

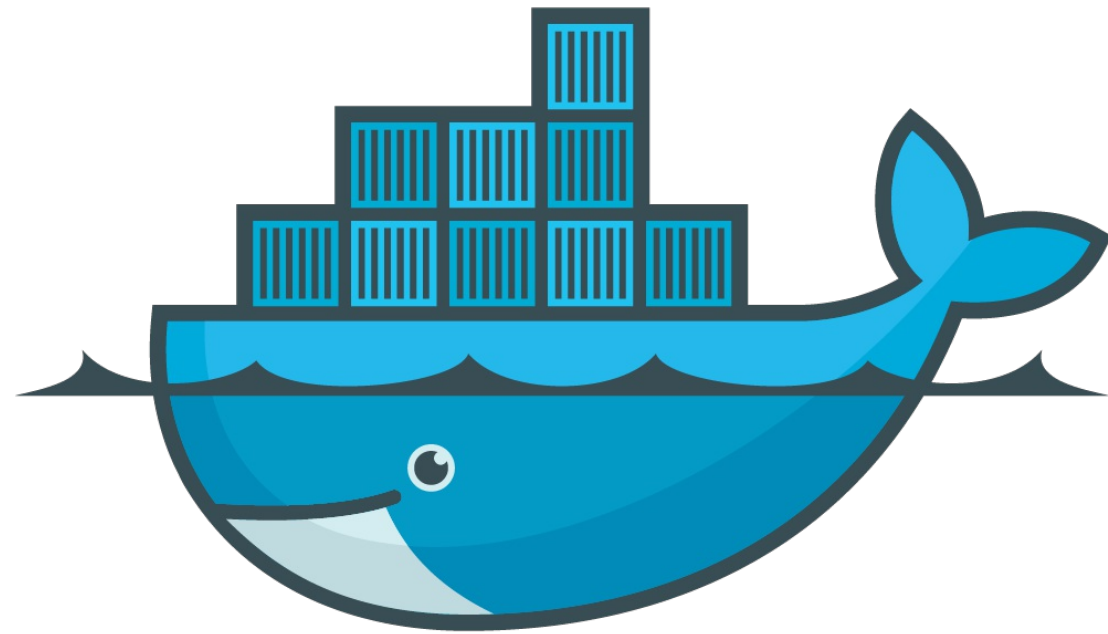
DOCKER && CONTAINERS

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O MNIE

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- Machine Learning / AI for finance departments
- 12 years of experience
- Contact:

DOCKER



docker

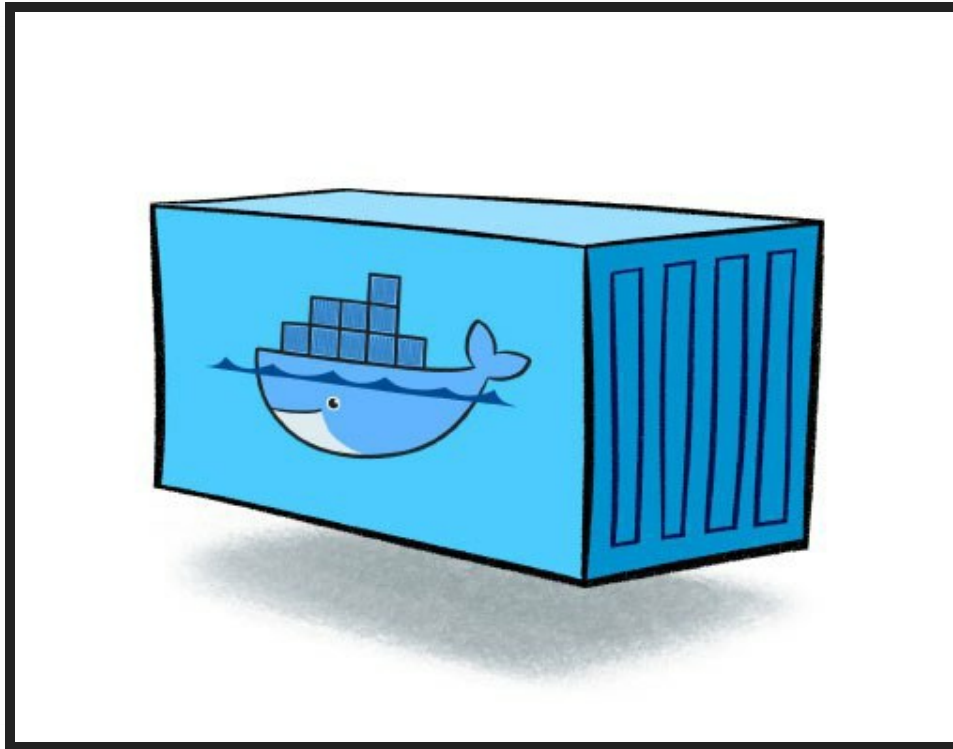
IT NOW, DEVOPS, DATA SCIENTISTS



WHY?

- Your app, your tool with all dependencies
- Blazing fast deployments
- Lightweight virtualization
- Good cli
- Best way to start with new tech
- Great community

DOCKER



- Standard for Container Images
- Smart layered file system
- Simpler CLI for containers

FROM VM TO CONTAINER

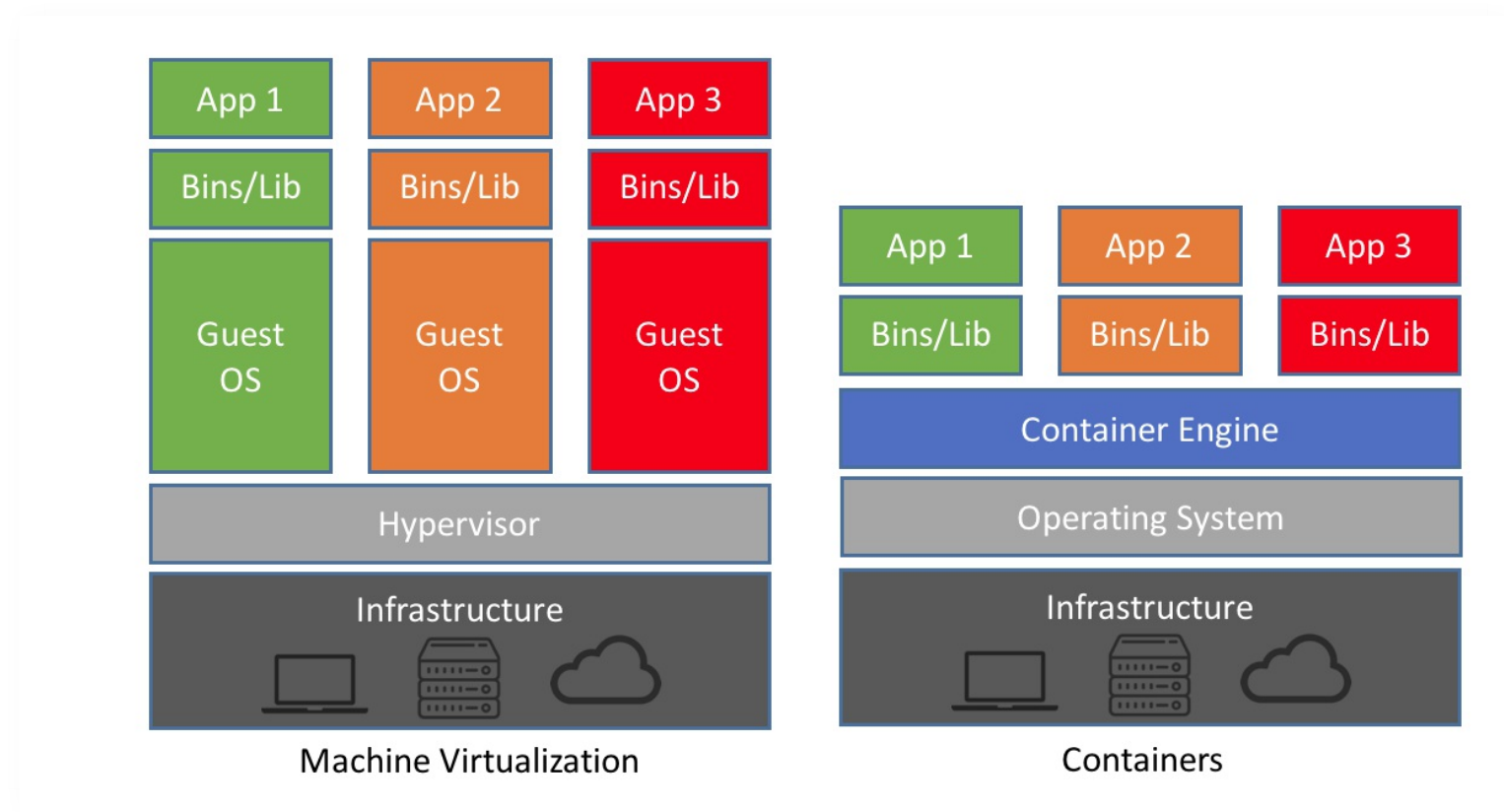


Traditional Architecture



Virtual Architecture

FROM VM TO CONTAINER



FROM VM TO CONTAINER



CONTAINERS

- Isolation of VM [*]
- Speed and simplicity of Process
- Docker - bring the tech for masses
- Docker - smart layered filesystem

* - ...

HOW TO WORKS

1. Have your code ready to ship*
2. Define your Dockerfile
3. Build your Docker Image

[*] 12factor apps

HOW TO WORKS

4. Ship it to a repository
5. Run in production, staging, on your colleague's laptop

DOCKERFILE - SIMPLE

```
FROM python:3.6-slim-jessie
```

```
WORKDIR /app
```

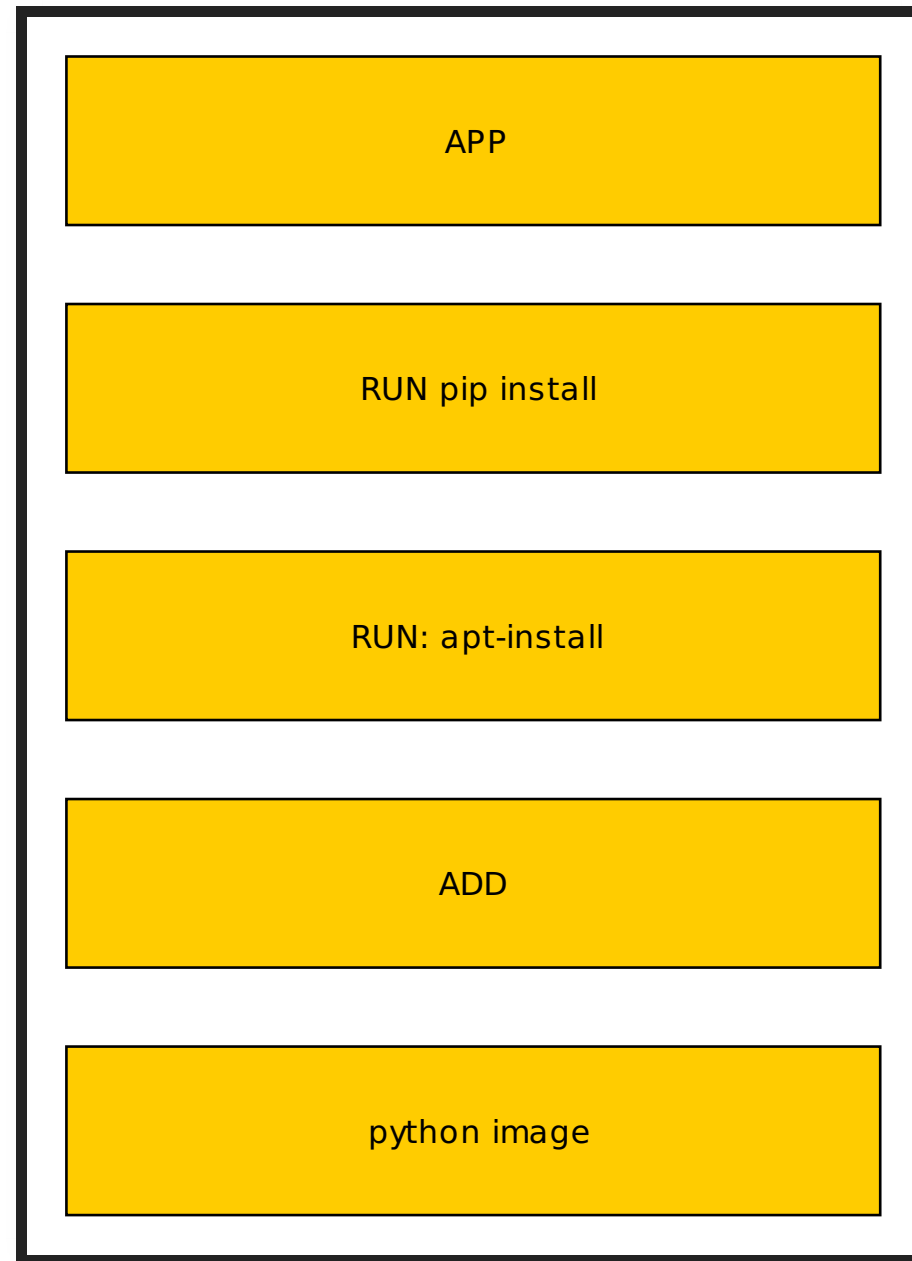
```
ADD requirements.txt /app/requirements.txt
```

```
RUN apt-get update && \  
    apt-get install -qq locales-all poppler-utils imagemagick && \  
    rm -rf /var/lib/apt/lists/* && \  
    pip install -r /app/requirements.txt --cache-dir /pip-cache
```

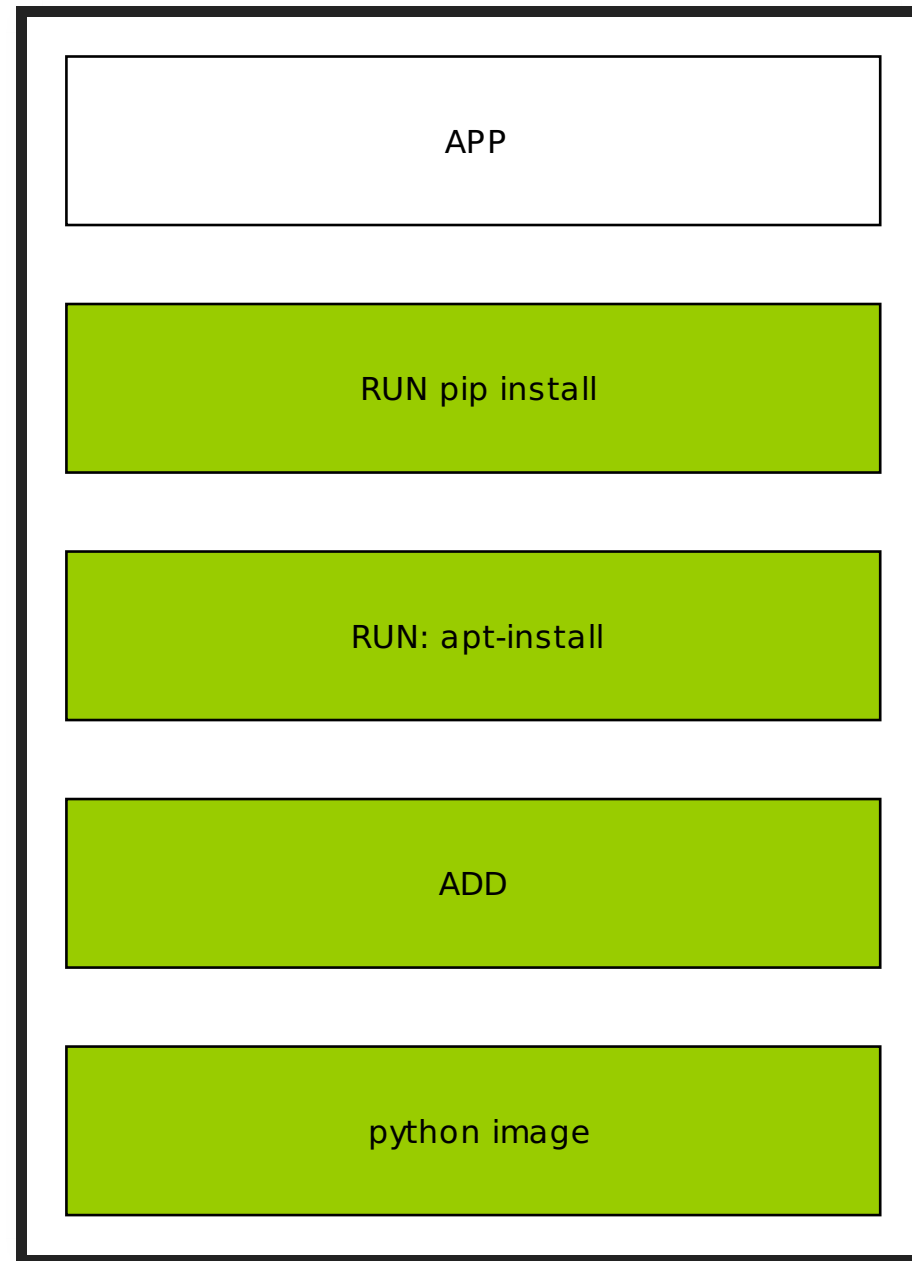
```
ADD model /app/model
```

```
ADD . /app
```

DOCKERFILE - LAYERS



DOCKERFILE - LAYERS



DOCKERFILE - LAYERS

- First deployment might be long
- Next one blazing fast!*

* depending which layer you upgrade

COMMANDS

```
docker build -t my_ml_app .  
docker start --name my_dev_app my_ml_app  
  
# notebook  
docker run -p 8888:8888 jupyter/scipy-notebook
```

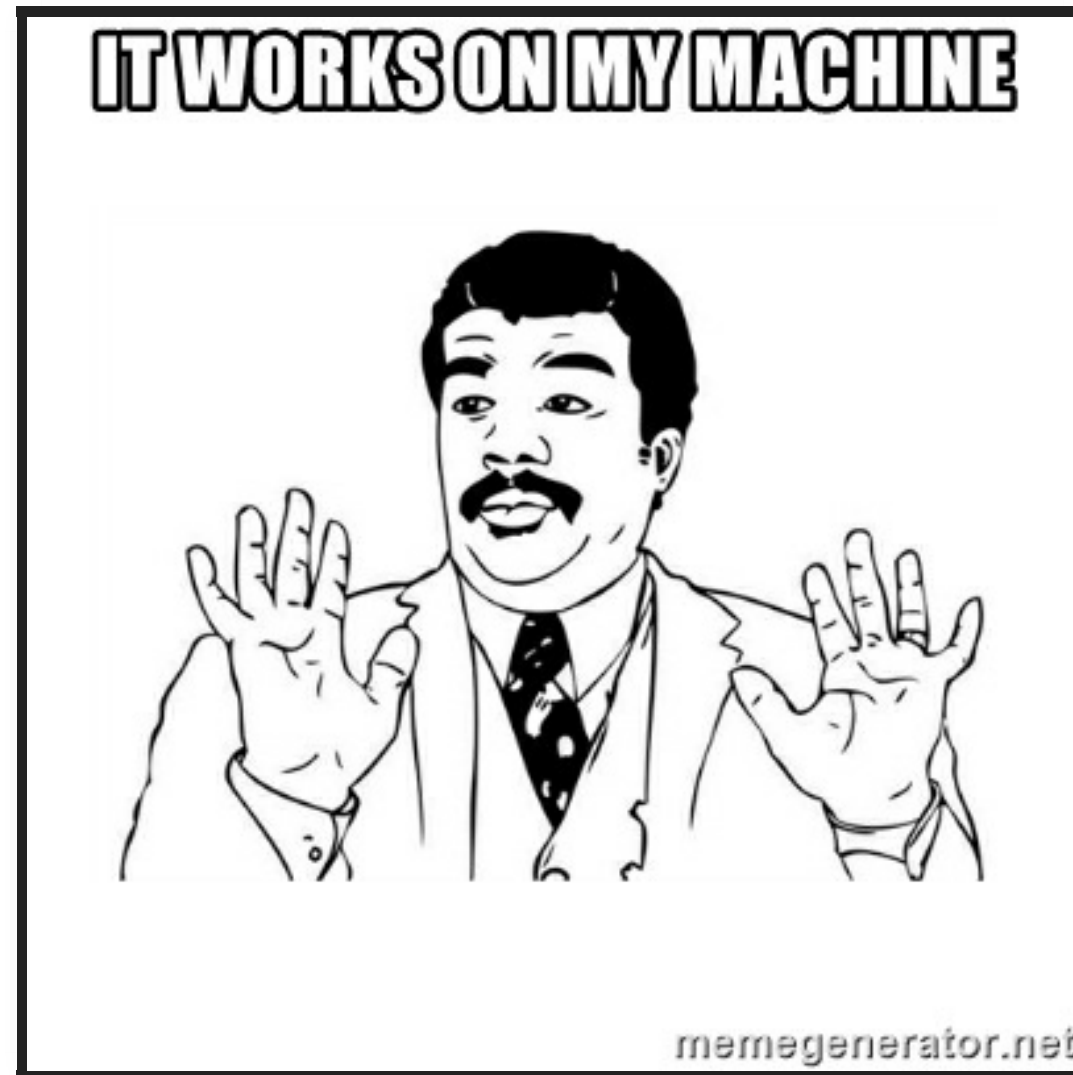
DEPENDENCY HELL NO MORE

DOCKER IMAGE HAS IT ALL!

- Configs
- Libraries
- OS Libraries

pss..we move the hell to the build time

PERFECT TECH FOR SHARING TOOLS



PERFECT TECH FOR SHARING TOOLS



DEPLOYMENT

- You run exactly what you build in your staging and production
- Blazing fast deployments

AMAZING DOCKER-BASED DEPLOYMENT

- Kubernetes, Mesos make scaling easy.
- Managed Kubernetes is on Amazon, Google and Azure with Graphic Card support.

EASY TO INSTALL AND USE

- You want to start with new tech
- No time to learn how to setup
- ...
- There must be docker that works out of the box!

EASY TO INSTALL AND USE

Docker approach:

- Docker must be runnable
- Docker must be configured out of the box
- Community put extra care to make it easy

EXAMPLE

DATASCIENCE-NOTEBOOK

- Check [docs](#)
- `docker run -p 8888:8888 jupyter/scipy-notebook`
- 3 minutes later
- notebook ready to use

BEST PRACTISE

Secure web server ([nginx](#))

```
docker run -d \  
-p 80:80 -p 443:443 \  
-e 'DH_SIZE=512' \  
marvambass/nginx-ssl-secure
```

Delegate boring things. Fast start.

ALTERNATIVE










- A lot of installation
- A lot of time to understand nuances

SIMPLIER INTEGRATION TESTS

- Need to test against mongodb?
- Run it with docker in your CI/CD or locally

CATALOG

Kitematic

 official solr Solr is the popular, blazing-fast, open source enterprise search platform built on Apache... ♡ 247 ↓ 360K ooo CREATE	 official elasticsearch Elasticsearch is a powerful open source search and analytics engine that makes data easy to... ♡ 1.6K ↓ 18M ooo CREATE	 official postgres The PostgreSQL object-relational database system provides reliability and data integrity. ♡ 2.5K ↓ 18M ooo CREATE
 official ubuntu-upstart Upstart is an event-based replacement for the /sbin/init daemon which starts processes... ♡ 66 ↓ 225K ooo CREATE	 official memcached Free & open source, high-performance, distributed memory object caching system. ♡ 526 ↓ 5M ooo CREATE	 official rabbitmq RabbitMQ is a highly reliable enterprise messaging system based on the emerging AMQP... ♡ 911 ↓ 9M ooo CREATE
 official celery Celery is an open source asynchronous task queue/job queue based on distributed... ♡ 142 ↓ 225K ooo CREATE	 official mysql MySQL is a widely used, open-source relational database management system (RDBMS). ♡ 3.0K ↓ 30M ooo CREATE	 official mongo MongoDB document databases provide high availability and easy scalability. ♡ 2.3K ↓ 35M ooo CREATE

DOCKER

```
-----
| Data   |         | Developer |         | Deployment |
| Scient | ----- |         | ----> |         |
-----
<----- cut complexity ASAP -----
```

all the artifacts should go to the component git

MUCH MORE AHEAD :)

- Building docker efficient - size
- Init processes inside Docker
- Where to put models?
- Testing and Validating
- 12factor apps
- Working with kubernetes

MUCH MORE AHEAD :)

- How to migrate to containers existing systems
- Security

THANK YOU
DZIĘKUJE ZA UWAGĘ

BACKUP

DEPLOYMENT

Kubernetes:

```
spec:
  replicas: 2
  template:
    metadata:
      labels:
        app: mywebapp
        role: mywebapp
        tier: frontend
    spec:
      containers:
        - name: mywebapp
          image: eu.gcr.io/mycompany/mywebapp:v0.4.0
```

JAK ZAINSTALOWAĆ

- Zainstaluj Docker for [Linux](#)/[Mac](#)/[Windows](#)
- Wystartuj swojego pierwszego dockera:

```
docker run -p 8081:80 nginx
```

- Sprawdź czy działa:

```
curl 127.0.0.1:8081  
docker ps  
dokcer images
```