

# Kubernetes como Plataforma de Desarrollo

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DevOps at Okteto

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# About Me

## Iñaki Respaldiza Hidalgo

-  @irespaldiza
- Docker Sevilla organizer
- Ex Pixelated Heart
- Ex DevOps at BBVA Solution Portfolio
- Kubernetes for Developers
- [github.com/okteto/okteto](https://github.com/okteto/okteto)
- <https://cloud.okteto.com>



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# Agenda

- Developer productivity
- Workflows
- Kubernetes as a development platform
  - Multi-Tenancy
  - Development Experience
- Demo
- Conclusions
- Exercise

# Developer Productivity

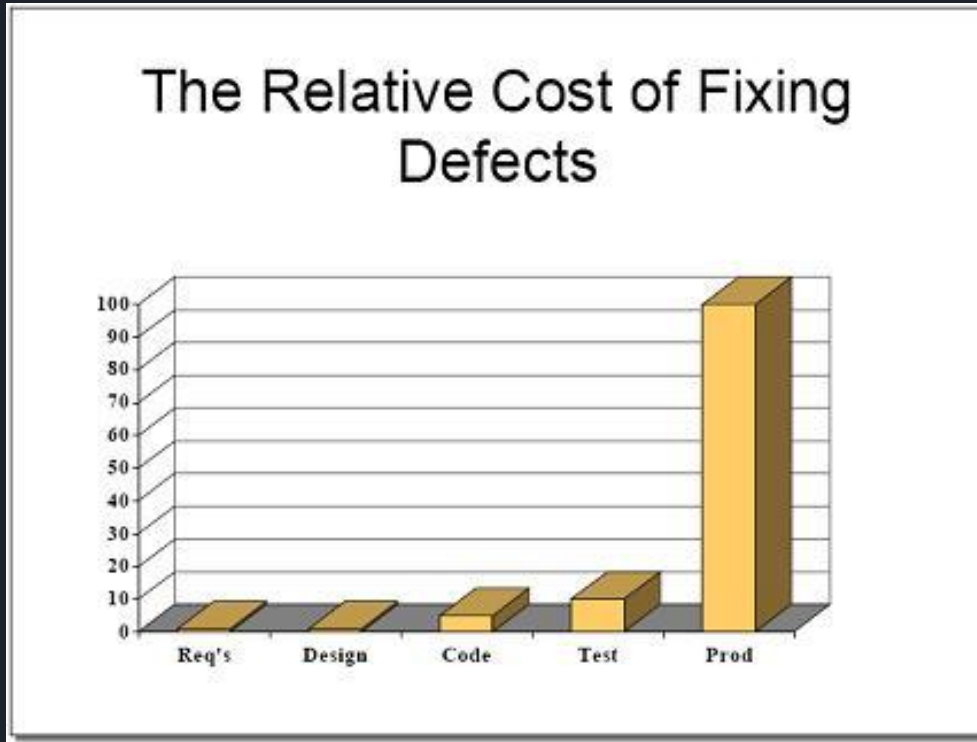
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# Developer Productivity

- 24% dealing with development environments
- 16% dealing with integration issues
- 40% of development time is wasted
- Switching contexts decreases productivity

# Relative Cost of Fixing Defects



Source: [http://www.riceconsulting.com/public\\_pdf/STBC-WM.pdf](http://www.riceconsulting.com/public_pdf/STBC-WM.pdf)

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# What does Development Environment mean?

- A development environment is a collection of procedures and tools for developing, testing and debugging an application or program.
- Application dependencies:
  - OS
  - OS libraries
  - Programming language libraries
  - Compiler
- External dependencies : MySQL, Redis, Postgres, RabbitMQ
- IDE, debuggers, plugins...

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What do I expect?



Replicable



Production-like



Inner Loop

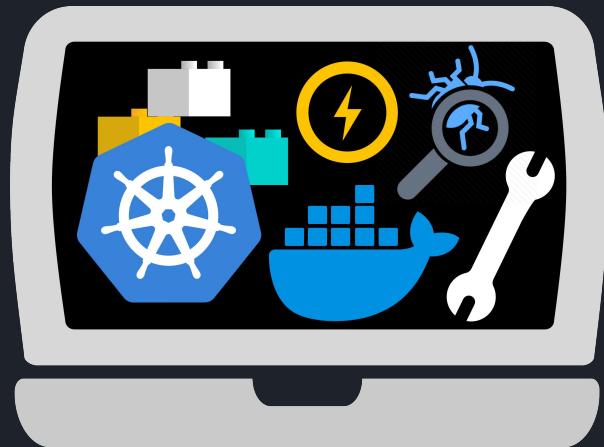


# Development Workflows

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## Local without containers

- Everything installed in my machine. Too much responsibility in CI.
- UX: fast builds, debuggers, hot reloads...



## Local sin Contenedores



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# Containers

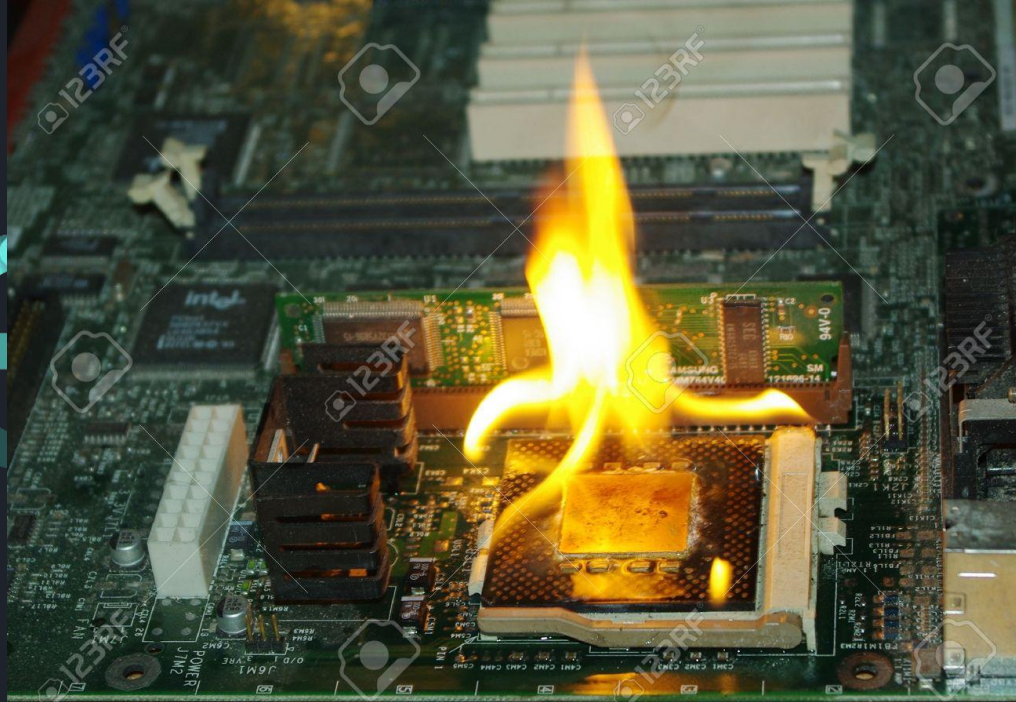
- Same runtime, but Kubernetes != Docker
- Manifest explosion



# Contenedores



# Containers



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**Mocked systems give you  
mocked confidence**

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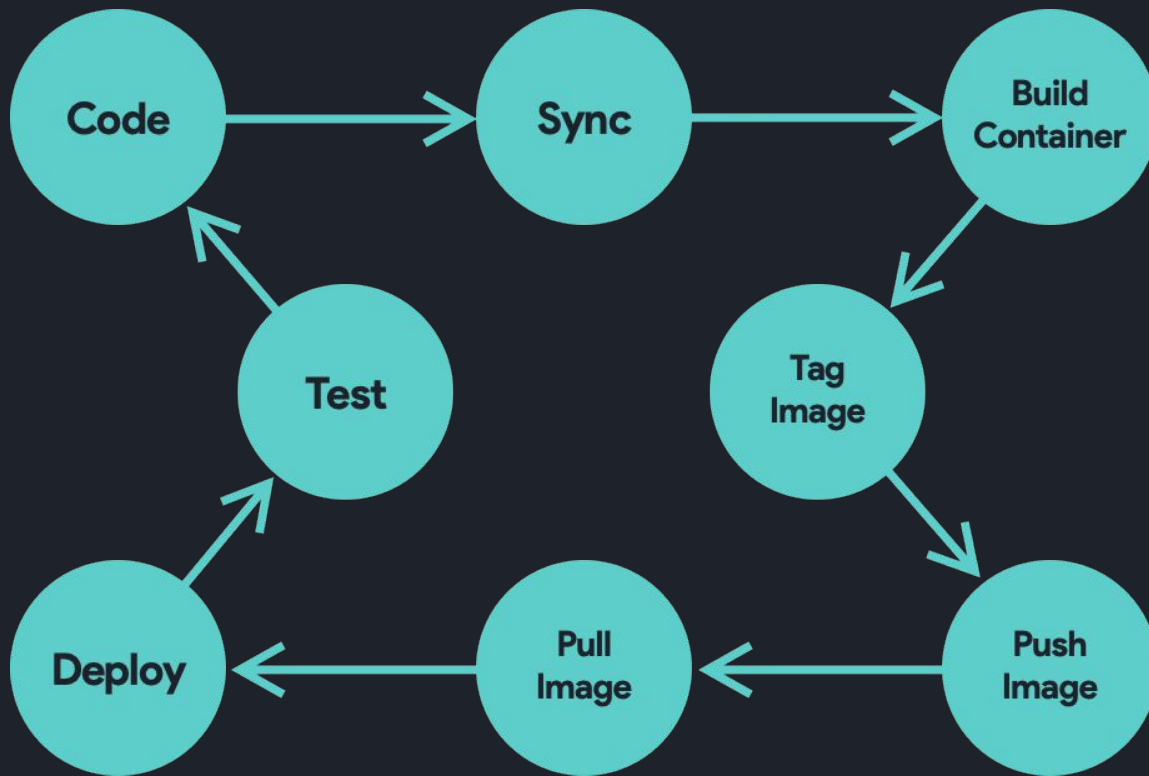
# Remote Kubernetes

- Production-like environments
- Fast (and shared) hardware, network
- Collaboration





# Kubernetes Remoto

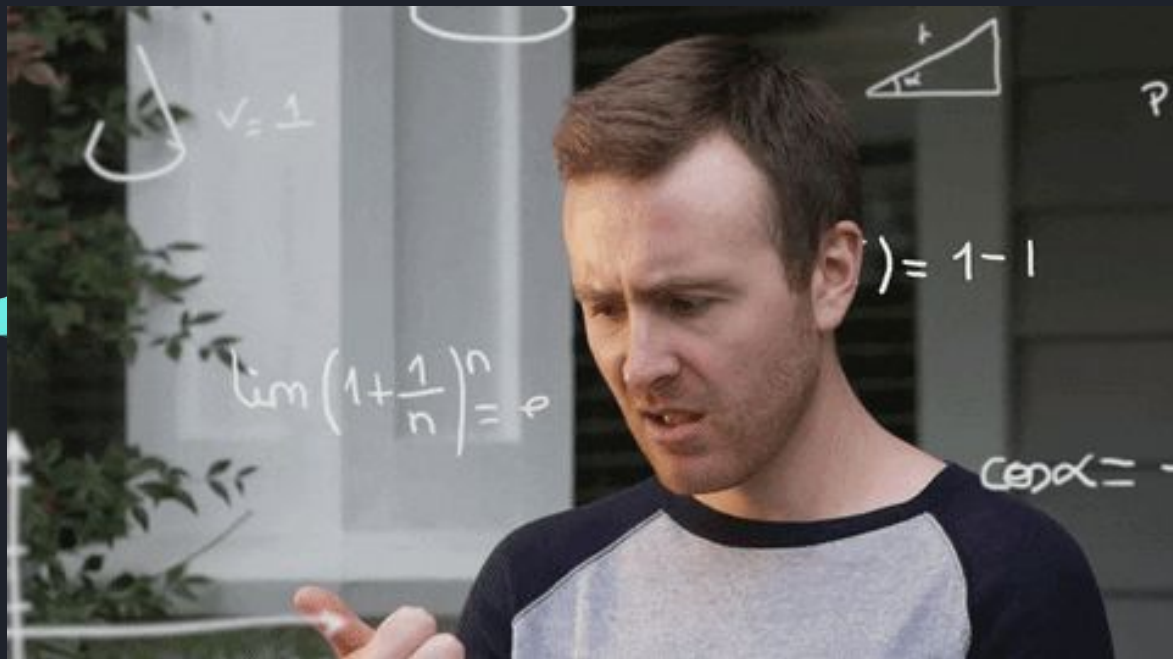


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# Kubernetes Remoto



# Kubernetes

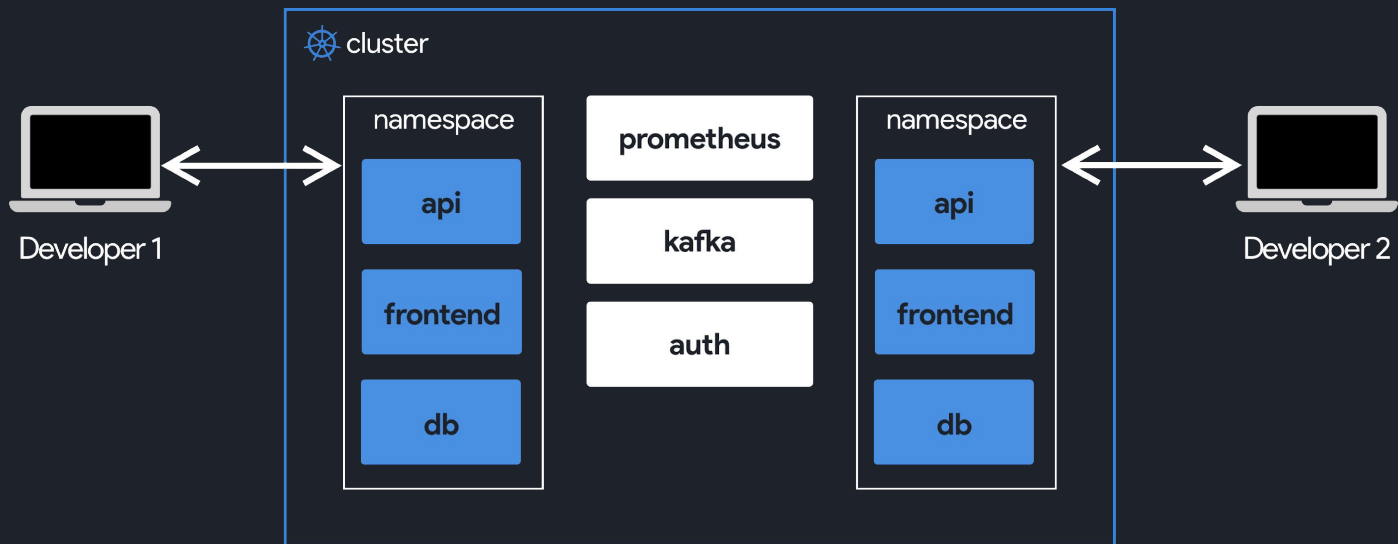


# Multi-Tenancy

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# Multi-Tenancy

- Each developer works on her own namespace
- Sandboxing using RBAC, network policies, OPA, quotas...
- Access to platform services



# Development Experience


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# Development Experience

- Skaffold
- Telepresence
- Online IDE
- Okteto

# github.com/GoogleContainerTools/skaffold







 GoogleContainerTools / skaffold

 Watch ▾ 204  Star 9.1k  Fork 846

 Code  Issues 317  Pull requests 16  Actions  Security  Insights

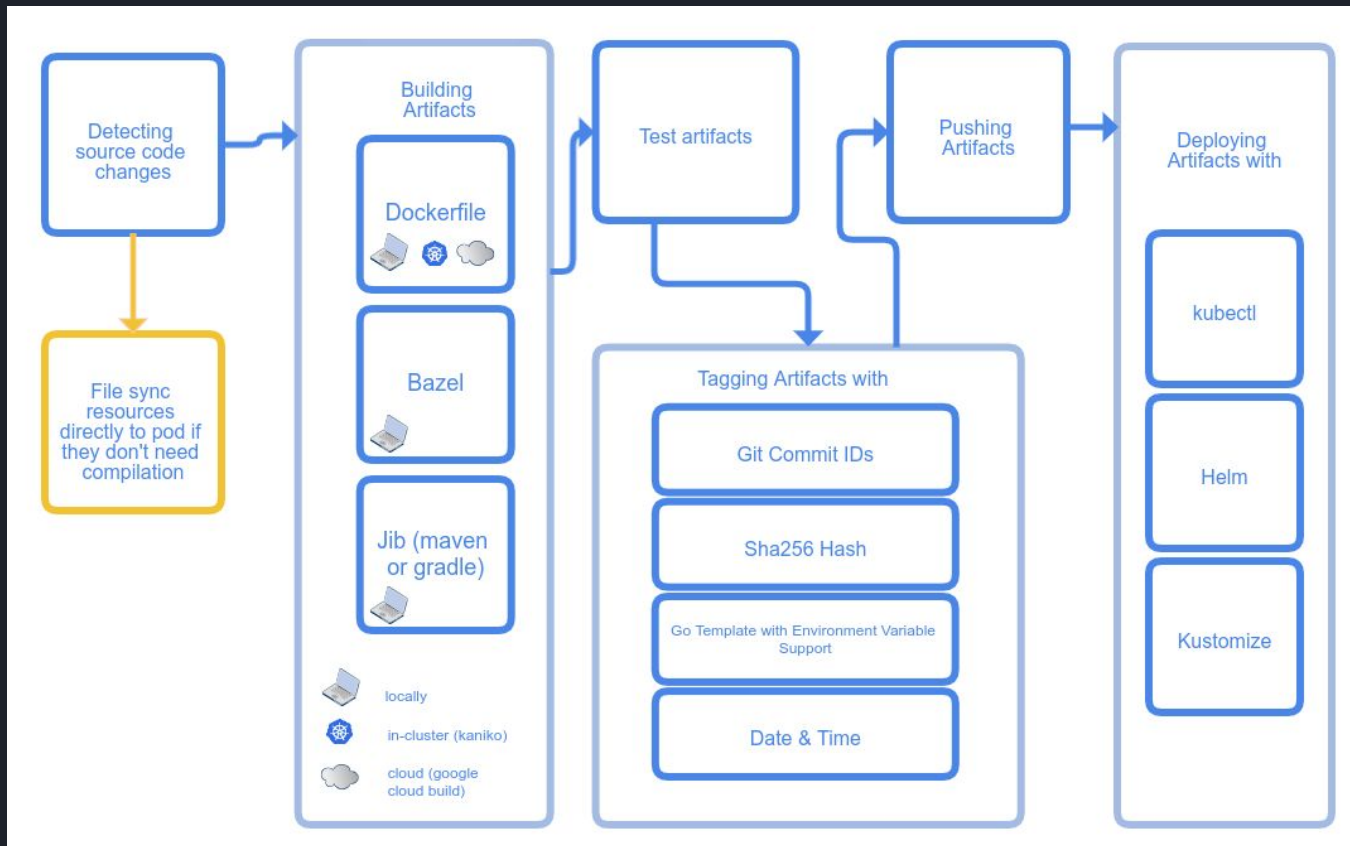
Easy and Repeatable Kubernetes Development <https://skaffold.dev/>

[kubernetes](#) [developer-tools](#) [docker](#) [containers](#) [go](#)

 5,788 commits  21 branches  0 packages  52 releases  173 contributors  Apache-2.0



# Scaffold



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# Skaffold Manifest

```
apiVersion: skaffold/v1beta14
kind: Config
build:
  artifacts:
    - image: irespaldiza/vote
  local:
    push: true
deploy:
  kubectl:
    manifests:
      - k8s.yaml
```

# github.com/telepresenceio/telepresence

telepresenceio / telepresence

Watch

53

Star

2.6k

Fork

172

Code

Issues 407

Pull requests 9

Actions

Projects 5

Wiki

Security

Insights

Local development against a remote Kubernetes or OpenShift cluster <https://www.telepresence.io>

kubernetes

local-development

docker

proxy

tunnel

vpn

minikube

2,869 commits

3 branches

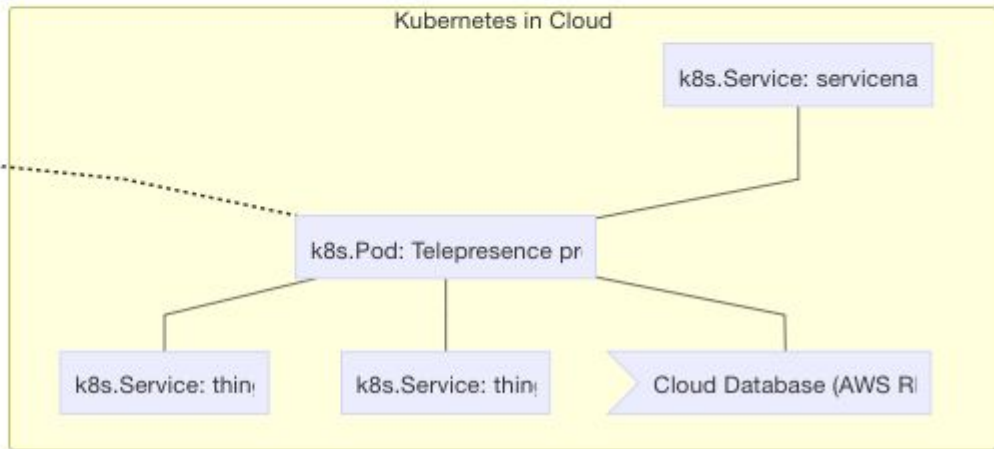
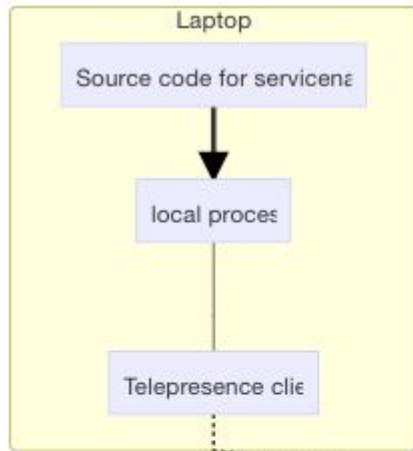
0 packages

104 releases

43 contributors

Apache-2.0

# Telepresence



# github.com/okteto/okteto

okteto / okteto

Watch ▾

27

★ Unstar

806

🍴 Fork

61

<> Code

🔔 Issues 34

🔗 Pull requests 2

▶ Actions

📁 Projects 0

📖 Wiki

🛡 Security

📊 Insights

⚙ Settings

Build better applications by developing and testing your code directly in Kubernetes <https://okteto.com>

Edit

kubernetes

cloud-native-developers

docker

cloud-computing

minikube

gke

helm

developer-tools

development

programming

devops

cloud-native

microservices

[Manage topics](#)

📄 684 commits

🌿 13 branches

📦 0 packages

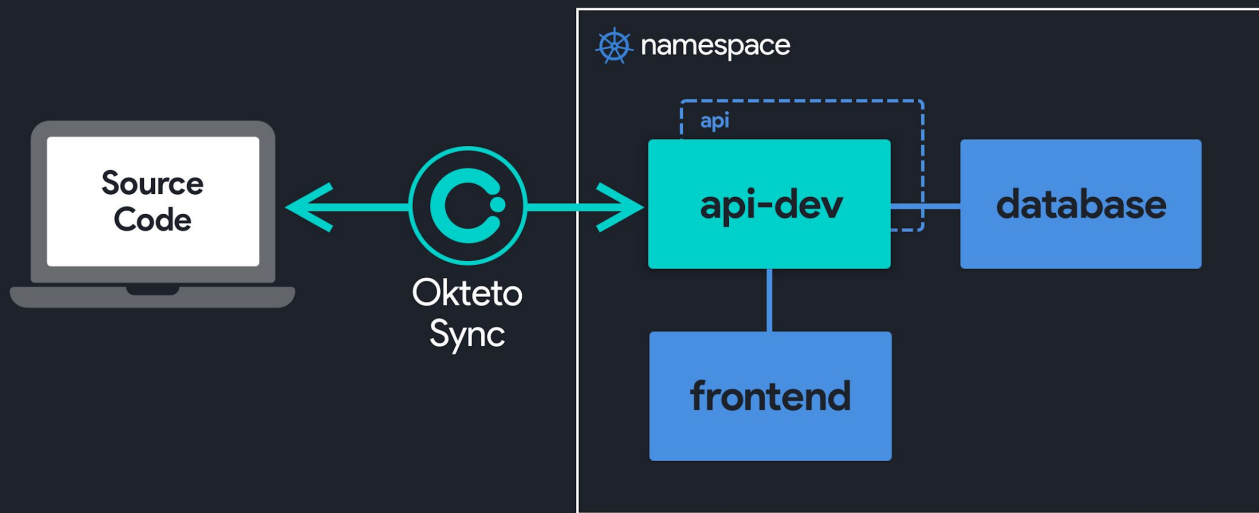
📦 71 releases

👤 9 contributors

📄 Apache-2.0

# Okteto

- Update pod with dev image: compiler, debugger, linters...
- Synchronize local changes to the remote pod



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# Okteto Manifest

```
name: frontend
image: node:10
workdir: /src
command: ["bash"]
forward:
  - 8080:80
```

# Demo time!

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# Skaffold & Okteto

## Materials

# Exercise

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# Exercise

Materials

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# Exercise

## Solutions

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# Okteto Design Principles

- Client-side only
- Works on Windows, Linux & Mac
- Decouple deployment from development: Helm, kubectl, CI, serverless...
- No need to deal with Docker and Kubernetes in the inner loop
- Local IDE
- Use your own tools

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## Conclusions



Docker



Kubernetes



Okteto

# Conclusions



**DEV**

**OPS**

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# Conclusions

- Kubernetes has great potential as a development platform
- Each developer is sandboxed at the namespace level
- Fast Inner loop is a must
- Docker and Kubernetes must be optional in the inner loop
- Reduce local setup
- Decouple deployment from development



# Muchas Gracias!

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