Modern Software Pipelines

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Bernhard Cygan

Senior Solution Architect

Red Hat

BP can now provision a new environment in **7 minutes**, instead of **2-3 weeks**.

BP runs security scans on every build and container with Red Hat OpenShift running on Amazon Web Services

Challenge

Modernize a complex technology infrastructure to speed app development.

Solution

BP used Red Hat® OpenShift® to build a self-service platform that supports DevOps and provides a continuous integration/continuous delivery (CI/CD) pipeline.

Why Red Hat

BP wanted an open source solution with enterprise support and security.

Results

- Reduced provisioning time for faster speed to market
- Improved security with security scans on every build and container
- Increased agility with DevOps and self-service capabilities

Source: Red Hat success story. "BP modernizes infrastructure, introduces DevOps with self-service platform,".

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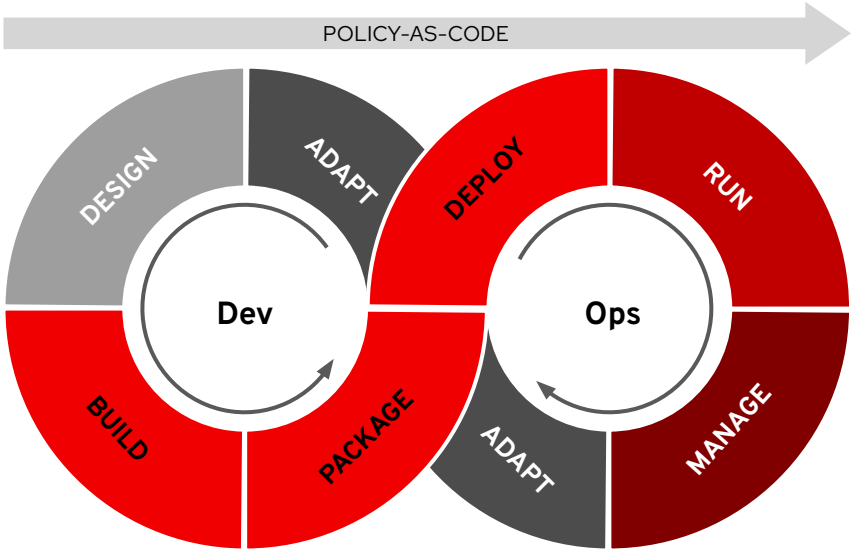
Security across the entire application lifecycle

- Image scanning
- Host scanning
- Serverless scanning
- Configuration scanning
- Compliance checks, auditing, reporting, remediation
- CI/CD integration and automation
- Artifact attestation



- Runtime threat detection
  - ✓ Process allowlisting
  - ✓ Anomaly detection
  - ✓ Policy-based detection
- Runtime vulnerability management
- Incident response
- Integrations
  - ✓ SIEM
  - ✓ Registries, CI/CD, runtimes, notification tools
- Feedback loop

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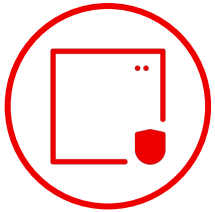
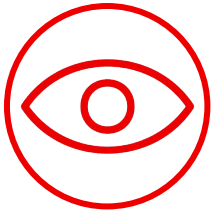
Secure the complete Software Delivery Lifecyle

Prevent & identify malicious **code**



Safeguard **build** systems early

Continuously **monitor** security at runtime



How does that look in real life ?

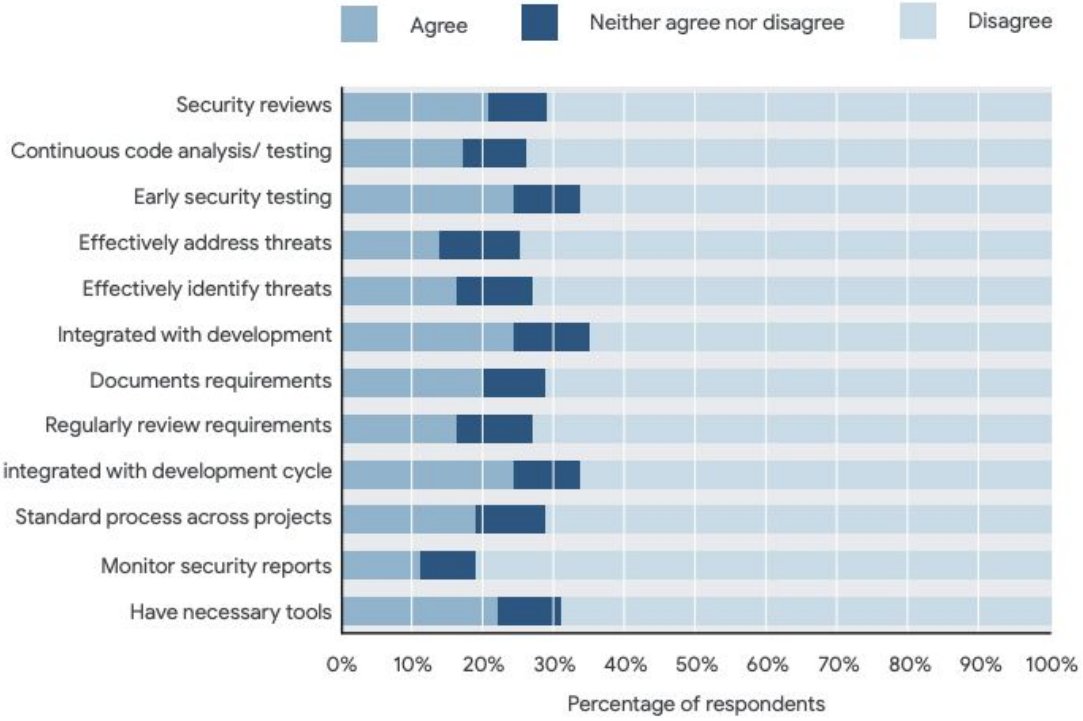


Figure 2. Establishment of SSDF practices

Survey responses about the establishment of SSDF practices. Similar to SLSA, a majority of respondents agreed that their organization followed all of these practices.

State of DevOps Report 2022: https://services.google.com/fh/files/misc/2022_state_of_devops_report.pdf

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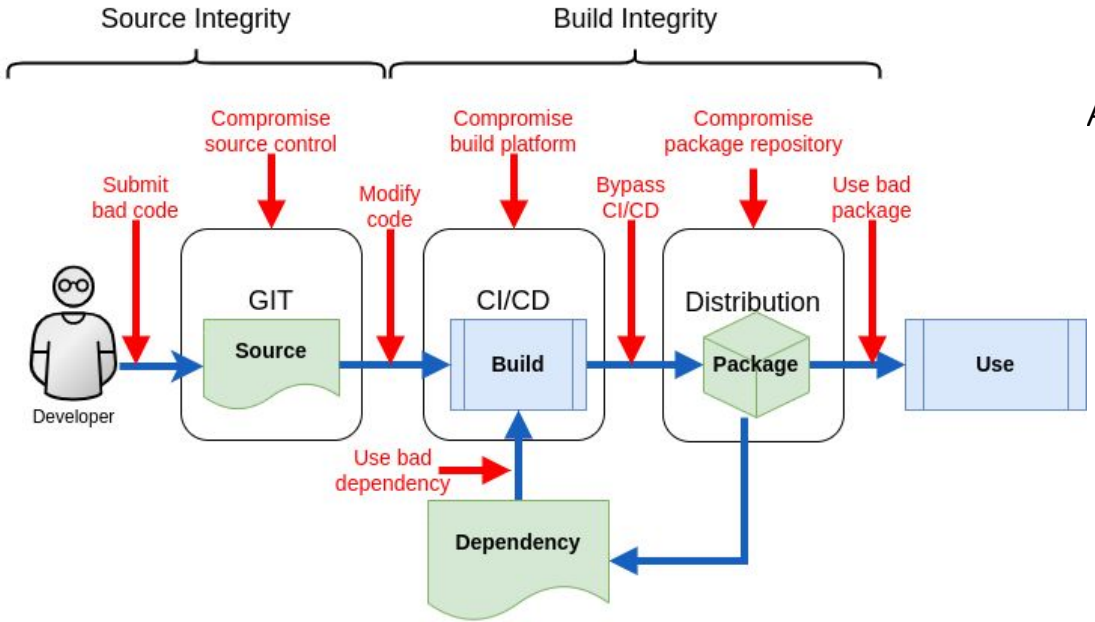
Attack Vectors of a Software Supply Chain

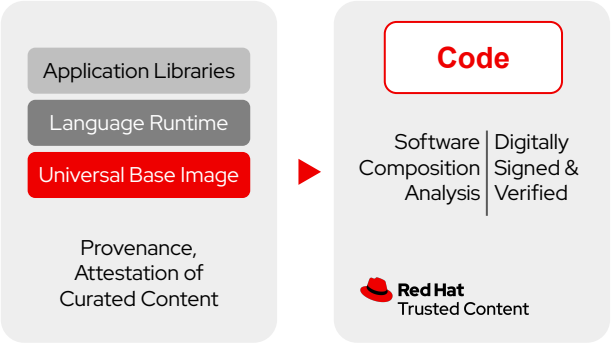


Attack Vectors

- Multiple vectors
- Fully recursive dependencies !

Eine Secure Software Supply Chain ist kein Produkt und kein Feature, sondern hauptsächlich ein Prozeß!

Code with integrated application security checks



Catch security issues early to keep and grow user trust

- Trusted curated content
- Automated software composition analysis and dependency analytics
- Aggregated view with drill down on security health
- Cryptographic signing and verification

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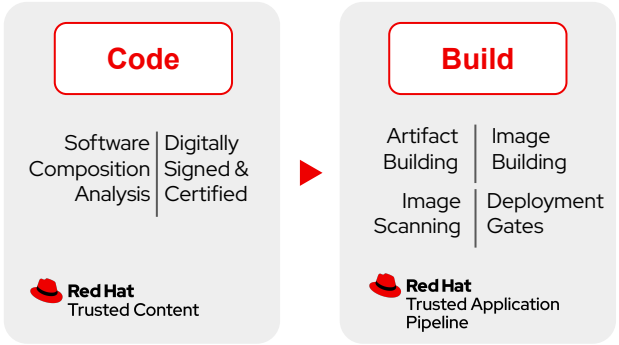
Build with security focused CI/CD workflows



Meet industry compliance while increasing productivity, efficiency

- Integrated security guardrails across pipelines
- Auto-generated Software-Bill-of-Materials (SBOM)
- Attestations and provenance checks
- Deployment based on policies to a declared state
- Continuous image vulnerability scanning
- Infrastructure and Pipeline as code

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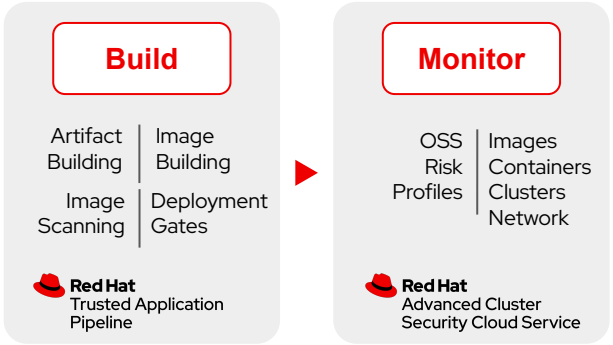
Monitor and identify runtime security incidents



Reduce noise, alert fatigue for shorter time to response

- Continuous improvement from runtime to build
- Detect and respond to suspicious activity
- Runtime vulnerability scanning and management
- Audit for compliance across hundreds of controls
- Expedite incident response to reduce down times

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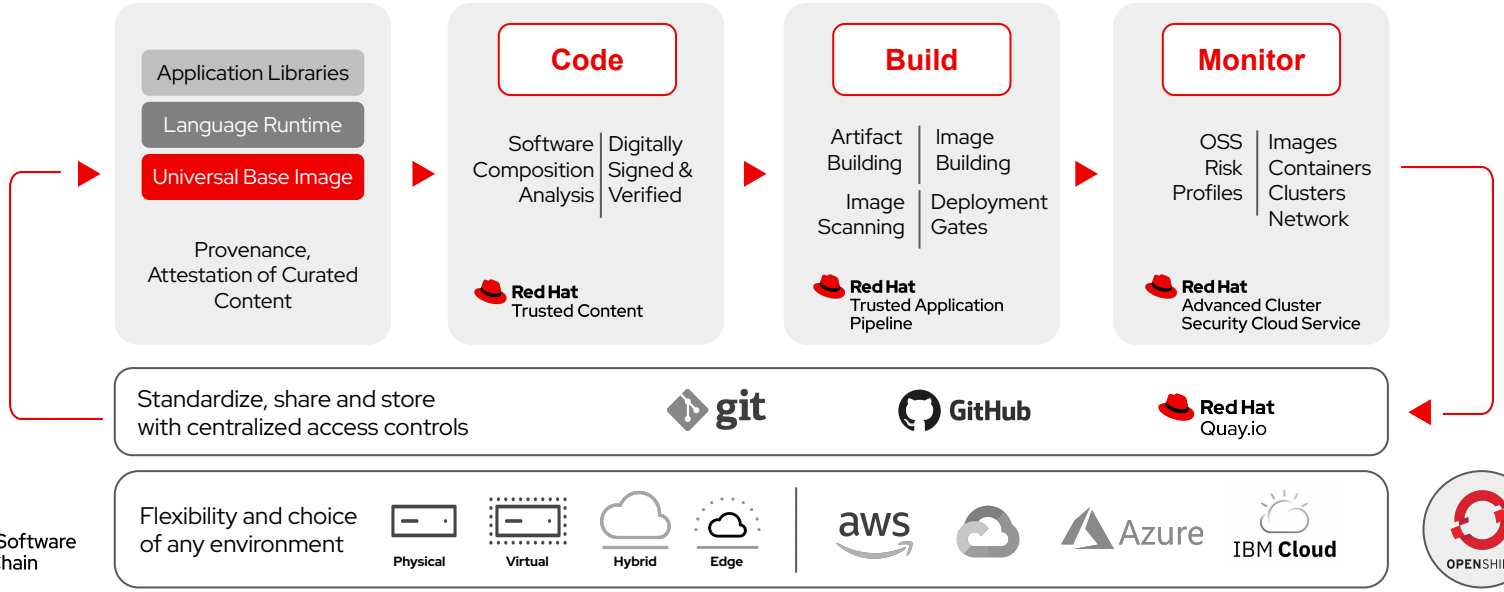
Code, build, and monitor to a Trusted Software Supply Chain

*Delivered as a **service** with integrated security guardrails at every phase of the software development lifecycle*



Red Hat Trusted Software Supply Chain

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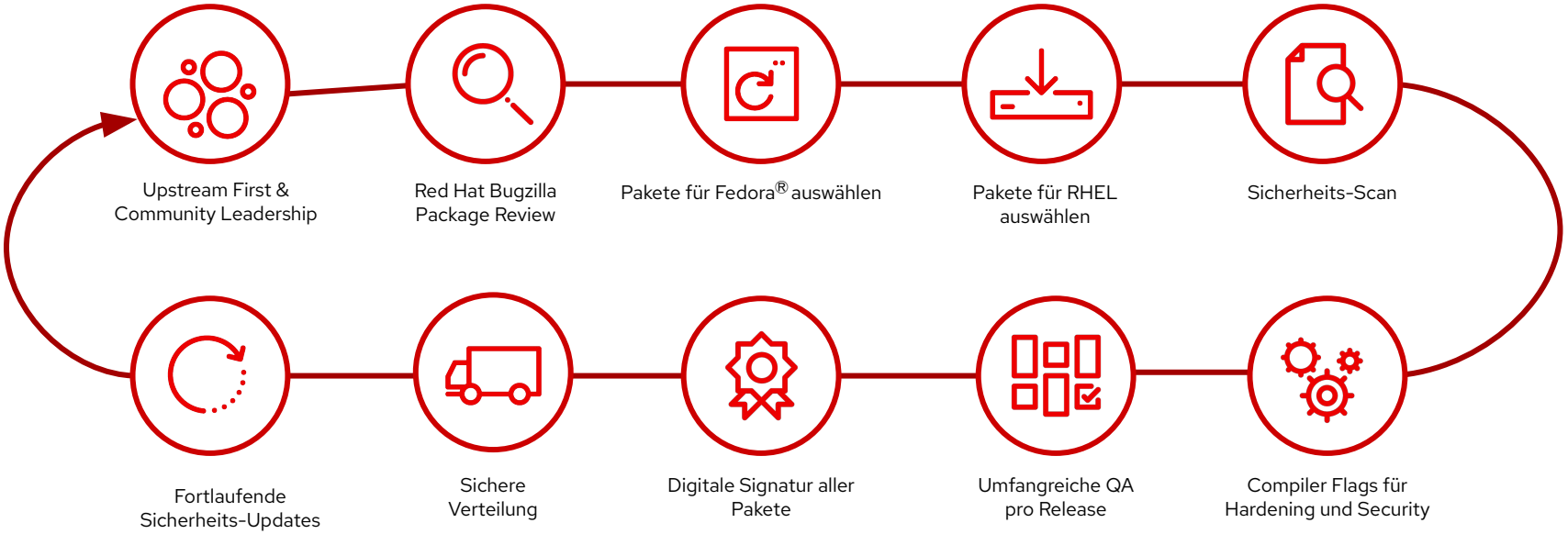
Red Hat's Secure Supply Chain für RHEL

Risiken reduzieren und Open Source für Firmen konsumierbar machen



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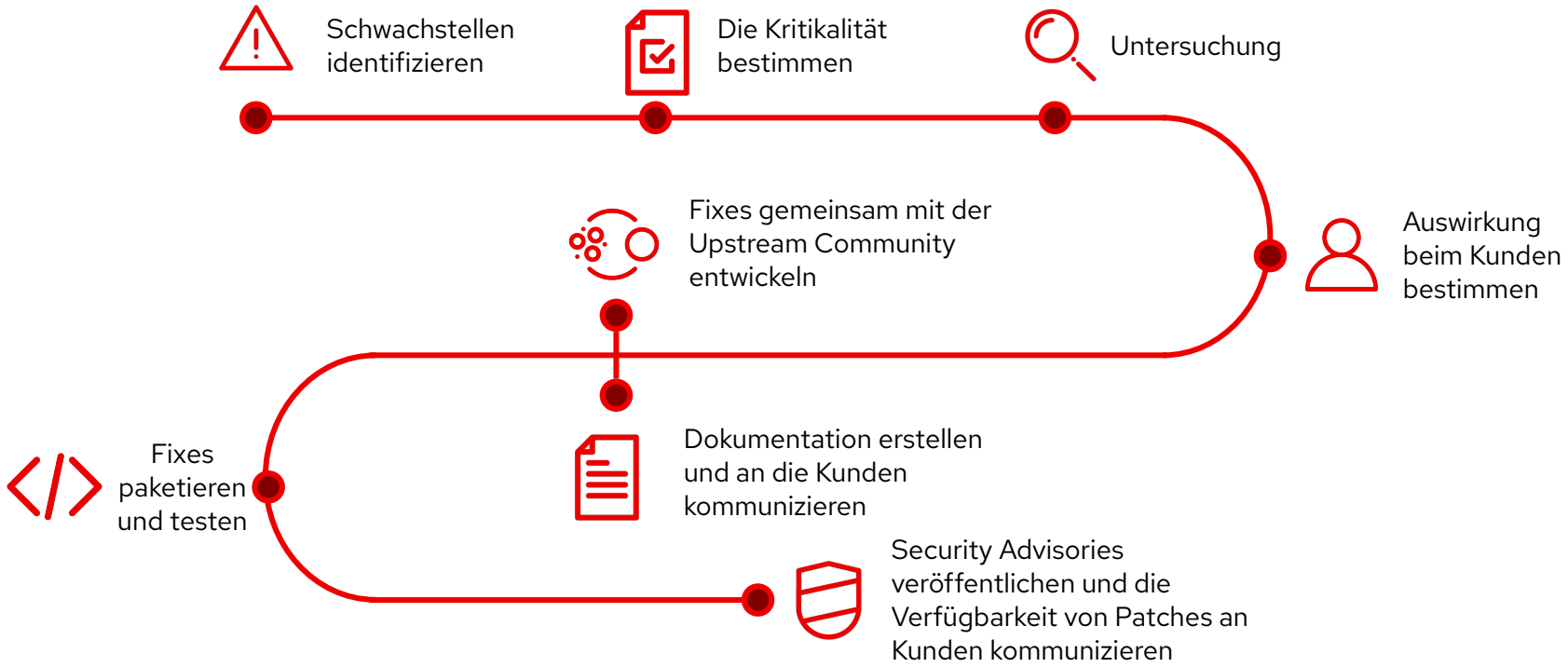
Sicherheitsbewußtsein beim Kunden schaffen



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Enhance and extend security functionality

Build on Red Hat functionality through our **security partners** to better secure the entire DevOps life cycle.

- Increase Trust
- Reduce Risk
- Improve Compliance
- Enhance Collaboration
- Increase Agility
- Improve Quality

Application analysis	Identity & access management
SAST, SCA, IAST, DAST, Image risk	Authn, Authz, Secrets Vault, HSM, Provenance
Compliance	**Network controls**
Regulatory compliance, PCI-DSS, GDPR	CNI plugins, policies, traffic controls, service mesh
Data controls	**Runtime analysis & protection**
Data protection and encryption	RASP, production analysis
Audit and monitoring	**Remediation**
Logging, visibility, forensics	SOAR, automatic resolution

CYBERARK · sysdig · aqua · SYNOPSYS · TIGERA · paloalto NETWORKS

NeuVector · snyk · anchore · THALES · portshift · tufin

TREND MICRO · IBM · Lacework · StackRox

Red Hat platform security

Secure host, container platform, namespace isolation, k8s and container hardening
(BSI Grundschutz, FIPS, NIST SP800, ISO 27000, Zero Trust, ...)

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Und am wichtigsten:

Automate the hell out of everything !

Was sonst noch ?

BSI Grundschutz - https://www.bsi.bund.de/DE/Themen/Unternehmen-und-Organisationen/Standards-und-Zertifizierung/IT-Grundschutz/it-grundschutz_node.html

Zero Trust Architecture - https://en.wikipedia.org/wiki/Zero_trust_security_model

OpenSSF (Open Source Security Foundation) - https://openssf.org/

SDLC (Software Development Lifecycle) - https://de.wikipedia.org/wiki/Vorgehensmodell_zur_Softwareentwicklung

SLSA (Reifegrad von Software-Entwicklungsprozessen) - https://slsa.dev/

Danke für Ihre Aufmerksamkeit!


linkedin.com/company/red-hat


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Lesestoff

Red Hat Trusted Application Pipeline
https://developers.redhat.com/articles/2023/07/18/introduction-red-hat-trusted-application-pipeline

Blog zu Tekton und Trusted Application Pipeline
https://www.redhat.com/en/blog/operating-tekton-scale-10-lessons-learned

Securing the Software Supply Chain

https://www.cisa.gov/sites/default/files/publications/ESF_SECURING_THE_SOFTWARE_SUPPLY_CHAIN_DEVELOPERS.PDF

Bottlenecks in Software Development

https://www.it-economics.de/en/software/bottlenecks-in-software-development/

DORA Metrics

https://cloud.google.com/blog/products/devops-sre/using-the-four-keys-to-measure-your-devops-performance

How often do you patch ?

https://www.opensourcerers.org/2022/12/05/how-often-do-you-patch/