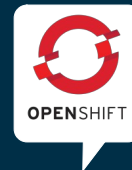


# CI/CD ON



Once upon a time...



«Integration Hell» und «Works on My Machine»



1991: Object Oriented Design: With Applications, Grady Booch






1997: Extreme Programming Explained

# 2001 CruiseControl

The screenshot displays the CruiseControl web interface. At the top, there are three tabs: "Dashboard", "Builds", and "Administration". The "Builds" tab is currently selected. Below the tabs, a large green banner indicates a successful build: "cce-windows passed (44 minutes ago)". To the left of this text is a green checkmark icon. To the right are icons for a power button, a speech bubble, and a Twitter bird. Below the banner, there are two tabs: "Artifacts" and "Modifications". The "Modifications" tab is selected, showing a list of changes. The first entry is by "bestfriendchris" [rev. 3847], with a description "[Chris & Gao Li] Fixed issue with queued inactive status." and two file paths. Below this, there is a "Latest Builds" section on the right side of the interface, listing the most recent builds with their status (green checkmark for success, red exclamation mark for failure) and their age.




Dashboard Builds Administration



**cce-windows passed (44 minutes ago)**   

Build Time: 27 Nov 2007 09:51 GMT +08:00 Duration: 7 minutes 40 seconds  
Build: build.8

Artifacts Modifications Build Log Tests Errors and Warnings

**Modifications**

 **bestfriendchris** [Chris & Gao Li] Fixed issue with queued inactive status.  
[rev. 3847]  /branches/cce/cruisecontrol/reporting/dashboard/jsunit/tests/json\_to\_css\_test.html  
[rev. 3847]  /branches/cce/cruisecontrol/reporting/dashboard/webapp/javascripts/json\_to\_css.js

**Latest Builds**  

- ✓ 7 minutes ago build.9
- ✓ 44 minutes ago build.8
- ✓ about 17 hours ago build.7
- ! about 17 hours ago
- ✓ about 18 hours ago build.6
- ✓ about 18 hours ago build.5
- ✓ about 19 hours ago build.4
- ✓ 1 day ago build.3
- ✓ 1 day ago build.2
- ✓ 8 days ago build.1

# 2005 Hudson

## Hudson

?

[ENABLE AUTO REFRESH](#)

[New Job](#)

[Manage Hudson](#)

[People](#)

**Build Queue**

No builds in the queue.

**Build Executor Status**

No.	Status
1	Idle
2	Idle

Continuous integration builds for ██████████

[edit description](#)

All +

S	W	Job ↓	Last Success	Last Failure	Last Duration	
		<a href="#">excalibur-slide-server-████████</a>	4 hours 34 minutes ( <a href="#">#1</a> )	N/A	22 seconds	
		<a href="#">████████cocoon-live</a>	2 hours 9 minutes ( <a href="#">#1</a> )	N/A	21 seconds	
		<a href="#">████████workflow</a>	2 hours 9 minutes ( <a href="#">#5</a> )	6 hours 24 minutes ( <a href="#">#1</a> )	15 seconds	
		<a href="#">hippo-cms-████████</a>	2 hours 8 minutes ( <a href="#">#9</a> )	N/A	6 minutes 32 seconds	
		<a href="#">hippo-repository-1.2.13</a>	5 hours 37 minutes ( <a href="#">#1</a> )	N/A	2 minutes 20 seconds	
		<a href="#">repository-initialization</a>	N/A	9 minutes 40 seconds ( <a href="#">#24</a> )	2 seconds	
		<a href="#">workflows-████████</a>	5 hours 10 minutes ( <a href="#">#1</a> )	N/A	22 seconds	

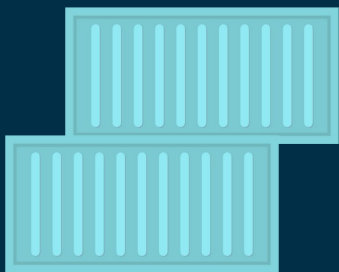
Icon: [S](#) [M](#) [L](#)

[Legend](#) for all for failures

Hudson ver. 1.184

Done

1



# Continuous Integration



einchecken



automatisches  
testen



Reporting /  
Codeanalyse



Deployment

# 2



## Continuous Delivery



«It aims at building, testing, and releasing software faster and more frequently.»

Continuous  
Integration



schnell &  
oft released



auf  
Knopfdruck



# Entwicklungsprozess



Kleine und kurze Entwicklungszyklen



Agiles Vorgehen



Voll automatisierte Acceptance Tests



Sehr hohe Testabdeckung



Feature Toggles



Big Scary Merge

# Feature Toggles

...

```
public void sendOrderNotification(Order order) {  
  
    // send default OrderNotification  
    mailService.sendOrderNotificationMessage(order);  
  
    if (featureService.isEnabled(SEND_ORDER_NOTIFICATION_AS_SMS)) {  
        smsService.sendOrderNotificationMessage(order);  
    }  
}  
...
```

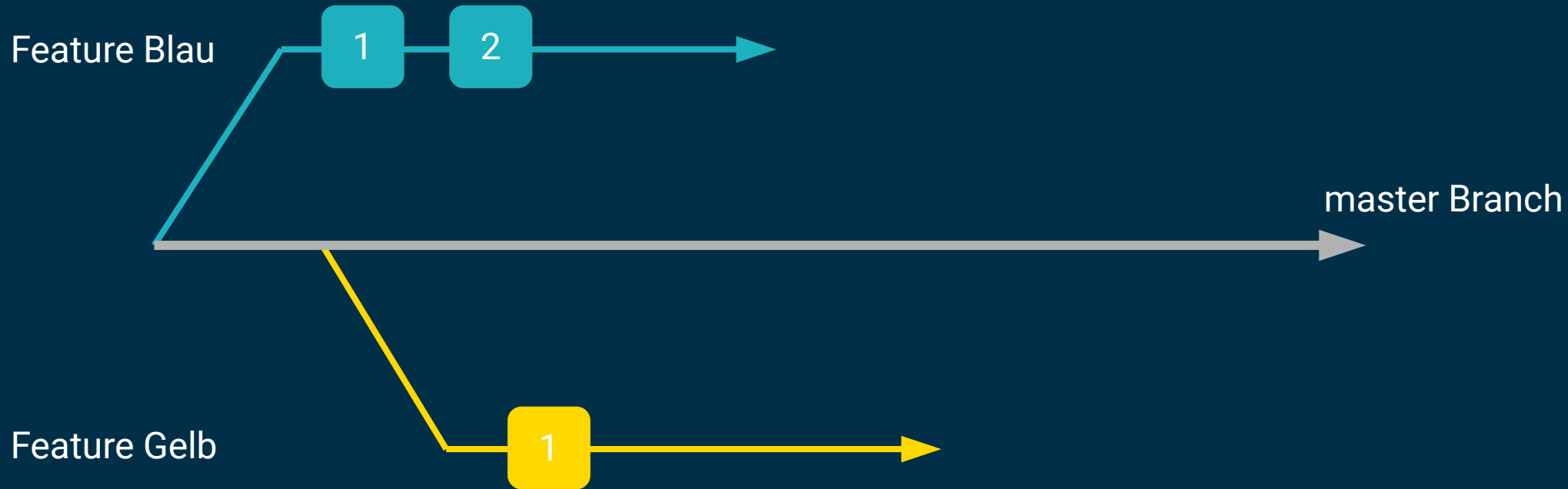
# Big Scary Merge bei Feature Branches



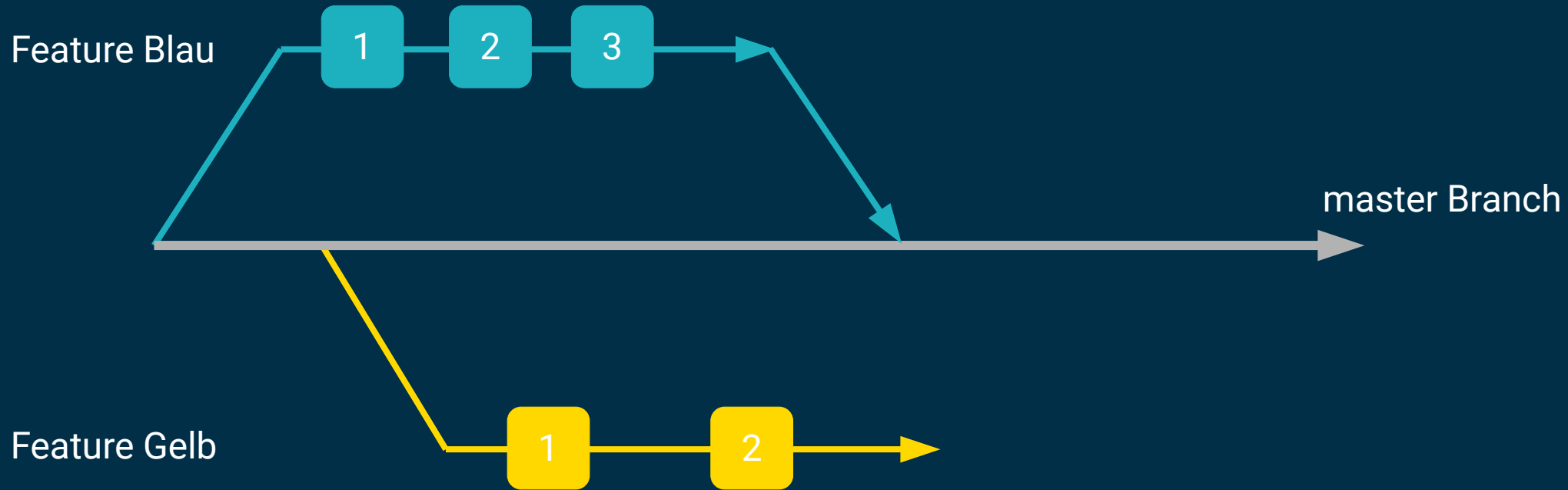
# Big Scary Merge bei Feature Branches



# Big Scary Merge bei Feature Branches

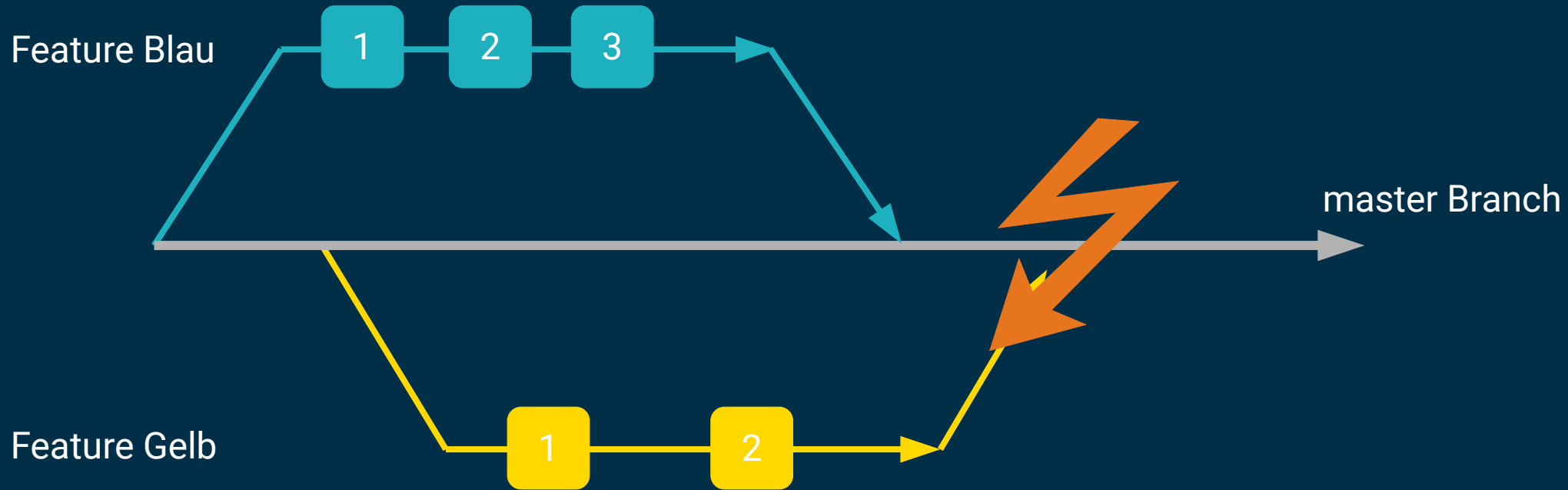


# Big Scary Merge bei Feature Branches





# Big Scary Merge bei Feature Branches



# 3



## Continuous Deployment

# Continuous Deployment

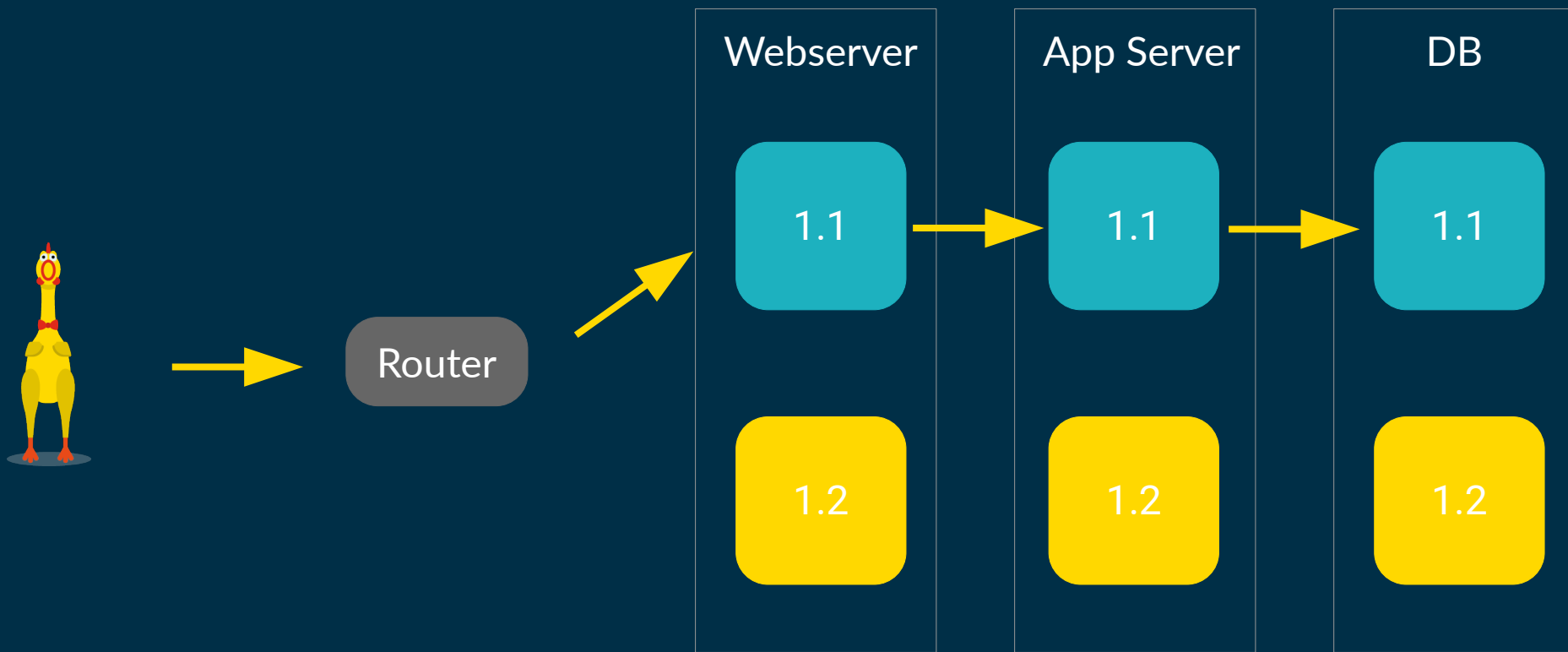
Jedes Release wird automatisch in Produktion deployed

Unterbruchsfreie Deployments nötig

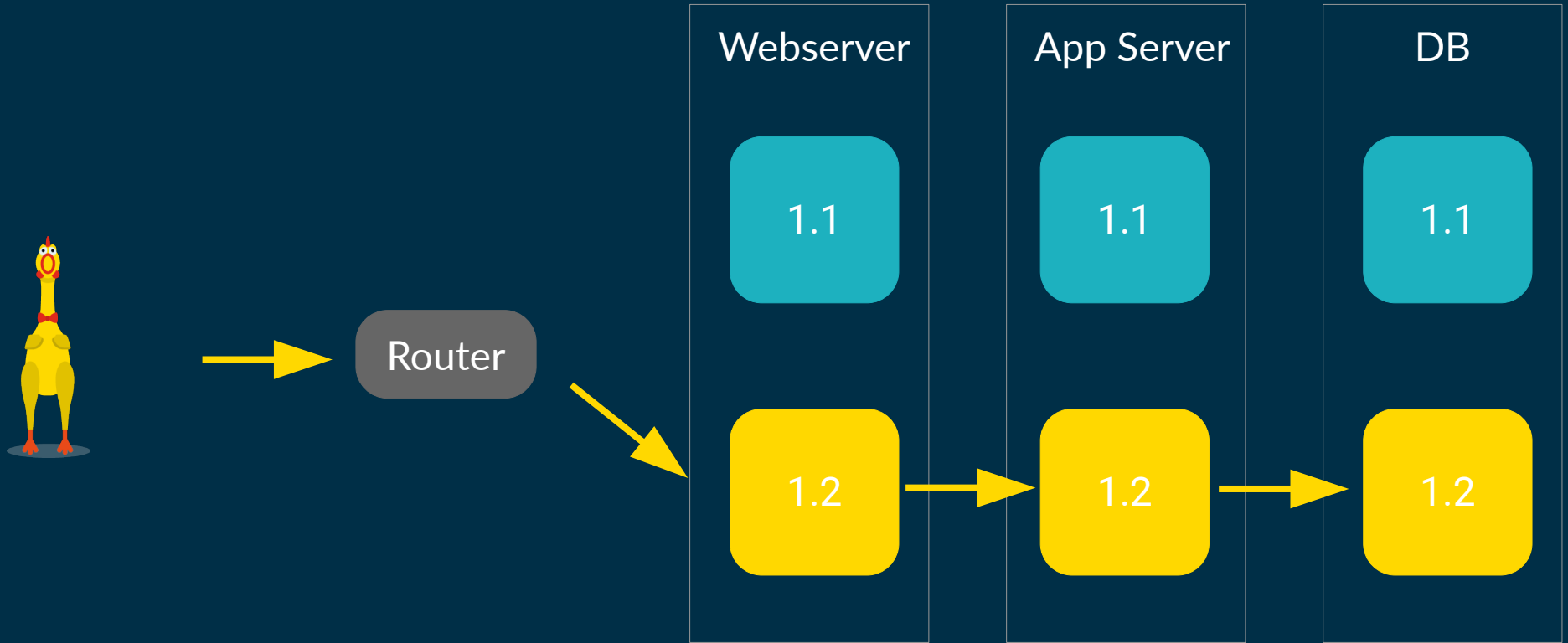
Blau - Gelb Deployments

Canary releasing

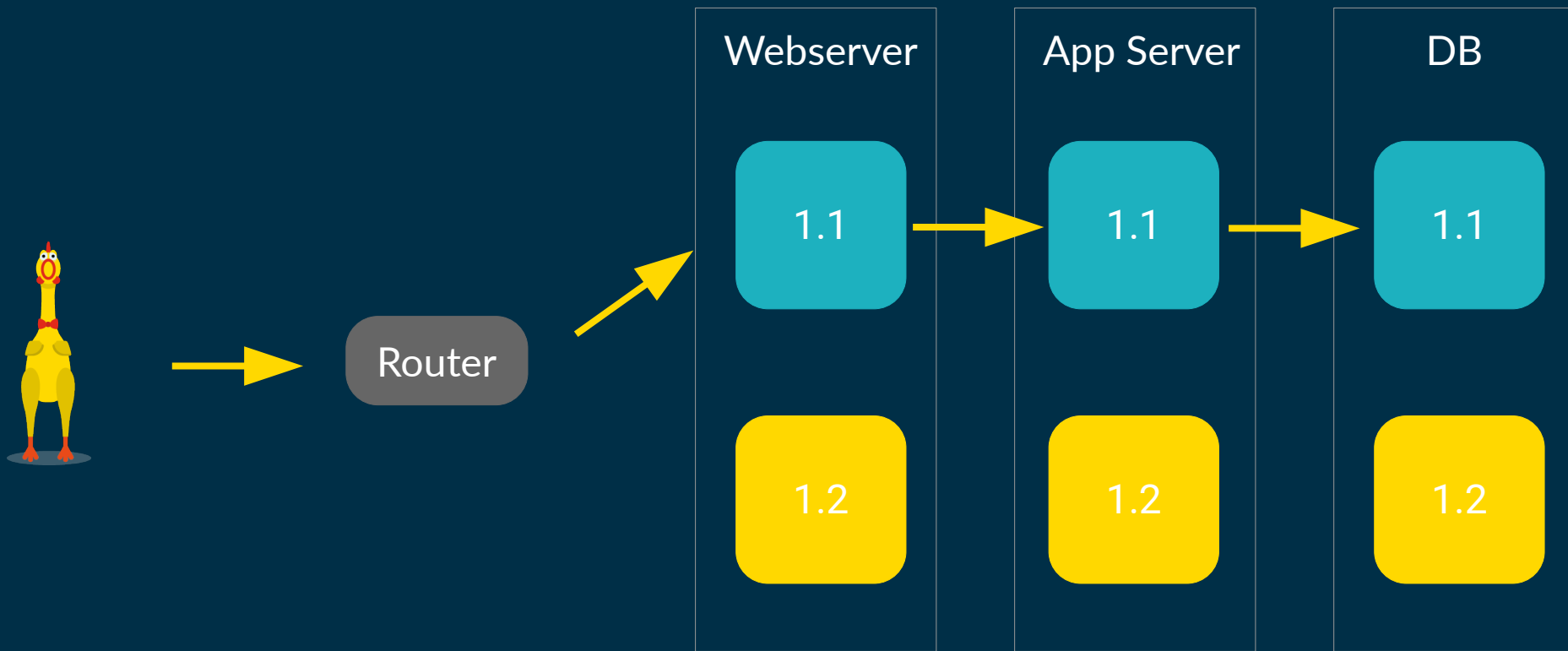
# Blau – Grün Deployments



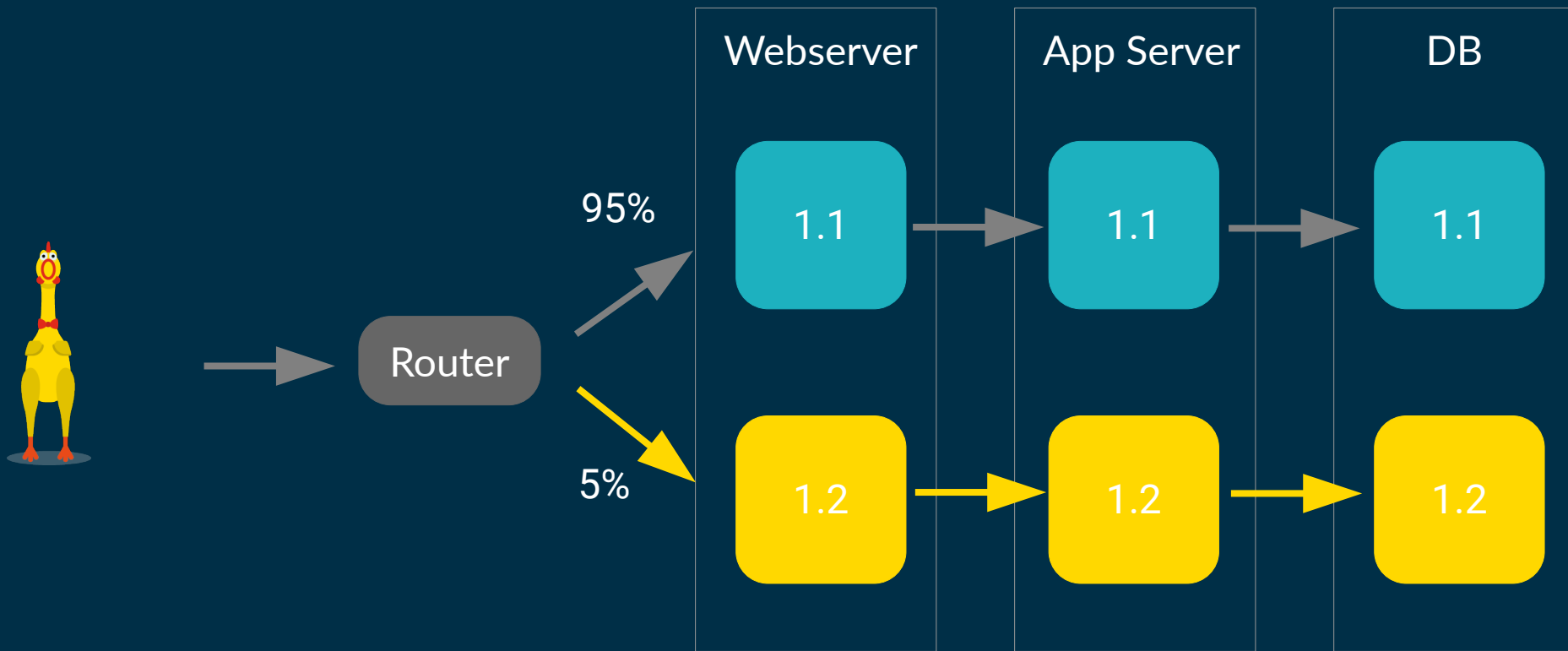
# Blau – Grün Deployments



# Canary Releasing

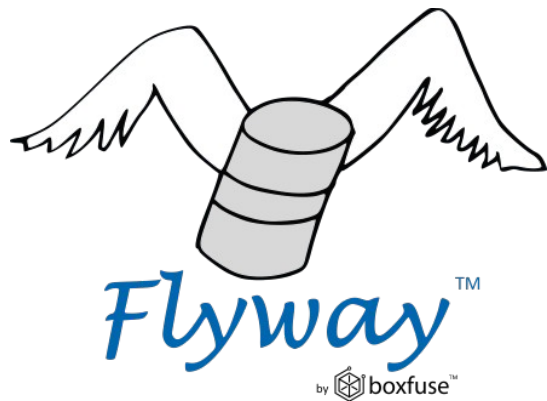


# Canary Releasing



# Automated Database Migration

Database Migration Scripts sind Teil der deployten Applikation und werden während dem Startup der App ausgeführt.



LIQUI🔥BASE

```
$ rake db:migrate
```

```
$ php bin/console doctrine:schema:update
```



# Automated Database Migration

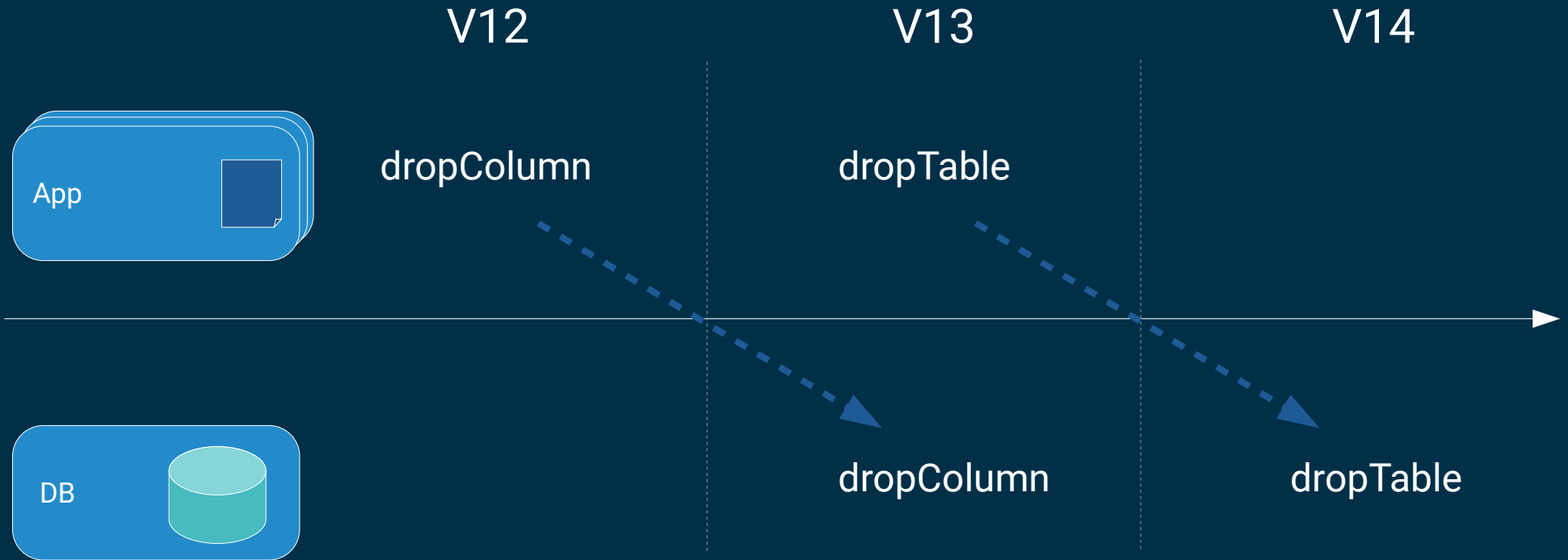
Die Datenbank kennt die aktuelle Schema Version.

DB Migrationen werden vor oder während dem Start der App ausgeführt.

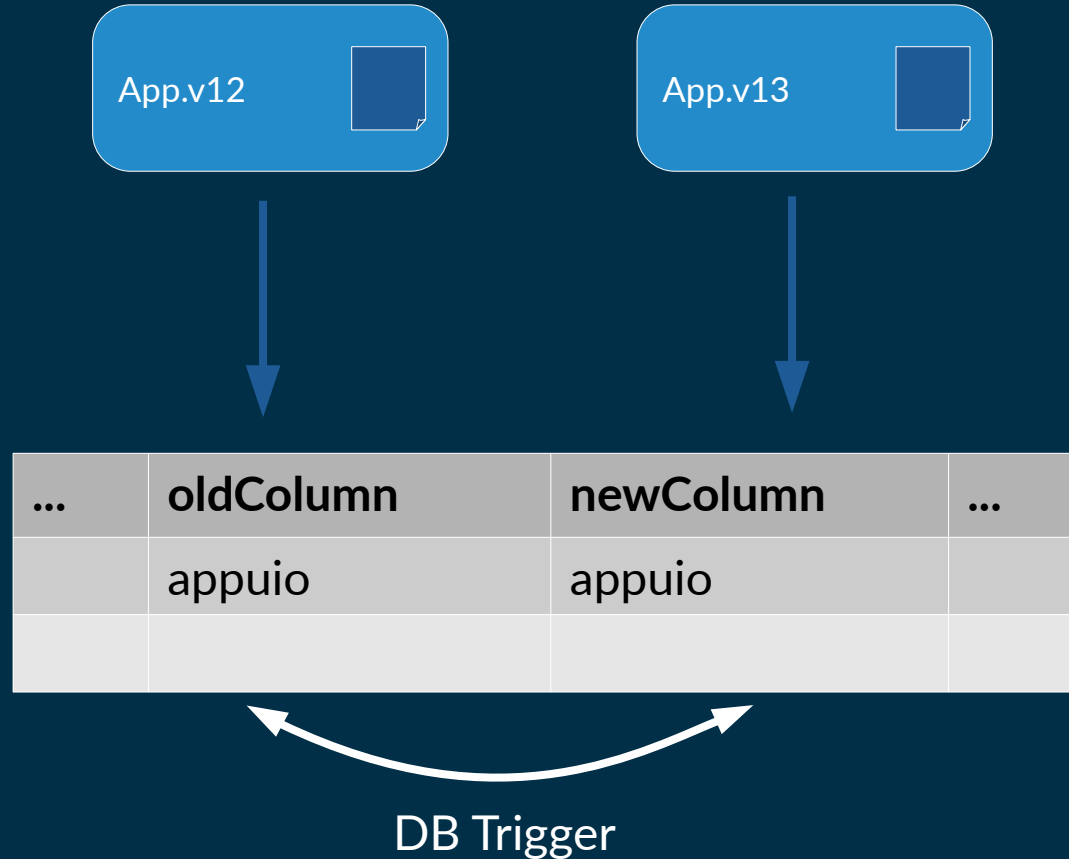
DB Migrationen werden analog Code getestet und durchlaufen die Pipeline

Rolling Update: Datenbank muss **abwärtskompatibel** sein

# Konzept: Automated Database Migration



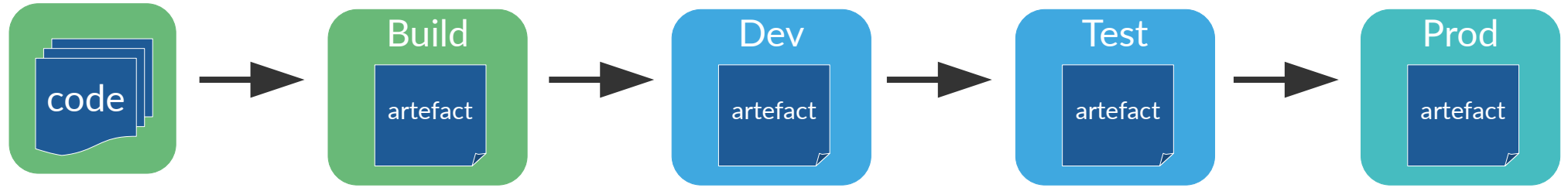
# Konzept: Automated Database Migration



4

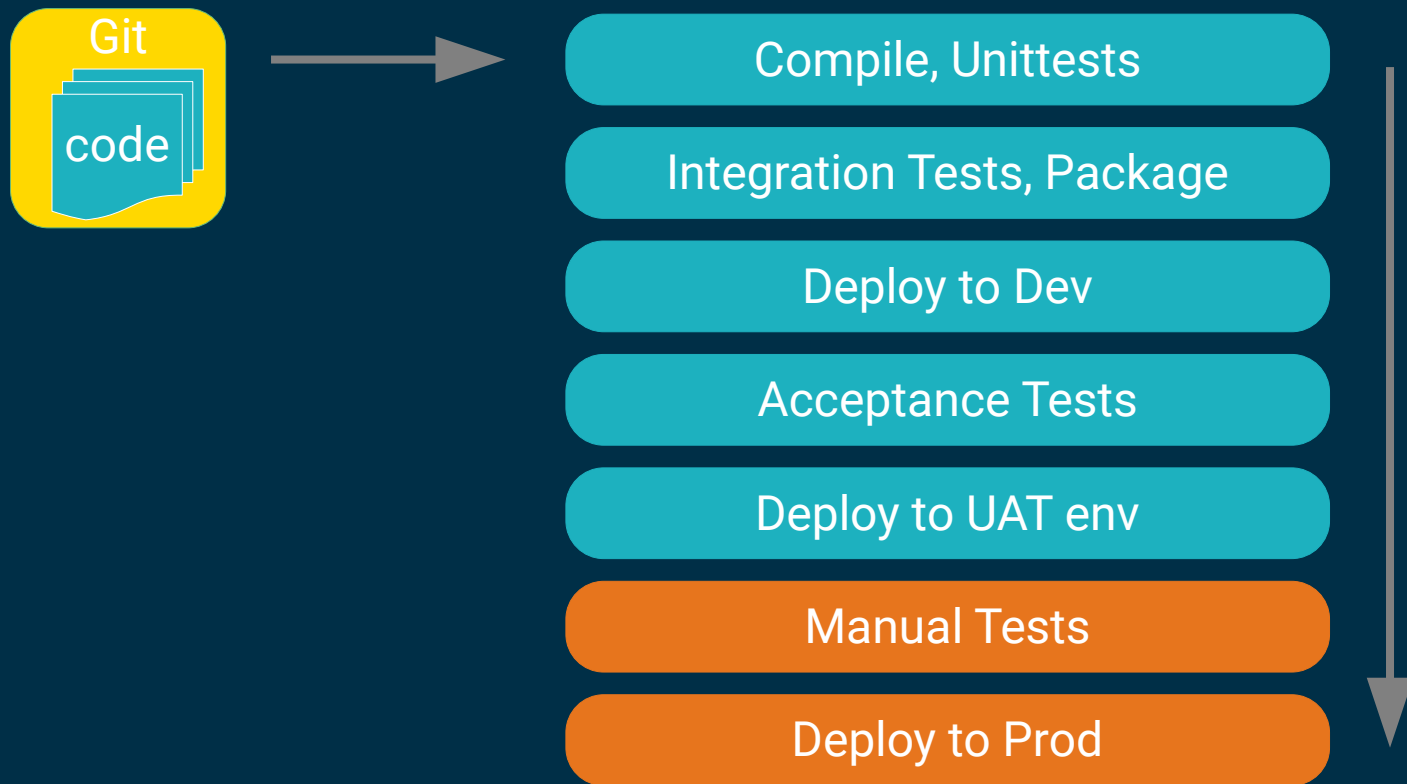


## Continuous Delivery Pipeline



Das gleiche Artefakt durchläuft die gesamte Pipeline

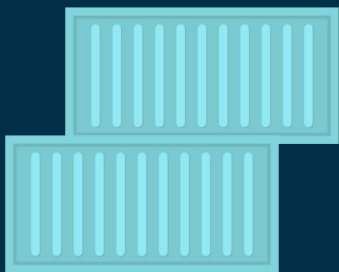
# Toplevel CI / CD Pipeline



# TOOLS

- CICD Tools wie Sand am Meer
  - Tekton Lab
- Neue Konzepte GitOps → argocd lab
-

# 5



## Managing Kubernetes Resources



# Bestpractice

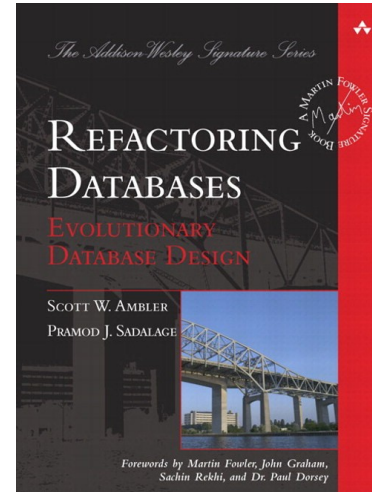
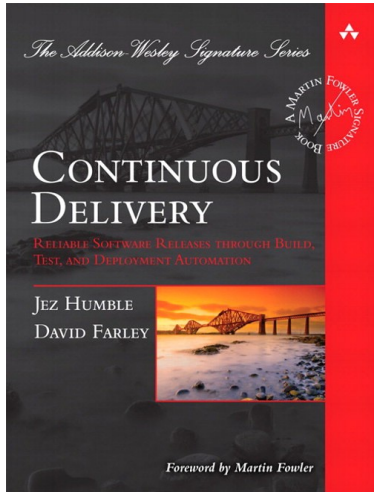
- Kubernetes Ressourcen mit OpenShift Templates, Helm, Kustomize, Plain managen
- `oc apply -f ...`

Don't use the fancy webconsole use Git!

# Fazit

E2E Automation is Key!

Continuous Deployment adds a lot of complexity



<http://martinfowler.com>

**DANKE**