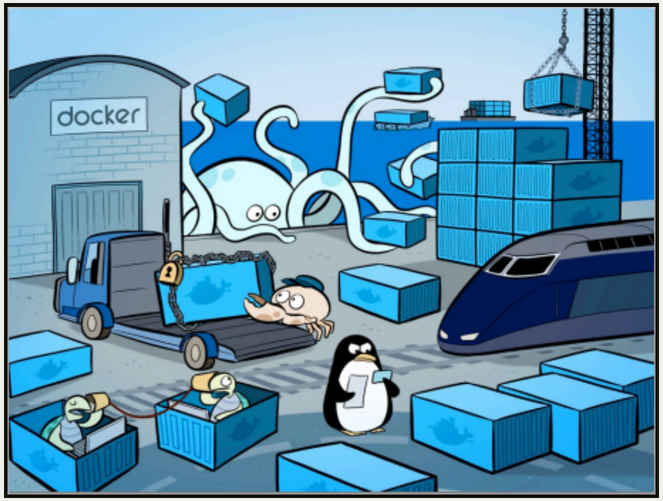


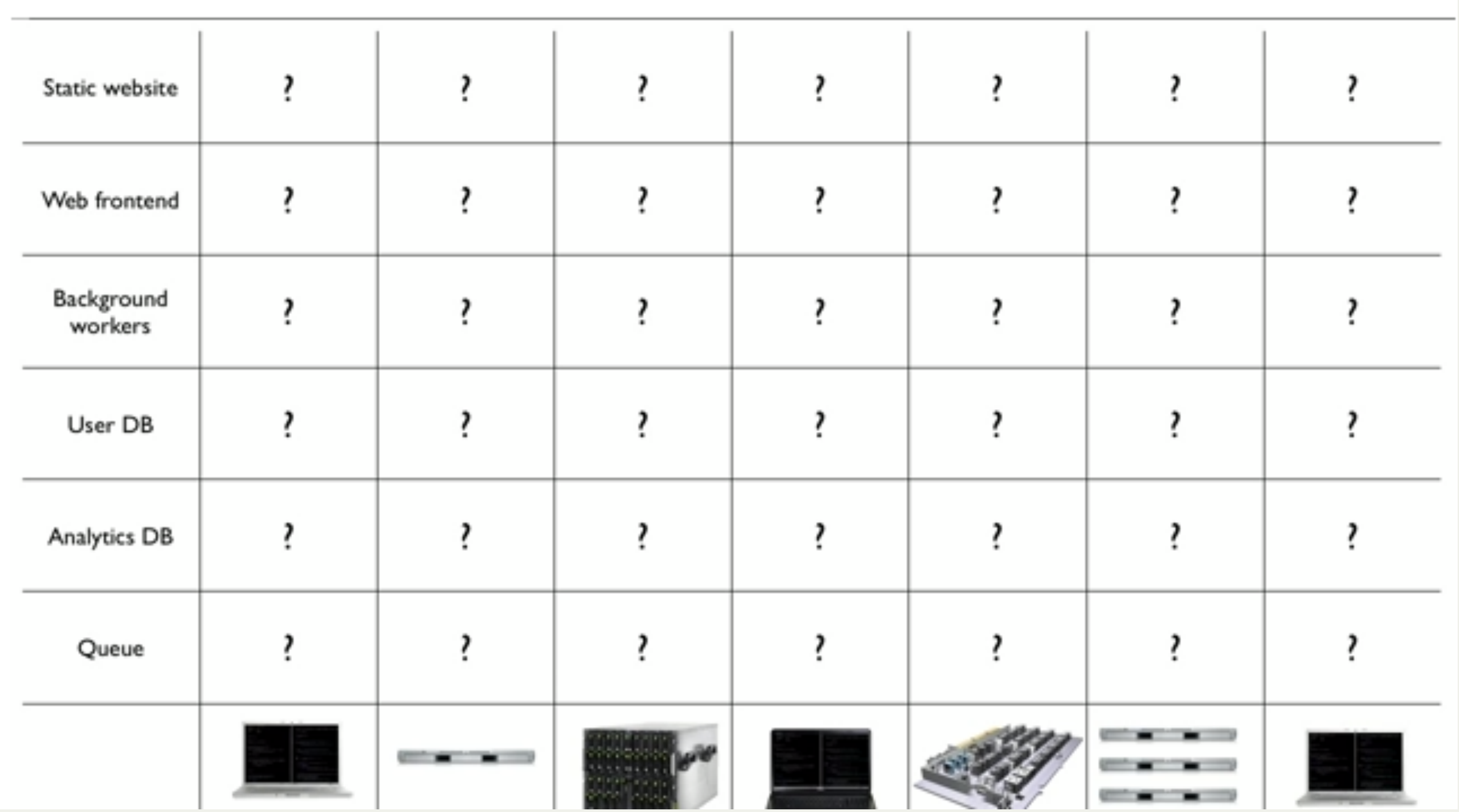
Golang Paris Meetup - 01/12/2015

Introduction to containers and Docker

Adrien Folie

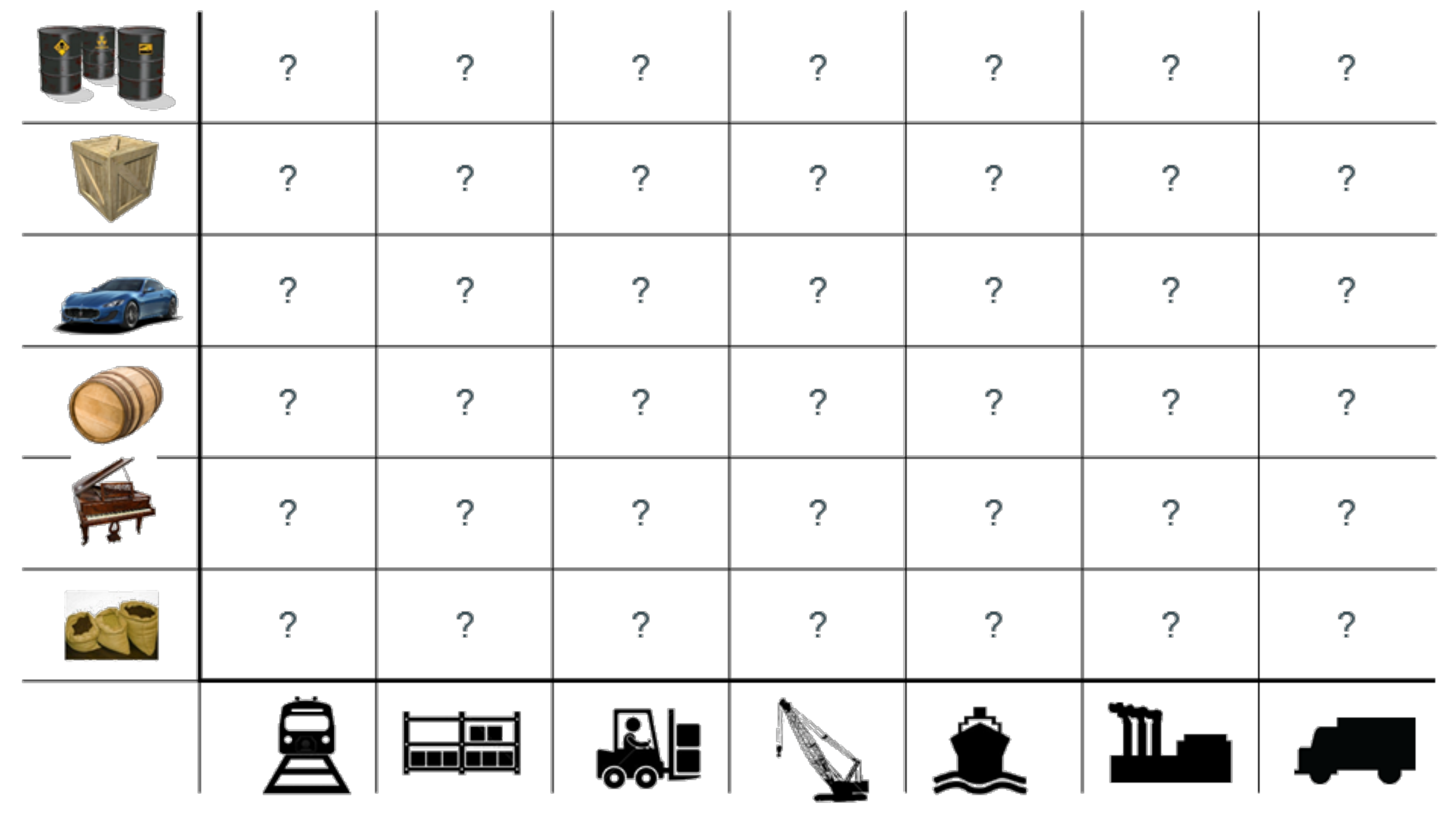
@folieadrien

The Matrix From Hell



Static website	?	?	?	?	?	?	?
Web frontend	?	?	?	?	?	?	?
Background workers	?	?	?	?	?	?	?
User DB	?	?	?	?	?	?	?
Analytics DB	?	?	?	?	?	?	?
Queue	?	?	?	?	?	?	?

Another Matrix From Hell

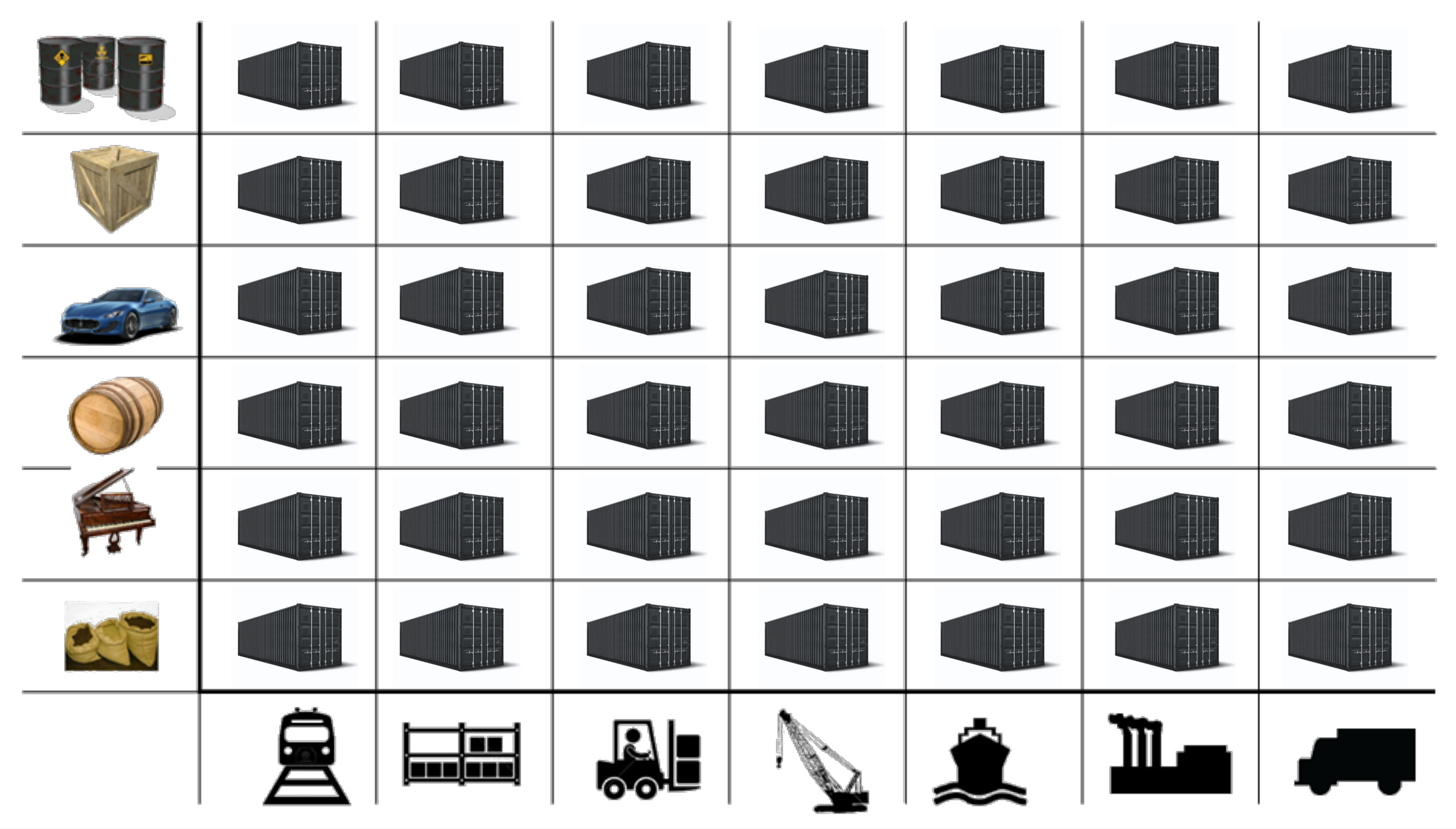


	?	?	?	?	?	?	?
	?	?	?	?	?	?	?
	?	?	?	?	?	?	?
	?	?	?	?	?	?	?
	?	?	?	?	?	?	?
	?	?	?	?	?	?	?

Solution

The intermodal container

Solved!



Solution to the deployment problem

The linux container

High level approach

Lightweight VM

- own process space
- own network interface
- can run stuff as root
- can have it's own /sbin/init

Advantages

- 1000x faster than a VM
- Easier to transfer and move efficiently
- Containers have no overhead

"Machine container"

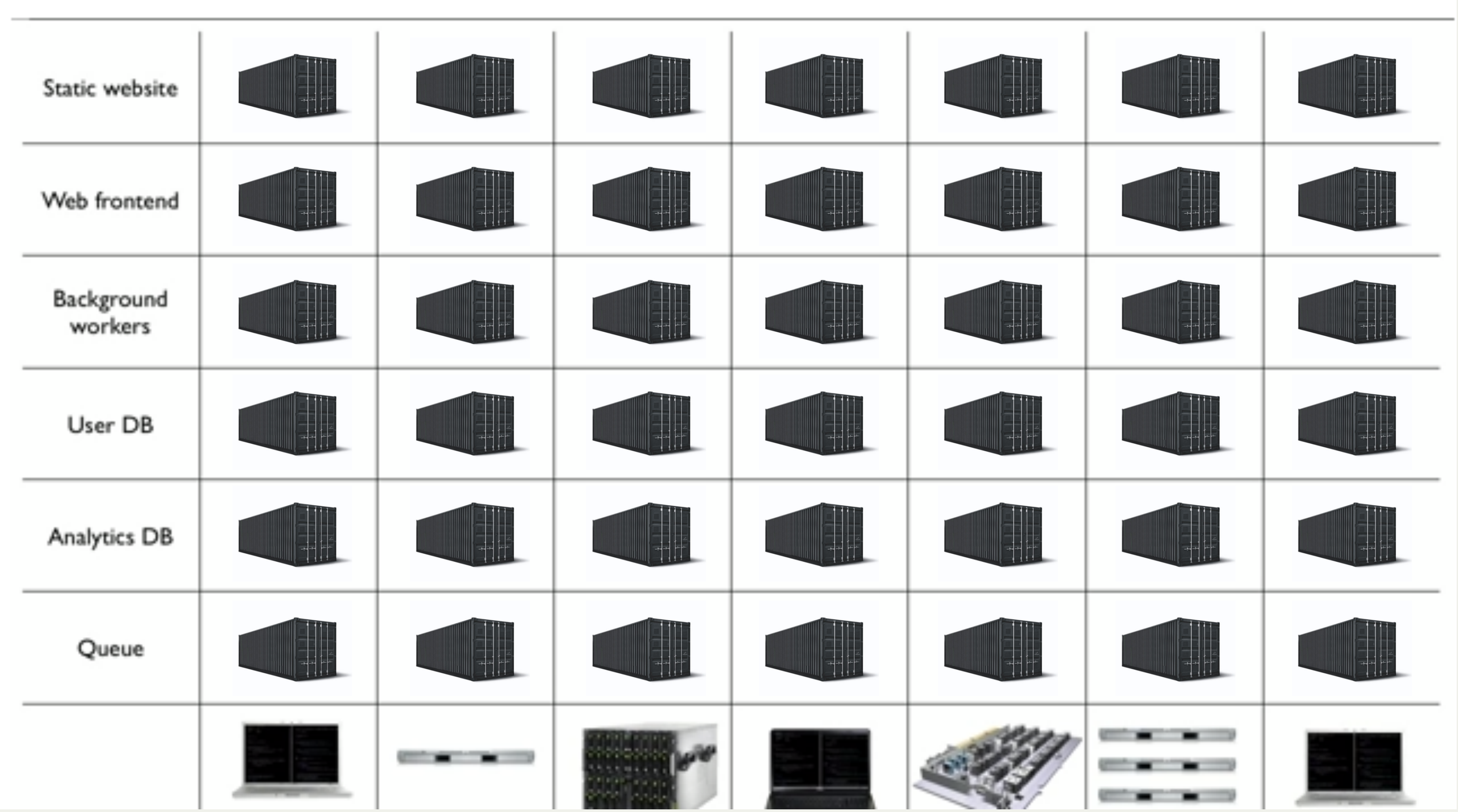
Low level approach

chroot on steroids

- Can also not have its own /sbin/init
- Container = isolated process(es)
- Share kernel with host
- No device emulation

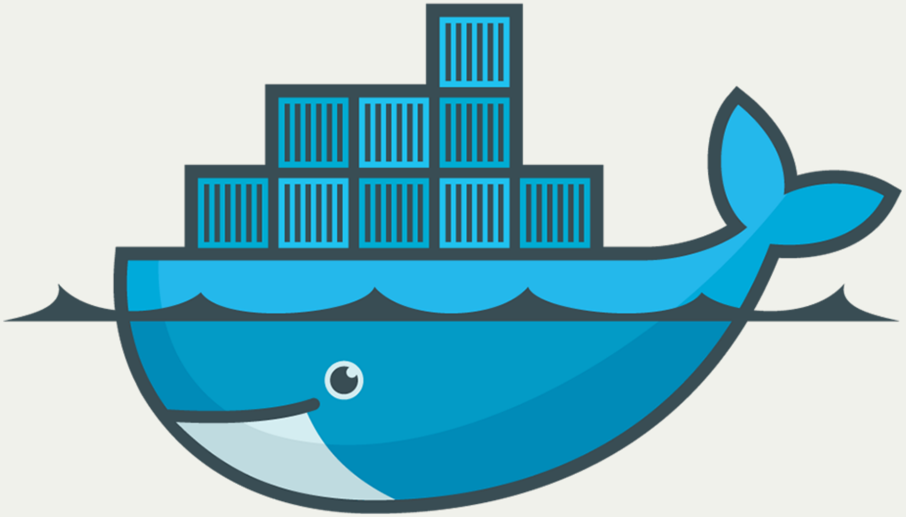
"Application container"

Solved!


Static website
Web frontend
Background workers
User DB
Analytics DB
Queue

Docker

A runtime for linux containers

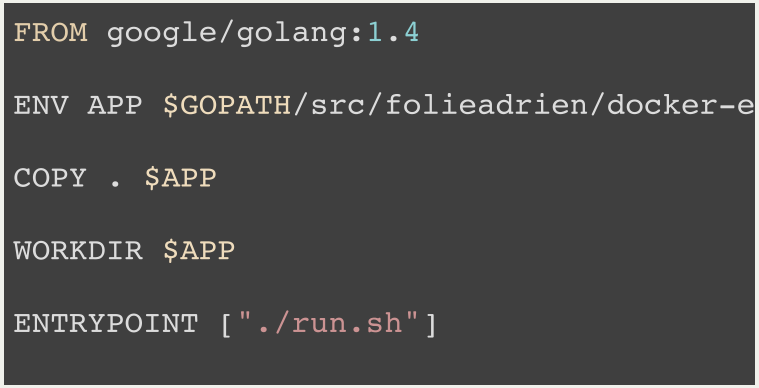


"If it runs on linux, it will run in Docker"

Standard format for containers

Dockerfiles

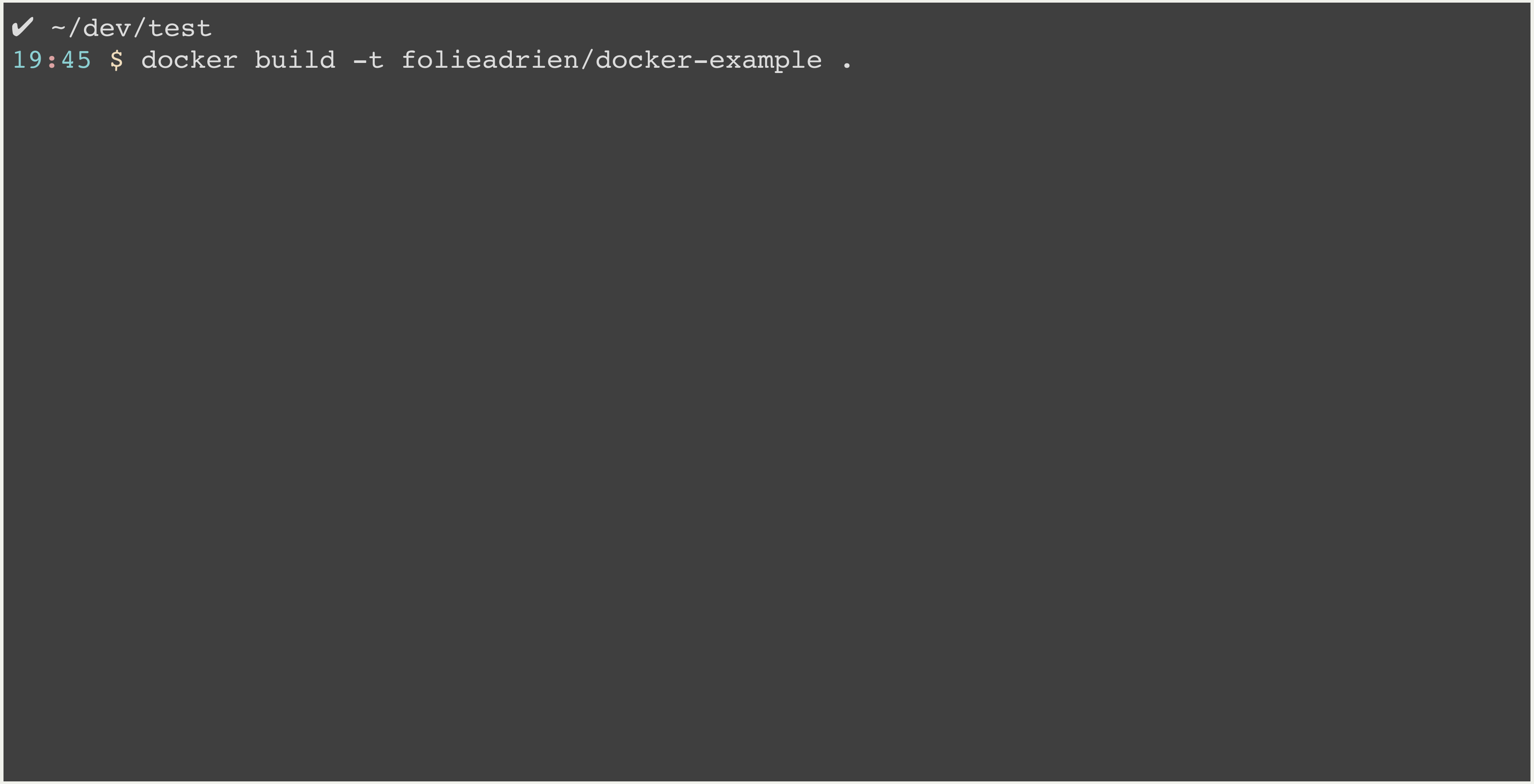
- Recipe to build a container
- Start FROM a base image
- RUN commands on top of it
- Easy to learn, easy to use



```
FROM google/golang:1.4

ENV APP $GOPATH/src/folieadrien/docker-e

COPY . $APP

WORKDIR $APP

ENTRYPOINT ["./run.sh"]
```

docker build -t folieadrien/docker-example .

Demo Time



```
✔ ~/dev/test
19:45 $ docker build -t folieadrien/docker-example .
```

Docker build

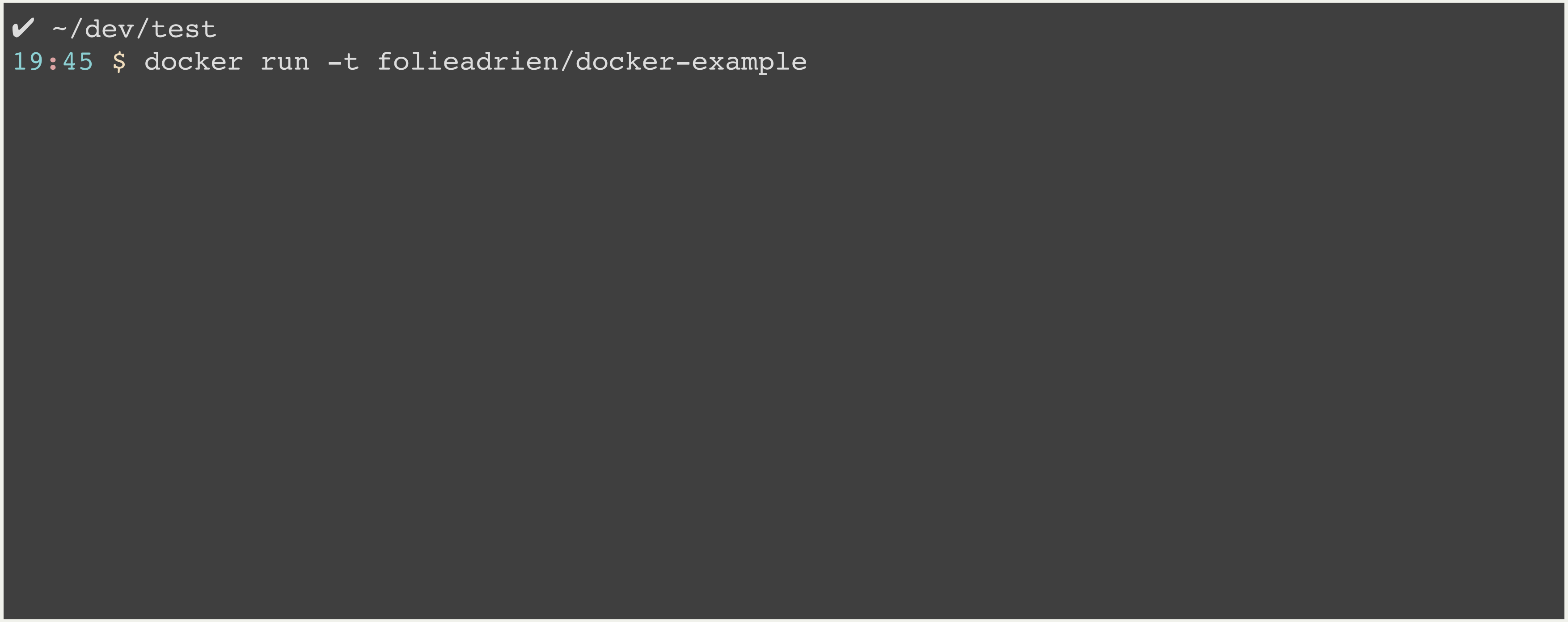
Advantages

- Take a snapshot after each step
- Re-use those snapshots in future builds
- Doesn't re-run slow steps (package install...) when it's not necessary

Docker run

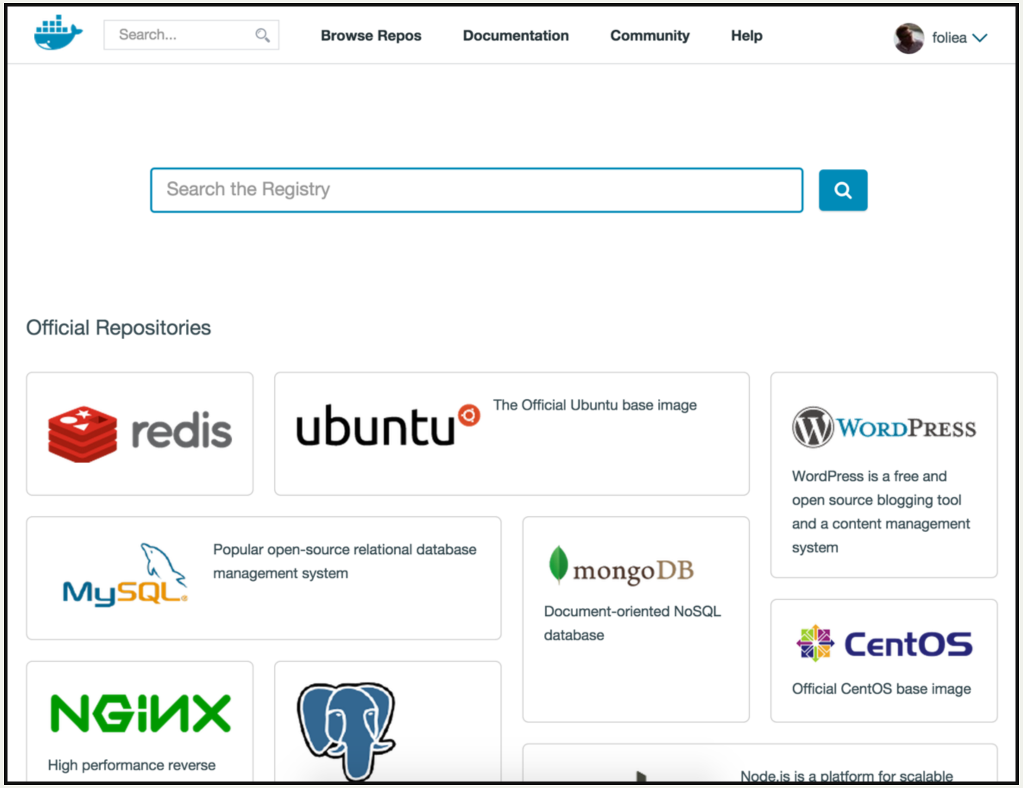
Execution is fast and lightweight

- Let's start a few containers



```
✔ ~/dev/test
19:45 $ docker run -t folieadrien/docker-example
```

Docker Hub



Official Repositories

The Official Ubuntu base image

WordPress is a free and open source blogging tool and a content management system

Popular open-source relational database management system

Document-oriented NoSQL database

Official CentOS base image

High performance reverse

Node.js is a platform for scalable

- docker push an image to the hub
- docker pull this image from any machine

Docker Ecosystem

On GitHub

- 731 Contributors
- 18,301 stars
- 40,000 projects referencing docker

Official Tools

- fig
- swarm
- machine

Questions