

A decorative header at the top of the slide featuring a series of overlapping circles in various shades of blue and teal, creating a cloud-like or bubble-like effect.

CI/CD

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' (which is active), and 'Administration'. The main content area features a large green banner with a white checkmark icon, indicating a successful build. The banner text reads: 'cce-windows passed (44 minutes ago)', 'Build Time: 27 Nov 2007 09:51 GMT +08:00', and 'Duration: 7 minutes 40 seconds'. Below the banner, there are five sub-tabs: 'Artifacts', 'Modifications', 'Build Log', 'Tests', and 'Errors and Warnings'. The 'Modifications' tab is selected, showing a list of changes. The first change is by 'bestfriendchris' [rev. 3847], with the description '[Chris & Gao Li] Fixed issue with queued inactive status.' and two file paths: '/branches/cce/cruisecontrol/reporting/dashboard/jsunit/tests/json_to_css_test.html' and '/branches/cce/cruisecontrol/reporting/dashboard/webapp/javascripts/json_to_css.js'. On the right side of the interface, there is a 'Latest Builds' section with a list of recent builds. The builds are listed with their status (green checkmark for success, red exclamation mark for failure) and their age. The builds are: '7 minutes ago build.9', '44 minutes ago build.8', 'about 17 hours ago build.7', 'about 17 hours ago' (highlighted in pink), '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', and '8 days ago build.1'.

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 [rev. 3847] [Chris & Gao Li] Fixed issue with queued inactive status.

/branches/cce/cruisecontrol/reporting/dashboard/jsunit/tests/json_to_css_test.html

/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	
		excalibur-slide-server-████████	4 hours 34 minutes (#1)	N/A	22 seconds	
		████████cocoon-live	2 hours 9 minutes (#1)	N/A	21 seconds	
		████████workflow	2 hours 9 minutes (#5)	6 hours 24 minutes (#1)	15 seconds	
		hippo-cms-████████	2 hours 8 minutes (#9)	N/A	6 minutes 32 seconds	
		hippo-repository-1.2.13	5 hours 37 minutes (#1)	N/A	2 minutes 20 seconds	
		repository-initialization	N/A	9 minutes 40 seconds (#24)	2 seconds	
		workflows-████████	5 hours 10 minutes (#1)	N/A	22 seconds	

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

[Legend](#) [for all](#) [for failures](#)

Hudson ver. 1.184

Done

1



Continuous Integration



einchecken



automatisches
testen

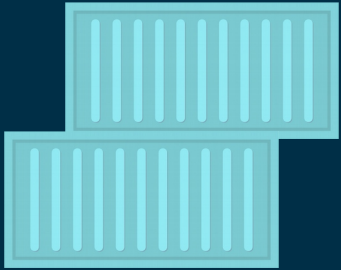


Reporting /
Codeanalyse



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);  
    }  
}  
...
```

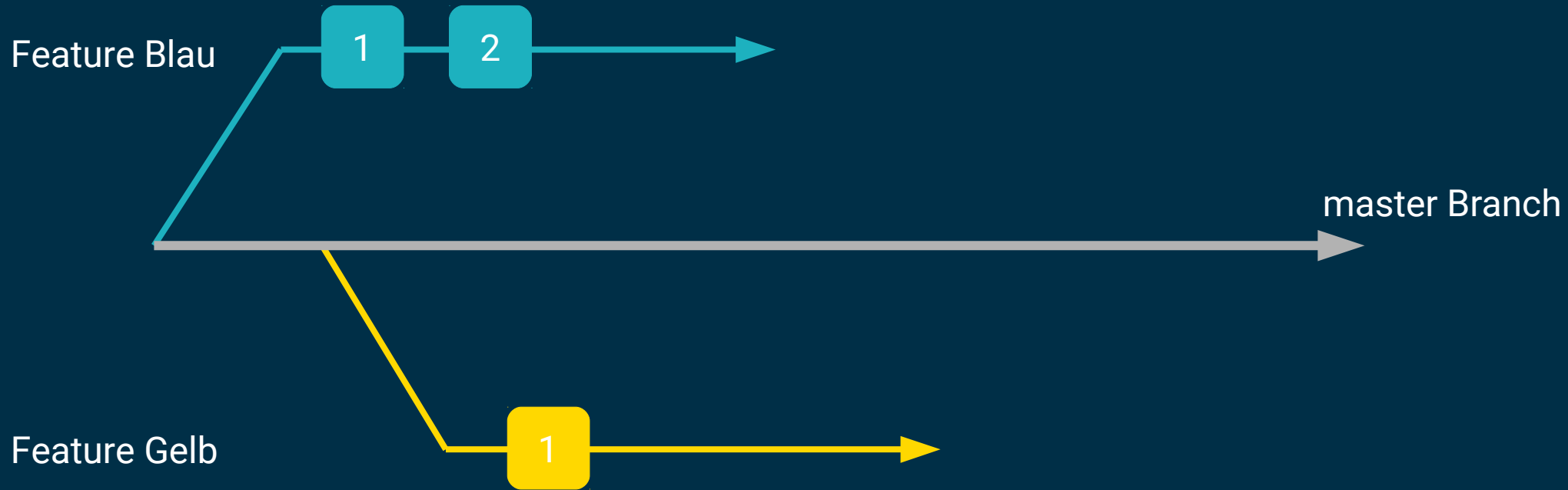
Big Scary Merge bei Feature Branches



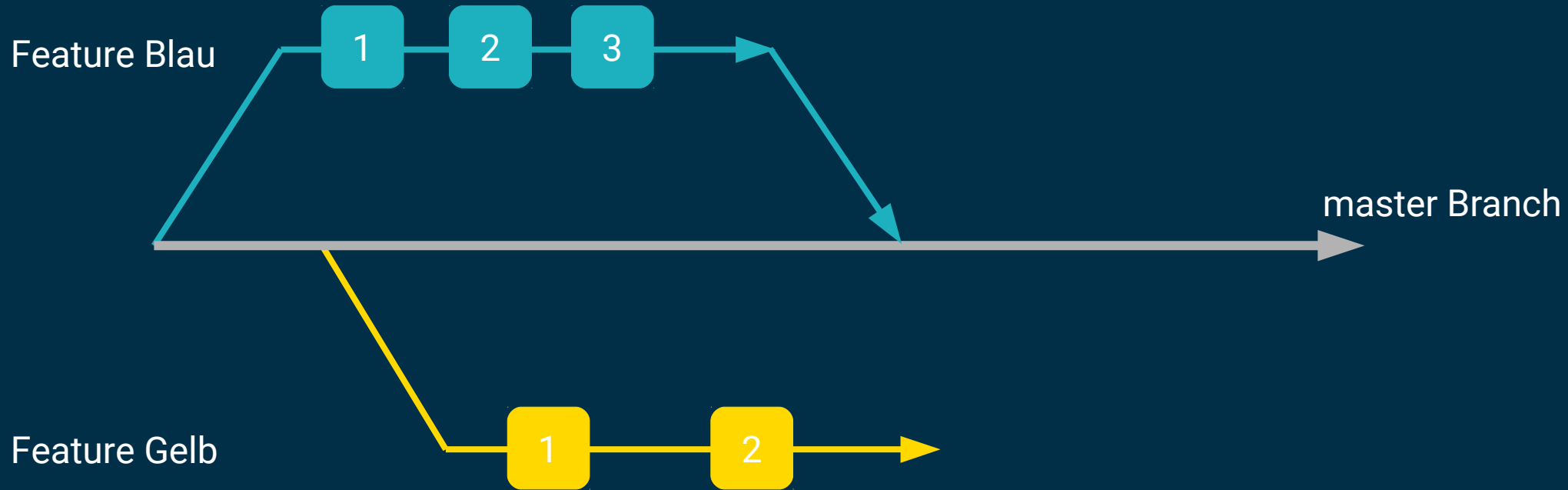
Big Scary Merge bei Feature Branches



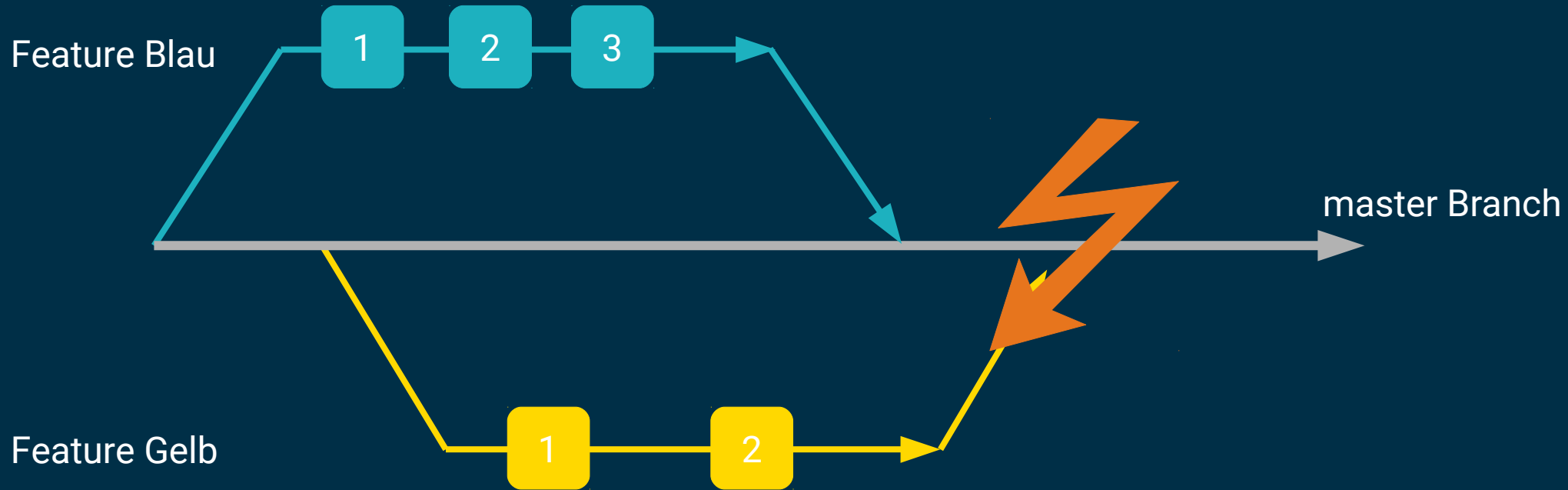
Big Scary Merge bei Feature Branches



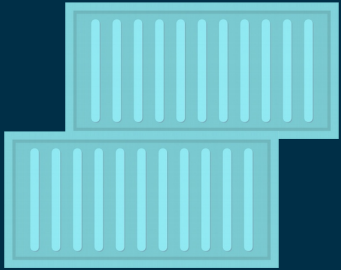
Big Scary Merge bei Feature Branches



Big Scary Merge bei Feature Branches



3



Continuous Deployment

Continuous Deployment

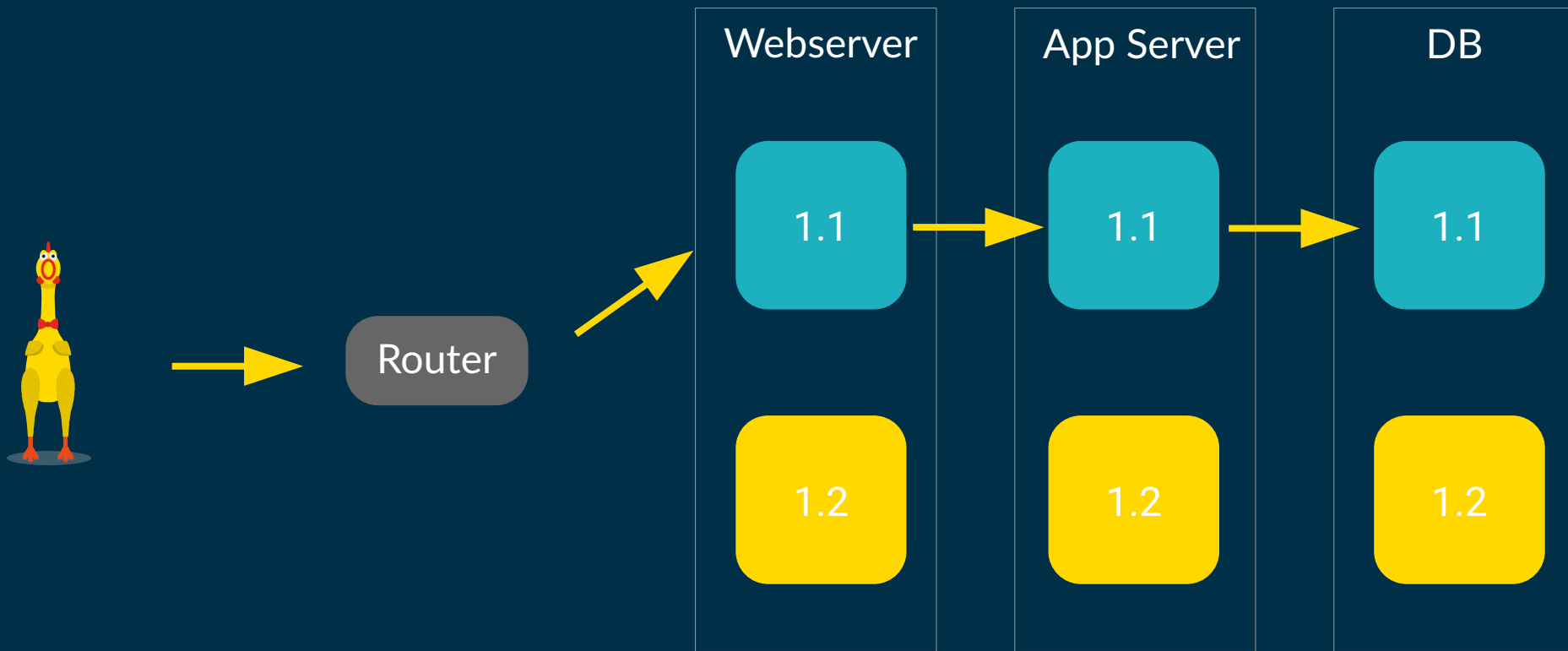
Jedes Release wird automatisch in Produktion deployed

Unterbruchsfreie Deployments nötig

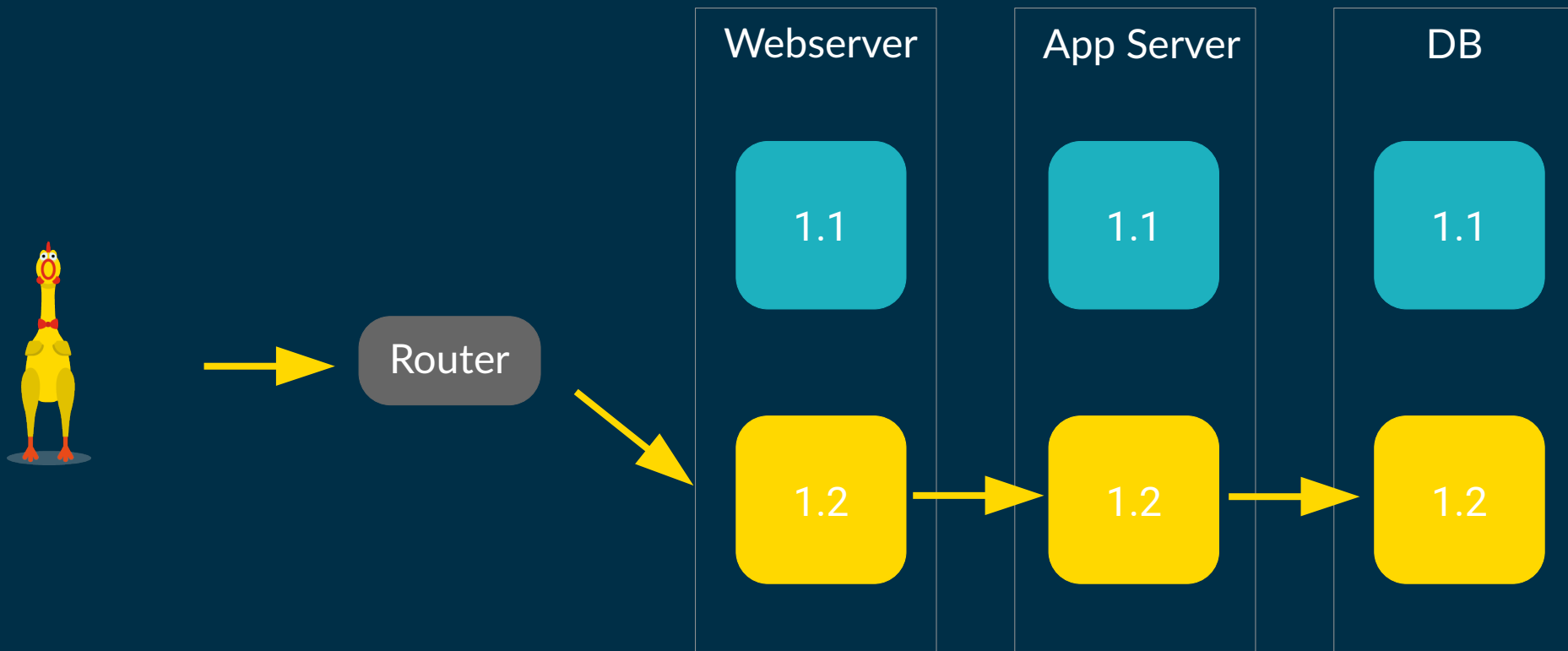
Blau - Gelb Deployments

Canary releasing

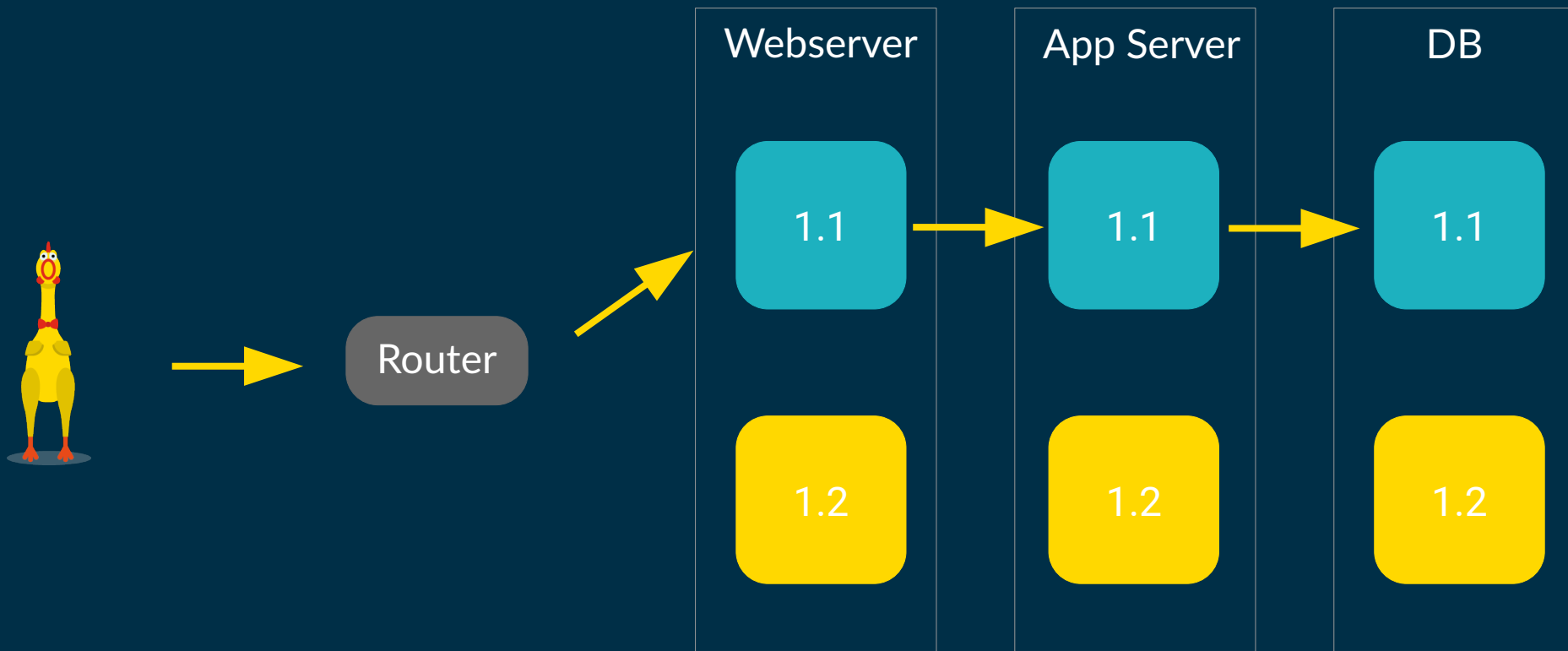
Blau – Gelb Deployments



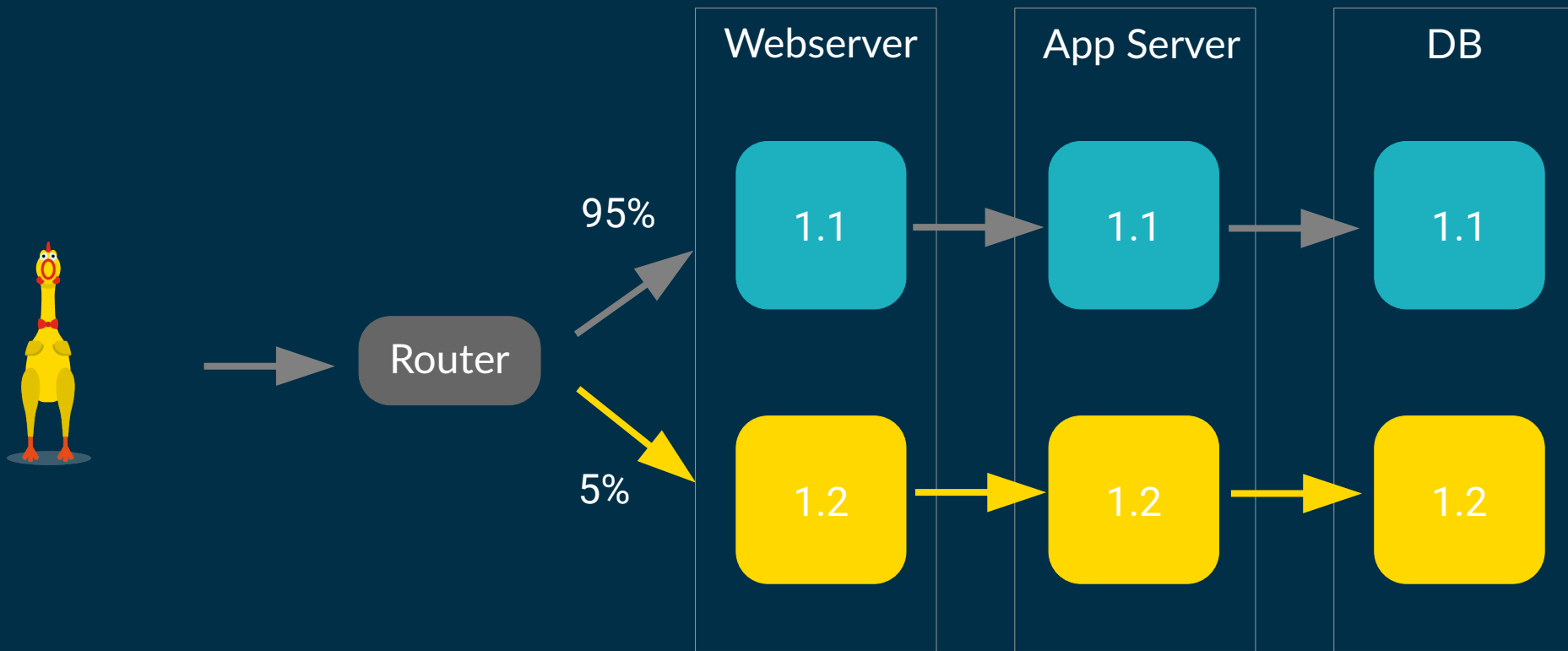
Blau – Gelb Deployments



Canary Releasing

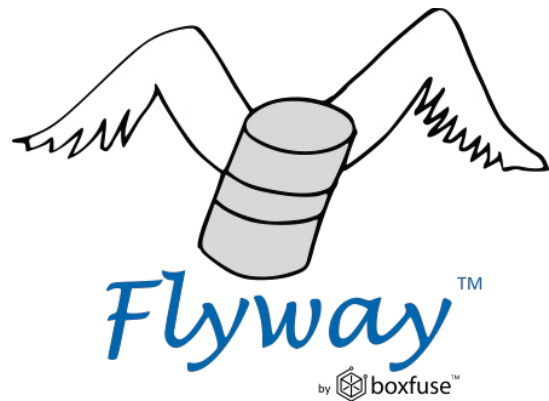


Canary Releasing



Automated Database Migration

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



```
$ rake db:migrate
```

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


Automated Database Migration

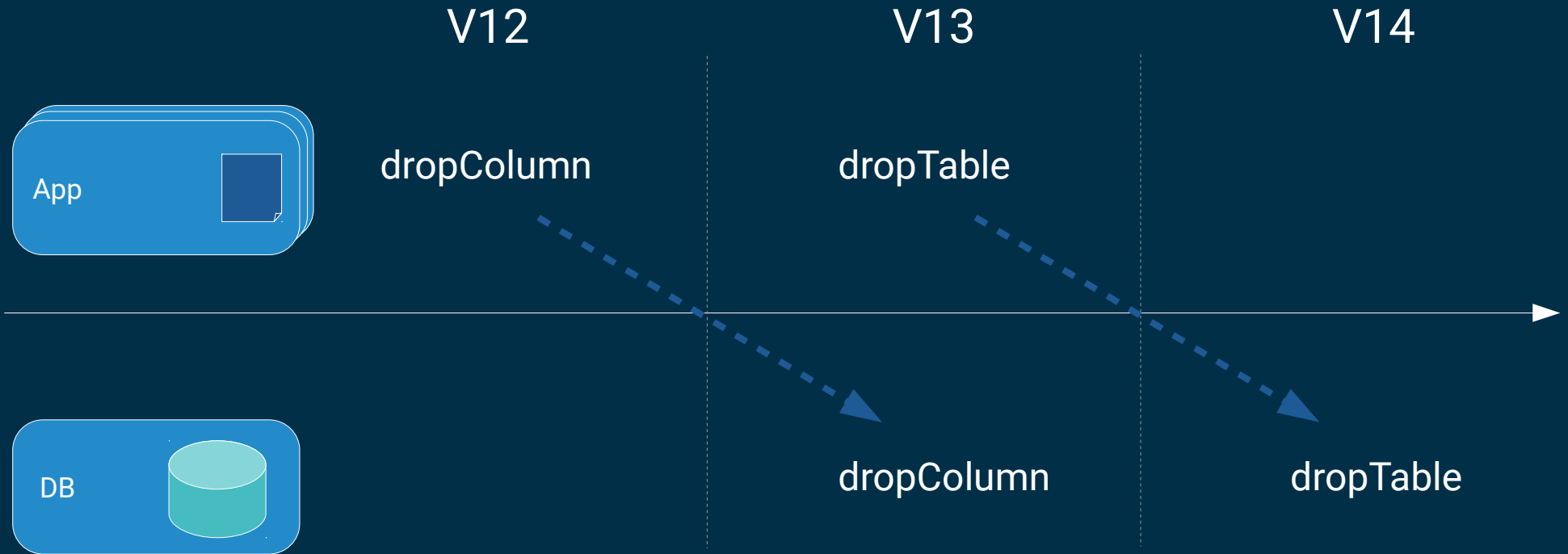
Die Datenbank kennt die aktuelle Schema Version.

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

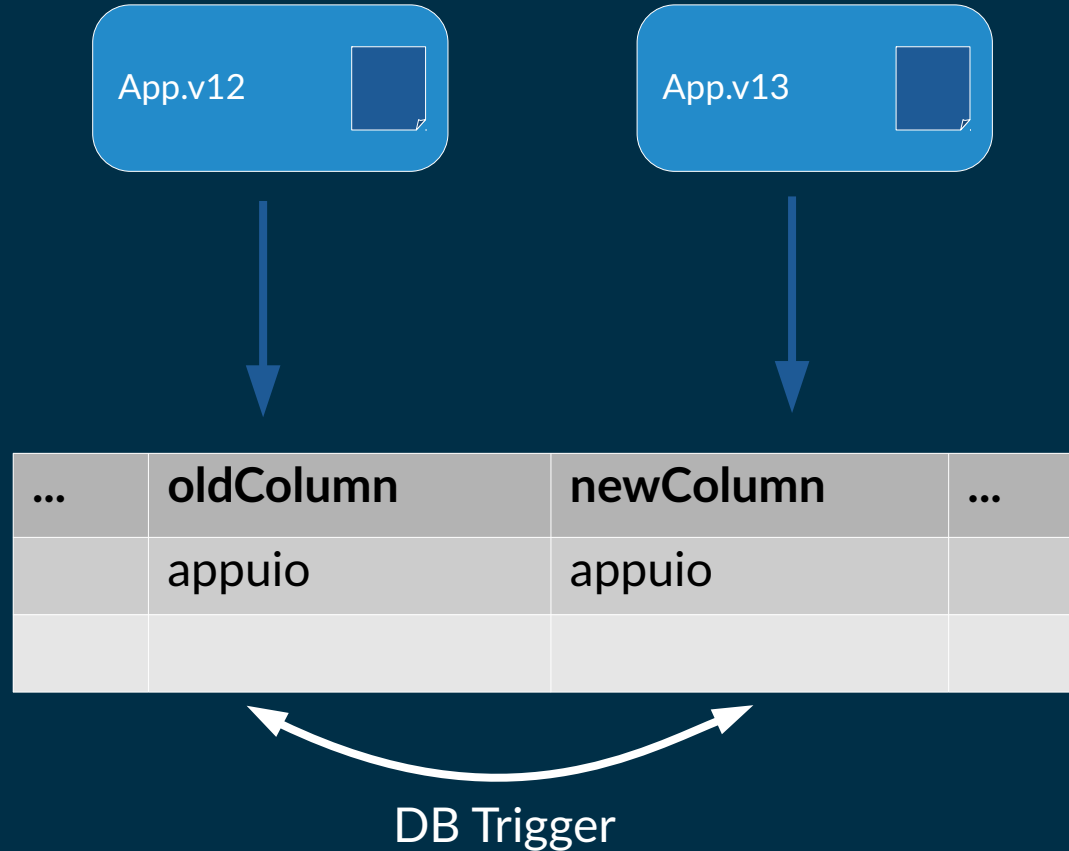
DB Migrationen werden analog Code getestet und durchlaufen die Pipeline

Rolling Update: Datenbank muss **abwärtskompatibel** sein

Konzept: Automated Database Migration



Konzept: Automated Database Migration

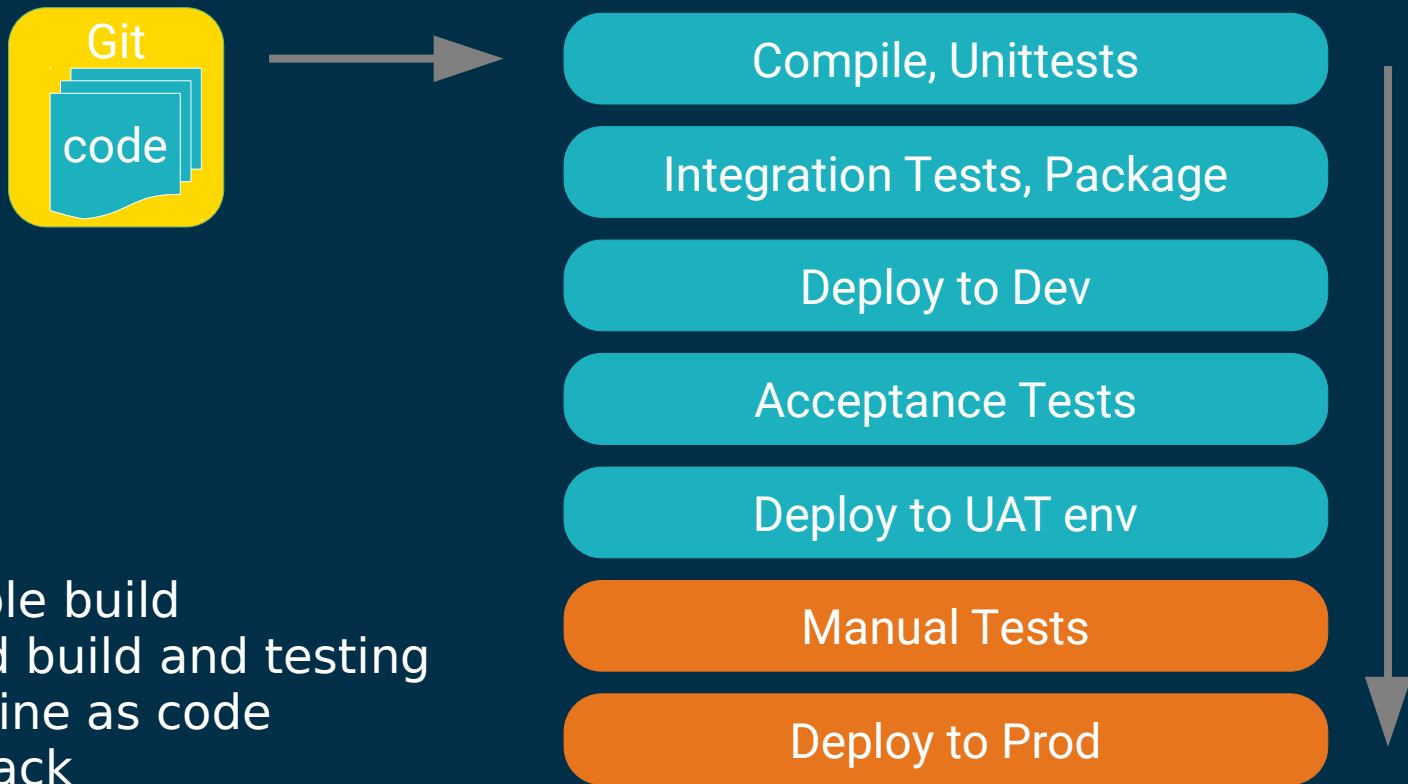


4

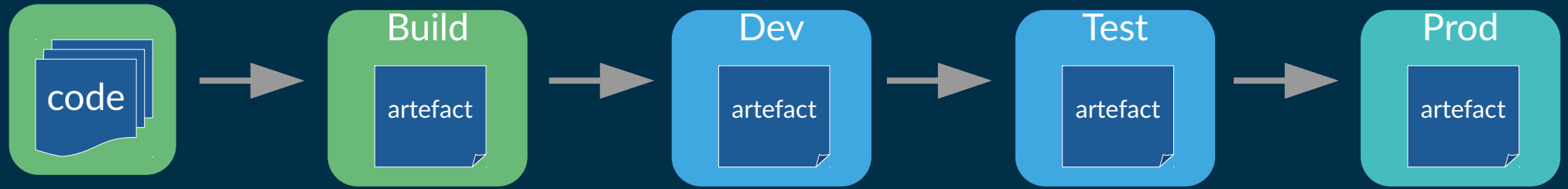


Continuous Delivery Pipeline

Toplevel CI / CD Pipeline

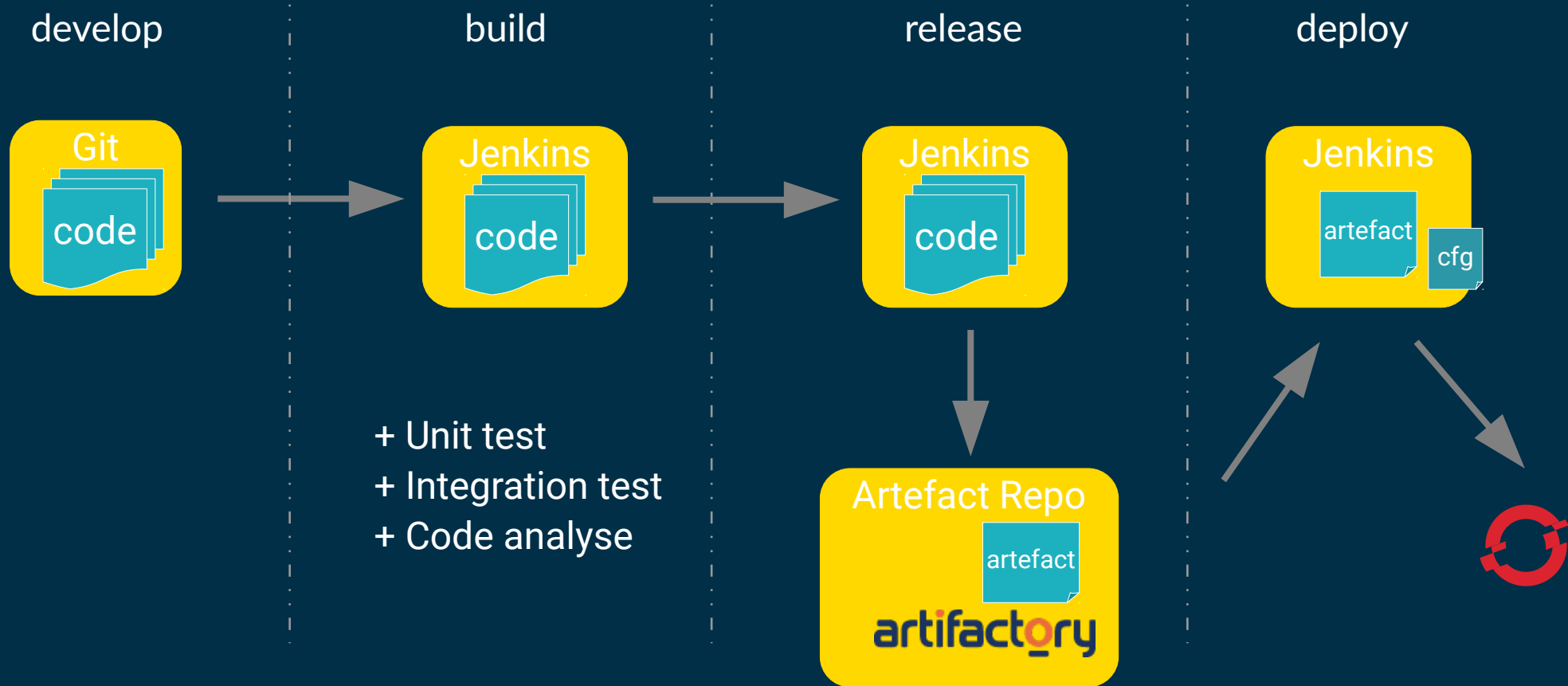


- reproducible build
- automated build and testing
- build pipeline as code
- fast feedback



Das gleiche Artefakt durchläuft die gesamte Pipeline

Konkretes Beispiel Java mit Maven (1)



Konkretes Beispiel Java mit Maven (2)

