



OPEN SOURCE AT ZALANDO

OSB OPEN SOURCE DAY

2019-11-07

HENNING JACOBS
[@try_except_](https://twitter.com/try_except_)



ZALANDO AT A GLANCE

~ **5.4** billion EUR

revenue 2018

~ **14,000**

employees in
Europe

> **80%**

of visits via
mobile devices

> **300**
million

visits
per
month

> **28**

million
active customers

> **400,000**

product choices

> **2,000**

brands

17

countries



USING OPEN SOURCE

2008-2010:
BASED
ON MAGENTO
COMMUNITY EDITION



SOMMERLAUNE BEI ZALANDO

EXKLUSIVES SHOPPINGERLEBNIS

Die neuesten Trends jetzt bei Zalando entdecken



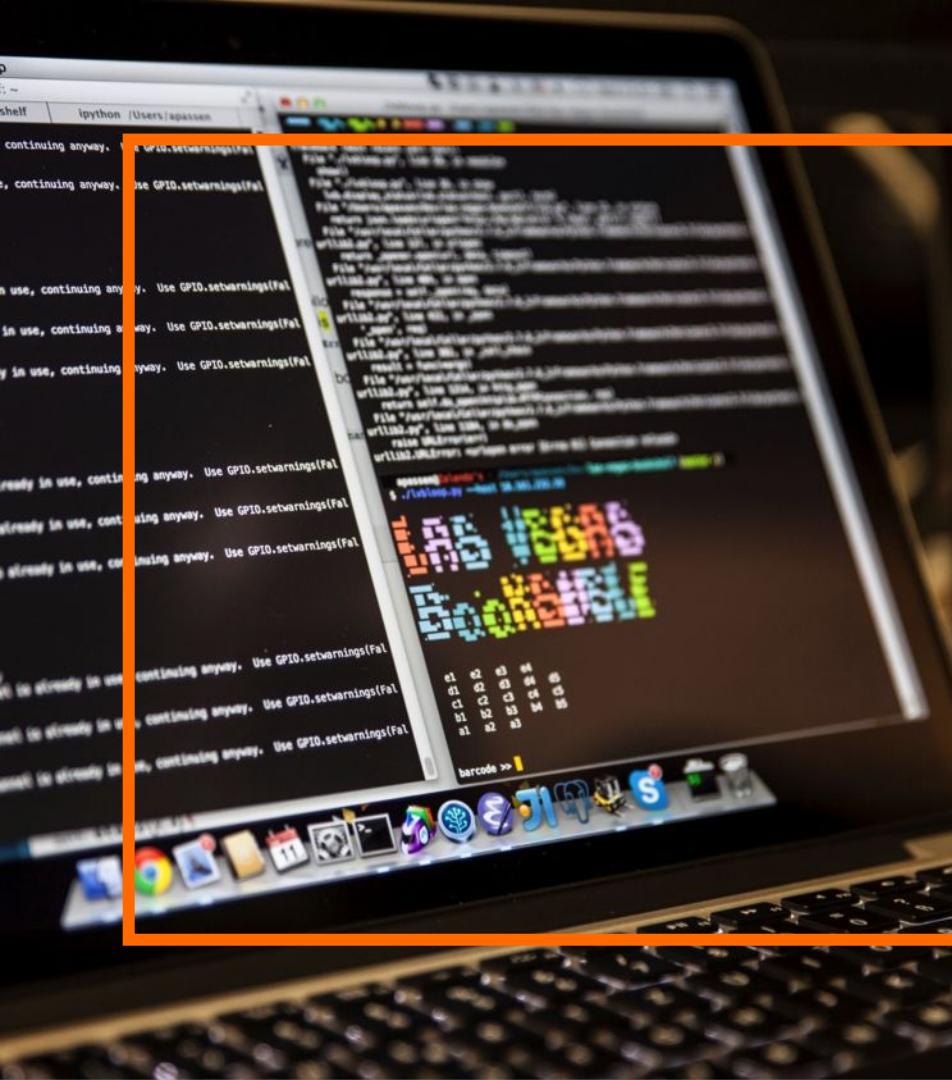
A large advertisement banner for Zalando featuring a woman's legs and feet wearing various summer shoes like sandals and sneakers. The text "SOMMERLAUNE BEI ZALANDO" and "EXKLUSIVES SHOPPINGERLEBNIS" is displayed, along with a subtitle encouraging users to discover the latest trends.



DAMEN



HERREN

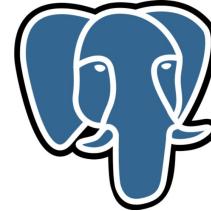


HOME-BREWED SOFTWARE

- >1100 developers
- >200 development teams
- >2000 applications

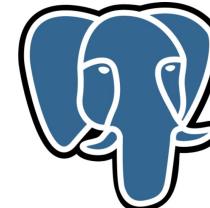
SINCE 2010

- Java (OpenJDK)
- Apache Tomcat
- PostgreSQL
- Python



OSS WE BUILD ON

- Java (OpenJDK)
- Apache Tomcat
- PostgreSQL
- Python
- JS, Scala, Go, ..
- Kubernetes



Most open source code can be used in Zalando projects, but everyone has a responsibility to ensure that we respect and comply with the licenses, and that we only adopt mature projects

Zalando Tech Radar — 2019.09

Frameworks

ADOPT	ASSESS
1. Akka (Scala)	16. Aurelia
2. Node.js	17. Ember.js
3. Play (Scala)	18. gRPC
4. ReactJS	19. Http4s
5. RxJava (Android)	20. JOOQ
6. scikit-learn	21. Redux
7. Spring	22. Vert.x
	23. Vue.js

TRIAL

HOLD
8. Akka-Http
9. Angular
10. AspectJ
11. Camel
12. Camunda
13. OpenNLP
14. TensorFlow
15. Thymeleaf

Infrastructure

ADOPT	ASSESS
68. Docker	77. AWS Lambda

HOLD
78. STUPS

TRIAL

75. Failsafe
76. Undertow



ZALANDO TECH RADAR

Kotlin

ASSESS

edit this page

Kotlin is a pragmatic, multi-paradigm, multi-platform, modern, safe, interoperable and toolable programming language by JetBrains. Its primary focus is and has been the JVM ecosystem.

Nonetheless, it supports compilation to [JavaScript](#) and native code via LLVM. More than just compilation, Kotlin makes sure to integrate very well with the respective ecosystem, be it package managers or build tools. Plus, for each additional feature the designers deeply think about its implications with respect to toolability, compilation performance, learning costs and multi-platform suitability. All of this is a reflection of Kotlin's philosophy: Pragmatism and interoperability over fancy but costly language features.

Kotlin was developed mostly in the open with constant feedback from the community. A handful of companies were using the language in production even before the 1.0 release. Nowadays, many companies use Kotlin in critical applications. Notable examples include: Android, Gradle, Netflix, Pinterest, Atlassian, Coursera, Evernote, Trello and Uber.

Notable language features:

1. Nullable types — with compiler checking on dereferencing
2. Smart casts — type narrowing based on control flow
3. Extension methods — define methods on any type
 1. extend APIs with discoverable methods
4. Data classes — create POJOs easily with auto-generated equals, hashCode and toString methods
5. Properties — auto-generated properties for class fields
6. Functional programming — supports closures, (explicit) tail recursion and higher order functions

POSTGRESQL AT ZALANDO

> 300

In on-premise data centers

> 700

Databases on AWS/Kubernetes



CLOUD NATIVE

Cloud native technologies empower organizations to build and run scalable applications in modern, dynamic environments such as public, private, and hybrid clouds.

Graduated



Kubernetes
Orchestration



Prometheus
Monitoring



Envoy
Service Proxy



CoreDNS
Service Discovery



containerd
Container Runtime



Fluentd
Logging

108 Companies in the End User Community



Plus 14 non-public members

CONTRIBUTING UPSTREAM

- We encourage contributions upstream
- Don't share confidential information
- Code/non-code contributions: all sanctioned and encouraged as part of employment at Zalando
- Only sign whitelisted CLAs





CONTRIBUTING OPEN SOURCE

**THERE IS A CULTURAL UNDERSTANDING
AND APPRECIATION OF OPEN SOURCE WORK
AT ZALANDO.**

PROJECTS

There are currently 201 active Zalando projects written in 16 different languages, with 32039 stars and 927 active contributors.

Fashion-mnist

Python

A MNIST-like fashion product database.
Benchmark :point_right:

 4957  840  4957

Flair

Python

A very simple framework for state-of-the-art
Natural Language Processing (NLP)

 4823  360  4823

Patroni

Python

A template for PostgreSQL High Availability
with ZooKeeper, etcd, or Consul

 2302  226  2302

Connexion

Python

Swagger/OpenAPI First framework for
Python on top of Flask with automatic
endpoint validation & OAuth2 support

 2025  345  2025

Skipper

Go

An HTTP router and reverse proxy for
service composition, including use cases like
Kubernetes Ingress

 1635  145  1635

Zalenium

Java

A flexible and scalable container based
Selenium Grid with video recording, live
preview, basic auth & dashboard.

 1498  299  1498

PATRONI



High-availability for PostgreSQL.

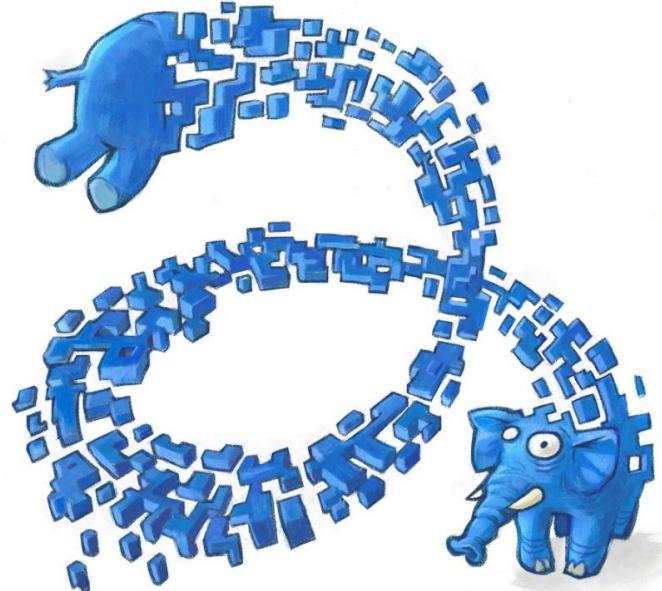
Widely used in production

Dec 5, 2018 · Gerardo Lopez-Fernandez

Introducing Patroni as the Postgres Failover Manager on GitLab.com

GitLab.com is introducing Patroni as the Postgres Failover Manager on GitLab.com.

POSTGRES OPERATOR



Application to manage
PostgreSQL clusters on
Kubernetes

>500

clusters running
on Kubernetes



Elasticsearch
2.500 vCPUs
1 TB RAM

Elasticsearch in Kubernetes

github.com/zalando-incubator/es-operator/

EXTERNAL DNS



Application to manage DNS records via Kubernetes objects

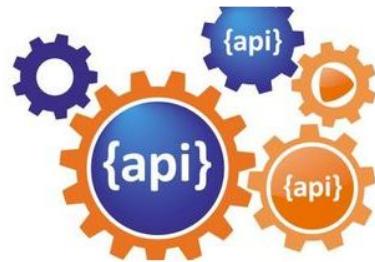
Part of Kubernetes organization.

184 contributors

API GUIDELINES

Zalando RESTful API and Event Scheme Guidelines

Zalando SE



Other formats: [PDF](#), [EPUB3](#)

The titles are marked with the corresponding labels: **Must**, **Should**, **May**:

Must: Follow API First Principle [100]

You must follow the [API First Principle](#), more specifically:

- You must define APIs first, before coding its implementation, [using OpenAPI as specification language](#)
- You must design your APIs consistently with this guidelines; use our [API Linter Service \[internal link\]](#) for automated rule checks.

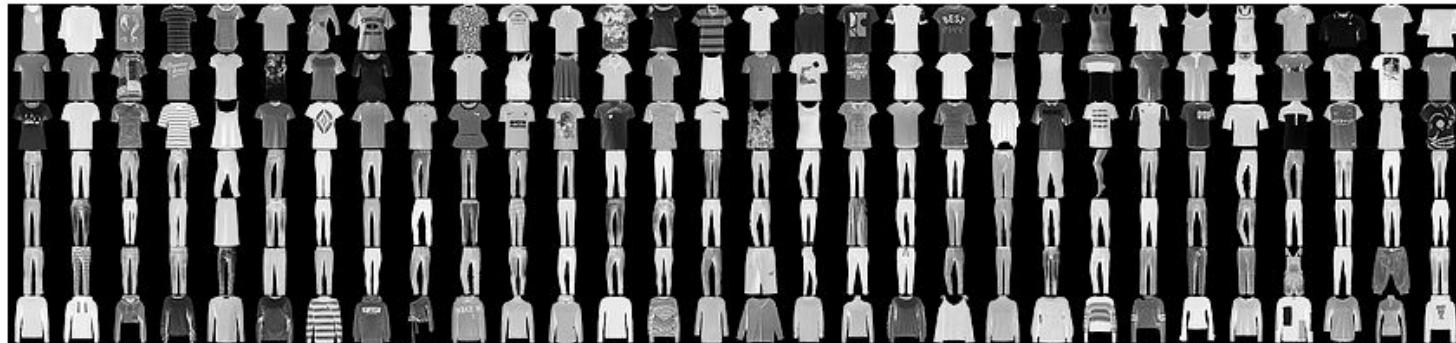
Fashion-MNIST

[Star 6.8k](#) [chat on gitter](#) [README 中文](#) [README 日本語](#) [License MIT](#) [Year in Review](#)

▶ Table of Contents

Fashion-MNIST is a dataset of [Zalando's](#) article images—consisting of a training set of 60,000 examples and a test set of 10,000 examples. Each example is a 28x28 grayscale image, associated with a label from 10 classes. We intend Fashion-MNIST to serve as a direct **drop-in replacement** for the original [MNIST dataset](#) for benchmarking machine learning algorithms. It shares the same image size and structure of training and testing splits.

Here's an example how the data looks (*each class takes three-rows*):



KUBERNETES CLUSTER CONFIGURATION

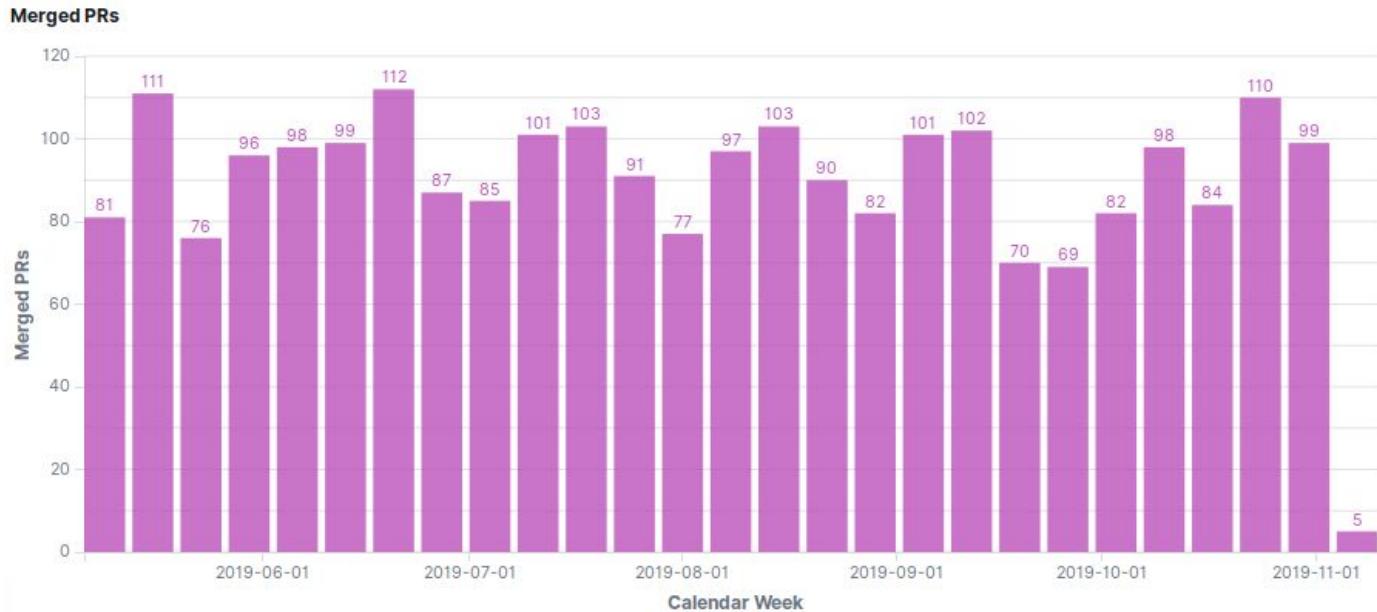


A screenshot of a GitHub repository page for 'zalando-incubator / kubernetes-on-aws'. The repository has 33 stars, 243 forks, and 60 issues. The 'manifests' folder is selected. A red bracket on the right side of the table groups the items into a single column.

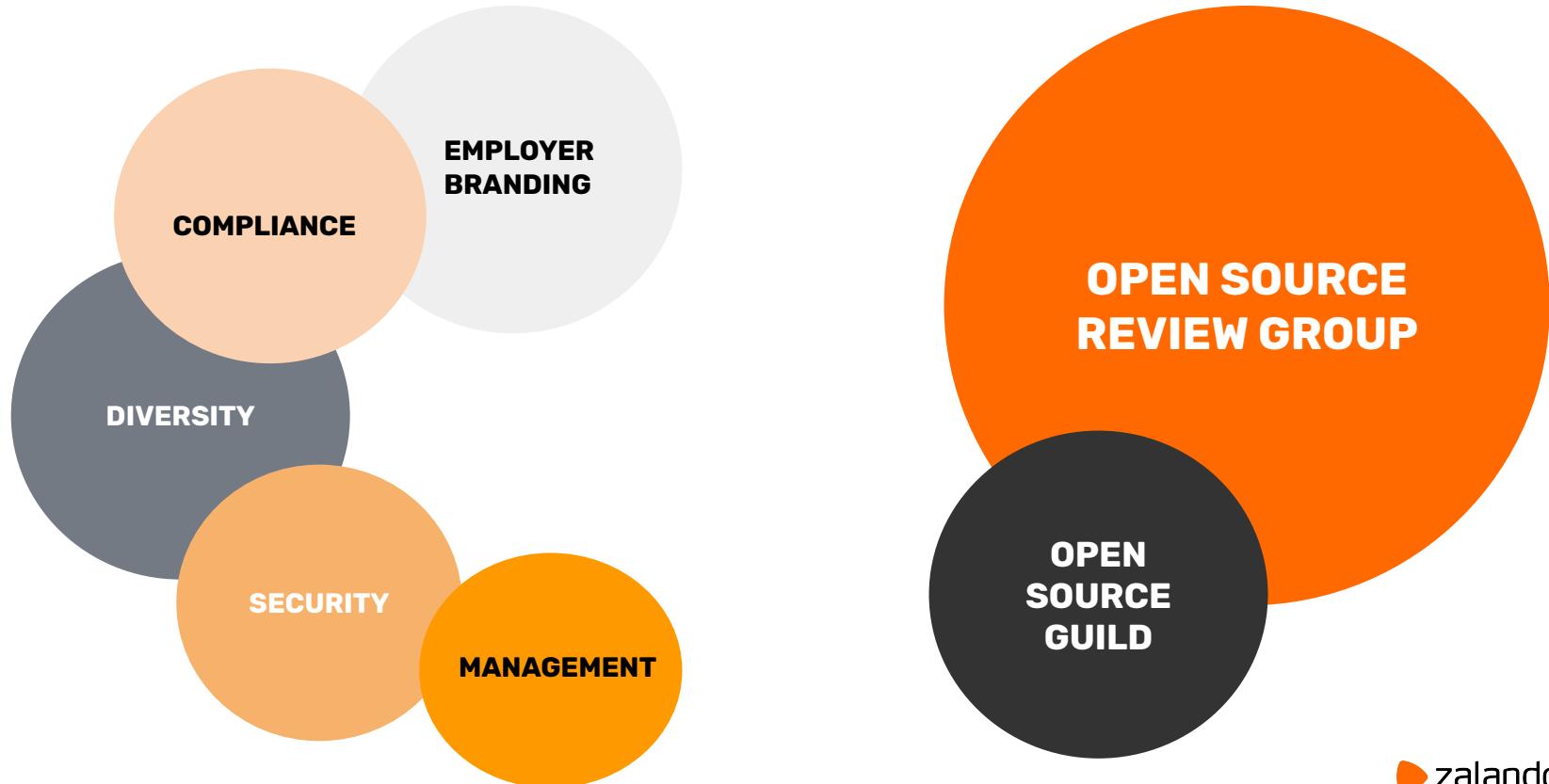
Component	Description	Last Commit
01-platform-controllers	PCS: validate application name	17 days ago
01-vertical-pod-autoscaler	Updated VPA to version 0.4.0 and associated objects	a month ago
01-widelity	ZMON: use a user-defined priority class	9 months ago
admission-control	Update admission-controller & proxy	4 days ago
audit-adaptor	Helmcheck will take result.conf from host	2 months ago
cadvisor	ndots for kube-system	2 months ago
cluster-fence-controller	Update CLC to master-4	2 months ago
coredns-local	Update CoreDNS to v1.4.0	2 months ago
cron	add cron namespace to all cluster, such that we can introduce best pr...	2 years ago
dashboard	ndots for kube-system	2 months ago
default-limits	Use the correct feature flag in default-limits	3 months ago
etcd-provisioner	ndots for kube-system	2 months ago
emergency-access-service	Update EAS	a month ago
etcd-backup	ndots for kube-system	2 months ago
external-dns	Updated the VPA to v1beta2	24 days ago
flannel	Update Flannel-watcher	a month ago
haproxy	Updated the VPA to v1beta2	24 days ago
infrastructure-secrets	Add secret with cluster-irf secrets to default ns	a year ago
ingress-controller	update to hotfix release and remove quiet flag	a day ago
ingress-template-controller	Put ingress-template-controller behind feature toggle to gradually de...	a month ago
kube-cluster-autoscaler	Add support for customizable AZs	16 days ago
kube-dns-metrics	ndots for kube-system	2 months ago
kube-downloader*	kube-downloader v0.12	a month ago
kube-janitor	kube-janitor v0.7	19 days ago
kube-job-cleaner	Add a feature toggle for disabling kube-job-cleaner	8 days ago
kube-metric-adapter	Update to master-31	7 days ago
kube-node-ready	Above updating kube-node-ready/kube-proxy	5 days ago
kube-proxy	Above updating kube-node-ready/kube-proxy	5 days ago
kube-state-metrics	ADD YPK to kube-state-metrics	7 days ago
kube-state-metrics-controller	remove debug logging to reduce logs and fix restart problem caused by...	2 days ago
kube-system	Report metrics with a 'static' blocker config	2 years ago
kubelet	ndots for kube-system	2 months ago
kubernetes-lifecycle-metrics	Updated the VPA to v1beta2	24 days ago
log-purger	Handle config format of EL bucket checks	23 days ago
metrics-server	Update metrics server to v0.3.2, use RBAC	22 days ago
node	Increase node driver installer log again	25 days ago
nodecontroller	ndots for kube-system	3 months ago
prometheus-node-exporter	Helmcheck will take result.conf from host	2 months ago
prometheus	Update to Prometheus v2.8.2	9 days ago
replica	disallow privilege escalation for restricted policy	5 months ago
roles	Sync all commits from main branch	5 months ago
skipper	add to the current buffer size which is less than 1Mi in total	23 days ago
storageclass	Update zones in 'standard' storage class	7 months ago
zmon-agent	Update zmon-agent	10 days ago
zmon-eve-agent	zmon-eve-agent: fix sources describe, pages calls	11 days ago
zmon-redis	ndots for kube-system	2 months ago
zmon-scheduler	ndots for kube-system	2 months ago
zmon-worker	Upgrade ZMON worker	16 days ago
deletion-yaml	Drop pod quotas in 'default' and 'kube-system'	5 days ago

47+ cluster components

PRS ACROSS ZALANDO OSS REPOS



OPEN SOURCE COMMUNITY AT ZALANDO



PURPOSE



Participate

We invest in and contribute to Open Source projects which are important to us. We encourage Zalando employees to get involved in Open Source.



Share

We share our code and processes with the rest of the world as we want technology to benefit as many people as possible.



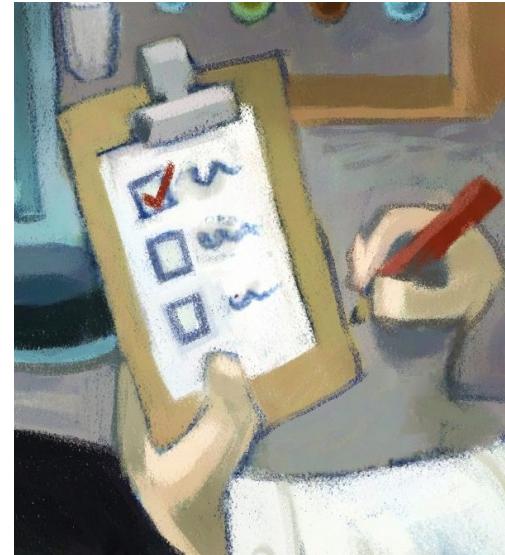
Promote

We enable and prioritize Open Source code in our engineering teams. We encourage an open culture as we see the practices of the Open Source movement as the best way to collaborate.

opensource.zalando.com

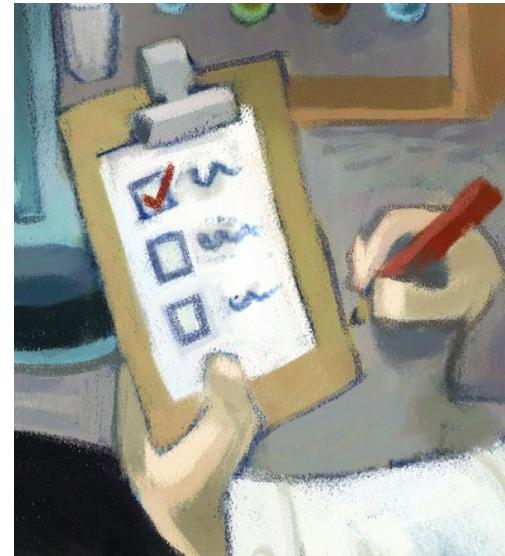
RELEASING OPEN SOURCE

- Get sign-off by lead
- Be compliant
- Prepare your repository
- Get reviewed



BEING COMPLIANT

- MIT license
- Required files
- GitHub.com workflow
- Copyright and ownership



GOOD PRACTICES

- Code of Conduct
- Clear expectations
- Documentation
- "good first issue"
- Promote!



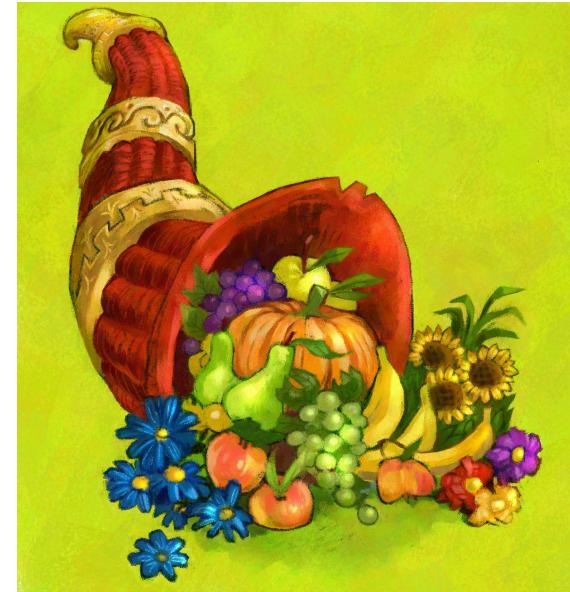
WE WANT OUR OSS PROJECTS TO BE

- High-quality
- Well documented
- Secure and compliant
- Actively maintained
- Beloved
- Used by the broader community



WHY RELEASE OPEN SOURCE?

- Collaboration
- Higher quality
- Sustainability
- Intrinsic motivation
- Employer Branding



“Empowerment of individuals is a key part of what makes open source work, since in the end, innovations tend to come from small groups, not from large, structured efforts”

Tim O'Reilly

OPEN SOURCE & MORE

Open Source at Zalando
opensource.zalando.com

More Zalando Tech Talks
github.com/zalando/public-presentations





QUESTIONS?

HENNING JACOBS
SENIOR PRINCIPAL

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[@try_except](https://github.com/try_except)

Illustrations by [@01k](https://www.instagram.com/01k)

