

# **Project Presentation Stage 1**

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Dummy Image

Dummy Image

# Containerized Microservices deployed through Kubernetes

- Components embedded in (Docker) Containers
- Containers have (ideally) one single responsibility

Dummy Image

## Frontent and API

- User inputs term
- Click on register
- Send request to API

Dummy Image

## Timeseries: MongoDB (I)

- Request Handler stores Term in MongoDB
- Persistency guaranteed by GCE Persistence Disk

Dummy Image

## Twitter Service

- Gets notified of newly created Terms
- Streaming stops and restarts with the new Term added for tracking
- Arriving Tweets are immediately stored into the Queue

Dummy Image

## Worker Queue

- Redis: in-memory data structure store
- A FIFO queue of Strings (Tweets)
- Load generator
  - API endpoint to add Strings to Queue directly

Dummy Image

# Compute Workers

- Running Workers process the Queue:
  - Assign Tweet to Term (filtering)
  - Calculate Sentiment
- Length of the Queue defined the number of Workers
  - Scaled through Kubernetes.



Dummy Image

## **Timeseries: MongoDB (II)**

- Workers store the calculated Sentiment into MongoDB.

Dummy Image

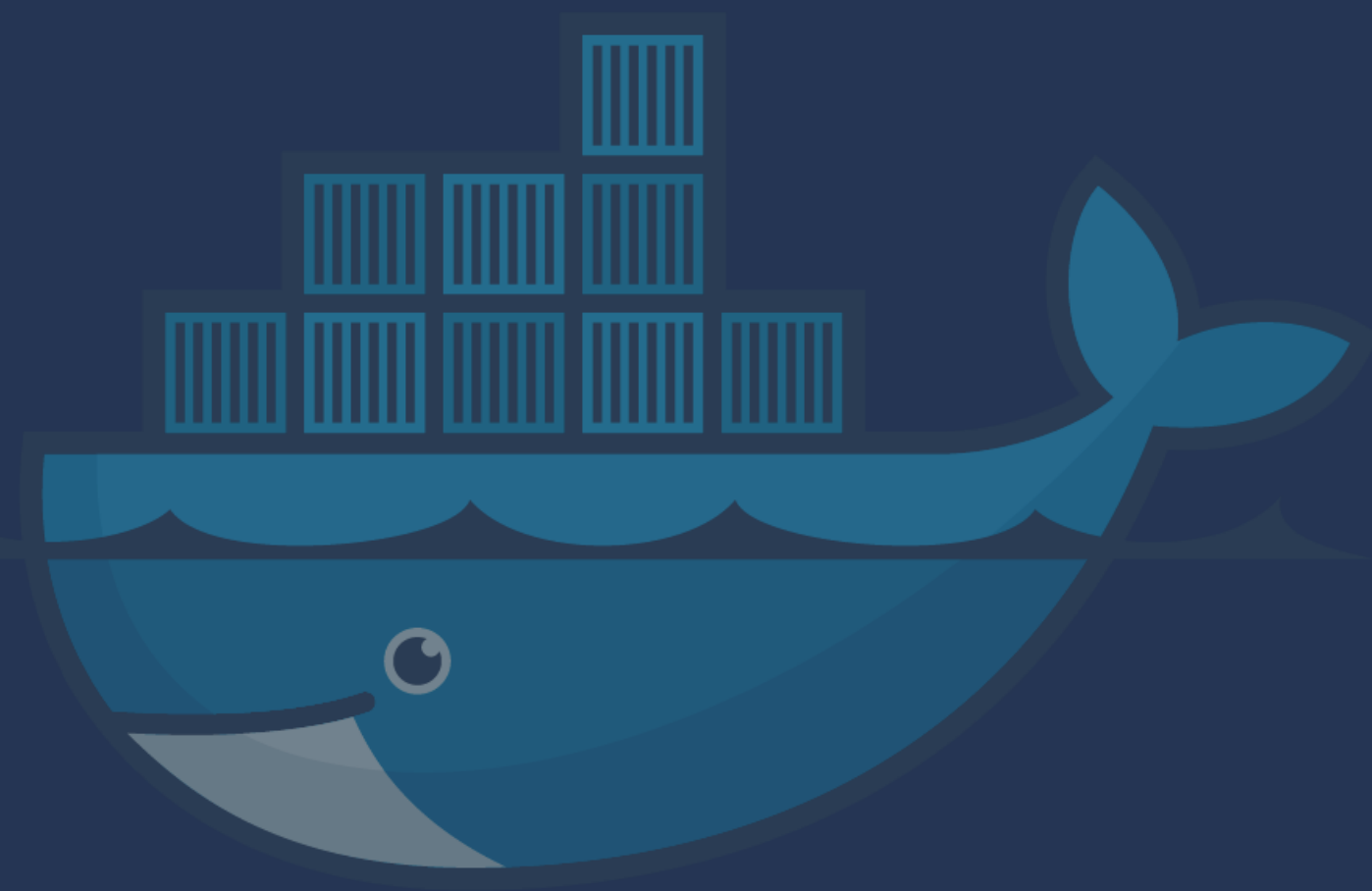
## Displaying Results

- Rest API gets request
- Collect relevant data from MongoDB
- Browser renders data
- Socket gets opened for continues pushes

# Architectural Styles

- Client / Server through Rest API
- Event-Driven notification of Term updates
- Pipes and Filters
- Blackboard: Redis Queue
  - Factory: Twitter Service
  - Worker: Compute Workers
- Highly decoupled

**Do you even scale?**



docker

# Kubernetes in one slide

@marc chasch ächt du das no mache?

# What does Kubernetes do for us

- Every component is potentially scalable through Kubernetes
  - Even MongoDB!
- Fault Tolerance:
  - Container recovery through Kubernetes
  - Decoupled design and Microservice
- Elasticity
  - Container scaling through Kubernetes

# Concernes

- High lock-in to Kubernetes
- Twitter
  - Only 400 Term, thus no scaling
  - May not match to terms perfectly
- Redis: may become a bottleneck
  - but we highly doubt it
-



# Technology Zoo - Rational

Cloud Platform: Google Container Engine (GCE)

- \* Easy support of Kubernetes

Containerization: Docker

- \* Popular Container engine

Container orchestration: Kubernetes

- \* Popular Container orchestration

Programming Language: Google Go

- \* New Programming language 🎉

# Dev Environment

Docker containers using Docker Compose

**Demo**

**Questions?**