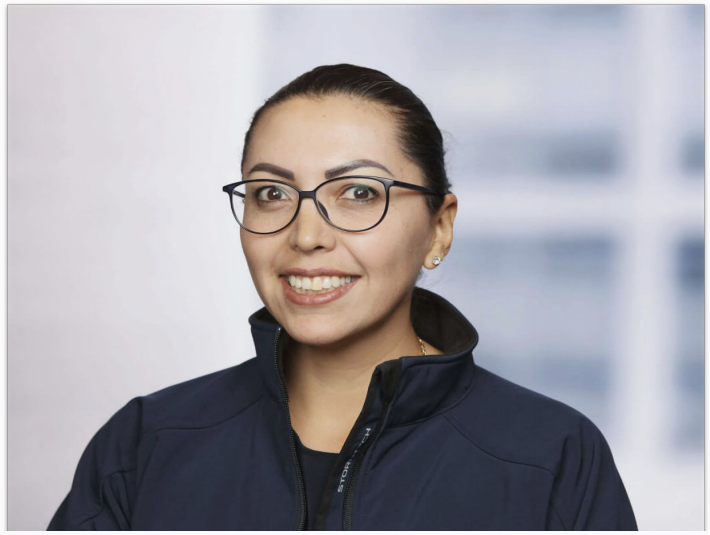
Strong Foundations

Insightful Learning
VS
Trial-and-Error
in CI/CD

SPEAKER INTRO

Ixchel Ruiz



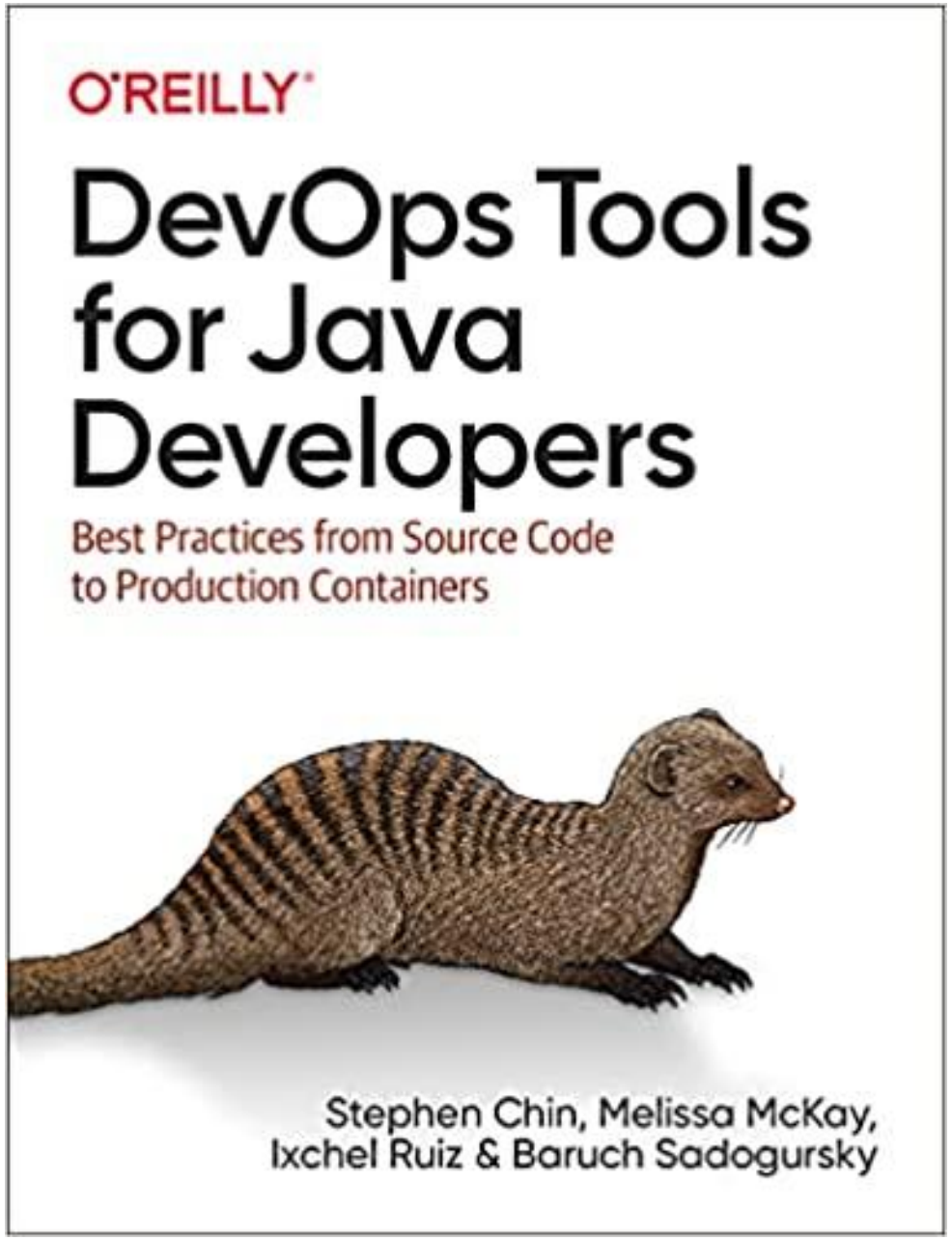
- Developer Advocate, JFrog

Melissa McKay

- Developer Advocate, JFrog
- Developer!
- Co-Chair of CDF Interoperability SIG
- Likes to play Pokemon Go

DEVOPS TOPICS

- DevOps Methodology
- Source Control
- Containers
- Microservices
- Continuous Integration
- Package Management
- Securing Your Binaries
- Deployment



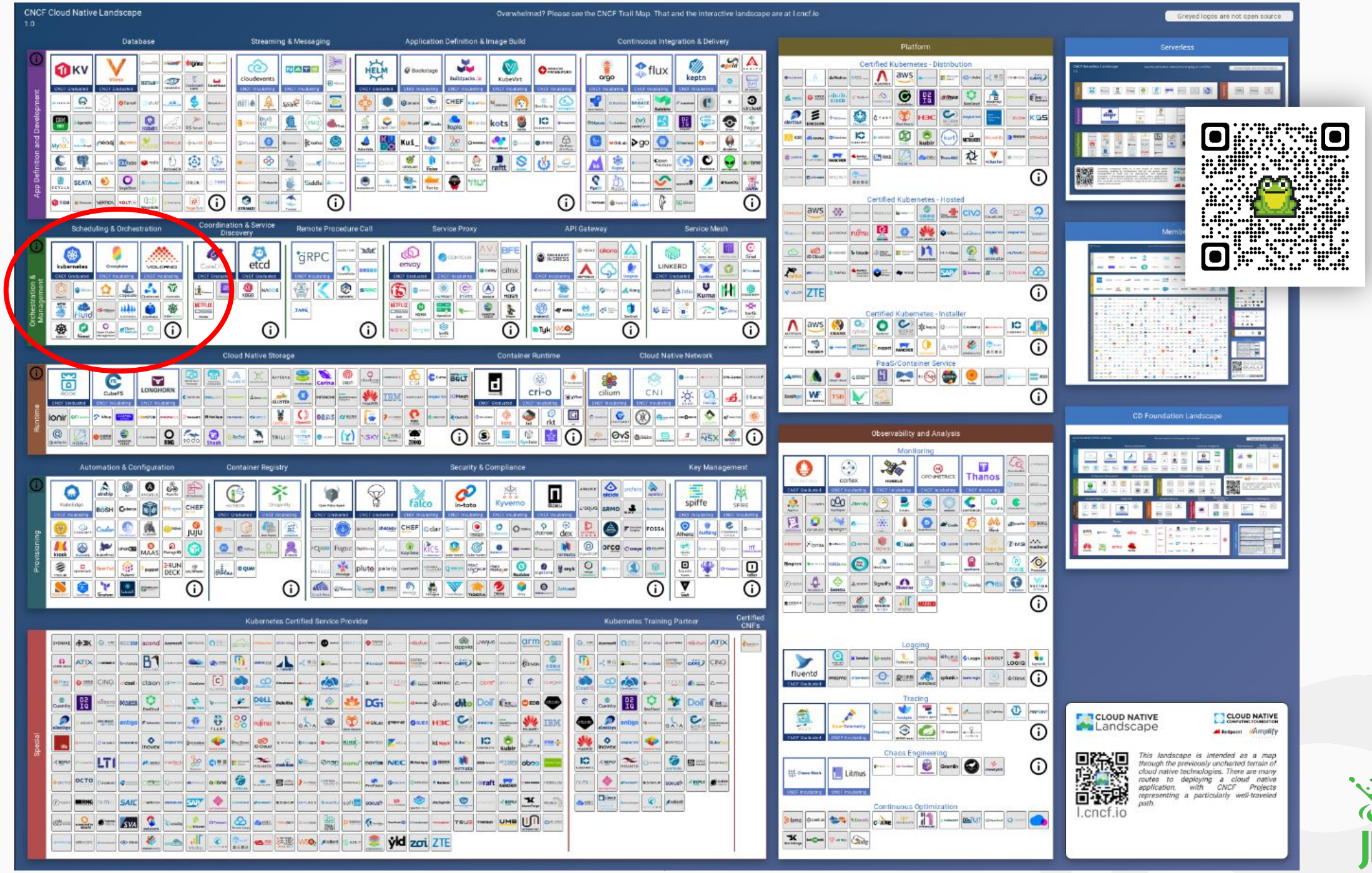
AGENDA

- The Initial Build of Your CI/CD Pipeline
- Developer vs DevOps
- Why DevOps?
- How To Measure Success
- Best Practices
- Why Not DevOps?
- Resources: Tried and True!

THE INITIAL BUILD OF YOUR CI/CD PIPELINE

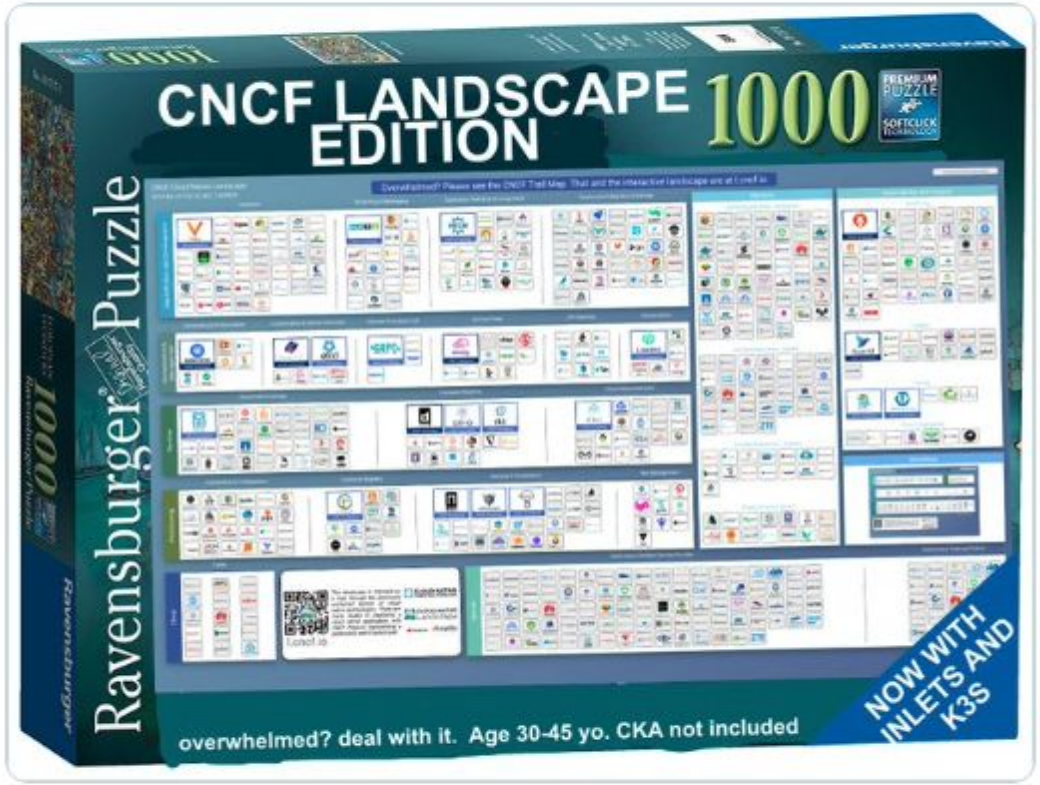
DEVOPS & CI/CD TOPICS

- Dev Resources
- Code
- Source Control
- Build Server
- Security Scanning
- Artifact Management
- Cloud Resources
- Deployment Infrastructure
- Automation
- Observability Tools


CNCF Cloud Native Landscape
1.0
Overwhelmed? Please see the CNCF Trail Map. That and the interactive landscape are at l.cncf.io
Greyed logos are not open source
Database
Streaming & Messaging
Application Definition & Image Build
Continuous Integration & Delivery
App Definition and Development
Scheduling & Orchestration
Coordination & Service Discovery
Remote Procedure Call
Service Proxy
API Gateway
Service Mesh
Orchestration & Management
Cloud Native Storage
Container Runtime
Cloud Native Network
Runtime
Automation & Configuration
Container Registry
Security & Compliance
Key Management
Provisioning
Kubernetes Certified Service Provider
Kubernetes Training Partner
Certified CNFs
Special
Platform
Certified Kubernetes - Distribution
Certified Kubernetes - Hosted
Certified Kubernetes - Installer
PaaS/Container Service
Observability and Analysis
Monitoring
Logging
Tracing
Chaos Engineering
Continuous Optimization
Serverless
CD Foundation Landscape
CLOUD NATIVE Landscape
CLOUD NATIVE COMPUTING FOUNDATION
This landscape is intended as a map through the previously uncharted terrain of cloud native technologies. There are many routes to deploying a cloud native application, with CNCF Projects representing a particularly well-traveled path.
l.cncf.io

memenetes
@memenetes

Kid: I want a really difficult puzzle for my birthday
Me:



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42 sales

CNCF Landscape Puzzle

$34.99 Out of stock

1 shop review ☆☆☆☆☆

★★★★★

The puzzle to end all puzzles.

Purchased item: CNCF Landscape Puzzle

tashy1019 Jan 4, 2021

Helpful?

CLOUD NATIVE COMPUTING FOUNDATION

CLOUD NATIVE TRAIL MAP

The Cloud Native Landscape https://github.com/cncf/landscape has a growing number of options. This Cloud Native Trail Map is a recommended process for leveraging open source, cloud native technologies. At each step, you can choose a vendor-supported offering or do it yourself, and everything after step #3 is optional based on your circumstances.

HELP ALONG THE WAY

A. Training and Certification

Consider training offerings from CNCF and then take the exam to become a Certified Kubernetes Administrator

https://www.cncf.io/training

B. Consulting Help

If you want assistance with Kubernetes and the surrounding ecosystem, consider leveraging a Kubernetes Certified Service Provider

http://cncf.io/kcsp

C. Join CNCF's End User Community

For companies that don't offer cloud native services externally

http://cncf.io/enduser

WHAT IS CLOUD NATIVE?

- **Operability:** Expose control of application/system lifecycle.
- **Observability:** Provide meaningful signals for observing state, health, and performance.
- **Elasticity:** Grow and shrink to fit in available resources and to meet fluctuating demand.
- **Resilience:** Fast automatic recovery from failures.
- **Agility:** Fast deployment, iteration, and reconfiguration.

www.cncf.io
info@cncf.io

v10

CORE LIFECYCLE PILLARS

Source Code Repository	Continuous Integration	Package Manager	Security Scanner	Continuous Delivery/ Deployment	Observability
Single Source of Truth	Build and test on every integration	Collect dependencies and publish artifacts	Scanning of dependencies and containers	Automated deployment	Observe and Measure

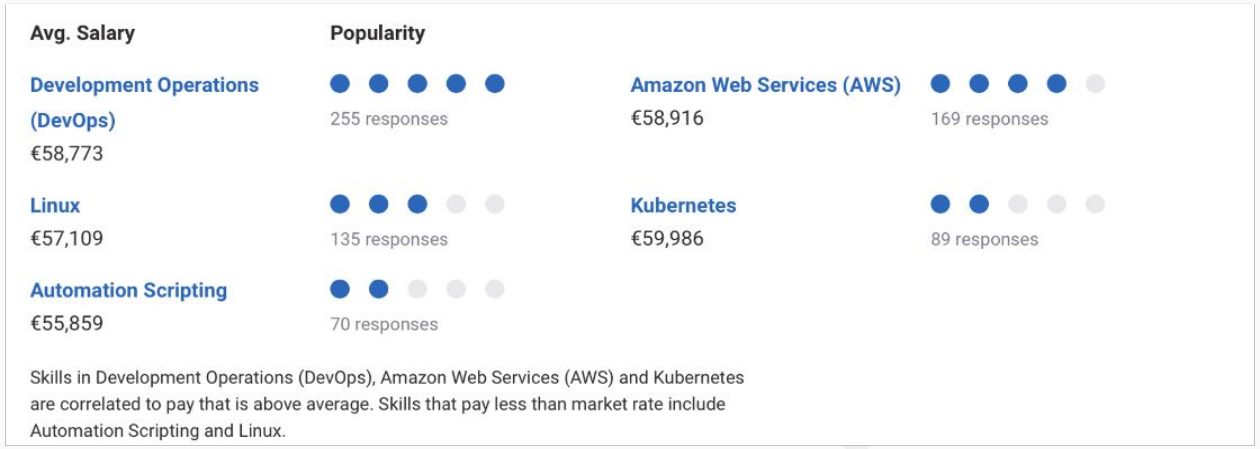
DEVELOPER
VS
DEVOPS

Why Should A Developer Care About DevOps

???

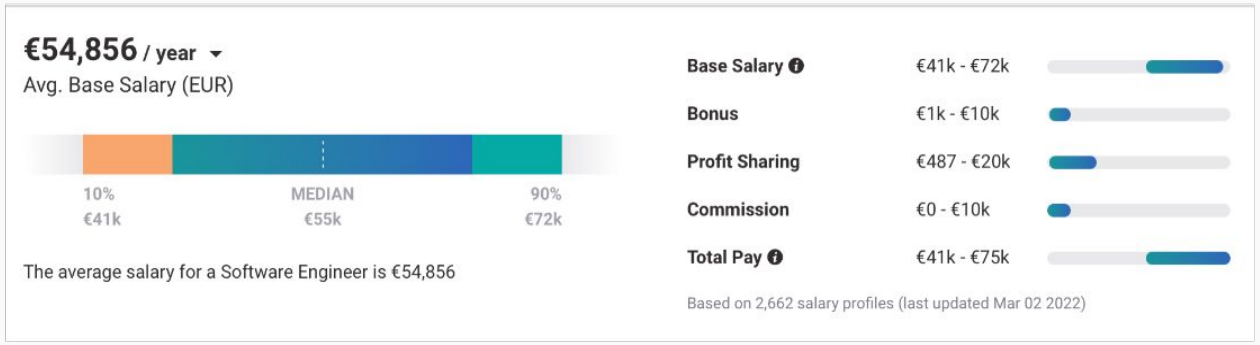
JOBS & SALARIES

~58K



Average Development Operations (DevOps) Engineer Salary Germany

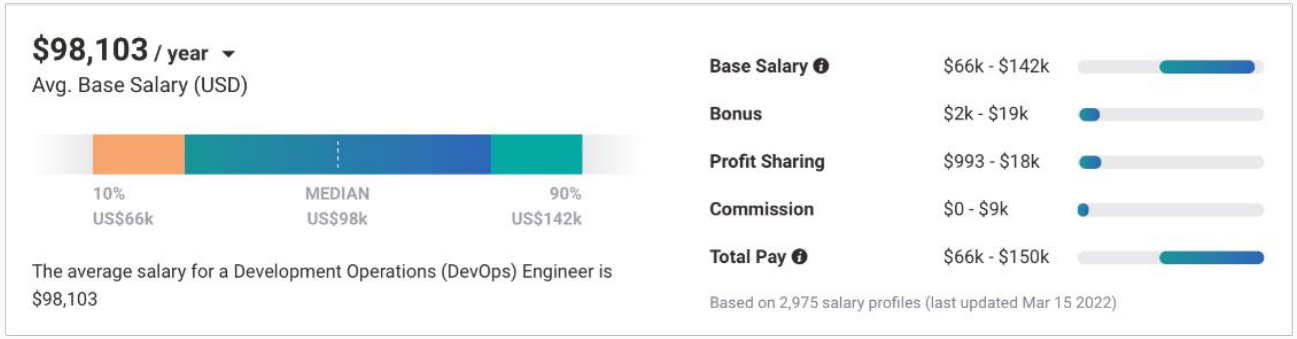
https://www.payscale.com/research/DE/Job=Development_Operations_(DevOps)_Engineer/Salary



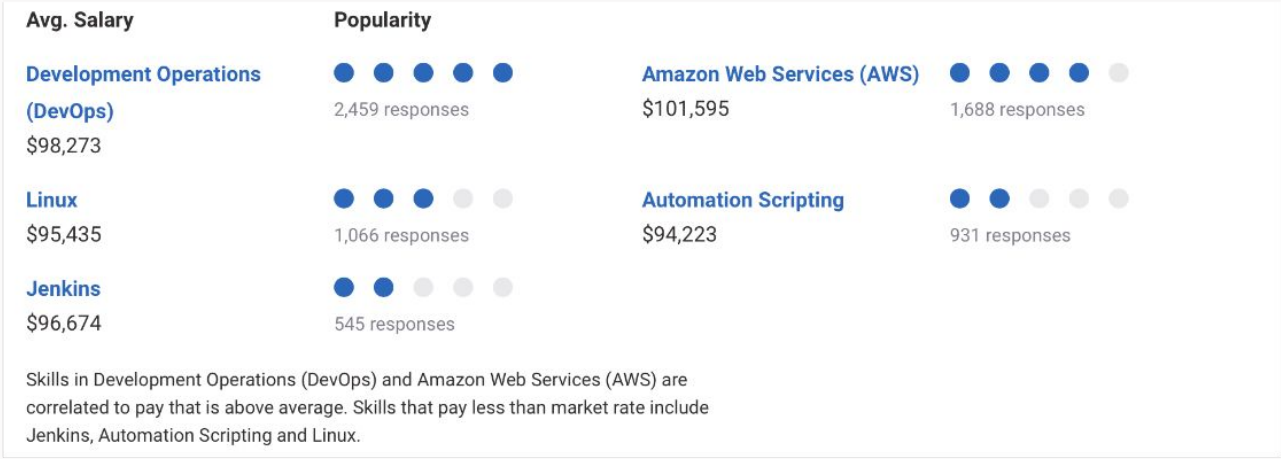
~54K

Average Software Engineer Salary
Germany

https://www.payscale.com/research/DE/Job=Software_Engineer/Salary



~98K



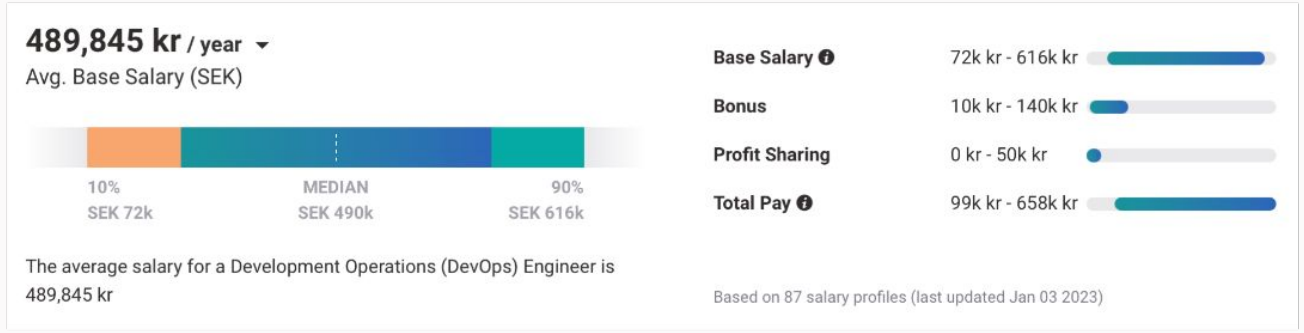
Average Development Operations (DevOps) Engineer Salary USA

https://www.payscale.com/research/US/Job=Development_Operations_(DevOps)_Engineer/Salary

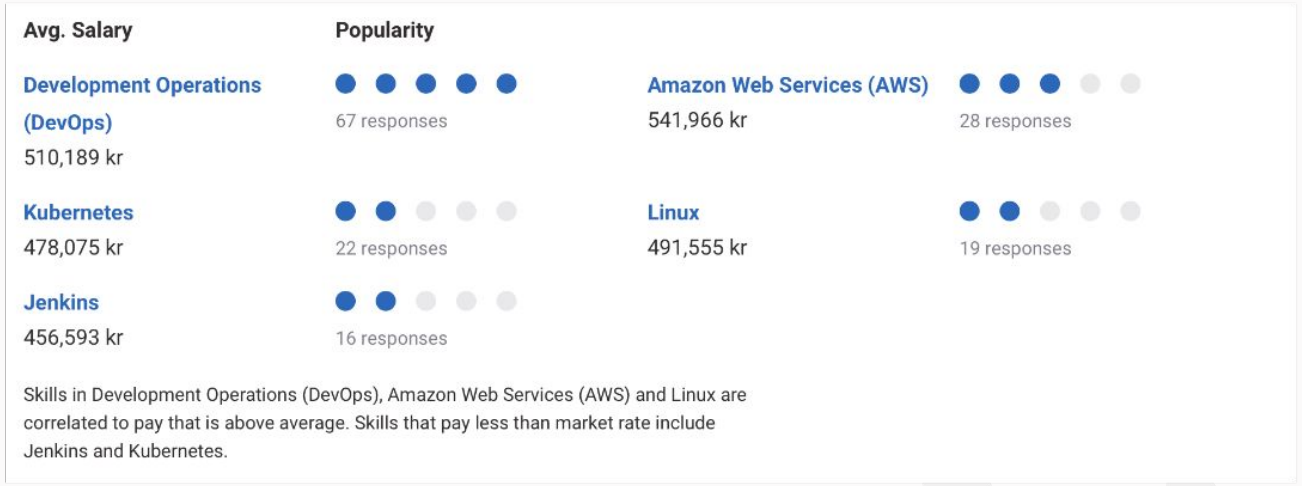
~88K

Average Software Engineer Salary
USA

https://www.payscale.com/research/US/Job=Software_Engineer/Salary

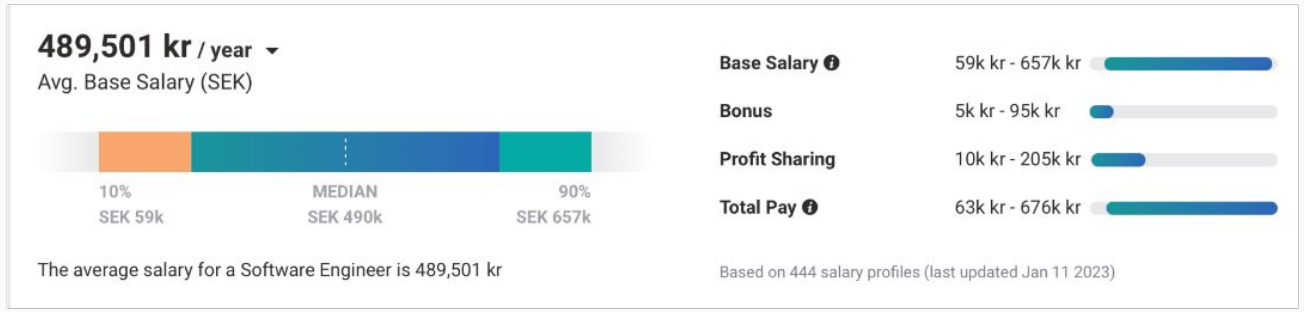


~490K



Average Development Operations (DevOps) Engineer Salary Sweden

https://www.payscale.com/research/SE/Job=Development_Operations_(DevOps)_Engineer/Salary



~490K

Average Software Engineer Salary

Sweden

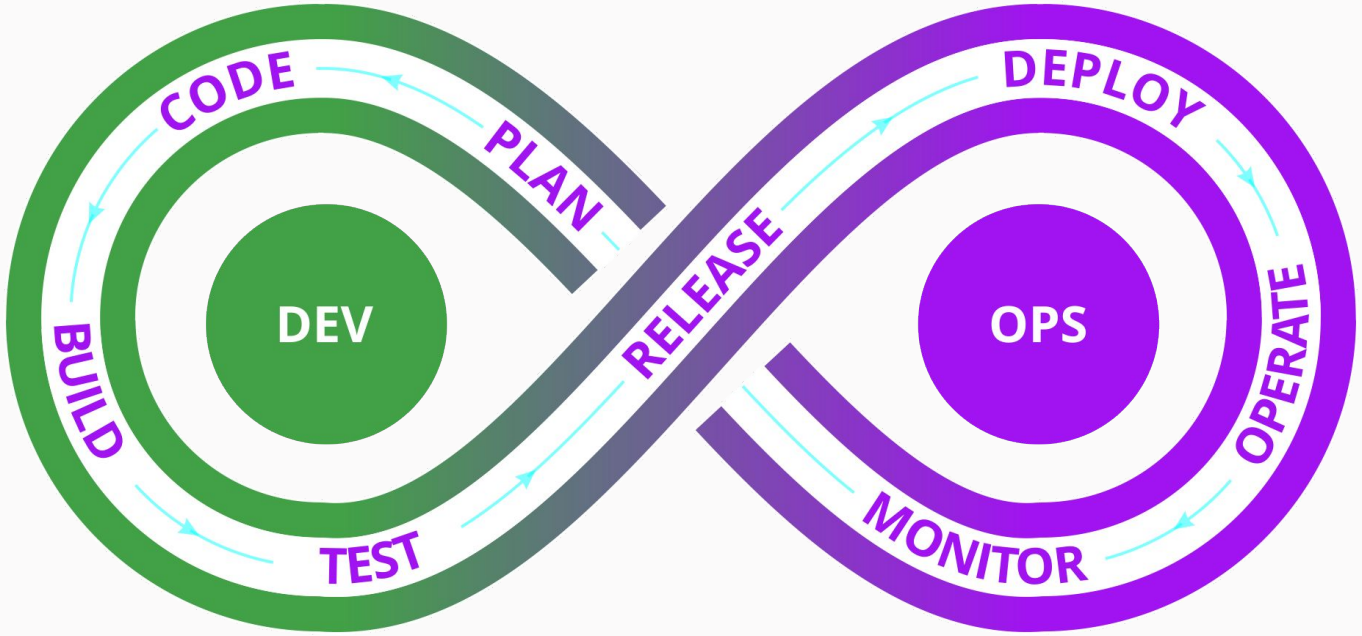
https://www.payscale.com/research/SE/Job=Software_Engineer/Salary

WHY
DEVOPS?

WHAT DO YOU REALLY CARE ABOUT?

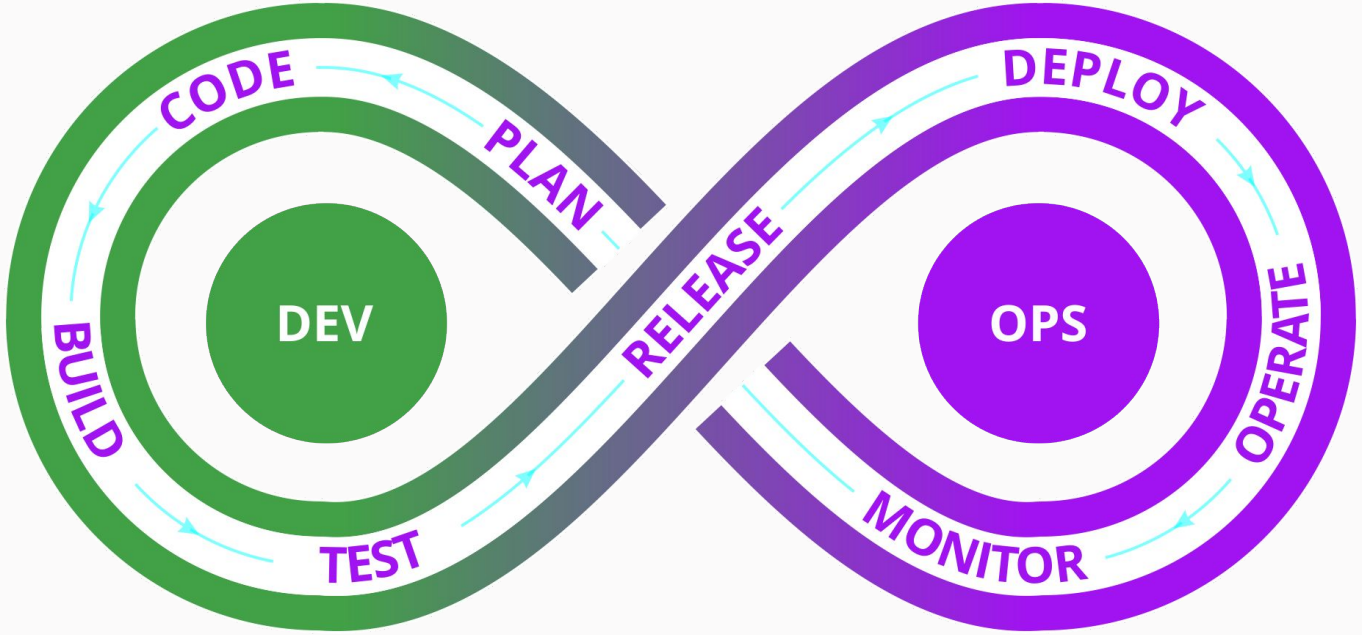
- Fast?
- Efficient?
- Reliable?
- Economical?

YOUR IT VALUE STREAM

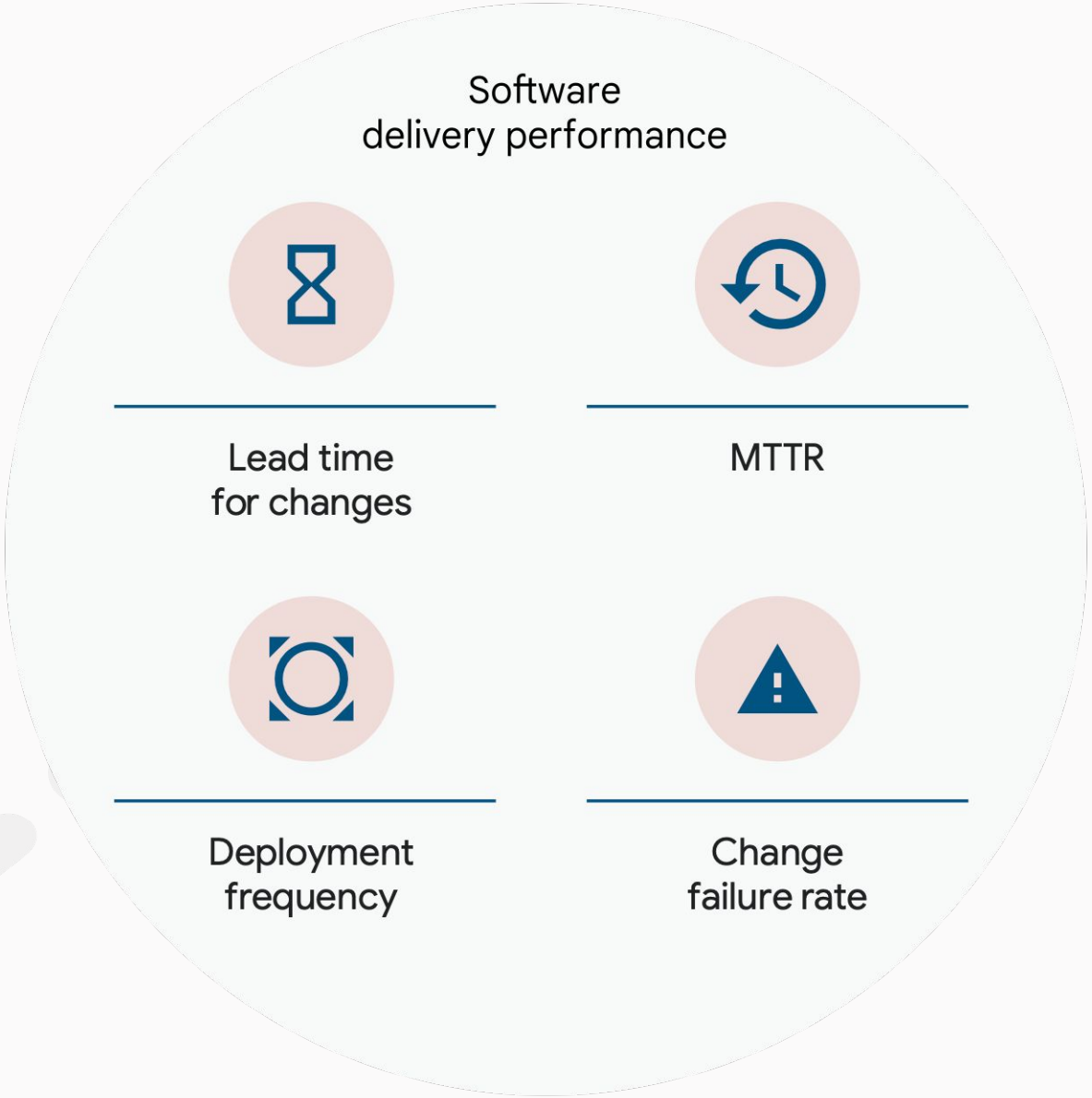


IMPROVE BY 1%

- Fast *Enough*?
- Efficient *Enough*?
- Reliable *Enough*?
- Economical *Enough*?



HOW TO MEASURE SUCCESS


Software
delivery performance
Lead time
for changes
MTTR
Deployment
frequency
Change
failure rate

- Lead time for *changes*
- Deployment *frequency*

Throughput

- *Time to restore* service
- Change failure *rate*

Stability

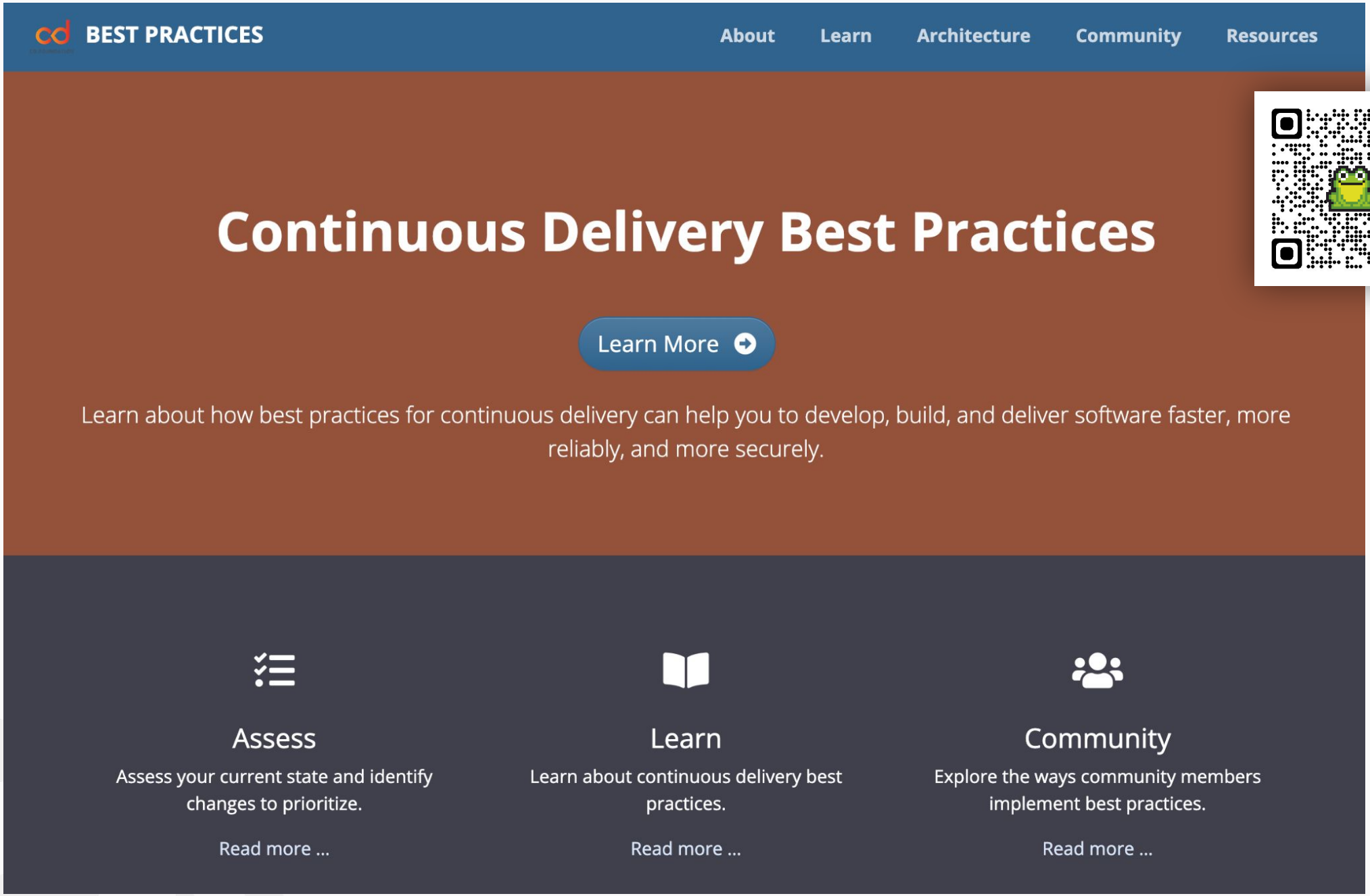
Software delivery performance **The Four Key Metrics**

- Lead time for *changes*
- Deployment *frequency*
- *Time to restore* service
- Change failure *rate*

Low	Mid	High
1/Mo - 1/6Mo	1/W - 1/Mo	On demand
1Mo - 6Mo	1W - 1Mo	1D - 1W
1W - 1Mo	1D - 1W	<1D
46% - 60%	16% - 30%	0% -15%

Software delivery performance The Four Key Metrics

BEST PRACTICES


BEST PRACTICES
About
Learn
Architecture
Community
Resources
Continuous Delivery Best Practices
Learn More
Learn about how best practices for continuous delivery can help you to develop, build, and deliver software faster, more reliably, and more securely.
Assess
Assess your current state and identify changes to prioritize.
Read more ...
Learn
Learn about continuous delivery best practices.
Read more ...
Community
Explore the ways community members implement best practices.
Read more ...

BEST PRACTICES (a few among many!)

- Understand the problem
- Address team culture
- Understand (and accept!) version control
- Implement Continuous Integration/Deployment/Testing
- Manage your Software Supply Chain
- Configuration Management (manage changes to both software and infrastructure)
- Reflect, Measure, Improve!

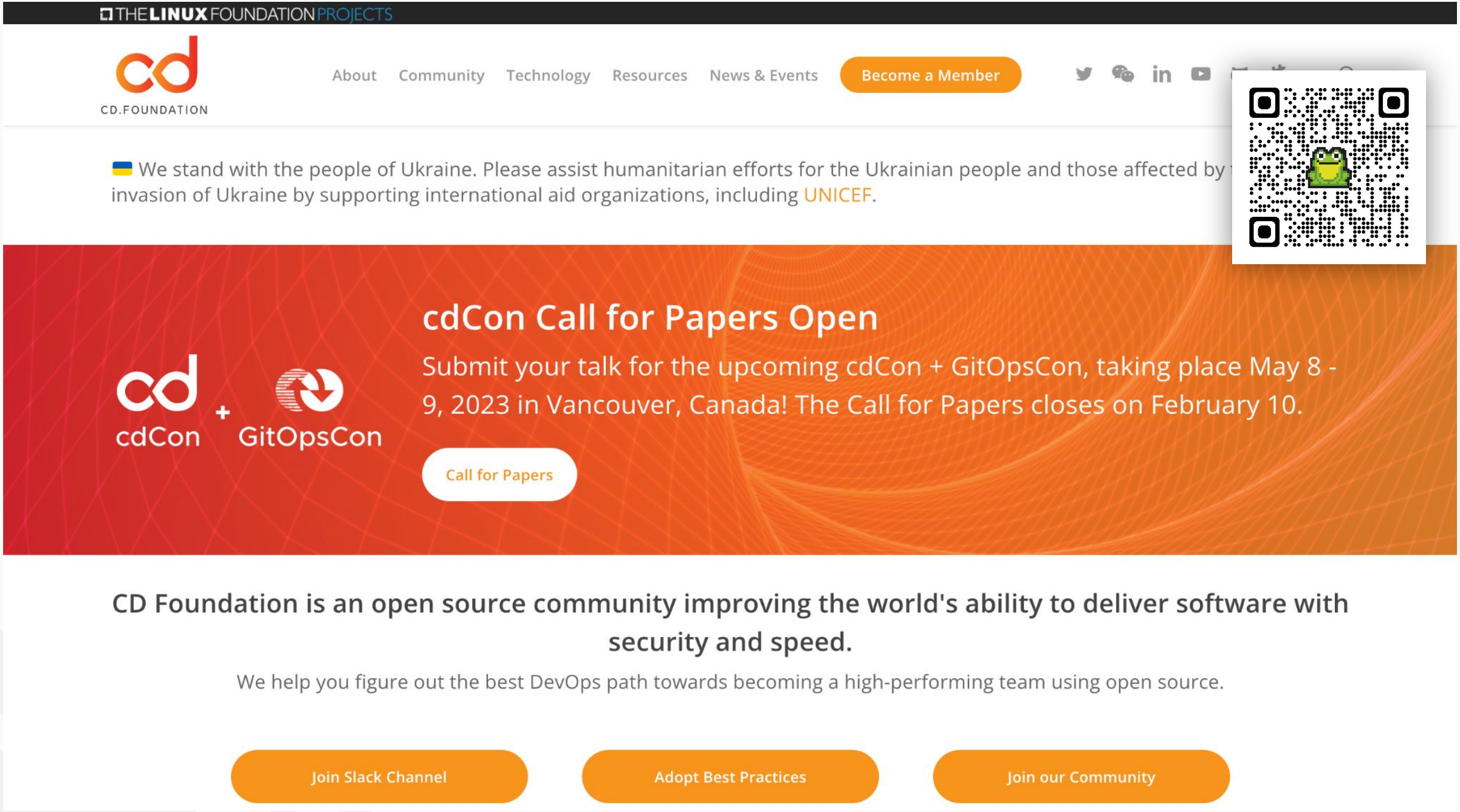
WHY
NOT
DEVOPS?

Blockers to DevOps evolution

- Organizational resistance to change
- Legacy architecture
- Shortage of skills
- Limited or lack of automation
- Unclear goals or objectives

Puppet State of DevOps Report 2021

RESOURCES
DEVOPS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Submit your talk for the upcoming cdCon + GitOpsCon, taking place May 8 - 9, 2023 in Vancouver, Canada! The Call for Papers closes on February 10.
Call for Papers
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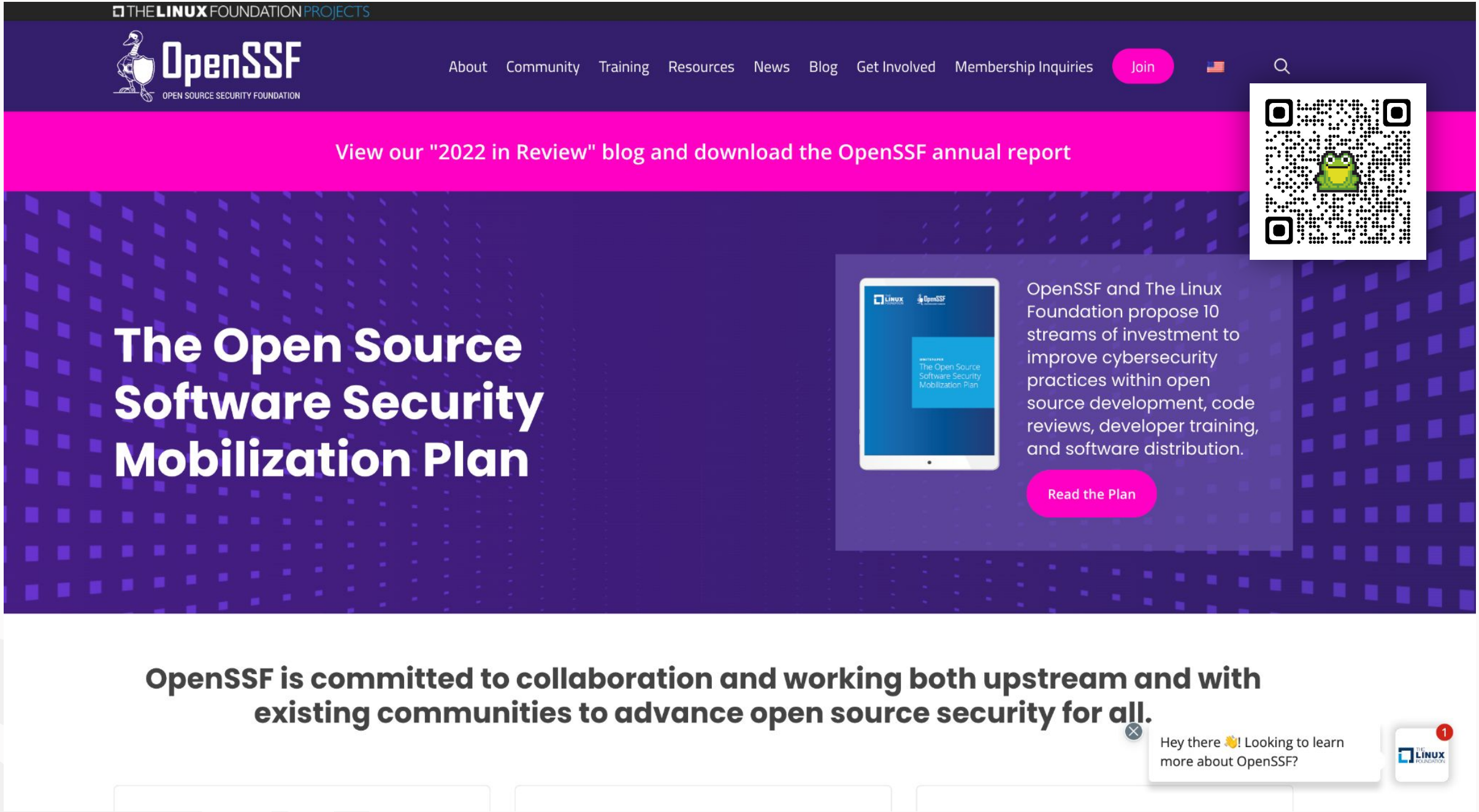
We help you figure out the best DevOps path towards becoming a high-performing team using open source.
Join Slack Channel
Adopt Best Practices
Join our Community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OpenSSF is committed to collaboration and working both upstream and with existing communities to advance open source security for all.
Hey there 👋! Looking to learn more about OpenSSF?
1

OpenSSF
OPEN SOURCE SECURITY FOUNDATION

About Community Training Resources News Blog Get Involved Membership Inquiries Join

OpenSSF is committed to collaboration and working both upstream and with existing communities to advance open source security for all.

Working Groups

Collaborate on the planning, design, and delivery of security tooling and best practices that secure critical open source projects.
Join

Town Halls

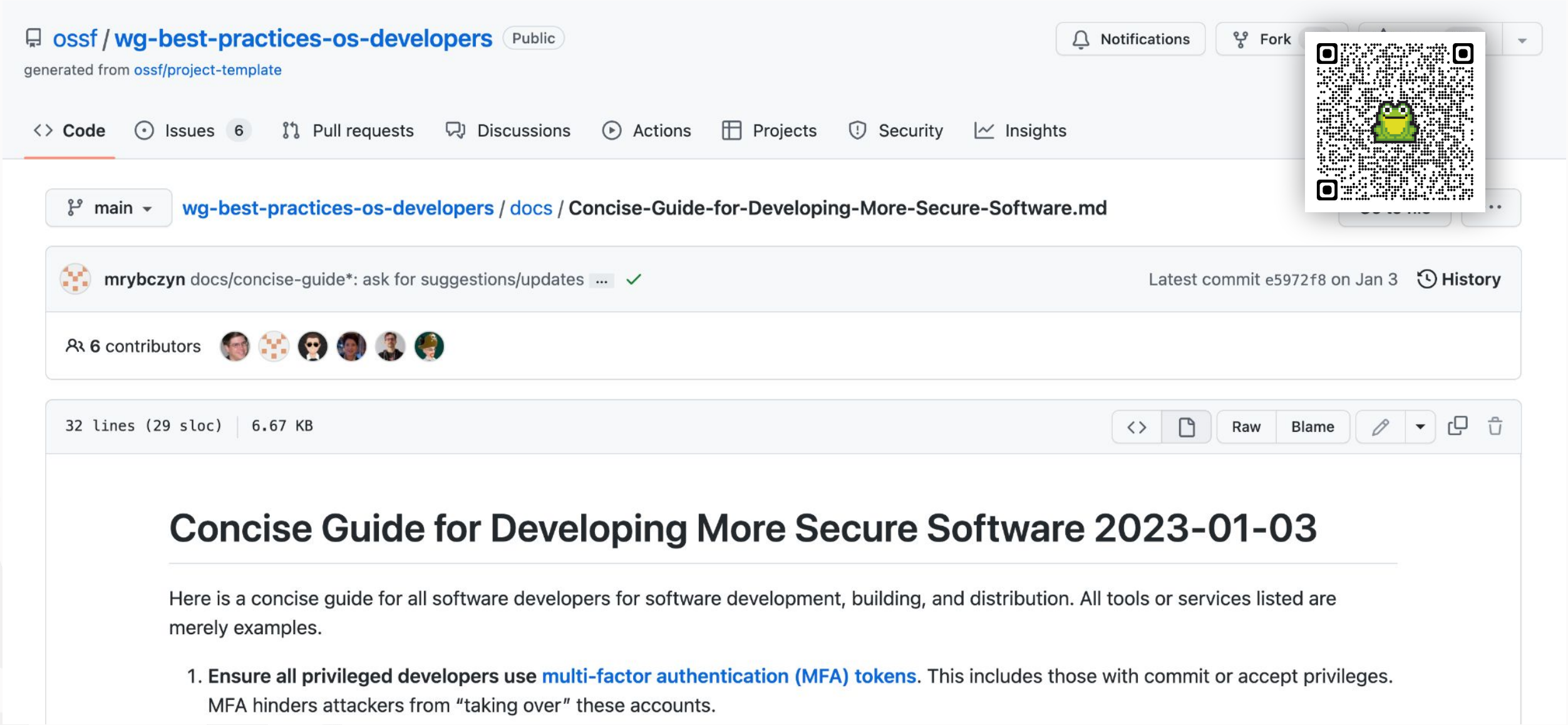
Stay informed about the latest happenings in open source security and engage with experts in our community,
Participate

Training

Take free courses on secure coding practices as part of our Software Development Fundamentals Professional Certificate.
Get Started

Now Hiring: Chief of Staff

We are seeking a Chief of Staff to help us execute on our purpose alongside our member organizations, working groups and community leaders.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Discussions
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Insights
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mrybczyn docs/concise-guide*: ask for suggestions/updates ...
Latest commit e5972f8 on Jan 3
History
6 contributors
32 lines (29 sloc)
6.67 KB
Raw
Blame
Concise Guide for Developing More Secure Software 2023-01-03
Here is a concise guide for all software developers for software development, building, and distribution. All tools or services listed are merely examples.
1. Ensure all privileged developers use multi-factor authentication (MFA) tokens. This includes those with commit or accept privileges. MFA hinders attackers from “taking over” these accounts.

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Code Issues 6 Pull requests Discussions Actions Projects Security Insights

main wg-best-practices-os-developers / docs / Concise-Guide-for-Evaluating-Open-Source-Software.md

mrybczyn docs/concise-guide*: ask for suggestions/updates ... ✓ Latest commit e5972f8 on Jan 3 History

3 contributors

51 lines (44 sloc) | 6.97 KB Raw Blame

Concise Guide for Evaluating Open Source Software 2023-01-03

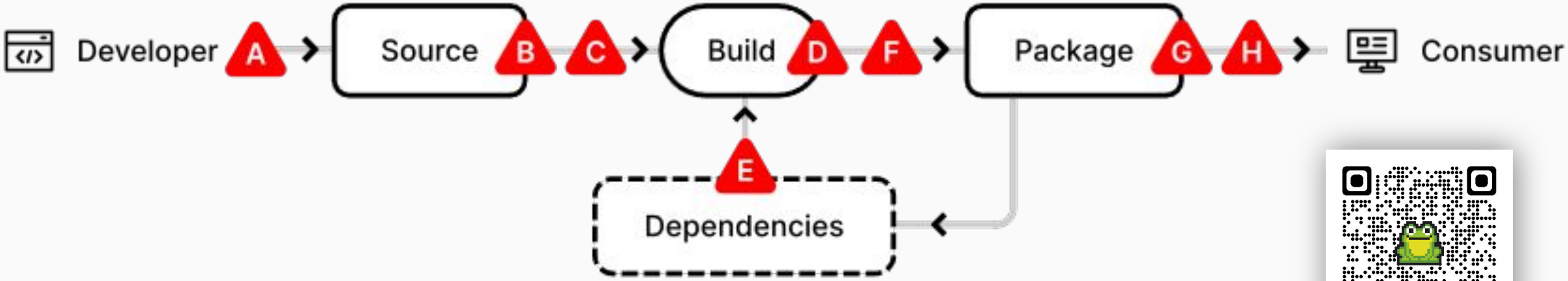
As a software developer, before using open source software (OSS) dependencies or tools, identify candidates and evaluate the leading ones against your needs. To evaluate a potential OSS dependency for security and sustainability, consider these questions (all tools or services listed are merely examples):

1. **Can you avoid adding it?** Can you use an existing (possibly indirect) dependency instead? Every new dependency increases the attack surface (a subversion of the new dependency, or its transitive dependencies, may subvert the system).

2. **Are you evaluating the intended version?** Ensure you are evaluating the intended version of the software, not a personal fork nor an attacker-controlled fork. These techniques help to counter the common “typosquatting” attack (where an attacker creates an “almost-

Supply-chain Levels for Software Artifacts

https://slsa.dev/



A Bypassed code review

B Compromised source control system

C Modified code after source control

D Compromised build platform

E Using a bad dependency

F Bypassed CI/CD

G Compromised package repo

H Using a bad package

THANK YOU!

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