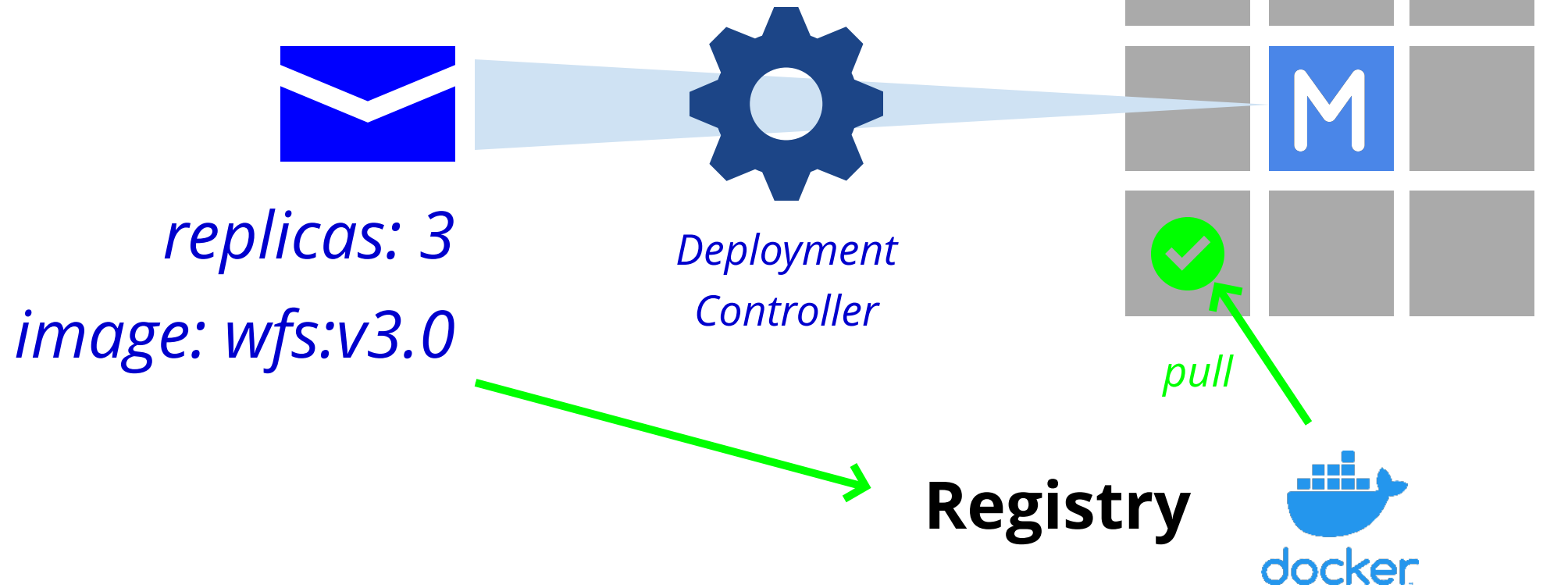
# Server / Cloud



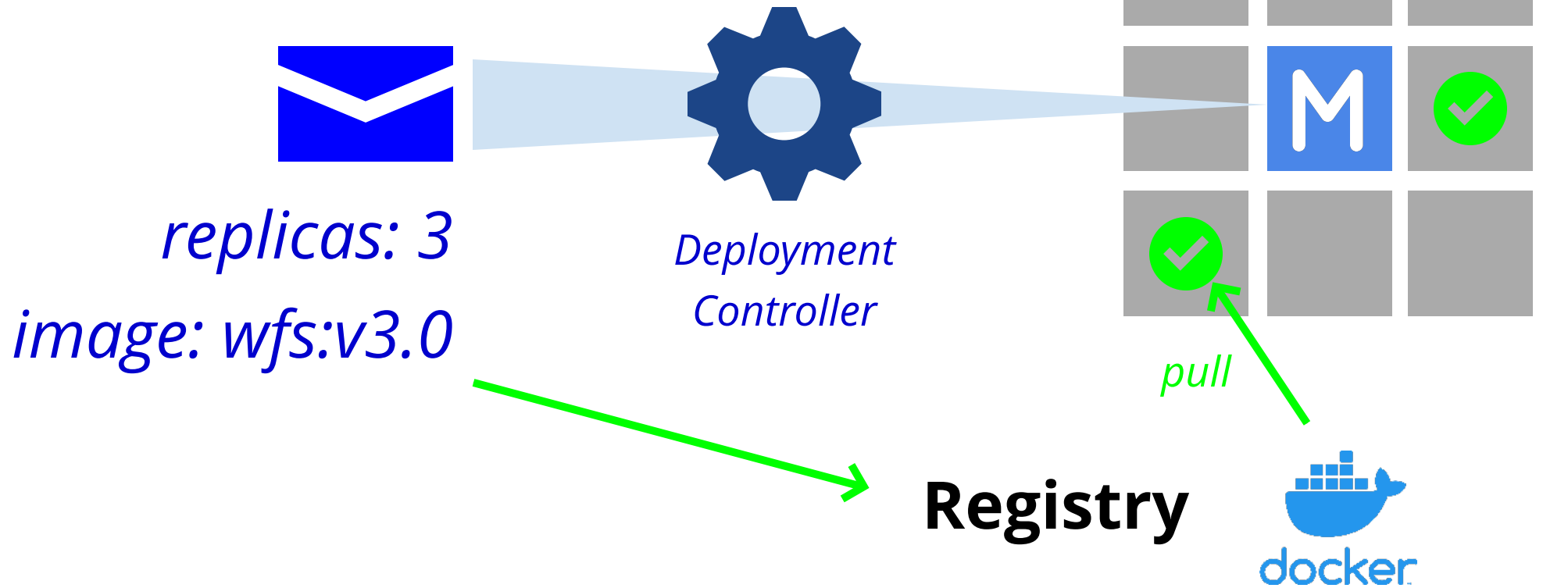
**Registry**



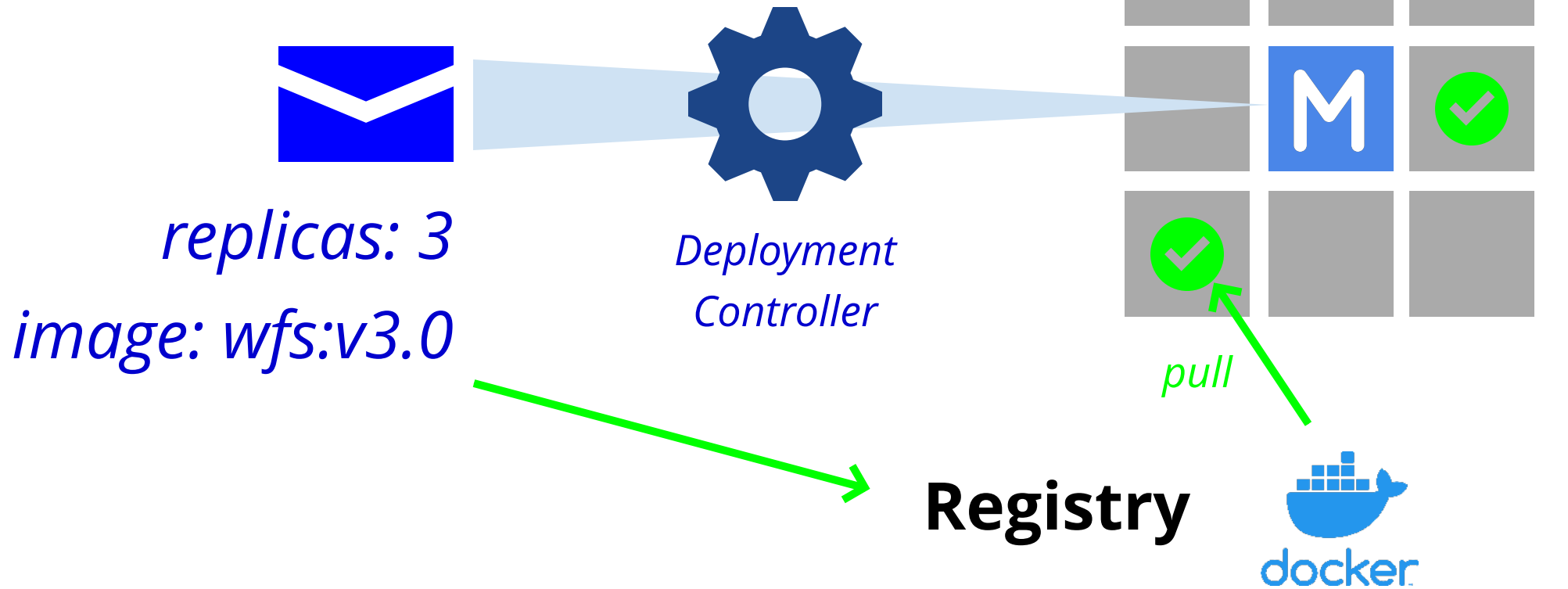
# Deployment mit Container(n)



# Deployment mit Container(n)

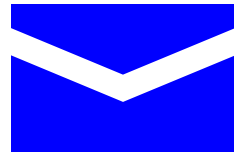


# Deployment mit Container(n)



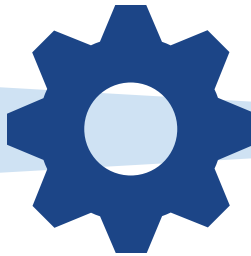


# Deployment mit Container(n)



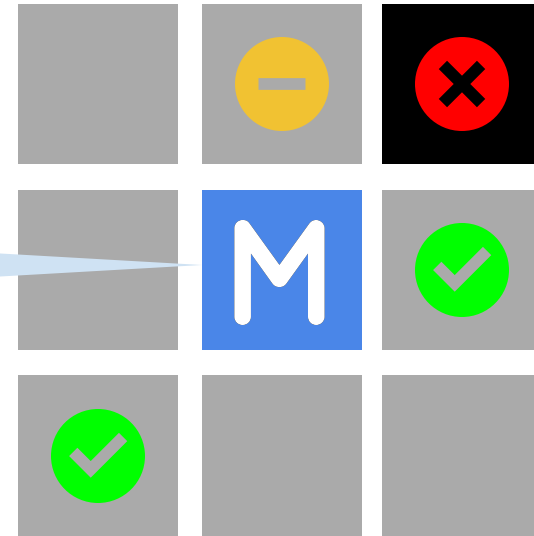
*replicas: 3 != 2*

*image: wfs:v3.0*

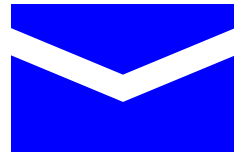


*Deployment  
Controller*

# Server / Cloud

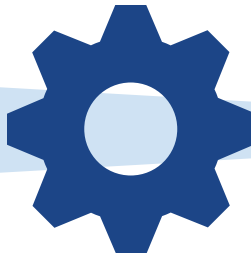


# Deployment mit Container(n)



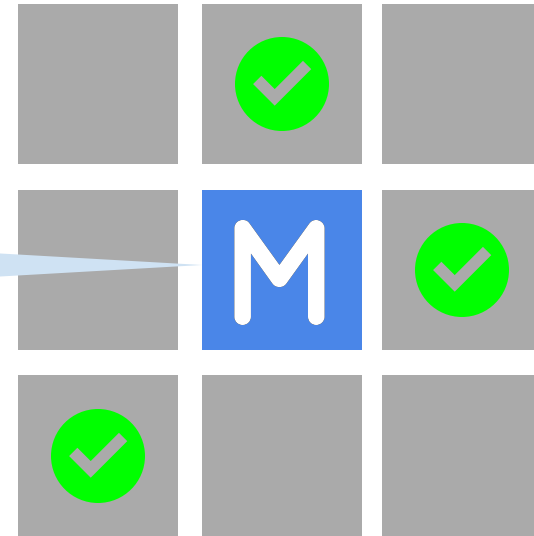
*replicas: 3*

*image: wfs:v3.0*



*Deployment  
Controller*

# Server / Cloud



# StatefulSet mit Container(n)



*replicas: 3*

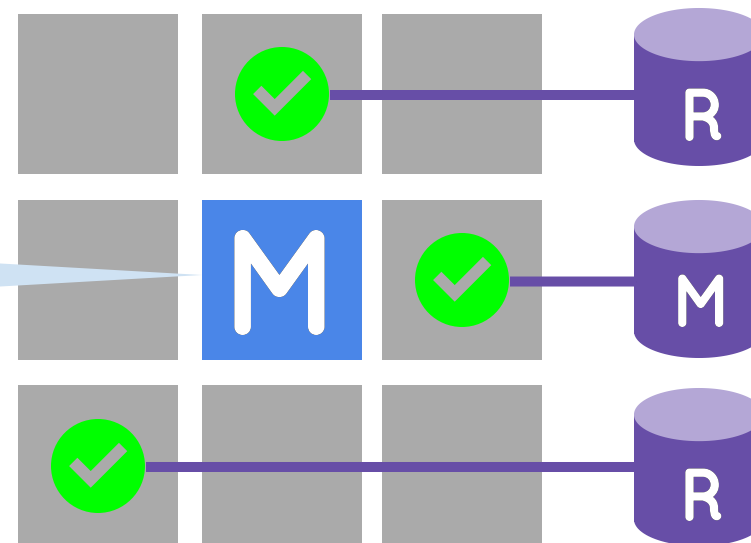
*image:*

*postgis:v3*



*StatefulSet  
Controller*

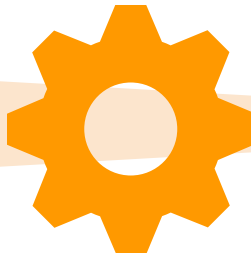
## Server / Cloud



# Postgresql mit Container

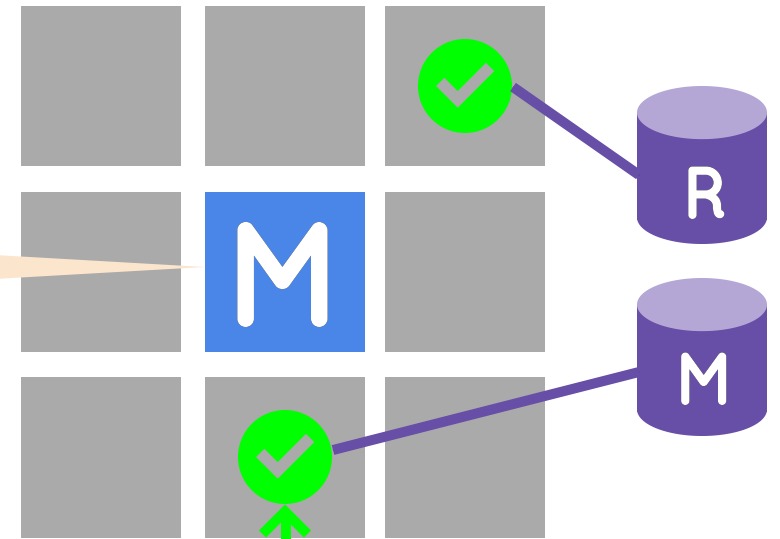


*replicas: 2*  
*image: spilo*



Operator

## Server / Cloud



Spilo



docker

```
apiVersion: acid.zalan.do/v1
kind: Postgresql
metadata:
  name: fossgis-app-db
spec:
  numberOfInstances: 2
  postgresql:
    version: "12"
  teamId: fossgis
  users:
    app_owner: []
  databases:
    prod_app_db: app_owner
  volume:
    size: 10Gi
```

```
apiVersion: acid.zalan.do/v1
kind: Postgresql
metadata:
  name: fossgis-app-db
spec:
  numberOfInstances: 2
  postgresql:
    version: "12"
  teamId: fossgis
  users:
    app_owner: []
  databases:
    prod_app_db: app_owner
  volume:
    size: 10Gi
```

- Erstelle einen PostgreSQL cluster
- mit dem Namen: *fossgis-app-db*.
  
- Zwei Instanzen, Master & Replica
- PostgreSQL 12
- Team: fossgis (Rollen für Mitarbeiter)
- Lege App-Nutzer *app\_owner* an
- Keine dedizierten Privilegien
- Lege Datenbank *prod\_app\_db* an
  
- Beantrage an 10GB Volume / Instanz

# POSTGIS-AS-A-SERVICE

- Power to the people! Nicht nur DBAs.
- Auto. Rollen & [Authentifizierungsmanagement](#)
- Extension Angebot und [Whitelisting](#)
- [Backups](#), [WAL archiving](#) & [Recovery](#) außerhalb von K8s
- [Skalieren](#) und Hochverfügbarkeit
- [Monitoring](#) von [Performance](#) und [Incidents](#)
- PostgreSQL Logs aus der DB abfragbar ([file\\_fdw](#))

# OPENSOURCE.ZALANDO.COM

- [Patroni](#) ist DER PostgreSQL high-availability manager
- [Spilo](#) ist Zalando's Postgres Image incl. Patroni
- [Postgres-Operator](#) betreut Spilo auf K8s

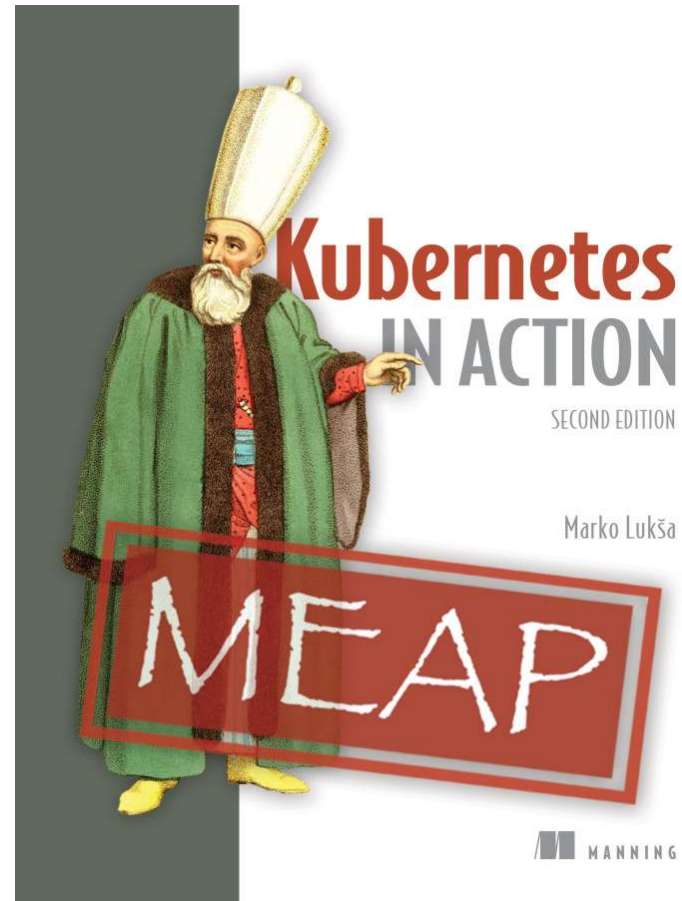


**DEMO**

# IST DAS SCHWER?

- Wer Docker kennt, kommt schneller rein
- K8s [1x1](#) eigentlich überschaubar
- Viel zu konfigurieren für den Prod.-Betrieb
- Lokal testen mit [Minikube](#), [Kind](#) etc.

# HAUSAUFGABE



# BRAUCHE ICH DAS?

- In-house K8s braucht Admins
- Erst bei größeren Firmen, ansonsten Cloud
- Was kann **schief** gehen?
- Es muss nicht K8s sein, aber Spilo schon ;)

DANKE

FELIX KUNDE

[slides.com/fxku/postgis-k8s](https://slides.com/fxku/postgis-k8s)