

Road to Kubernetes

Wer bin ich?

Tim Stoffel

:em engineering methods AG

Fachinformatiker Anwendungsentwicklung

7. Semester Bachelor IT Sicherheit

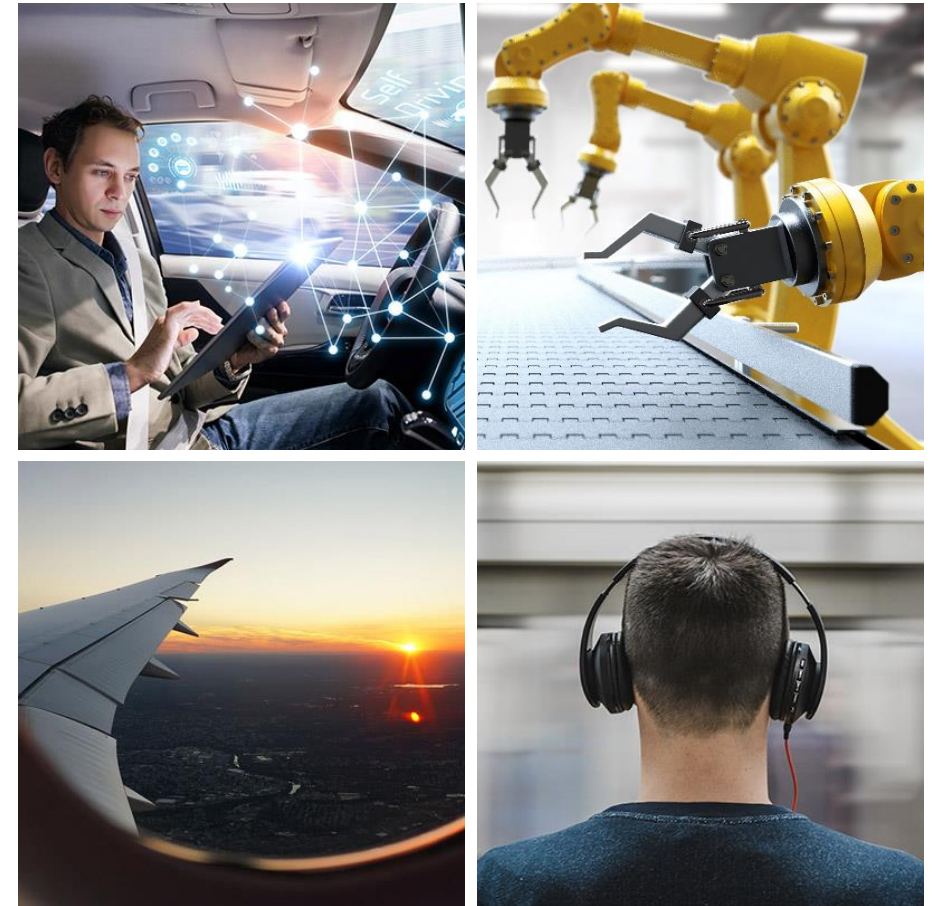


:em engineering methods AG

Wir liefern die digitale Zukunft für das Engineering.

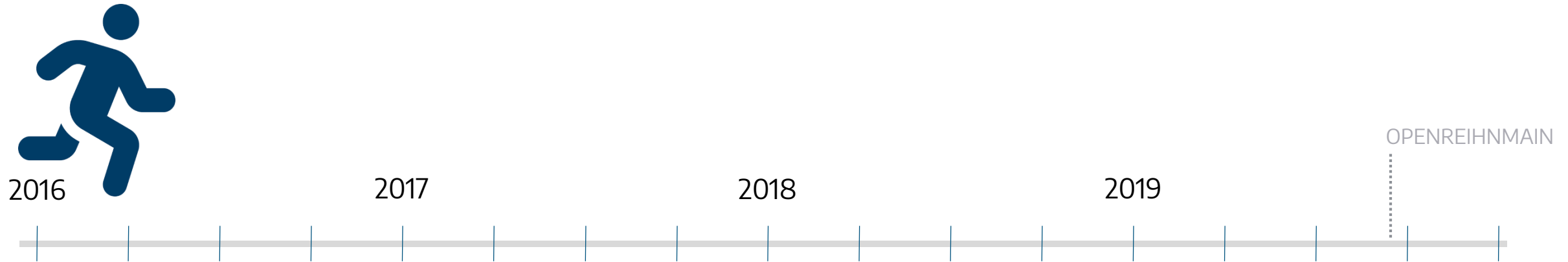
- Gründung 2001 in Darmstadt als „Spin-Off“ der TU Darmstadt, mit Standorten in Darmstadt und Böblingen
- Unabhängiges IT- und Beratungsunternehmen für Prozesse, Methoden und Technologien im Engineering
- Software- und Lösungsanbieter für Engineering Applikationen
- Fundiertes Know-how in den Branchen
 - **Automobil- und Zulieferindustrie**
 - **Maschinen- und Anlagenbau**
 - **Luft- und Raumfahrttechnik**
 - **Elektrik/Elektronik und Konsumgüter**
- 100 begeisterte Ingenieure, Softwareentwickler und IT-Spezialisten
- Erfolgreiche, nachhaltige Entwicklung – Inhabergeführtes Unternehmen

Zertifiziert nach
ISO 9001



Wie hat es angefangen?

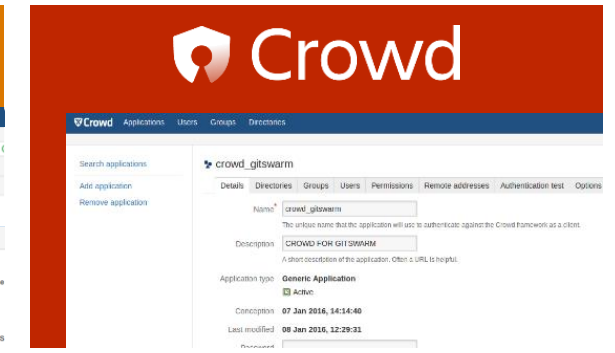
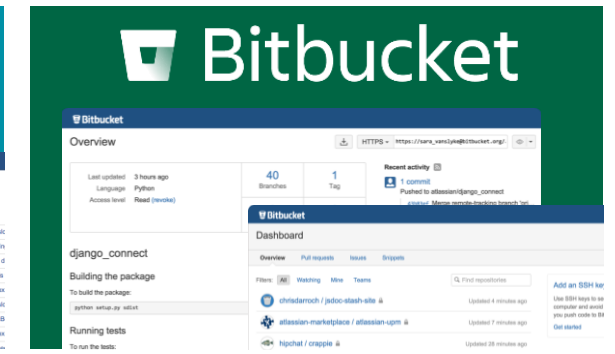
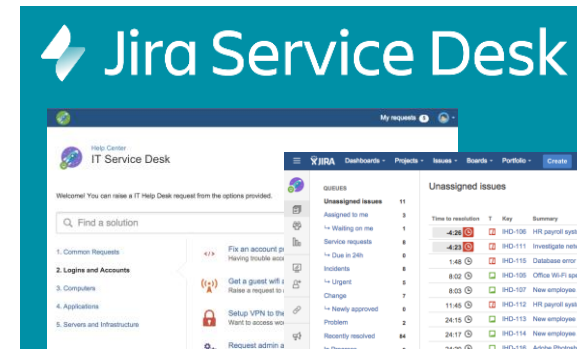
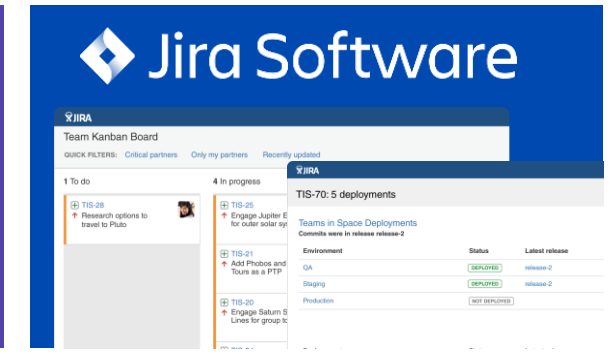
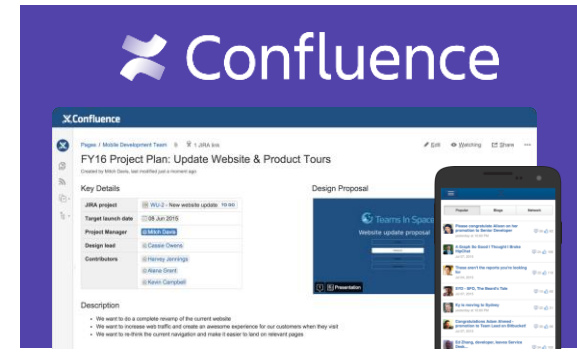
Zeitstrahl





Atlassian Tools

Der Atlassian Stack





Demos

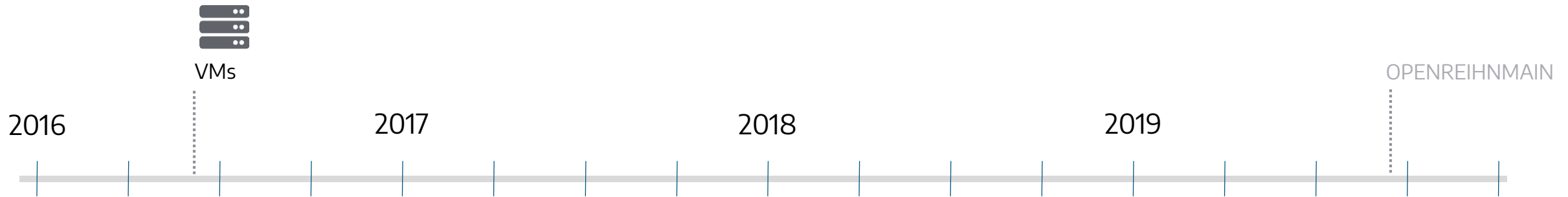


Workshops

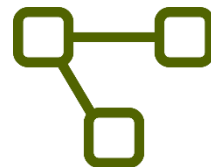


Plugin Entwicklung

Zeitstrahl



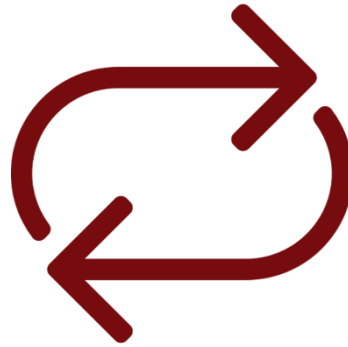
Der VM Prozess



Probleme



Zeit



Routine Aufgabe

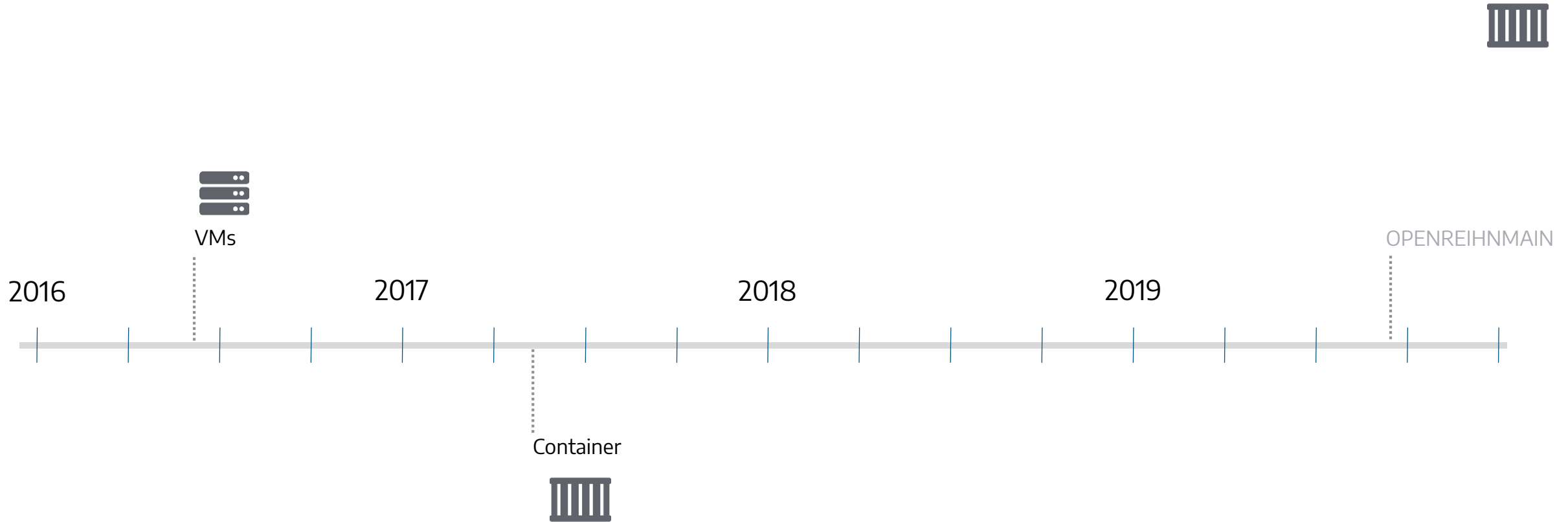


Wartung

Container



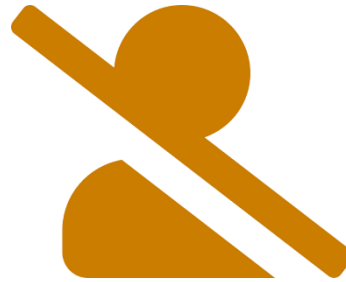
Zeitstrahl



Verbesserungen



Schneller



wenig manuelle
Arbeit



Einfache
Wartung & Betrieb

Der Container Prozess



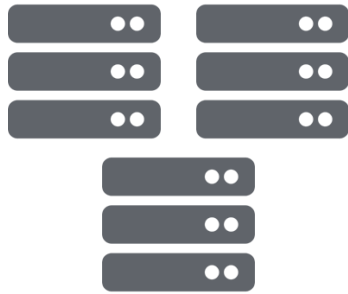
Beantragung App

Bereitstellung des Containers

Übergabe



Probleme von Containern



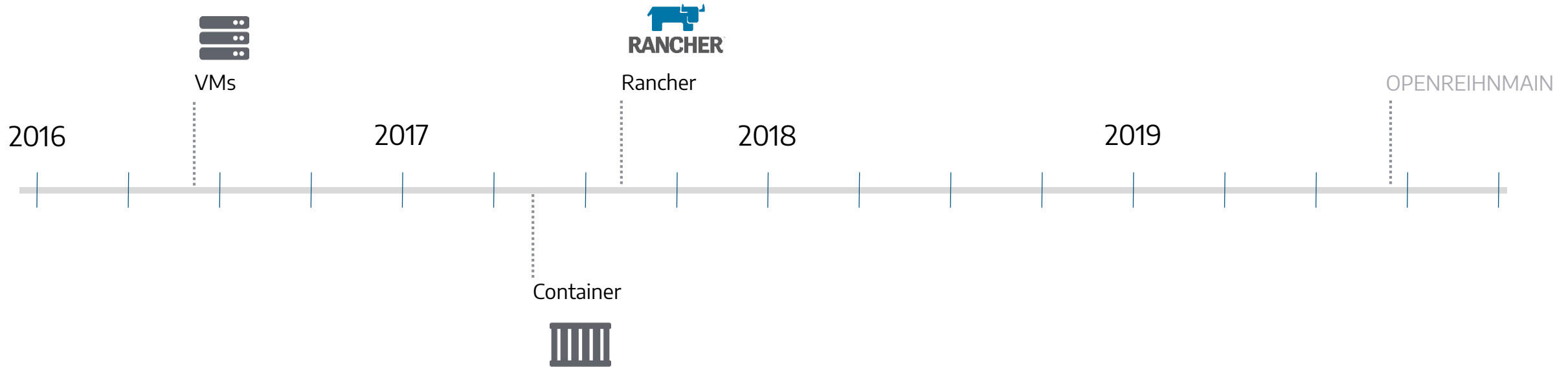
Skalierung



Interaktion für
Bereitstellung

Wie kann es verbessert werden?

Zeitstrahl



Vorteile von Rancher



Cluster



App Store

Der Rancher Prozess



Nutzer lässt App bereitstellen

Rancher stellt bereit

Übergabe



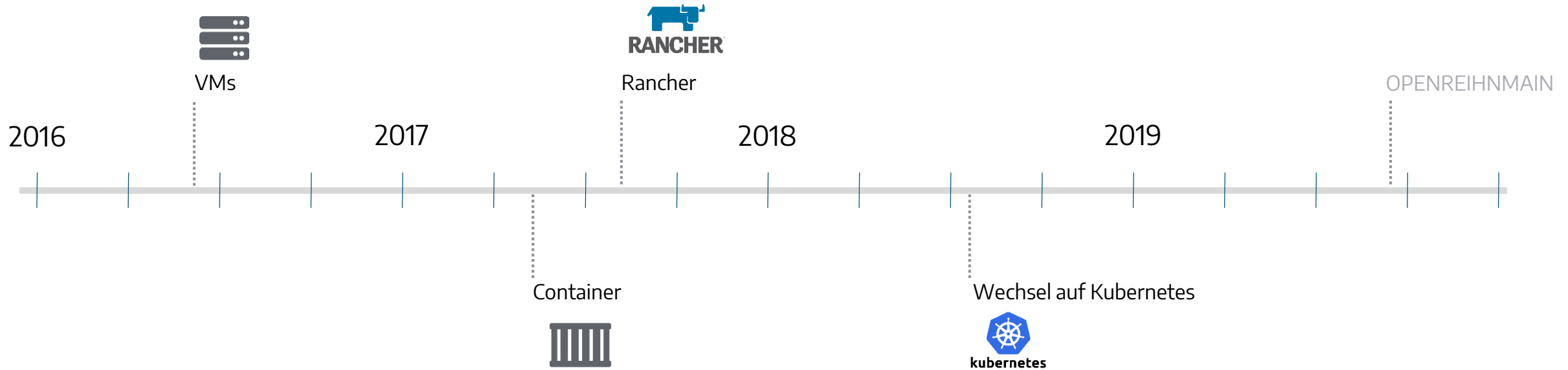
Kubernetes

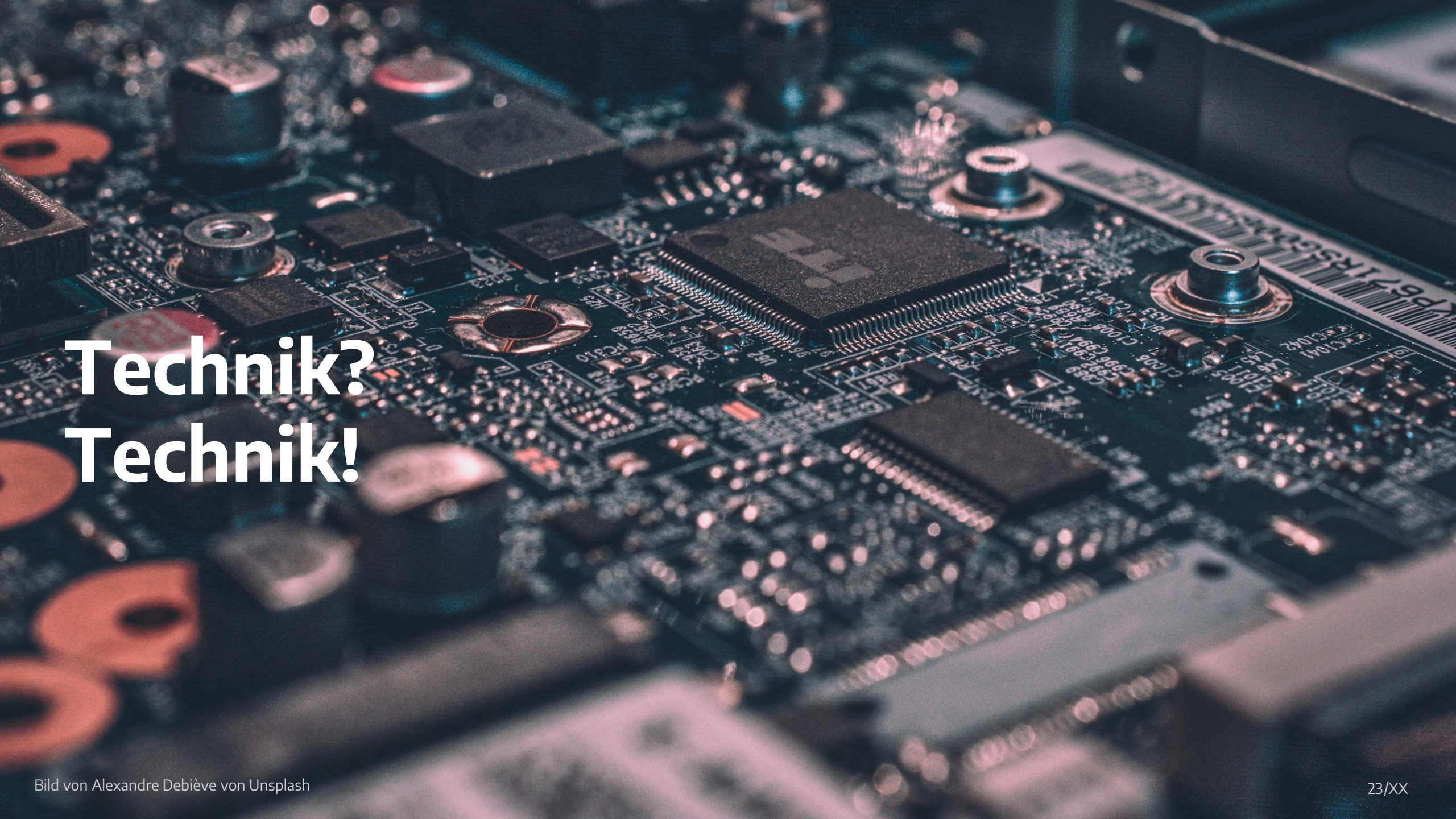


Zeitstrahl



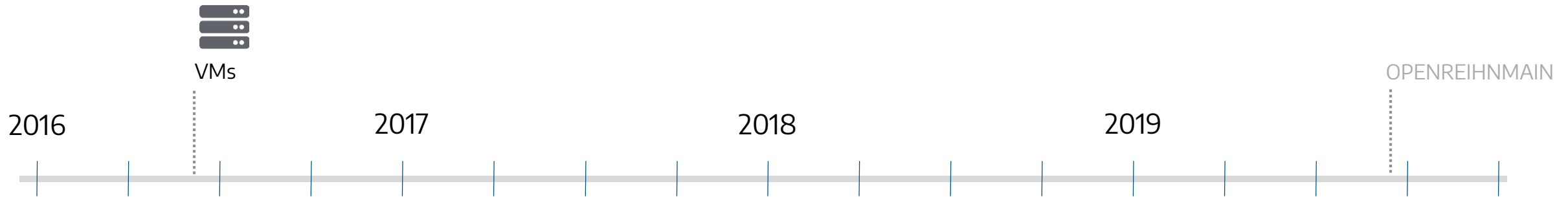
kubernetes





Technik? Technik!

Zeitstrahl



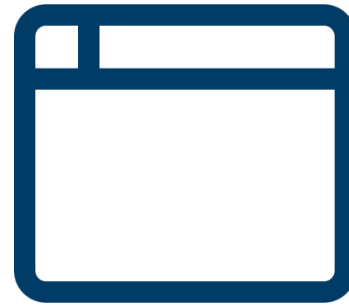


Automatisierung

Was muss automatisiert werden?



System &
Abhängigkeiten



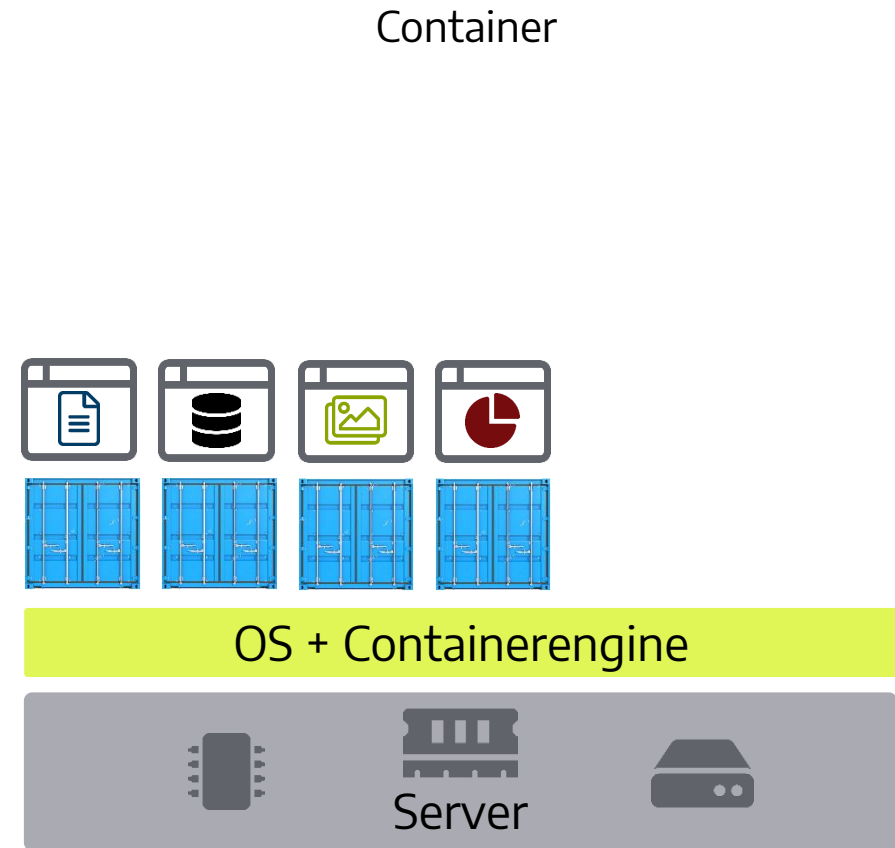
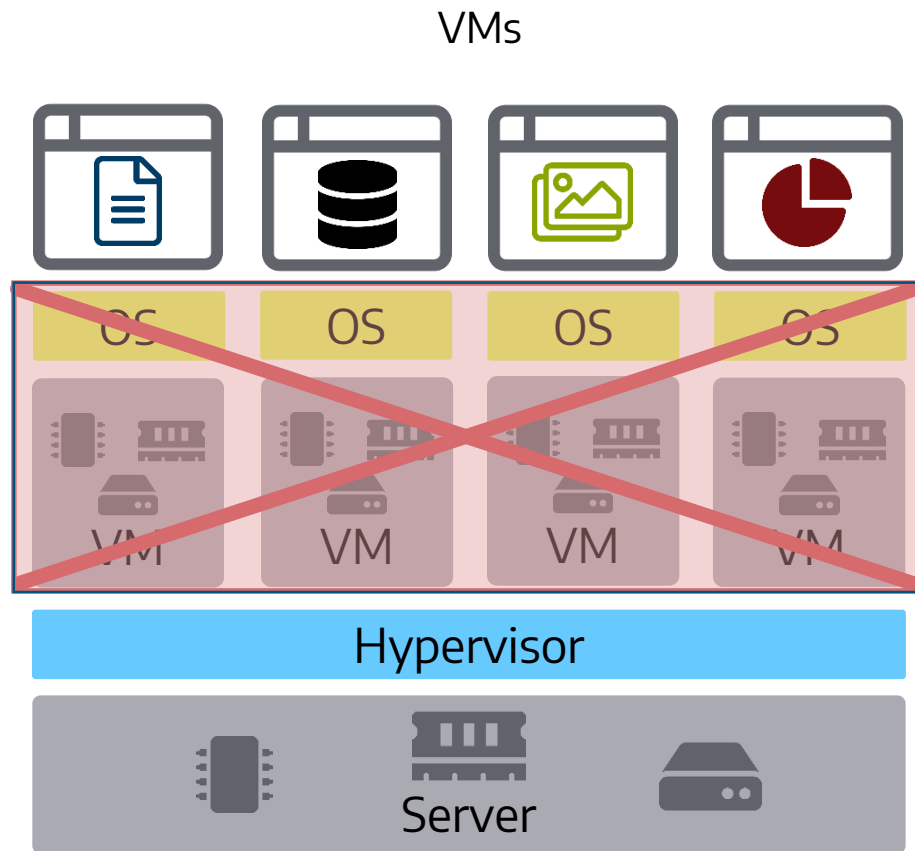
Applikation



Setup



Das System automatisieren



Die Applikation automatisieren



Den Webwizard automatisieren



JIRA

Database setup

Database Connection Built In (for evaluation or demonstration)
 My Own Database (recommended for production environments)
Built in database can be [migrated](#) to a database of your own later.
[Learn more about connecting JIRA to a database.](#)

Database Type

Hostname
Hostname or IP address of the database server.

Port
TCP Port Number for the database server.

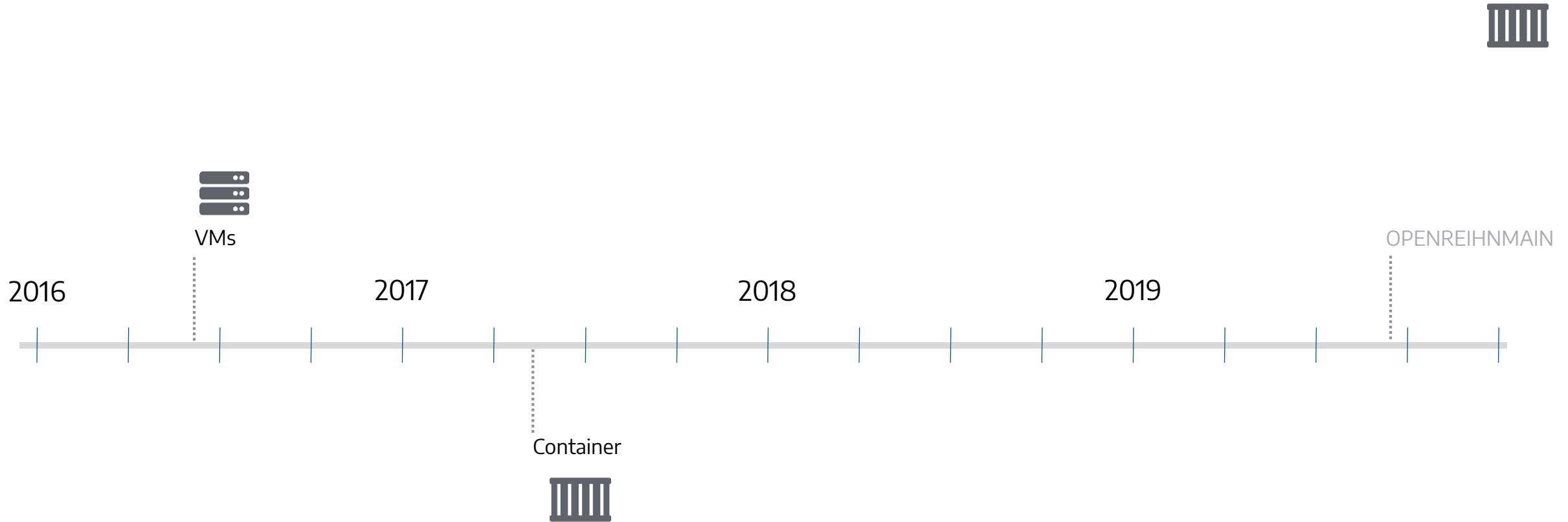
Database
The name of the database to connect to.

Username
The username used to access the database.

Password
The password used to access the database.

Schema
Specify the schema name for your database.

Zeitstrahl

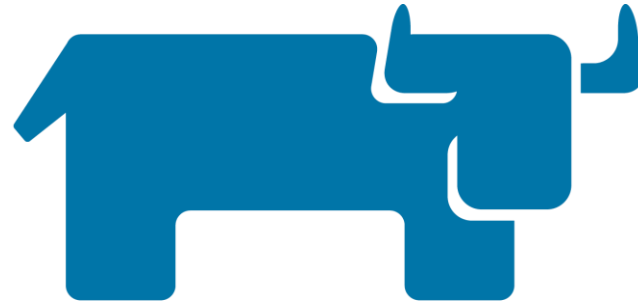




Was brauche ich noch?

Welche Plattform?





RANCHER®

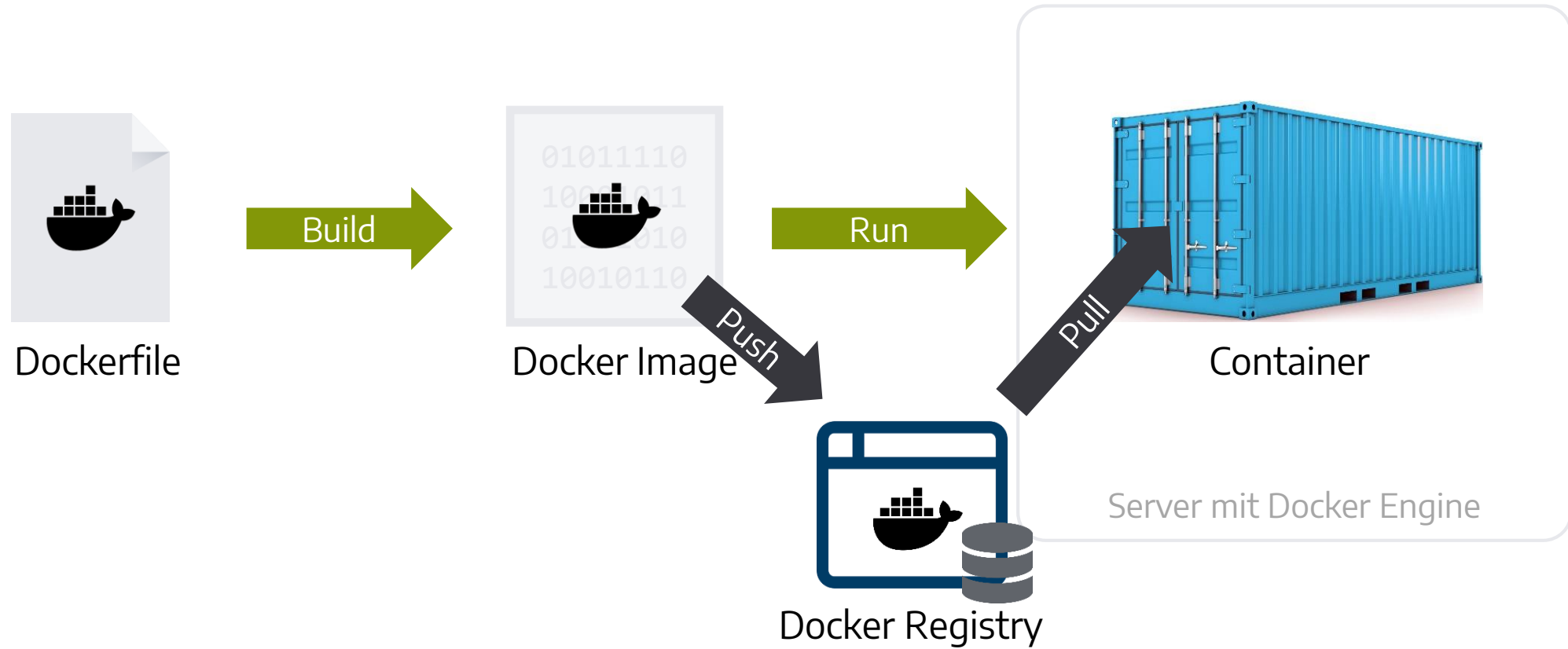
Self Service Plattform



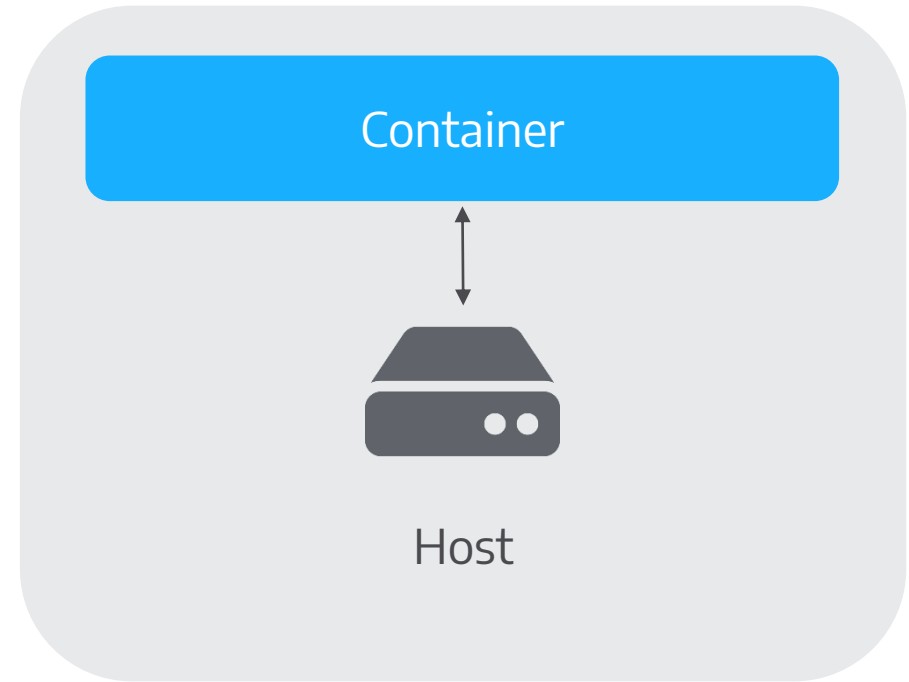
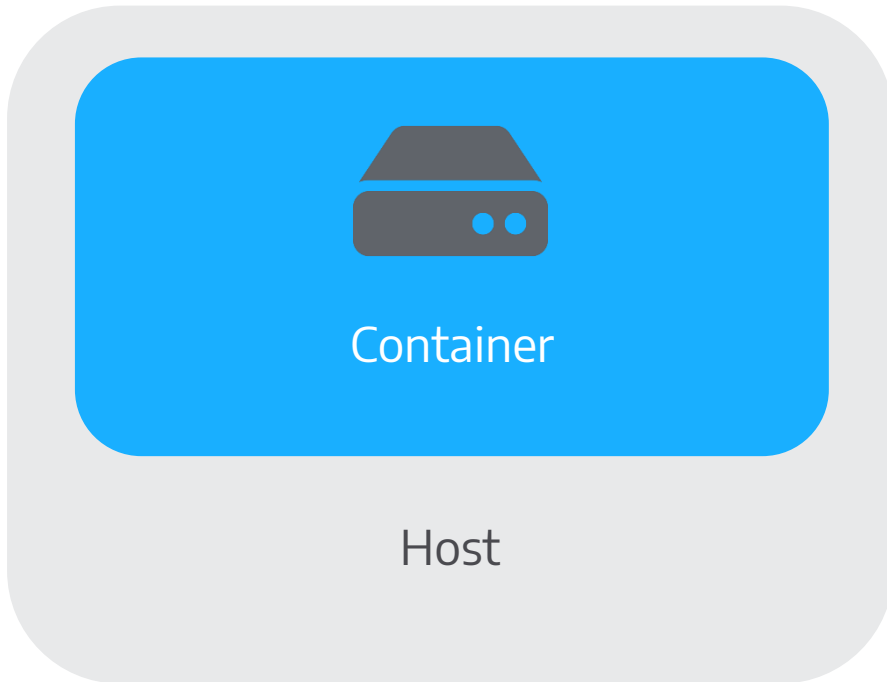
The screenshot displays the Rancher Self Service Platform interface. At the top, there is a navigation bar with a cluster dropdown menu set to 'Atlassian', and tabs for 'Workloads', 'Apps', 'Resources', 'Namespaces', 'Members', and 'Tools'. Below the navigation bar, the 'Catalog' section is visible, featuring a 'Refresh' button and a 'All Categories' dropdown. The main content area is a grid of six Helm chart cards, each with an icon, title, description, and a 'View Details' button.

| Chart Name | Description |
|-----------------------------------|--|
| acs-engine-autoscaler (from Helm) | DEPRECATED Scales worker nodes within agent pools |
| aerospike (from Helm) | A Helm chart for Aerospike in Kubernetes |
| airflow (from Helm) | Airflow is a platform to programmatically author, schedule and monitor workflows |
| anchore-engine (from Helm) | Anchore container analysis and policy evaluation engine service |
| apm-server (from Helm) | The server receives data from the Elastic APM agents and stores the data into a datastore like Elasticsearch |
| ark (from Helm) | DEPRECATED A Helm chart for ark |

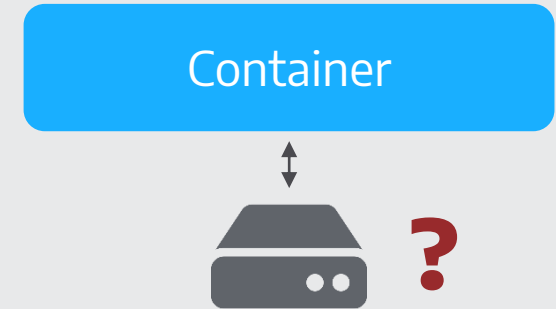
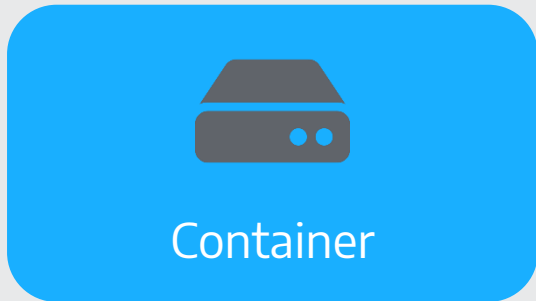
Container Registry



Speicher



Container Cluster

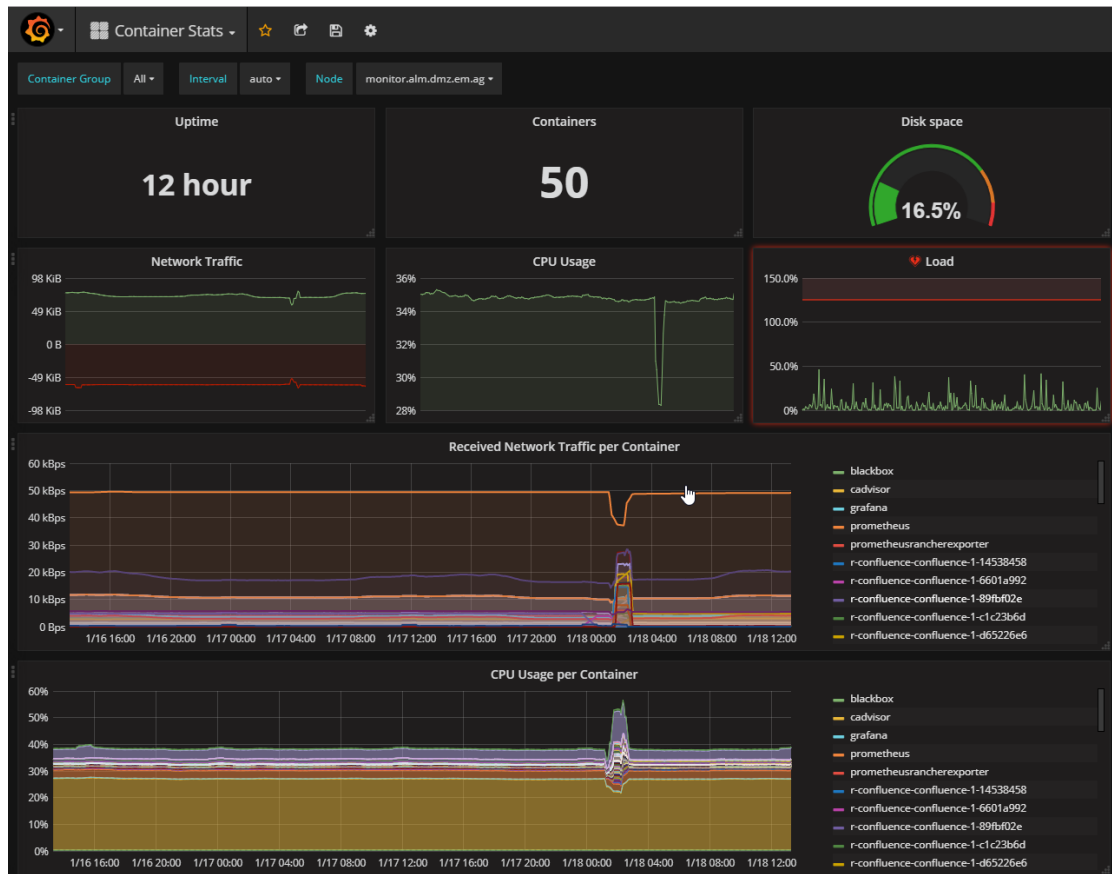


Host 1

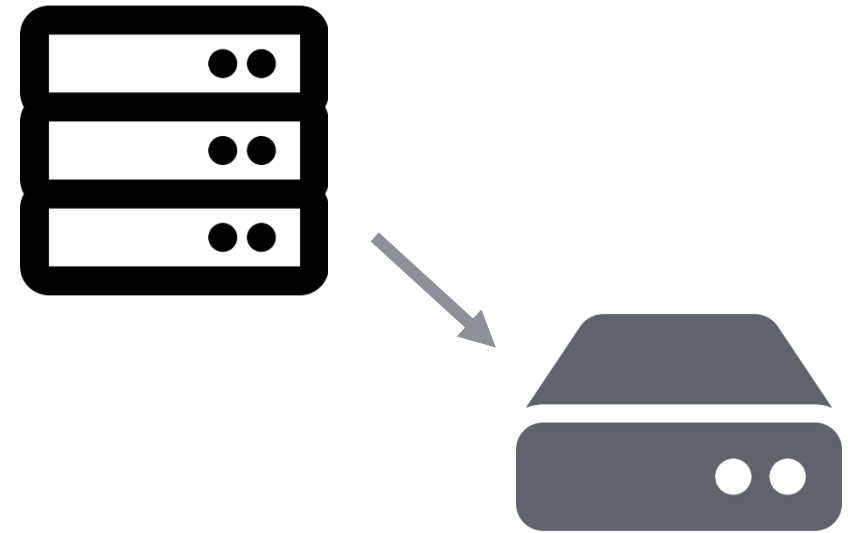
Host 2

Host 3

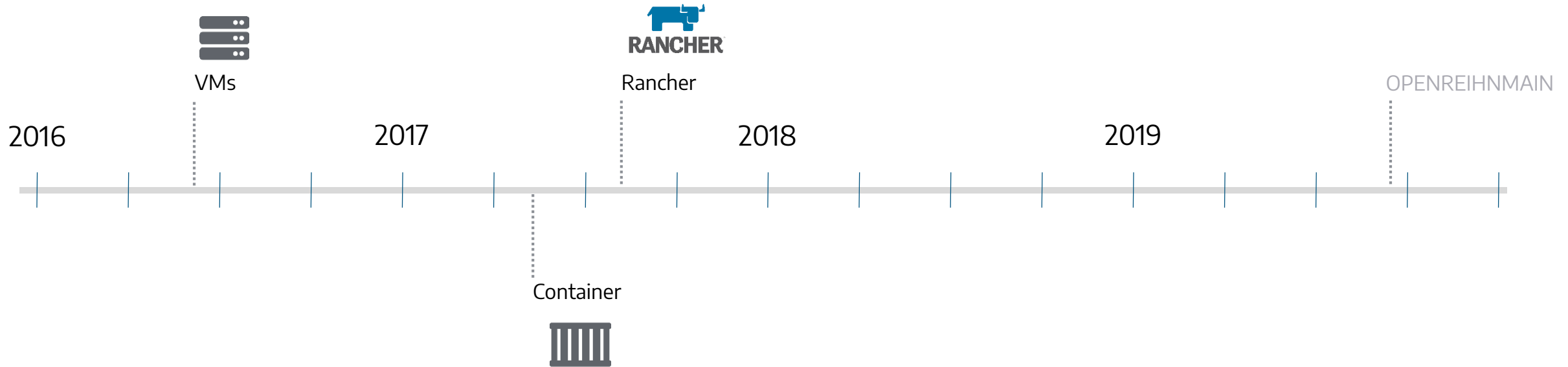
Monitoring



Backups



Zeitstrahl



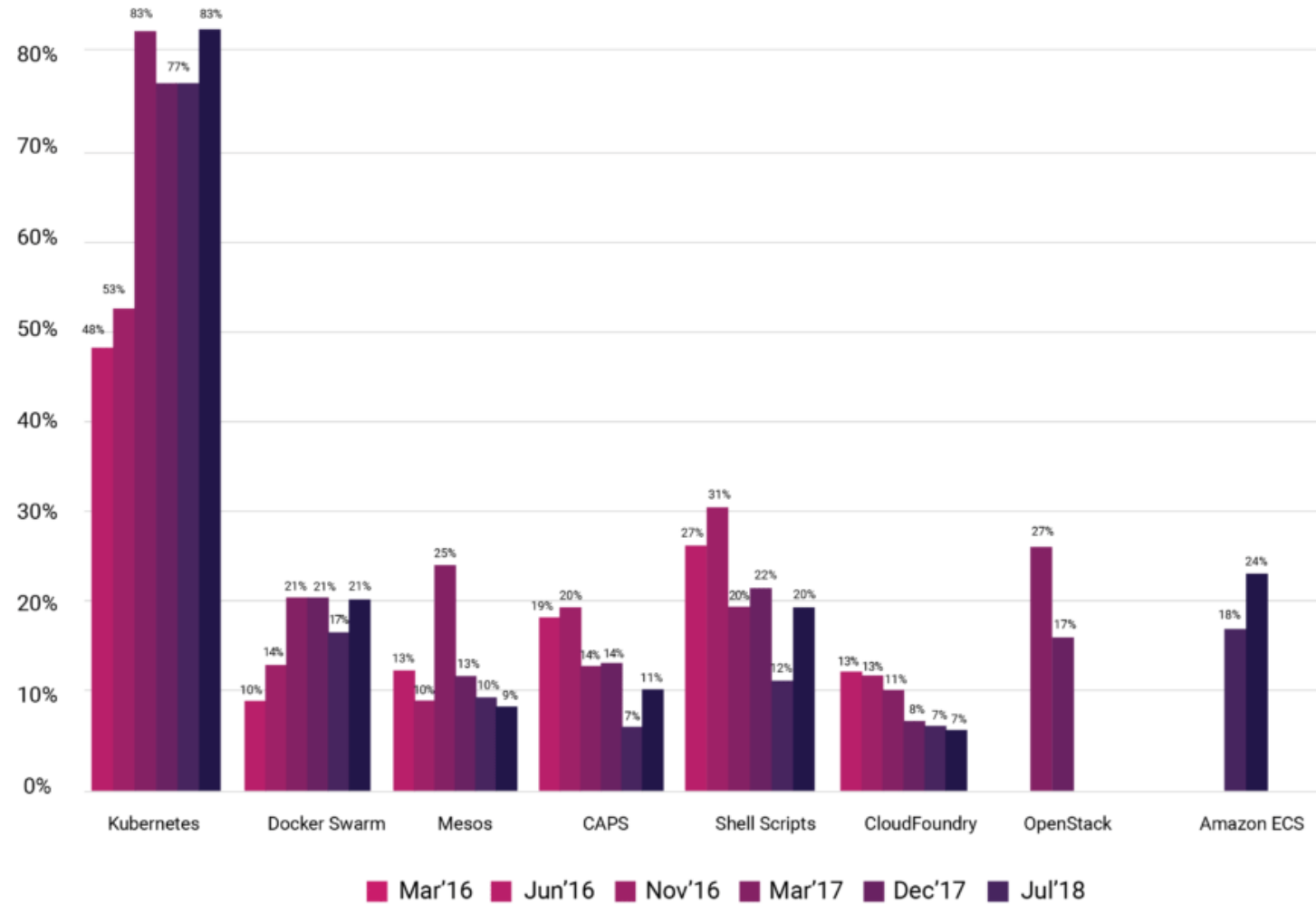
A man with dark, curly hair is sitting on the hood of a yellow taxi. He is wearing a dark, quilted jacket over a red shirt. He has a thoughtful expression, with his hand resting on his chin. The background shows a city street with other cars and buildings, slightly out of focus.

Und dann?

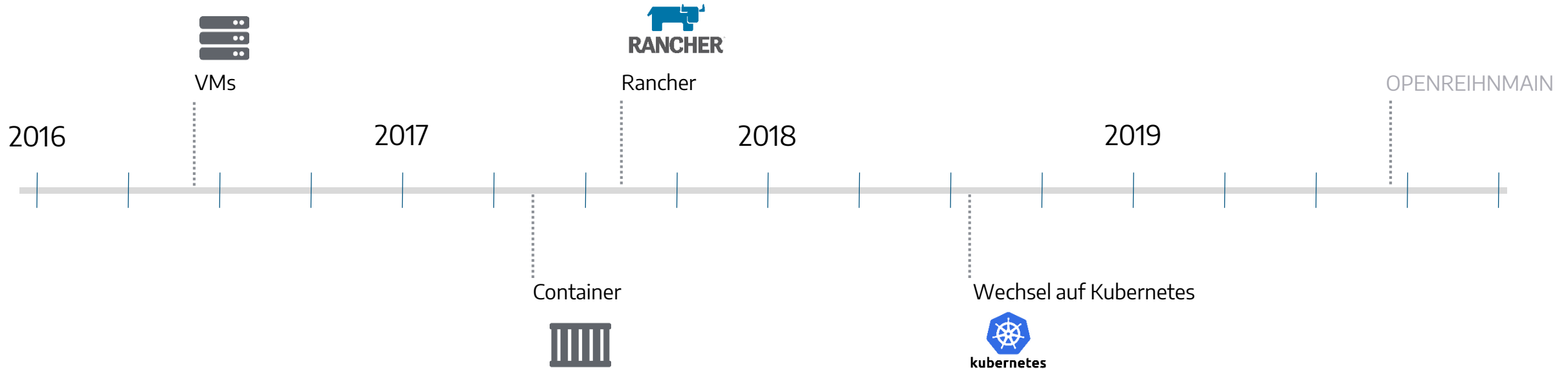
Rancher wechselt zu Kubernetes



kubernetes



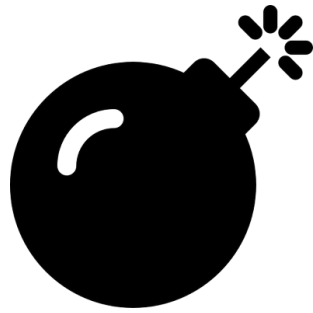
Zeitstrahl



Was kann schon schief gehen?



Probleme



Downtimes



Speicher

Komplexität



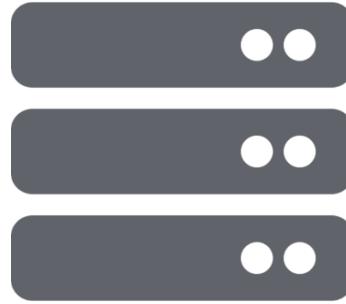
Was ist die Lösung?



Lösung?



Besseres Verständnis



Änderungen an der
Architektur



Updates

Kubernetes Benefits



Skalierung



Apps

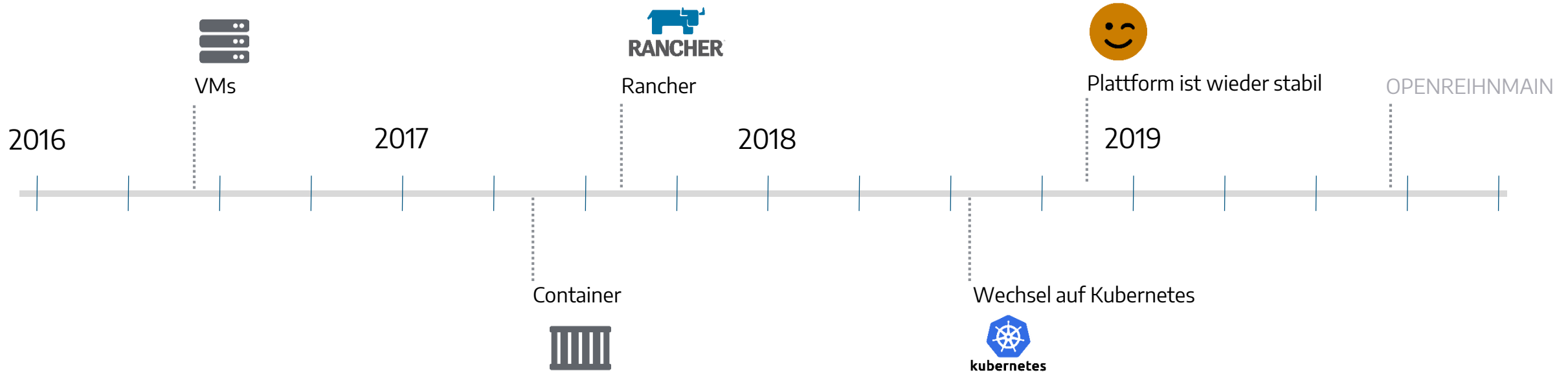


Betrieb

Zeitstrahl



kubernetes



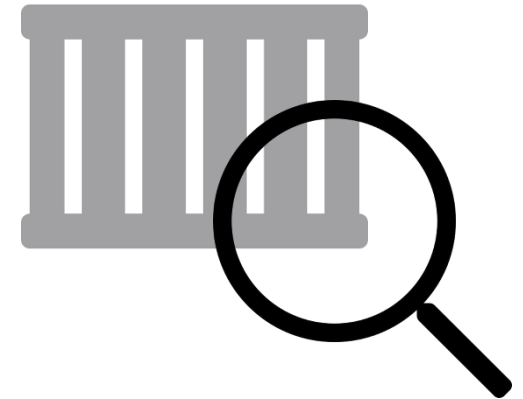
**Darf es noch ein
bisschen mehr sein?**



Security



Vault





**MORE
AWESOME
NOW**

Und jetzt?

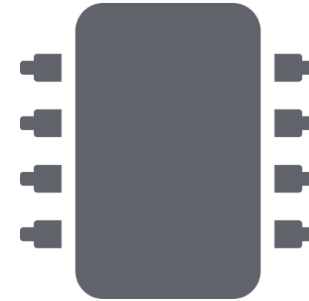
Zahlen



15 User



100-200 Pods

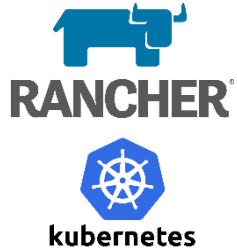


32 Cores



120 GB RAM

Architektur



RancherOS

RancherOS

RancherOS

RancherOS

RancherOS



Controller & etcd

Controller & etcd

Worker

Worker

Worker

NFS



Was nehme ich mit?

Bild von Holly Mandarich auf Unsplash



Das beste Kubernetes wird
von jemand anderem
betrieben.

Wir liefern die digitale Zukunft für das Engineering

Vielen Dank für Ihr Interesse!

Bei Fragen sprechen Sie mich gerne an:

Tim Stoffel, Fachinformatiker

E-Mail tim.stoffel@em.ag

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Herrenberger Str. 14, 71032 **Böblingen**