< **Cloud Native Buildpacks** />

C1 Public

Hello, I'm Roman

[Roman Bachmann joined Swisscom 2012]

- Network-, Software-, DevOps-Engineer

- Cloud Solutions Architect, Head of Cloud Empowerment

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Cloud Native Buildpacks

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/agenda
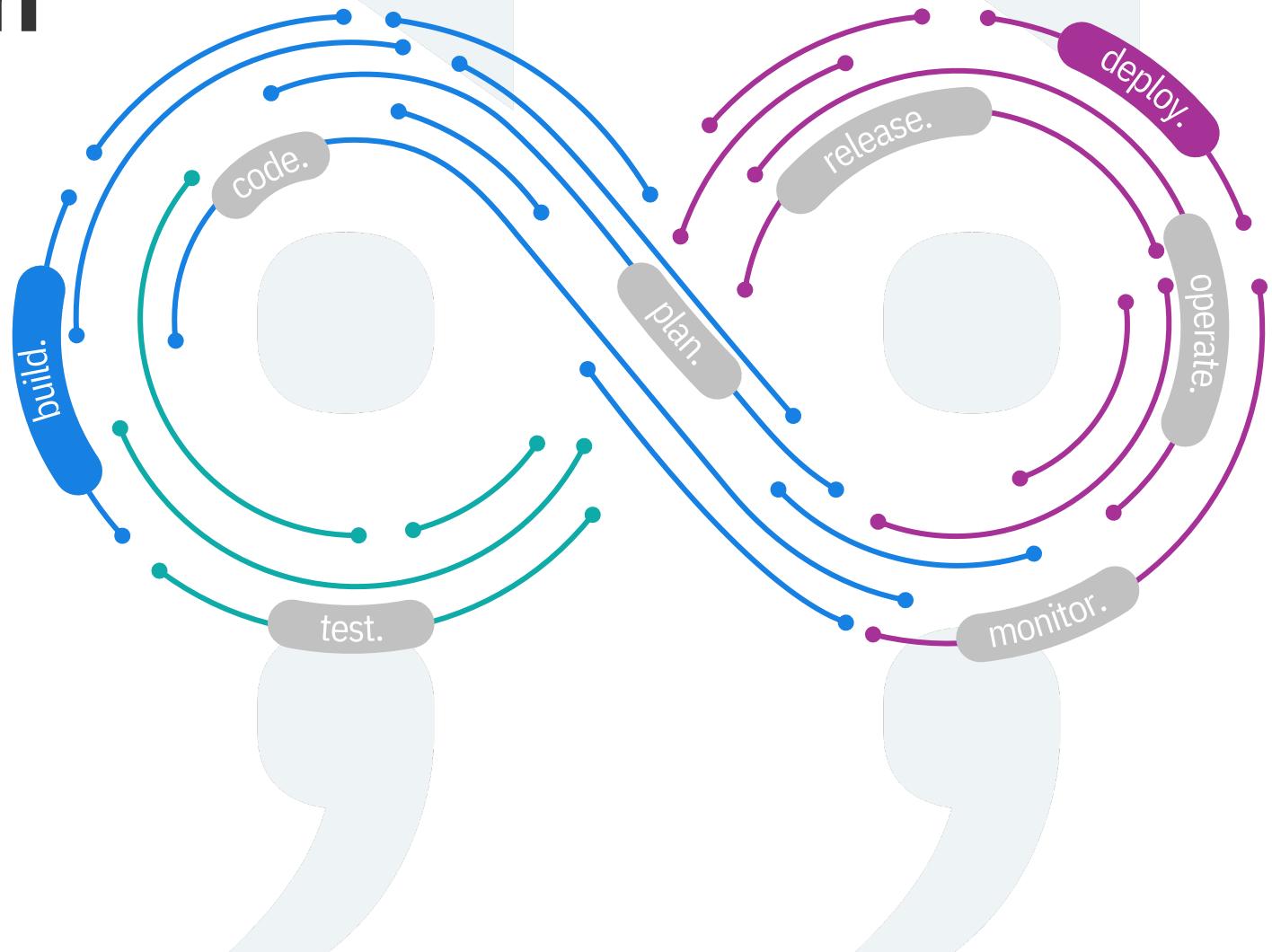
The Problem
{howto}

// app-1.0.0.war
// app-1.0.0.jar

// cp app-1.0.0.jar ...
// docker run ...
// cf push ...

Cloud Foundry

\<history\>

Support for pushing
Docker images into
the platform and .NET
applications

[2011]

[2016]

[2015]

Officially announced, Cloud
Foundry was open sourced and
housed inside Pivotal

Open Service Broker API
project in collaboration
with **Fujitsu, Google, IBM,
VMware, Red Hat and SAP**

Cloud Native Buildpacks

Cloud Foundry

<history>

[2017]

Eirini is supported by all Cloud Foundry certified providers less than one year after its launch

[2019]

Cloud Foundry Container Runtime and **Envoy and Istio integration** into the project
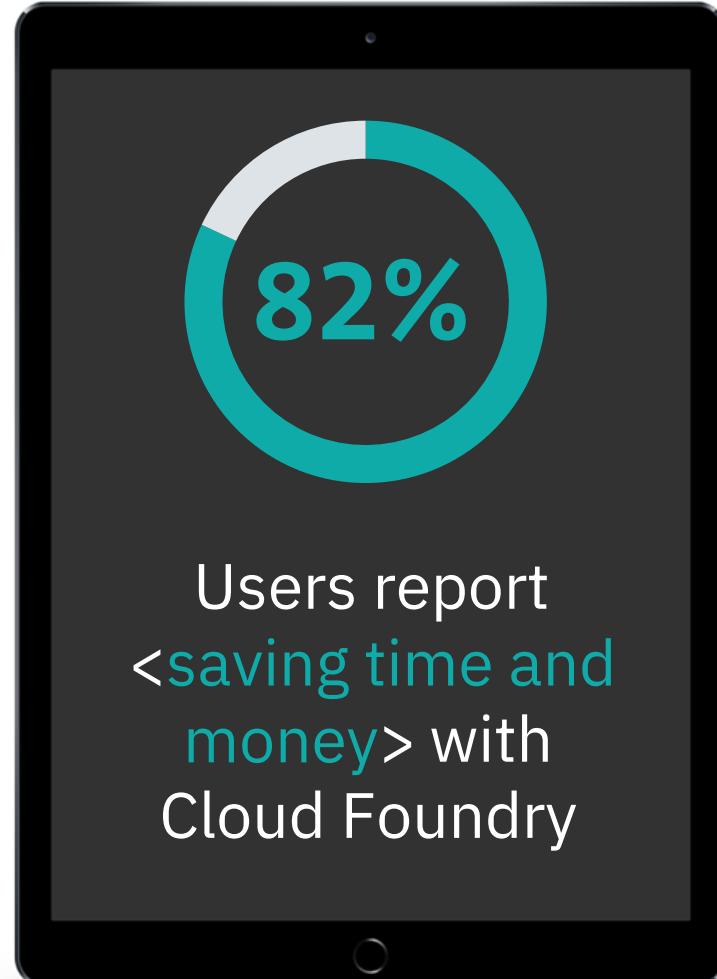
Cloud Native Buildpacks

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Users agree

86% more efficient developers

80% more efficient operators

78% more effective business

82%

Users report
<saving time and money> with
Cloud Foundry

Users agree

86% more efficient developers
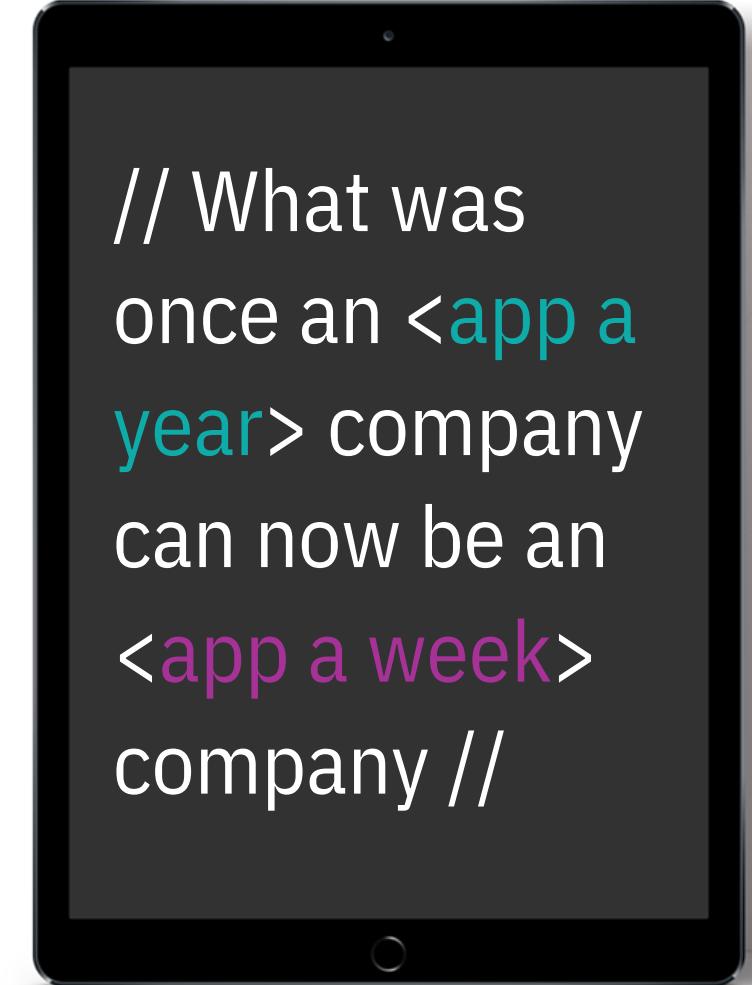
80% more efficient operators

78% more effective business

82%
Users report **saving time and money** with Cloud Foundry

// What was once an <app a year> company can now be an <app a week> company //

upload,

stage,

start;

Application code

Package

Droplet

Process(es)

Buildpack(s)

Stack

Configuration + Environment

Cloud Native Buildpacks

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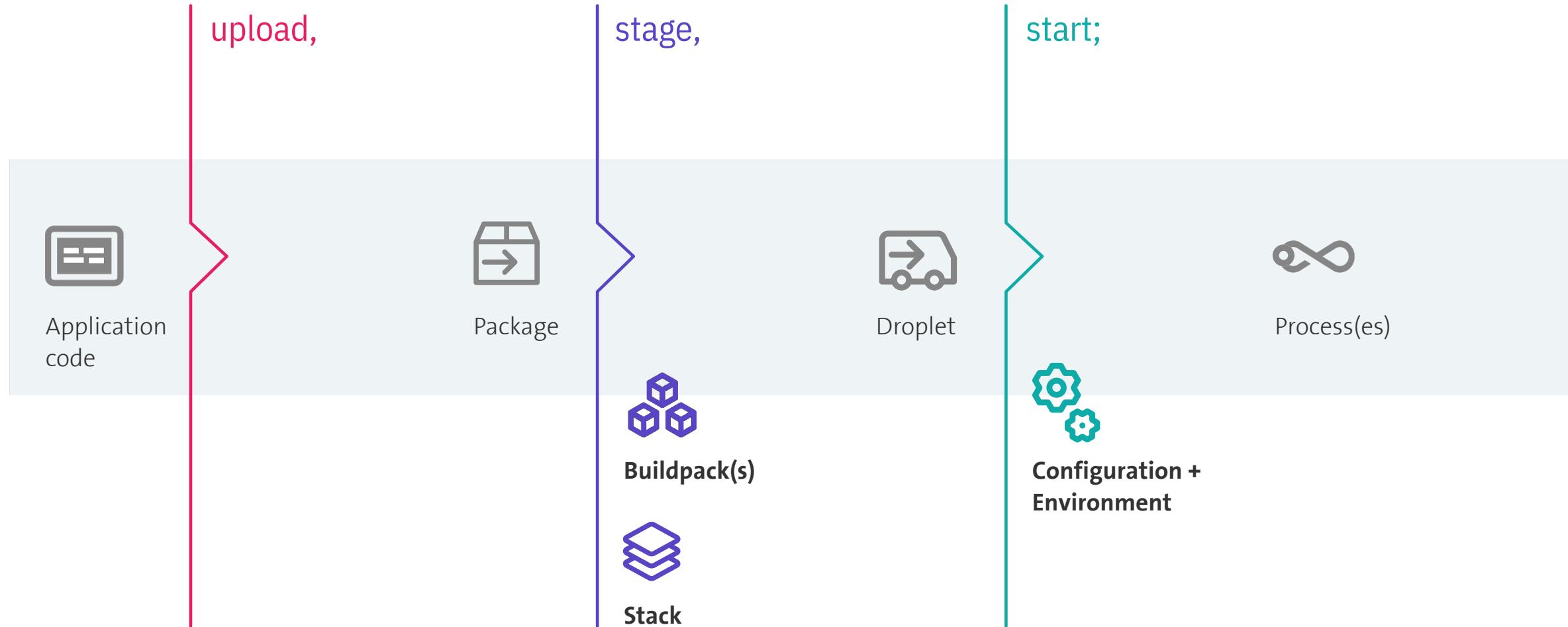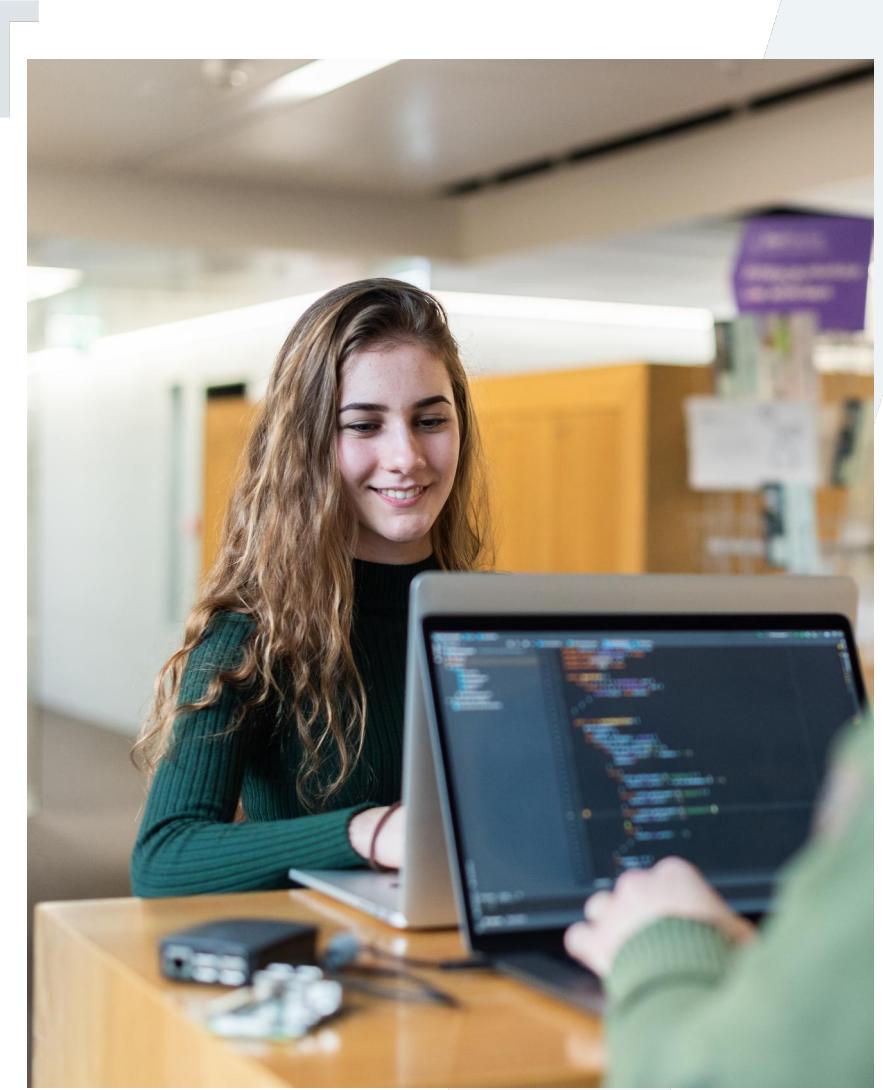
(+) Patched up-to-date JRE/dependencies

(+) Memory calculator

(+) Simply make it run (e.g. NGINX)

(+) No dockerfiles to maintain

Cloud Native Buildpacks
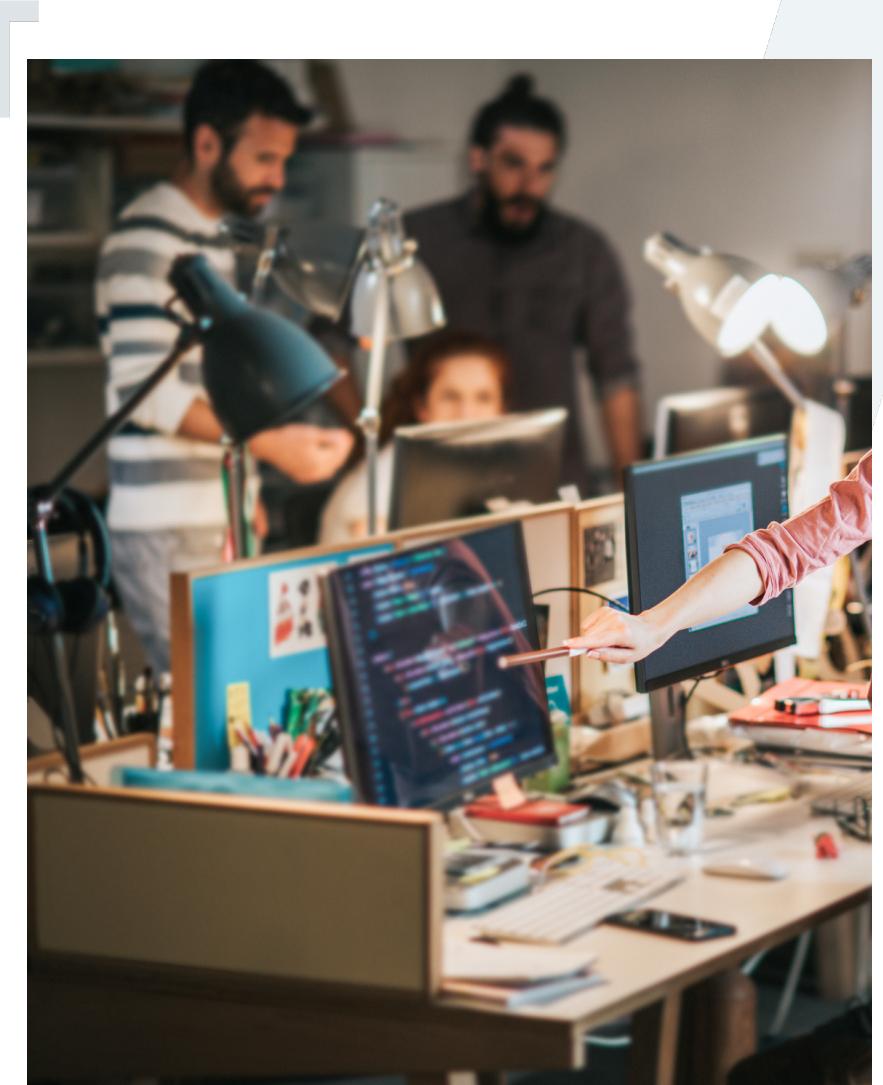
Challenges of Buildpacks

(-) Local development differs from
cloud deployment

(-) Different stages have different droplets

(-) Hard to scan for vulnerabilities

(-) Breaking changes might get
noticed too late

Cloud Native Buildpacks

CLI for building apps using Cloud Native Buildpacks
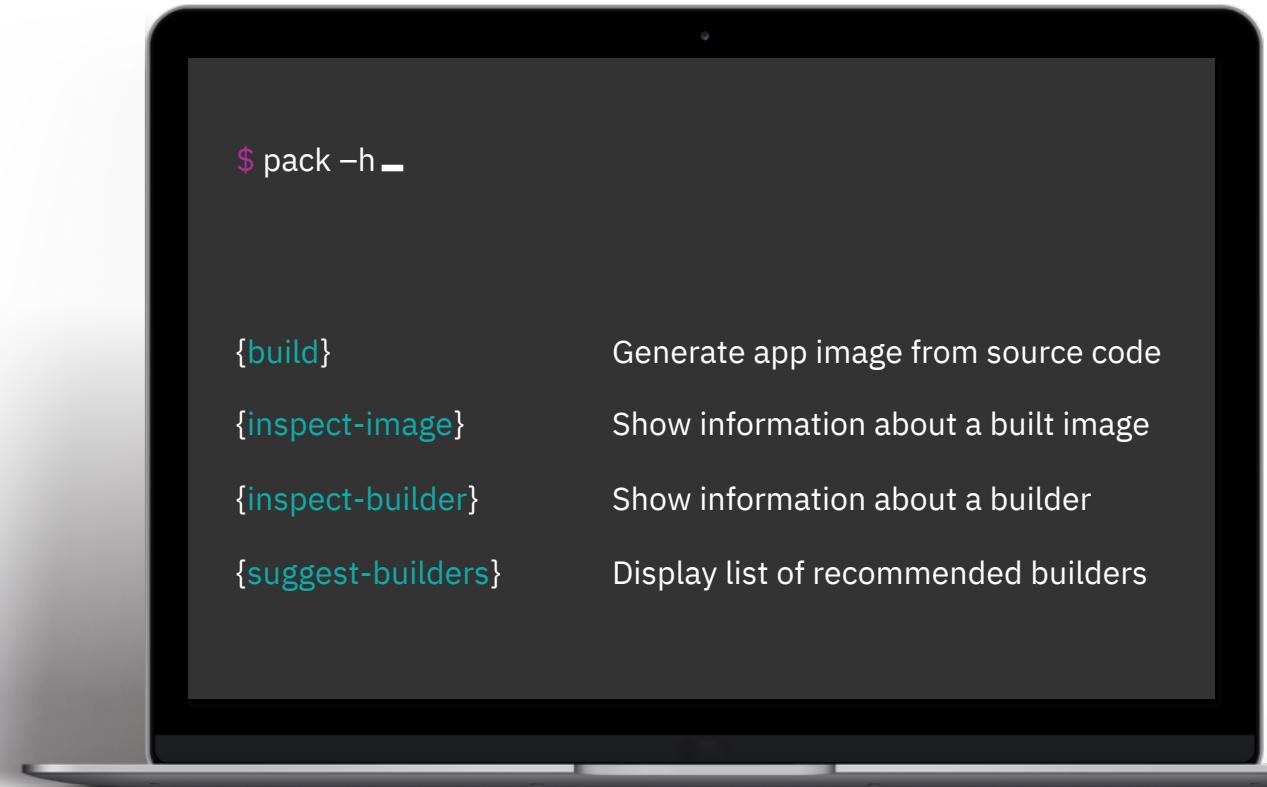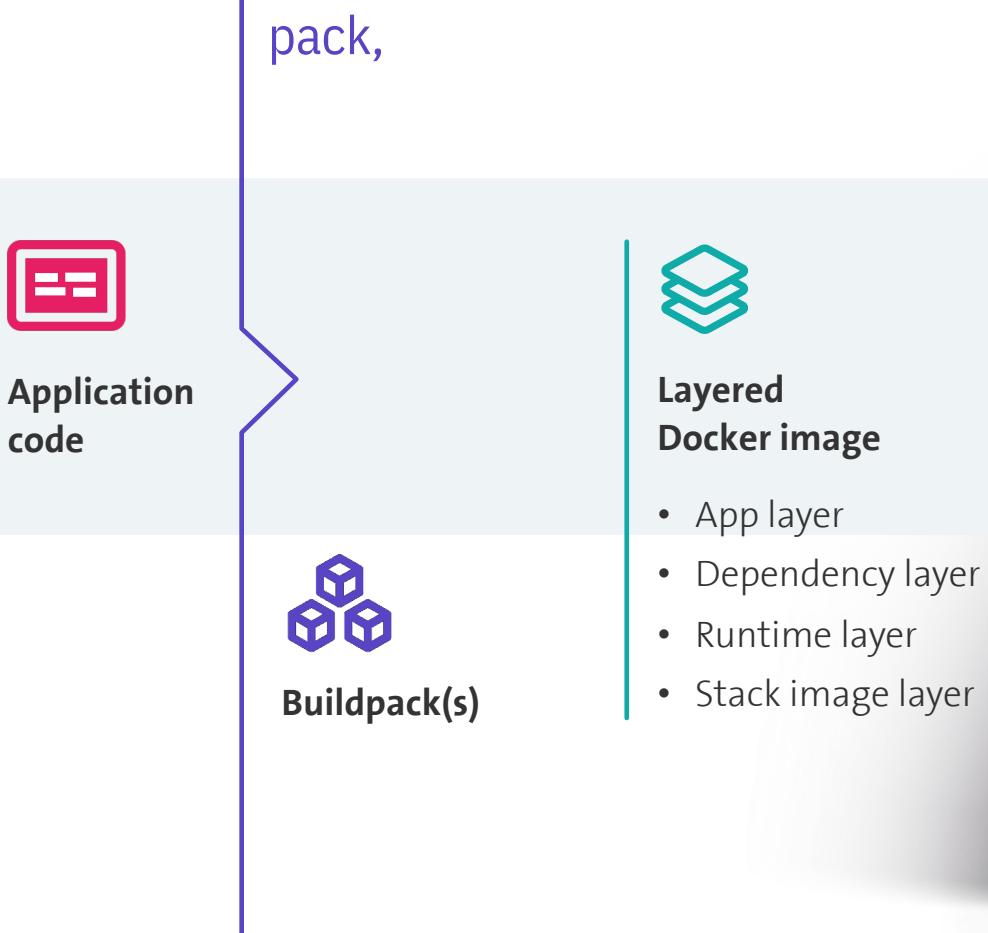
```
$ pack –h ▬


{build}              Generate app image from source code

{inspect-image}      Show information about a built image

{inspect-builder}    Show information about a builder

{suggest-builders}   Display list of recommended builders
```

Available Commands

pack,

Application code

Buildpack(s)

Layered Docker image

- App layer
- Dependency layer
- Runtime layer
- Stack image layer

```
$ pack –h ▄

{build}            Generate app image from source code
{inspect-image}    Show information about a built image
{inspect-builder}  Show information about a builder
{suggest-builders} Display list of recommended builders
```

/demo

Cloud Native Buildpacks

outlook;

- More dedicated buildpacks

- Smaller, optimized buildpacks

- kpack for cf-for-k8s

Cloud Native Buildpacks

Conclusion

Great support for developing and running applications in **any possible cloud platform**

Cloud Native Buildpacks

Hard to argue why not to use CNBs
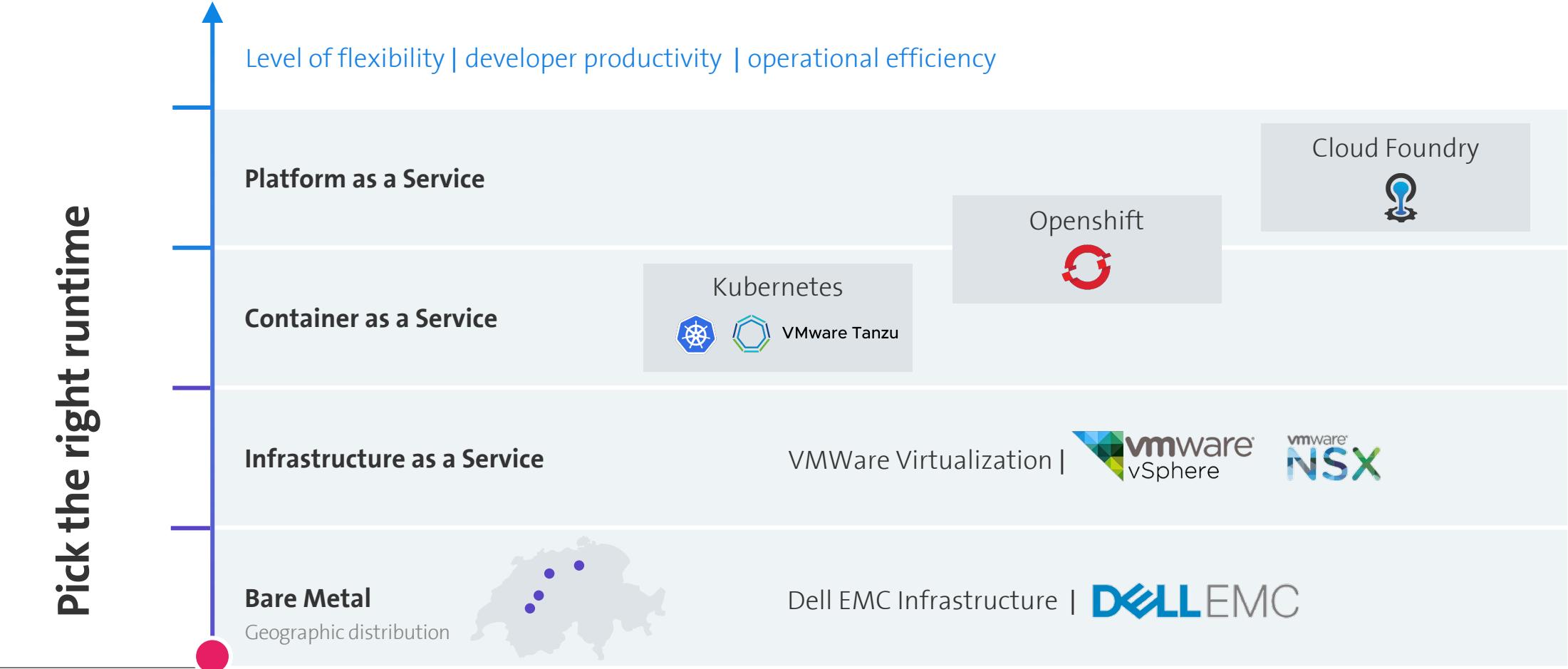
- Local development

- Reproducible builds

- Easily scannable for vulnerabilities

- No dockerfiles to maintain

- Deploy and run anywhere

Pick the right runtime

Cloud Native Buildpacks

Level of flexibility | developer productivity | operational efficiency

Platform as a Service

Cloud Foundry

Openshift

Container as a Service

Kubernetes

VMware Tanzu

Infrastructure as a Service

VMWare Virtualization | vmware vSphere   vmware NSX

Bare Metal
Geographic distribution

Dell EMC Infrastructure | DELLEMC

Further reading

https://medium.com/@robachmann/cloud-native-buildpacks-to-unite-paas-and-caas-cac215f53442?sk=d58a6b273e34ace176be61654b3ab33c

https://github.com/swisscom/blogpost-cnb

https://www.cloudfoundry.org/cloud-foundry-foundation-turns-5/

https://www.cloudfoundry.org/user-survey-2019/

https://github.com/pivotal/kpack

https://github.com/cloudfoundry/cf-for-k8s

https://github.com/cloudfoundry/java-buildpack

https://paketo.io/

https://buildpacks.io/

https://buildpacks.io/docs/install-pack/

https://tanzu.vmware.com/content/blog/cloud-native-buildpacks-for-kubernetes-and-beyond

https://www.brighttalk.com/webcast/14883/382332/effective-spring-on-kubernetes

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< Thank you! />

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