Docker for Developers

Containerization is the new virtualization

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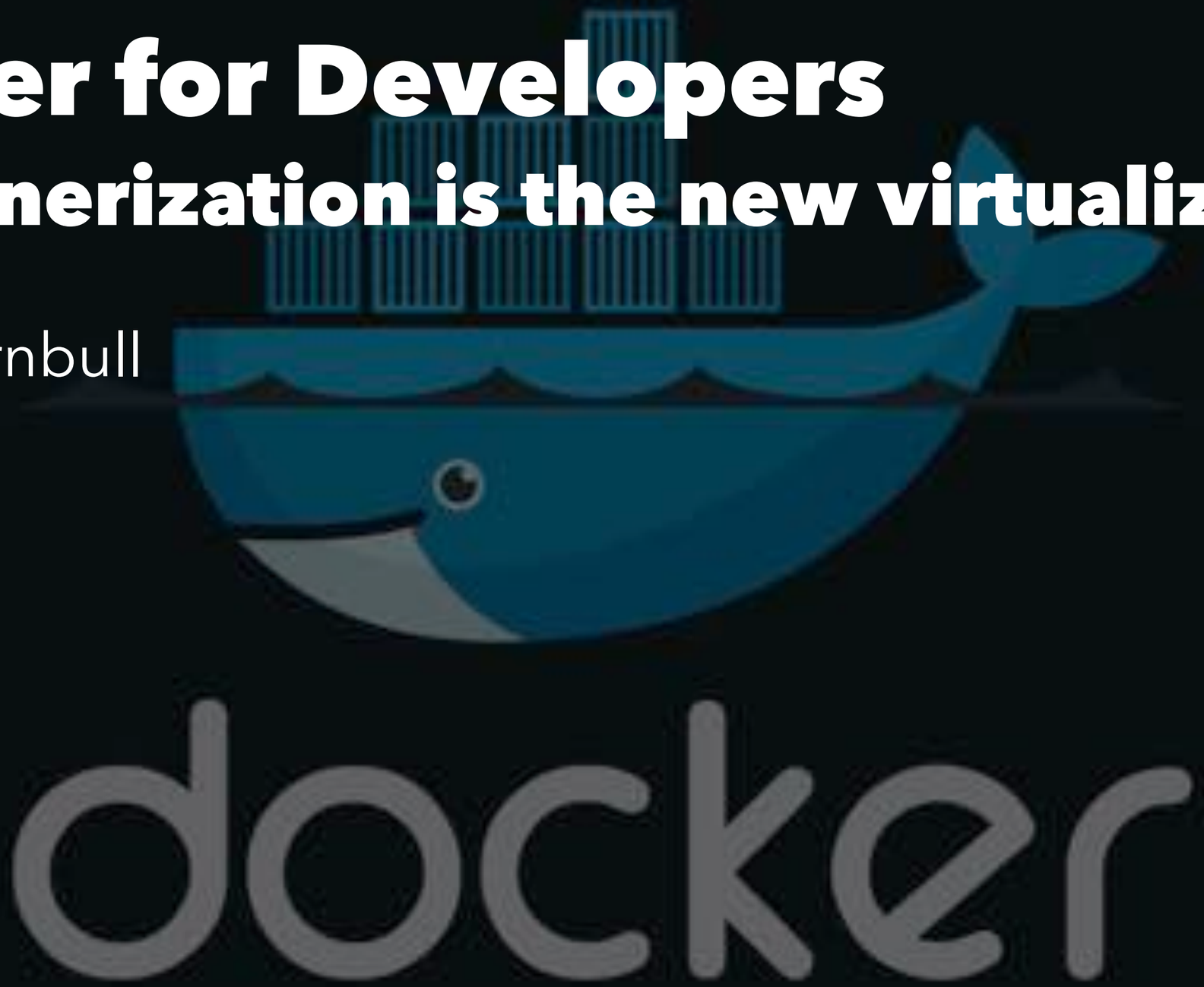
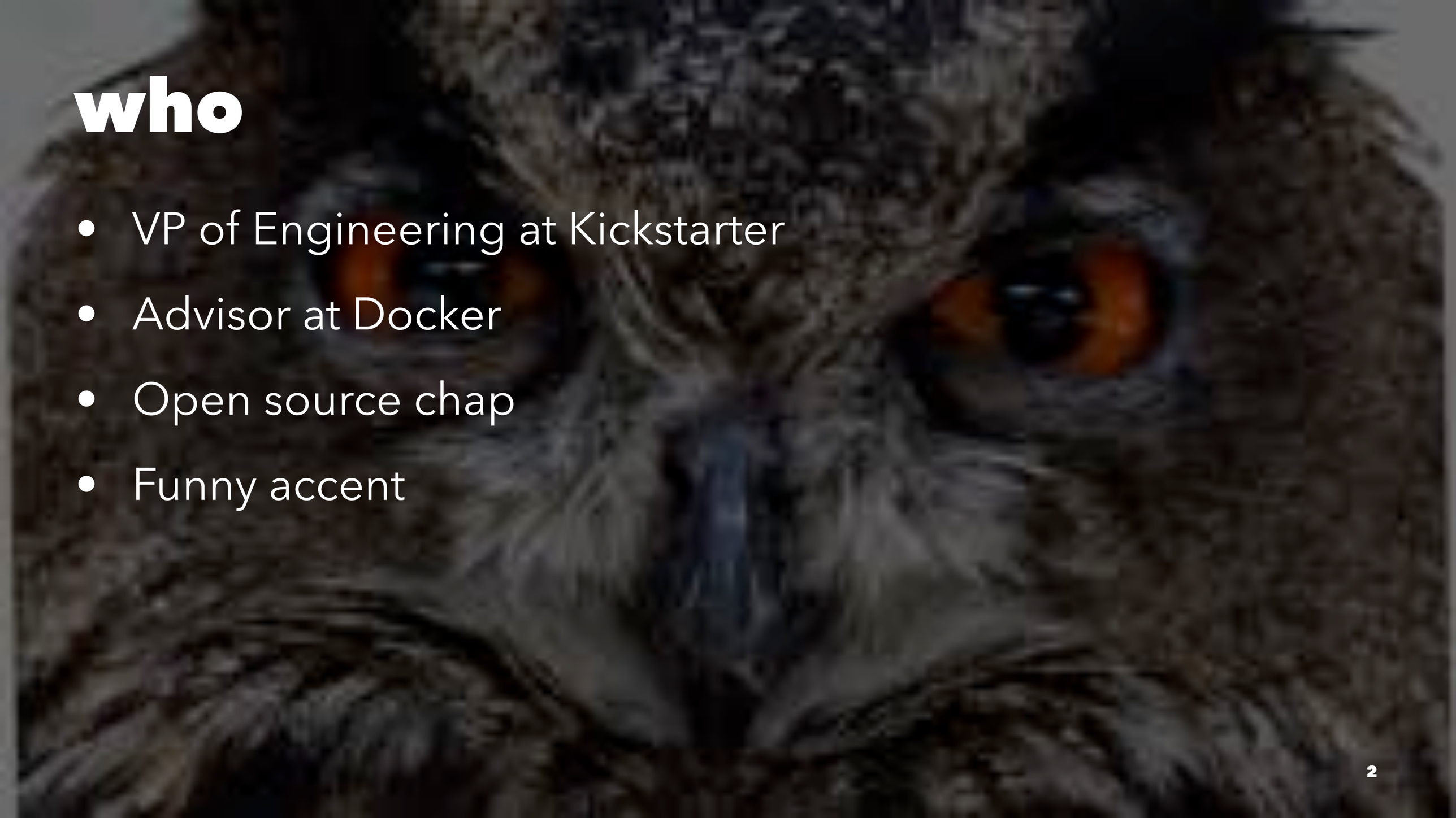
@kartar

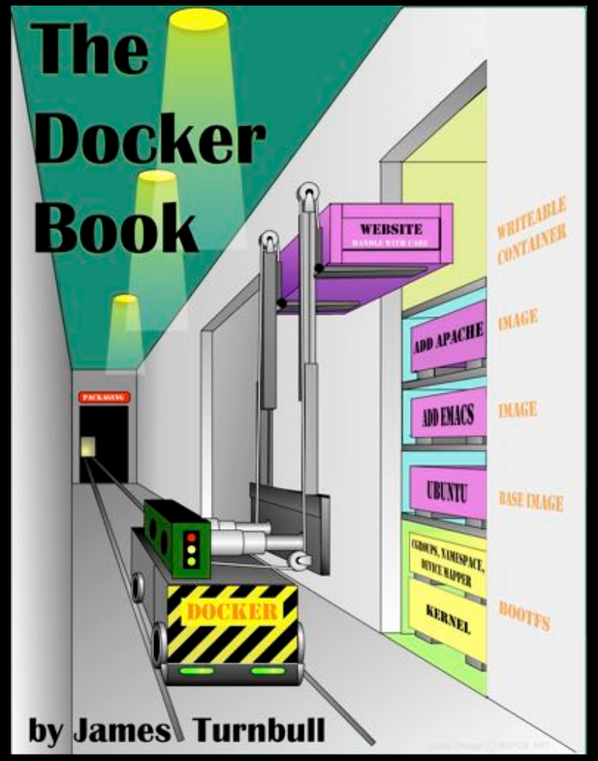




who

- VP of Engineering at Kickstarter
- Advisor at Docker
- Open source chap
- Funny accent

The Docker Book



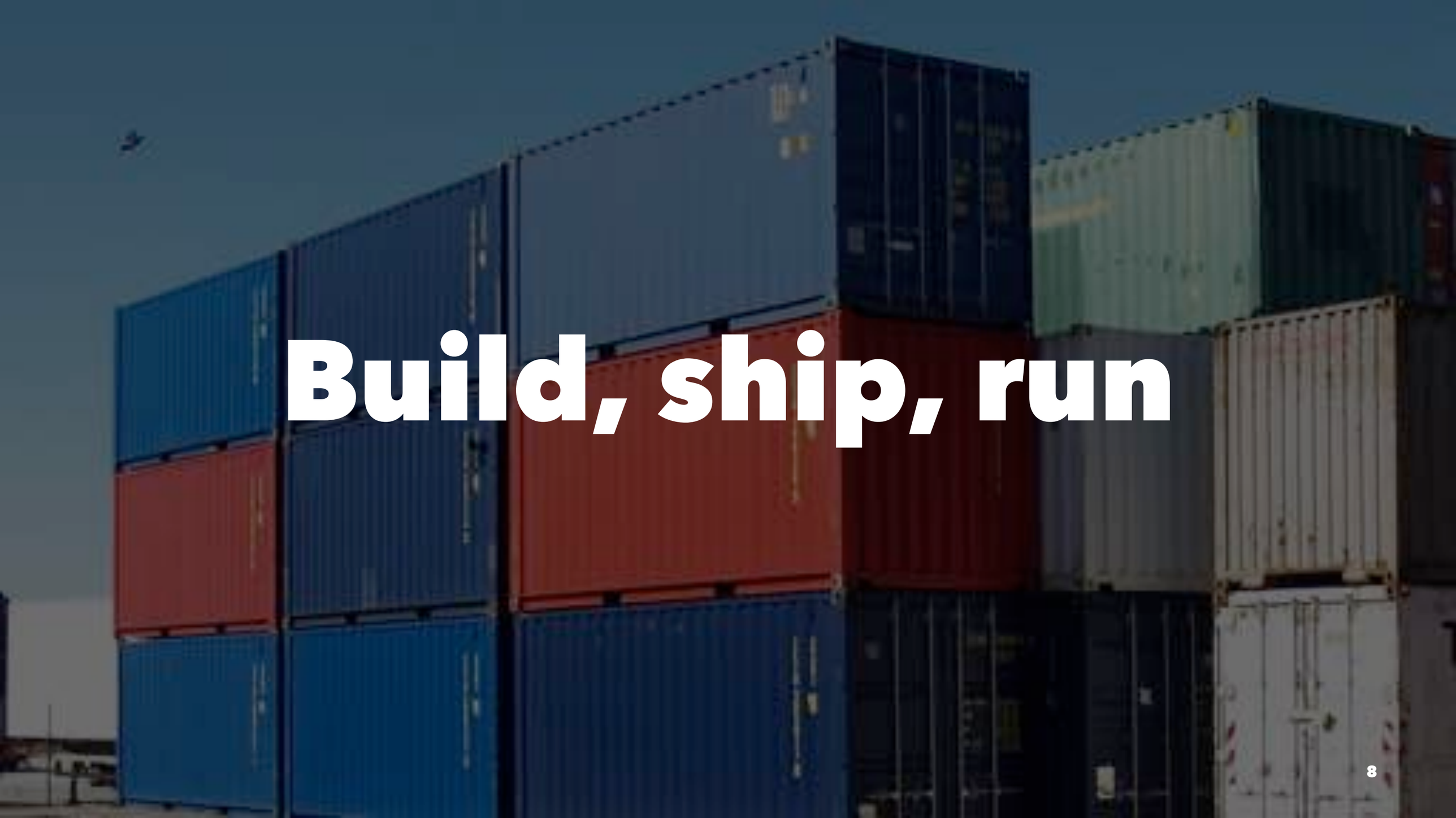
www.dockerbook.com

Who are you folks?

What's this all about?

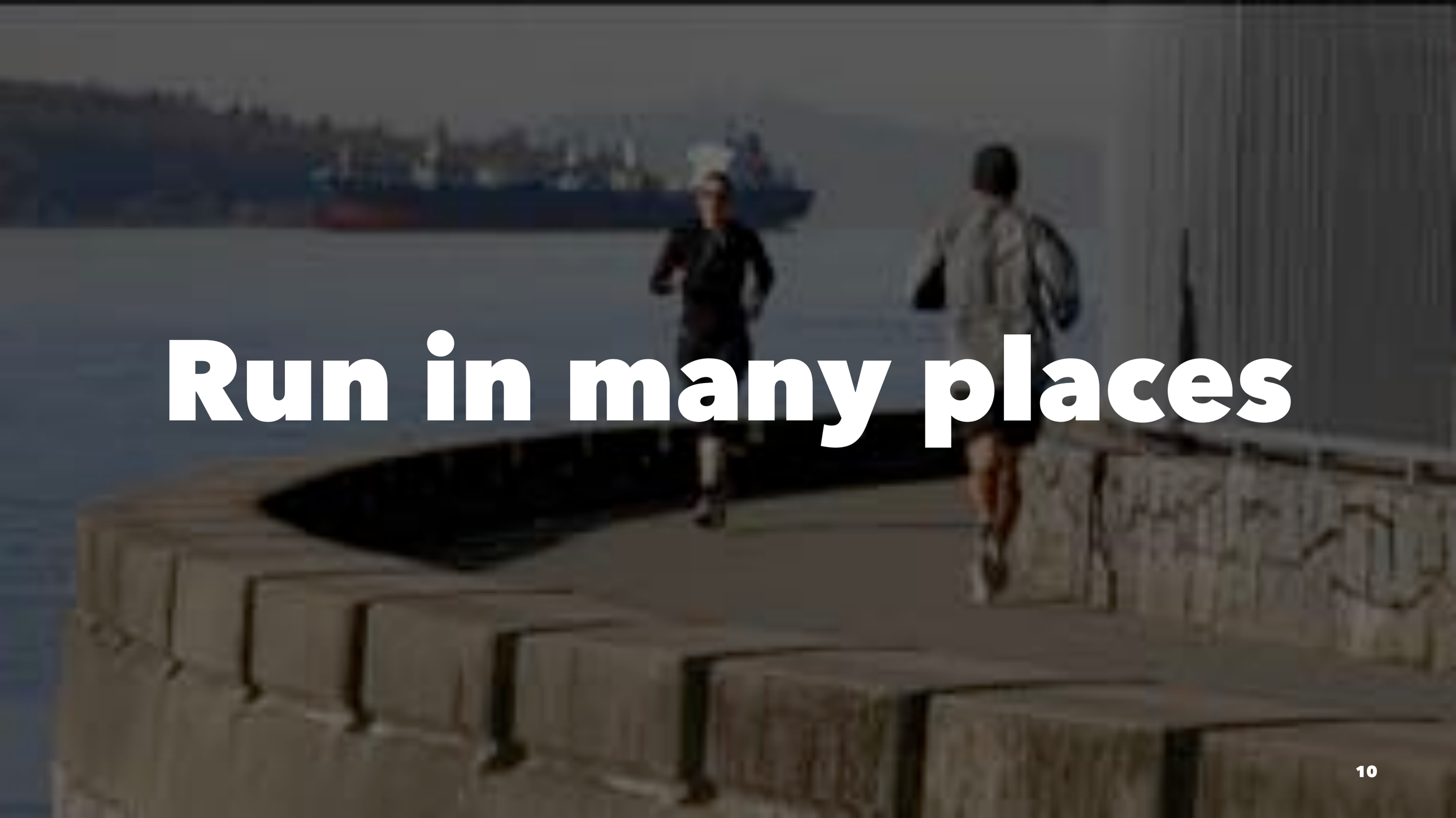
What is Docker?

Container virtualization



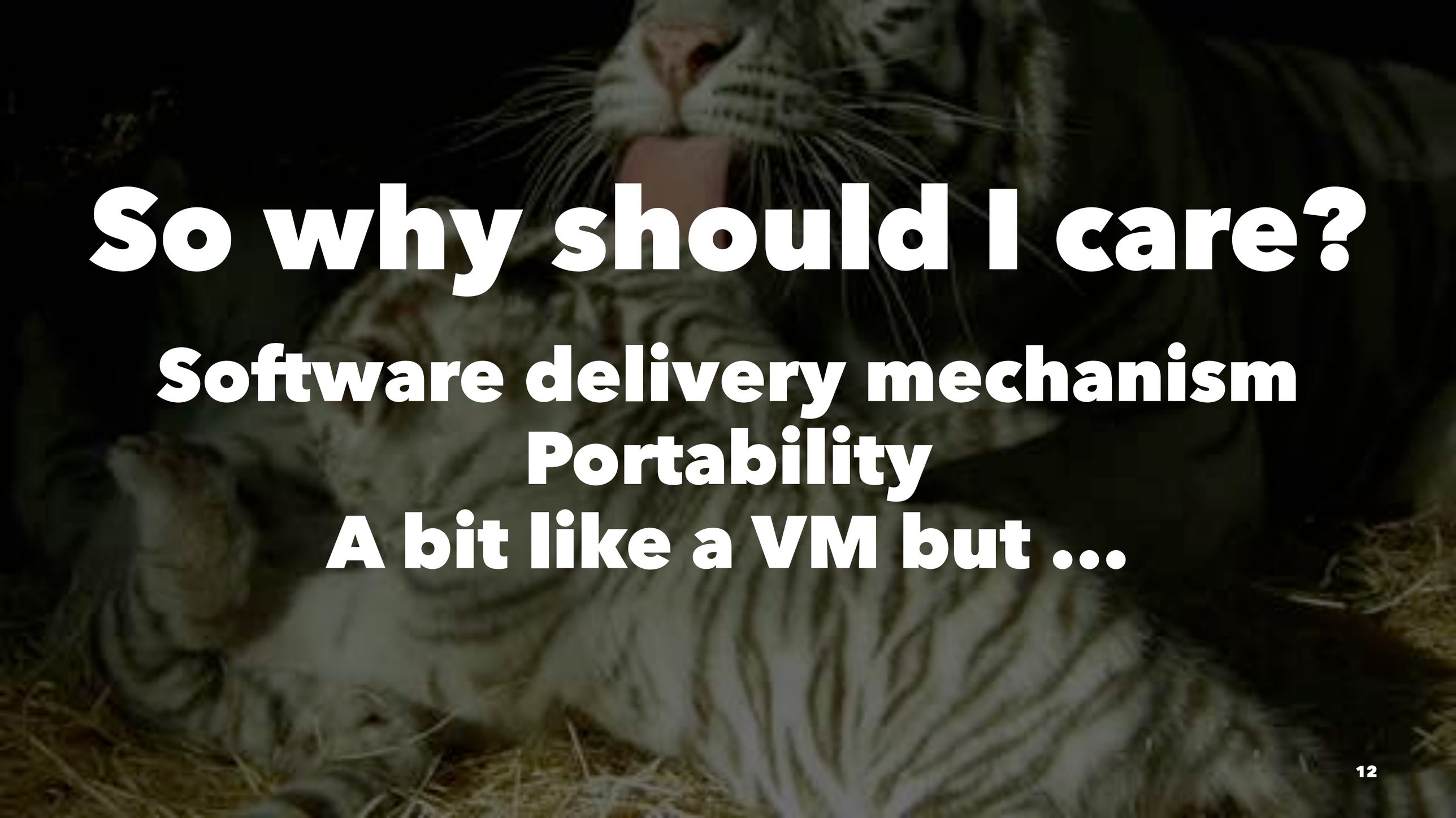
Build, ship, run

Build once



Run in many places

Isolated
Layered
Standard
Content agnostic



So why should I care?

Software delivery mechanism
Portability
A bit like a VM but ...

… not like a VM

1. Containers boot faster
2. Containers have less overhead
3. Containers bring native performance
4. Containers are Cloud & VM-compatible

Devs care about their app

Ops cares about the containers

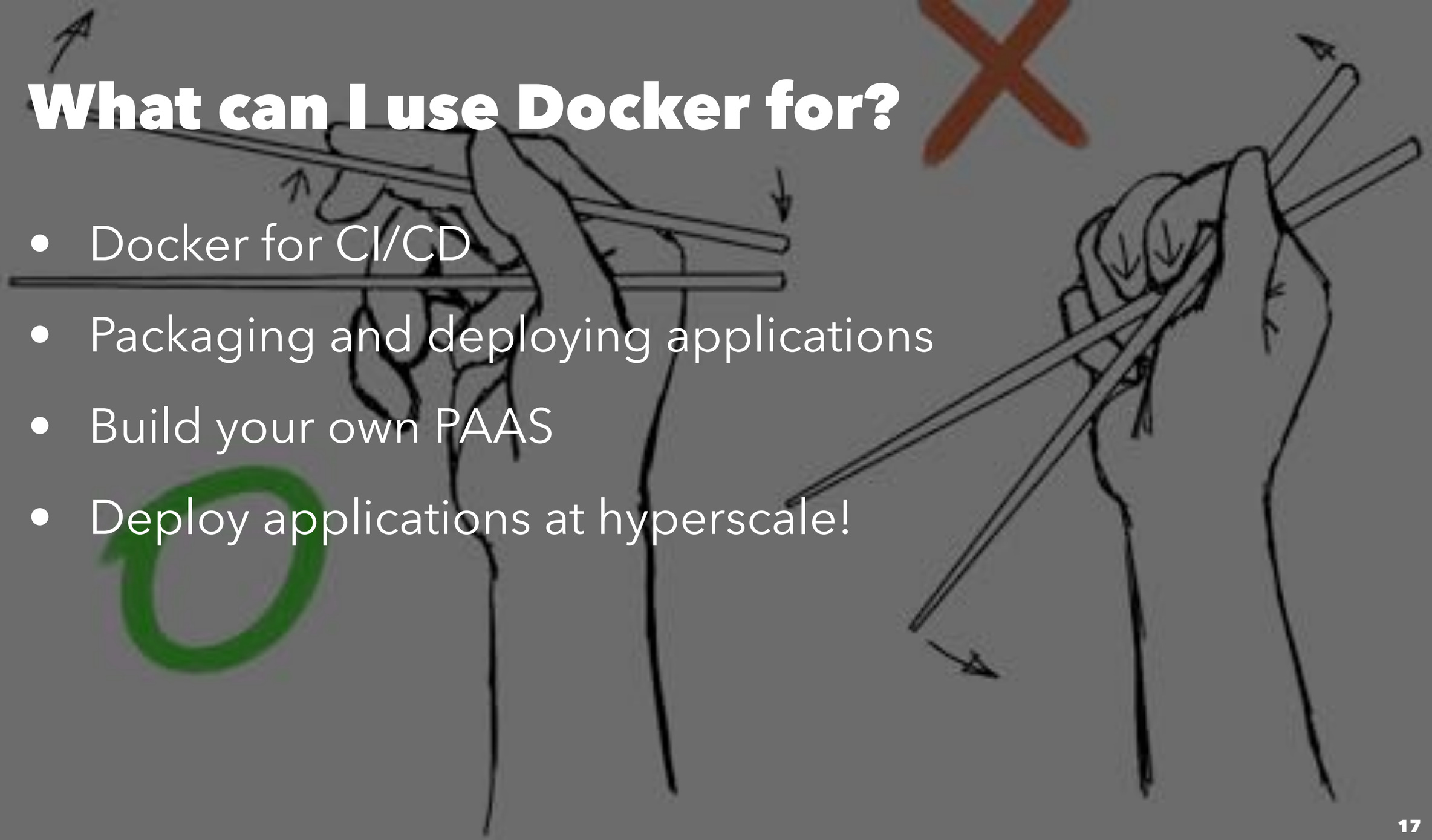
Why developers care...

- Clean, safe, hygienic and portable
- No worries about dependencies
- Encourage good architecture

Why operations care...

- Make the lifecycle more efficient
- Eliminate inconsistencies
- Support segregation of duties

What can I use Docker for?



- Docker for CI/CD
- Packaging and deploying applications
- Build your own PAAS
- Deploy applications at hyperscale!

Technology Stack

- Runs on most Linux distributions
- Boot2Docker for OSX and Windows
- **Windows in the works!**
- Uses Linux kernel features

Docker Basics

Image & Dockerfile
Container
The Docker Hub

Building Docker images

```
FROM       ubuntu
MAINTAINER James Turnbull "james@example.com"

RUN apt-get -qqy update
RUN apt-get install -qqy apache2
ADD index.html /var/www/

ENV APACHE_RUN_USER www-data
ENV APACHE_RUN_GROUP www-data
ENV APACHE_LOG_DIR /var/log/apache2

VOLUME [ "/var/log/apache2" ]
EXPOSE 80

ENTRYPOINT ["/usr/sbin/apache2"]
CMD ["-D", "FOREGROUND"]
```

Building the image

```
$ sudo docker build -t="jamtur01/fluentconf" .
```

Sharing the image

```
$ sudo docker push jamtur01/fluentconf
```

Running the container

```
$ sudo docker run --name mywebsite -ti -p 80:80 jamtur01/fluentconf
```

Docker Hub

- Like GitHub but for containers.
- Integrates with GitHub and BitBucket.
- Web hooks for integration with other services.

Workflow

- Write awesome code!
- Commit code.
- (Automatically) build Docker images
- Share images
- Profit!

But it's not simple to
build a stack

Docker Compose

- Fast, isolated development environments using Docker.
- Quick and easy to start.
- Manages a collection of containers.

Installing Compose

```
$ sudo pip install -U docker-compose
$ docker-compose --version
```

Compose basics

- Build your apps with `Dockerfile`'s.
- Combine applications and images with a `docker-compose.yml` file.

The Dockerfile

```
FROM ubuntu:14.04
RUN apt-get -yqq update
RUN apt-get -yqq install nodejs npm
RUN ln -s /usr/bin/nodejs /usr/bin/node
RUN mkdir -p /var/log/nodeapp
ADD nodeapp /opt/nodeapp/
WORKDIR /opt/nodeapp
RUN npm install
```

The docker-compose.yml file

```
db:
  image: redis
  ports:
    - "6379"
web:
  image: jamtur01/fluentdemo
  command: nodejs server.js
  ports:
    - "3000:3000"
  links:
    - db
```

Compose details

- Can build images, use existing or pull images
- Can map ports, manage links and create volumes
- Still single host centric.

Start Compose

```
$ sudo docker-compose up
Creating compose_db_1...
Creating compose_web_1...
. . .
```

Demo

Compose benefits

- Build complex local stacks.
- Consistent and shareable.
- No more..

WORKED FINE IN DEV
OPS PROBLEM NOW

Team and Deployment Workflow

- Write awesome code!
- Commit code.
- (Automatically) build Docker images.
- (Automatically) run Jenkins tests.
- Promote images to new environments.
- Profit!

Questions?