

Continuous Delivery and Zero Downtime

What your architecture needs to succeed



AXEL FONTAINE

@axelfontaine

axel@boxfuse.com





Flyway

flywaydb.org



boxfuse

boxfuse.com

about

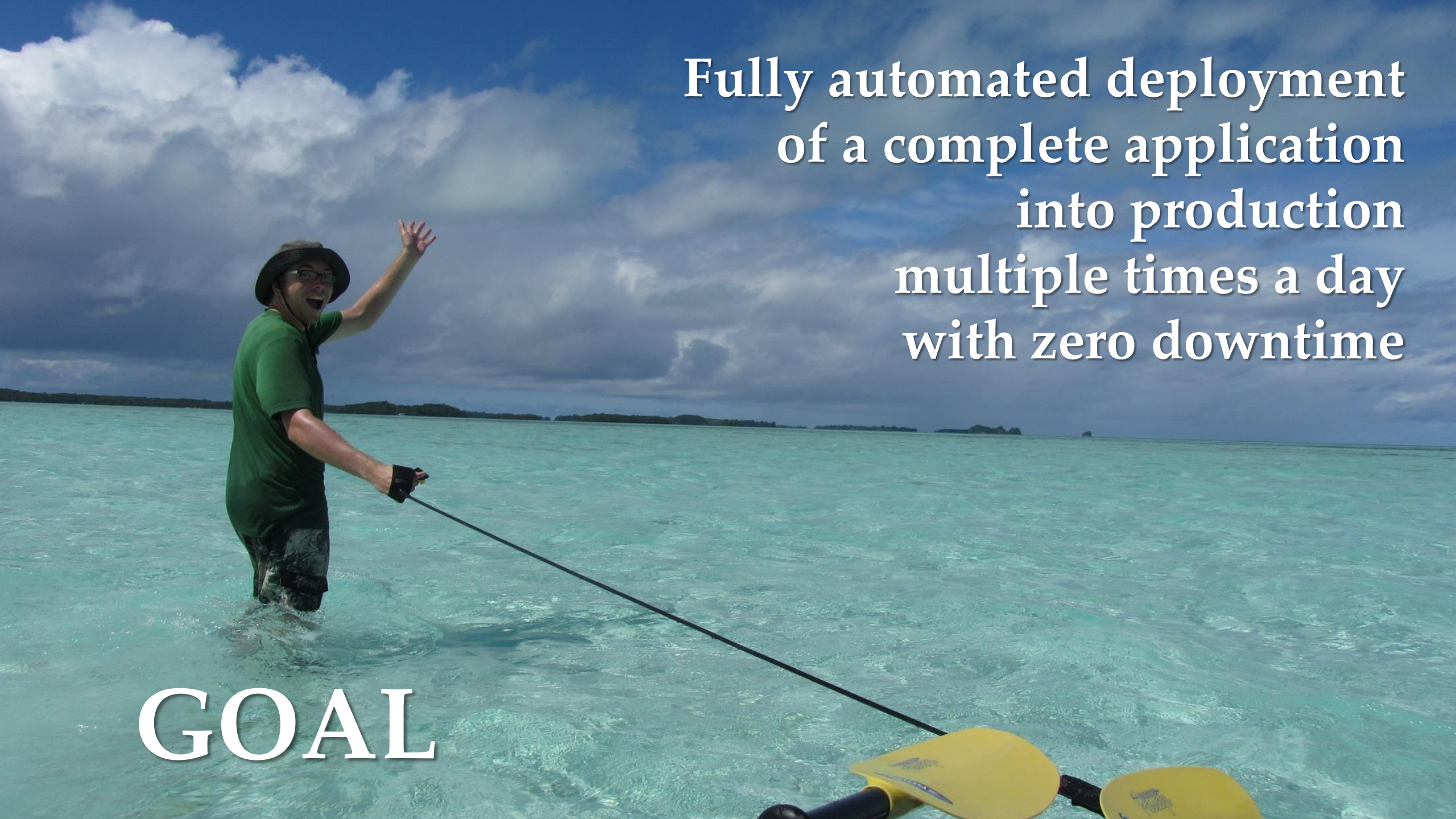
questions

Disclaimer

Two days ago
my voice completely
abandoned me



Advanced Swiss Technology

A man wearing a green t-shirt, a wide-brimmed hat, and glasses is standing in shallow, clear turquoise water. He is holding a black rope that extends from the foreground towards him. He has a joyful expression, with his mouth open and one hand raised in a celebratory gesture. The background shows a vast expanse of water under a blue sky with scattered white clouds. In the bottom right corner, the yellow blades of a kayak are visible.

Fully automated deployment
of a complete application
into production
multiple times a day
with zero downtime

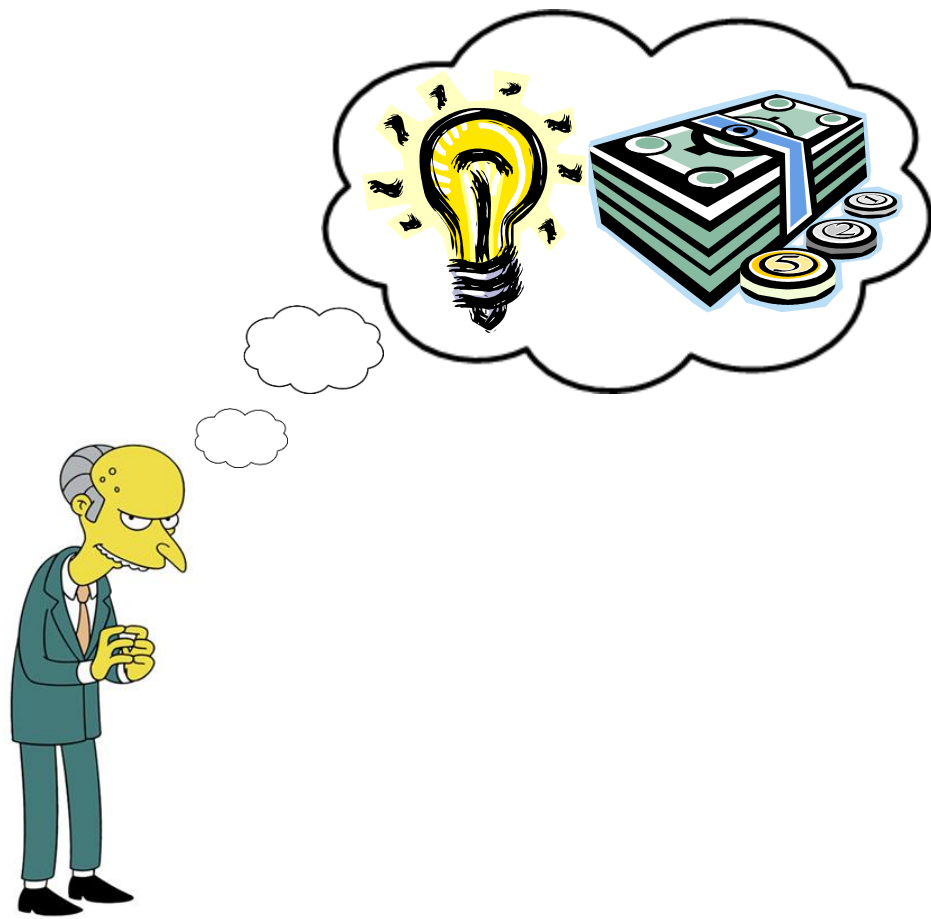
GOAL



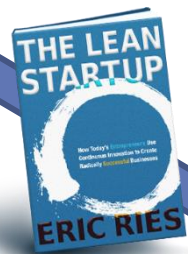
Putting
things
into

PERSPECTIVE

NEW NITH



KANBAN



KANBAN



A motorcyclist wearing a black helmet and jacket is riding a blue motorcycle on a city street. The motorcycle is heavily loaded with a large stack of cardboard boxes, secured with yellow straps. The boxes are stacked high, reaching above the rider's head. The background is blurred, showing a city street with buildings and other people. The text "CONTINUOUS DELIVERY" is overlaid in white, serif font on the left side of the image.

CONTINUOUS DELIVERY

Poll:

How often do you deploy in production?

At least

- Once a year
- Every 3 months
- Every Month
- Every 2 weeks
- Every week
- Multiple times a week
- Every day
- Multiple times a day



Things that connect us

We honor the everyday things that bring us together and celebrate people everywhere opening up and connecting. [Share](#)

Sign Up

It's free and always will be.

First Name:

Last Name:

Your Email:

Re-enter Email:

New Password:

I am:

Select Sex:

Birthday:

Month:

Day:

Year:

Why do I need to provide my birthday?

By clicking Sign Up, you agree to our [Terms](#) and that you have read our [Data Use Policy](#), including our [Cookie Use](#).



Sign Up

[Create a Page for a celebrity, band or business.](#)



Share your life
in photos

Sign up now

or login with your ID:  

© by Tannenberg

Upload

More ways to get your photos online.

Multiple ways to upload your photos to Flickr—through the web, your mobile device, email or

Discover

See what's going on in your world.

Keep up with your friends and share your stories with comments & notes. Add rich

Share

Your photos are everywhere you are.

Upload your photos once to Flickr, then easily and safely share them through Facebook.

Etsy

Register

Sign In

Search for items and shops

Search

Cart

Etsy is now in Spanish! [Change your language preferences](#) to test it out.

Browse

Art

Home & Living

Jewelry

Fine Jewelry

Women

Men

Kids

Vintage

Weddings

Craft Supplies

Trending Items

Pictoplasma

VERSAND *für* UMME
 DIESEN MONAT GIBT'S *in* DEUTSCHLAND!
 Jetzt einkaufen

Handpicked Items [See more](#)

Picked by pitsispopis



Yellow hair bow / Hand Croc...
Plexida €6.00 EUR



blue felt bold geometric neck...
pergamondo €26.05 EUR



Denim bow hair barrette, jea...
Akamatra €9.47 EUR



Opposites attract. Crochet b...
sidirom €12.63 EUR



Questions

Tags

Users

Badges

Unanswered

Ask Question

Top Questions

interesting

198

featured

hot

week

month

-2

votes

2

answers

24

views

how do i get the number of members on status name

mysql

sql

sql-server

join

14s ago dragon112 139

0

votes

1

answer

15

views

Problem while playing video in jsp - How to redirect to another page after playing the video?

java

html

jsp

19s ago bhagyas 262

0

votes

0

answers

2

views

Can inline elements contain block elements?

html

24s ago Vimal Basdeo 458

0

votes

0

answers

1

view

What is the Fastest .net web solution?

asp.net

web-services

asp.net-ajax

ajax.net

24s ago JCPflux 63

2

votes

1

answer

13

views

How to get time format using country ISO code in android?

android

time-format

27s ago Sathya 2,093

Favorite Tags

flyway

Add

Ignored Tags

Add

network tag filters »

Recent Tags

c# × 81

java × 53

c++ × 52

php × 43

javascript × 41

jquery × 28

android × 22



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stackoverflow.com



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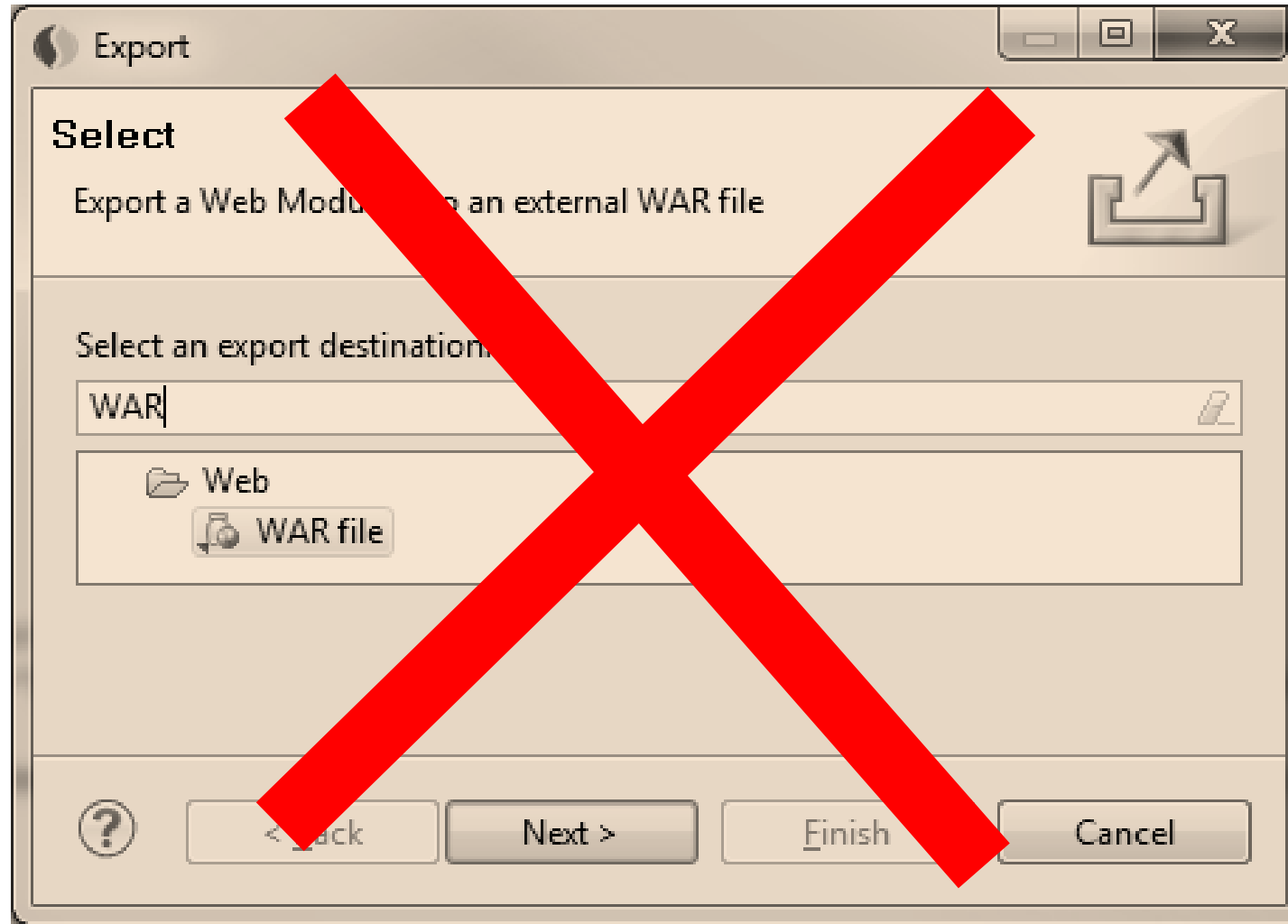
stackoverflow.com

Prerequisites

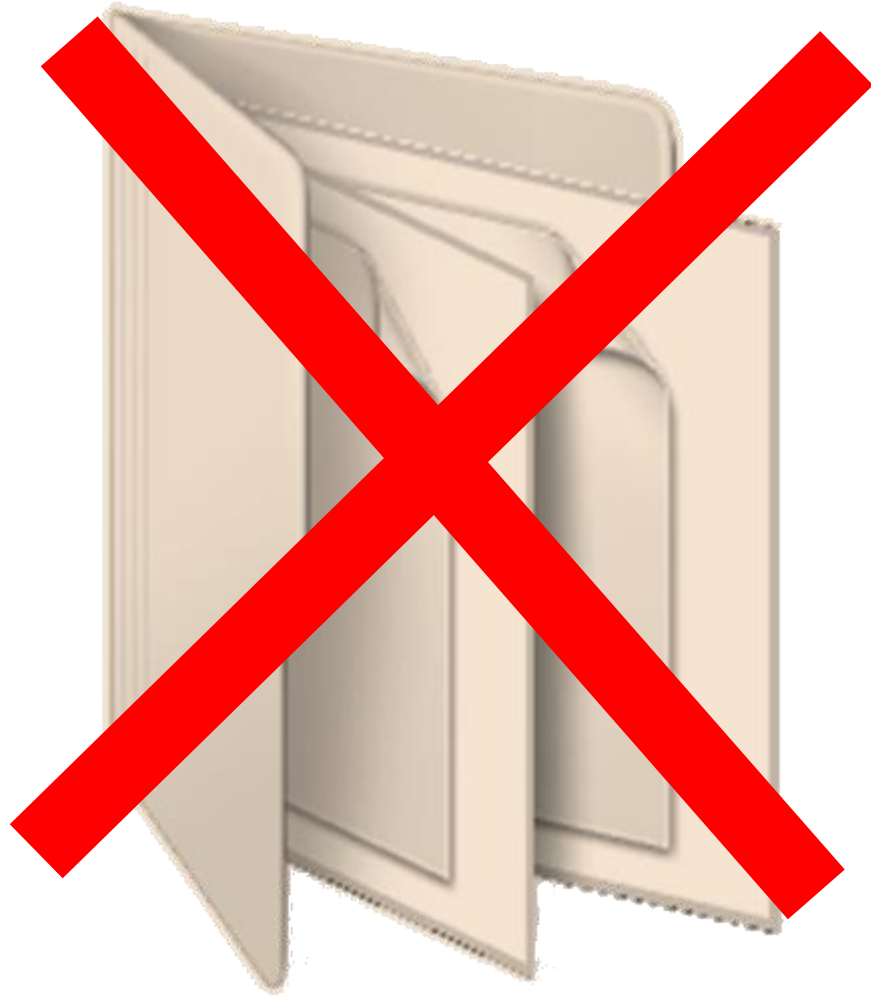


Process

<http://www.flickr.com/photos/feffef/460299390/in/photostream/>



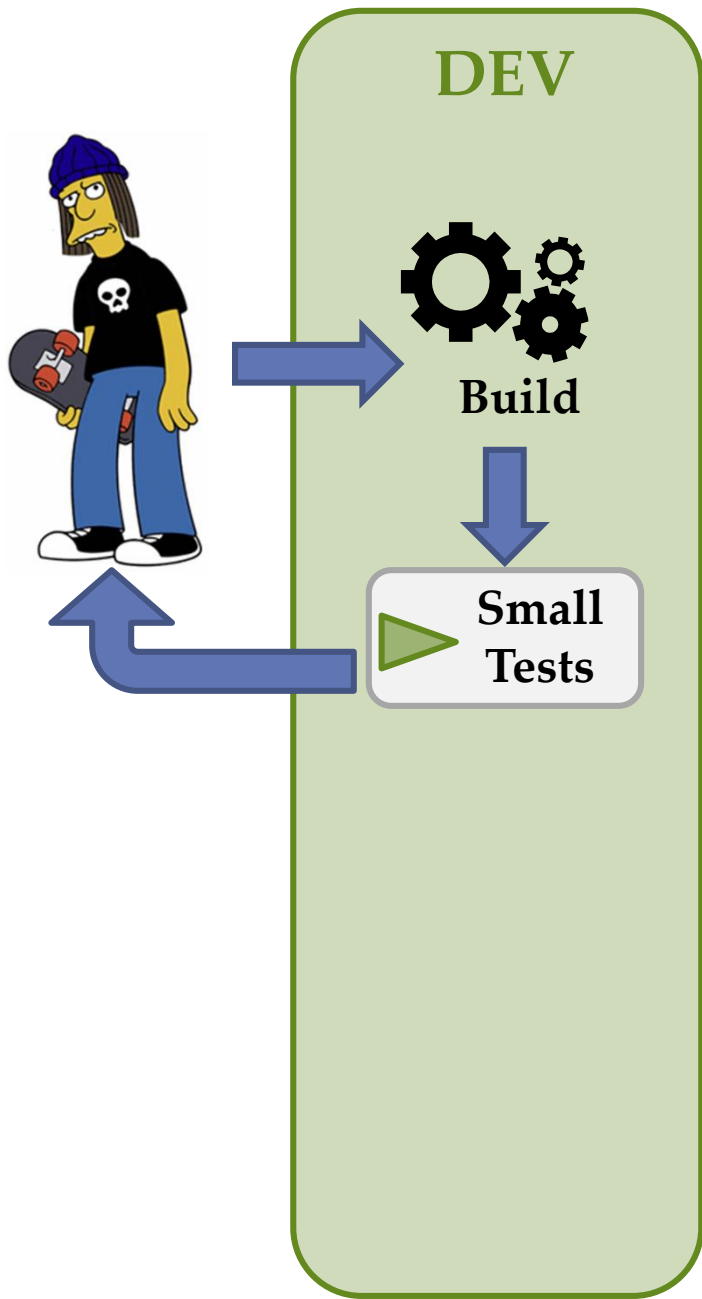
Build

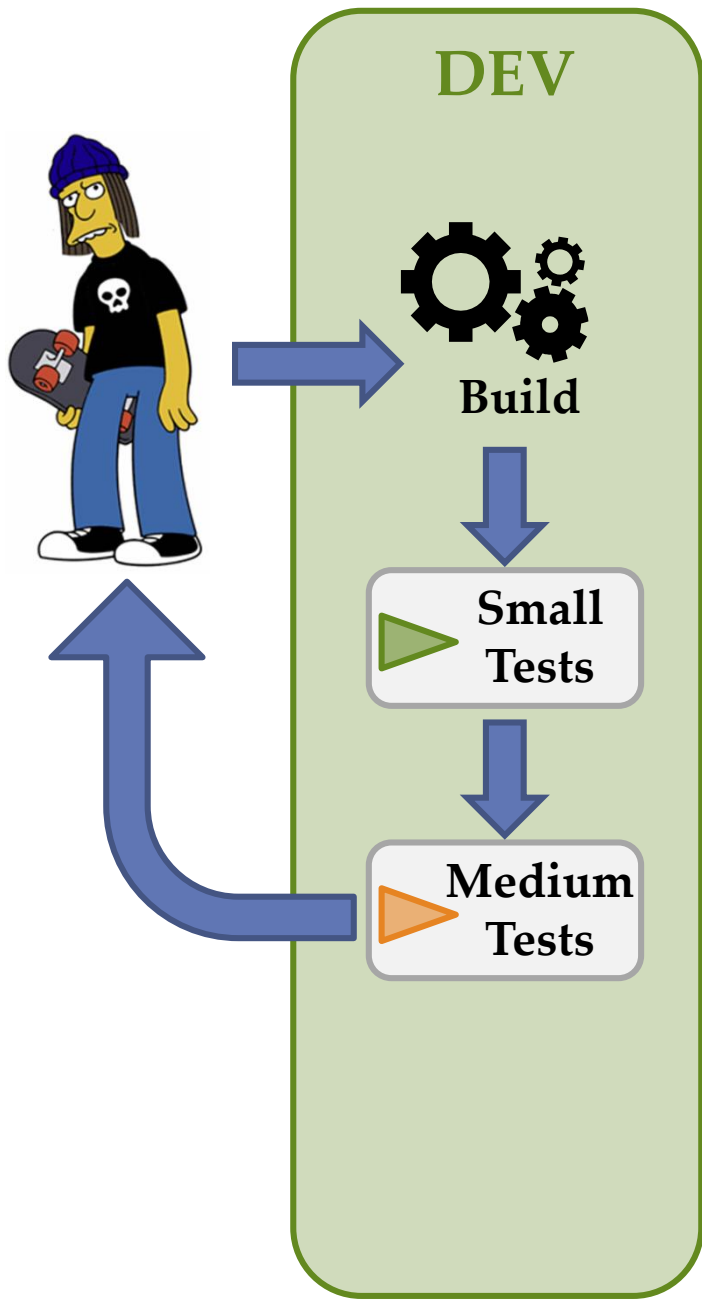


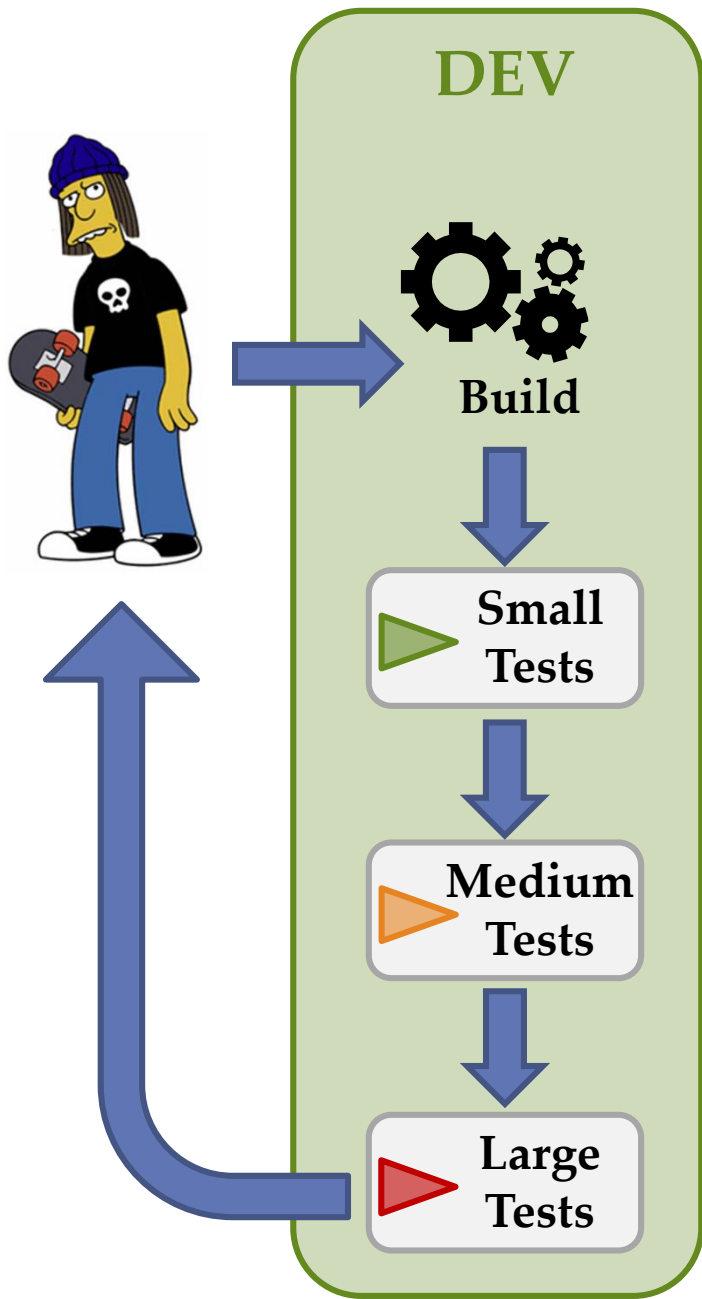
Version Control

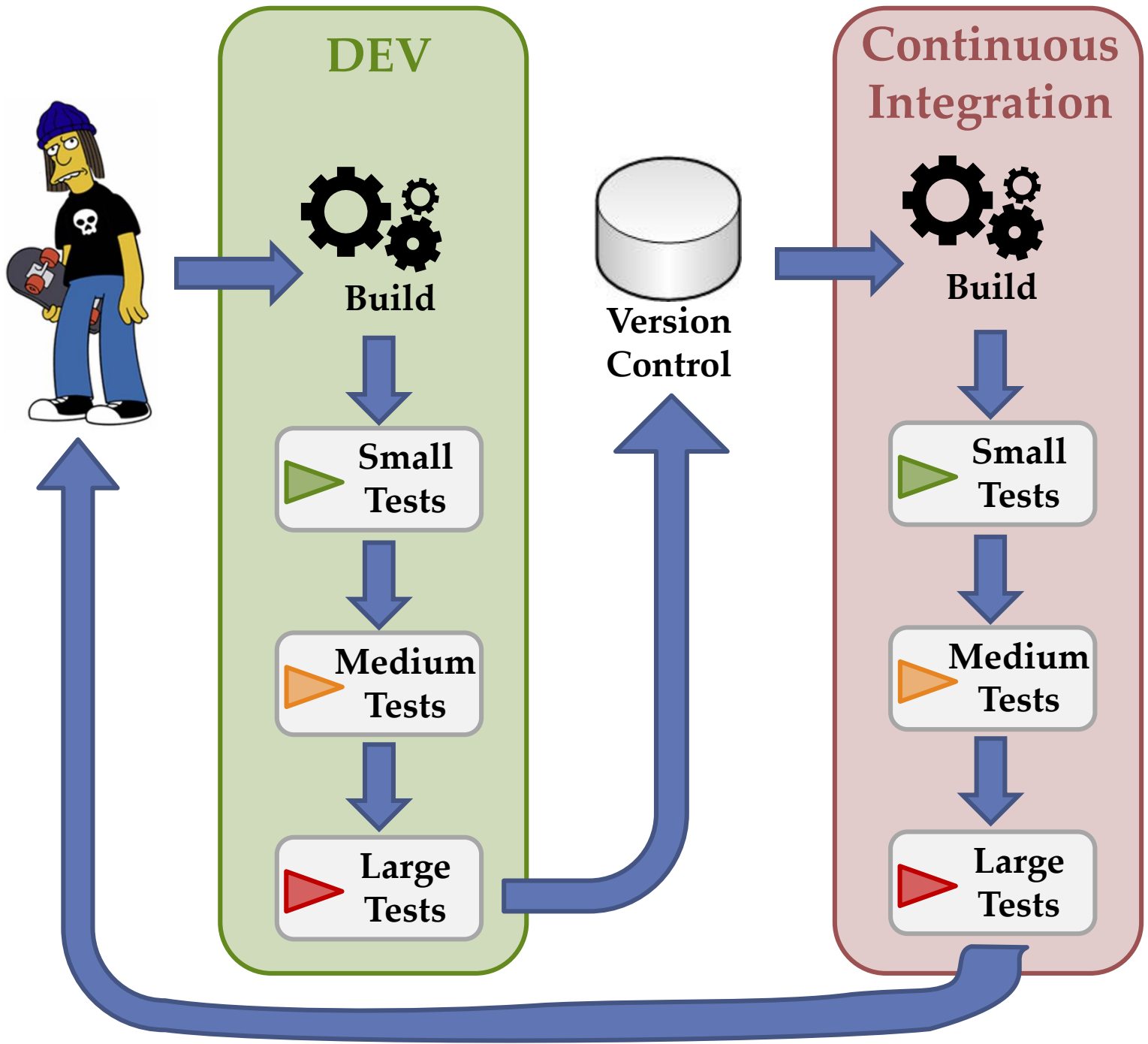


Test









DEPLOYMENT automation

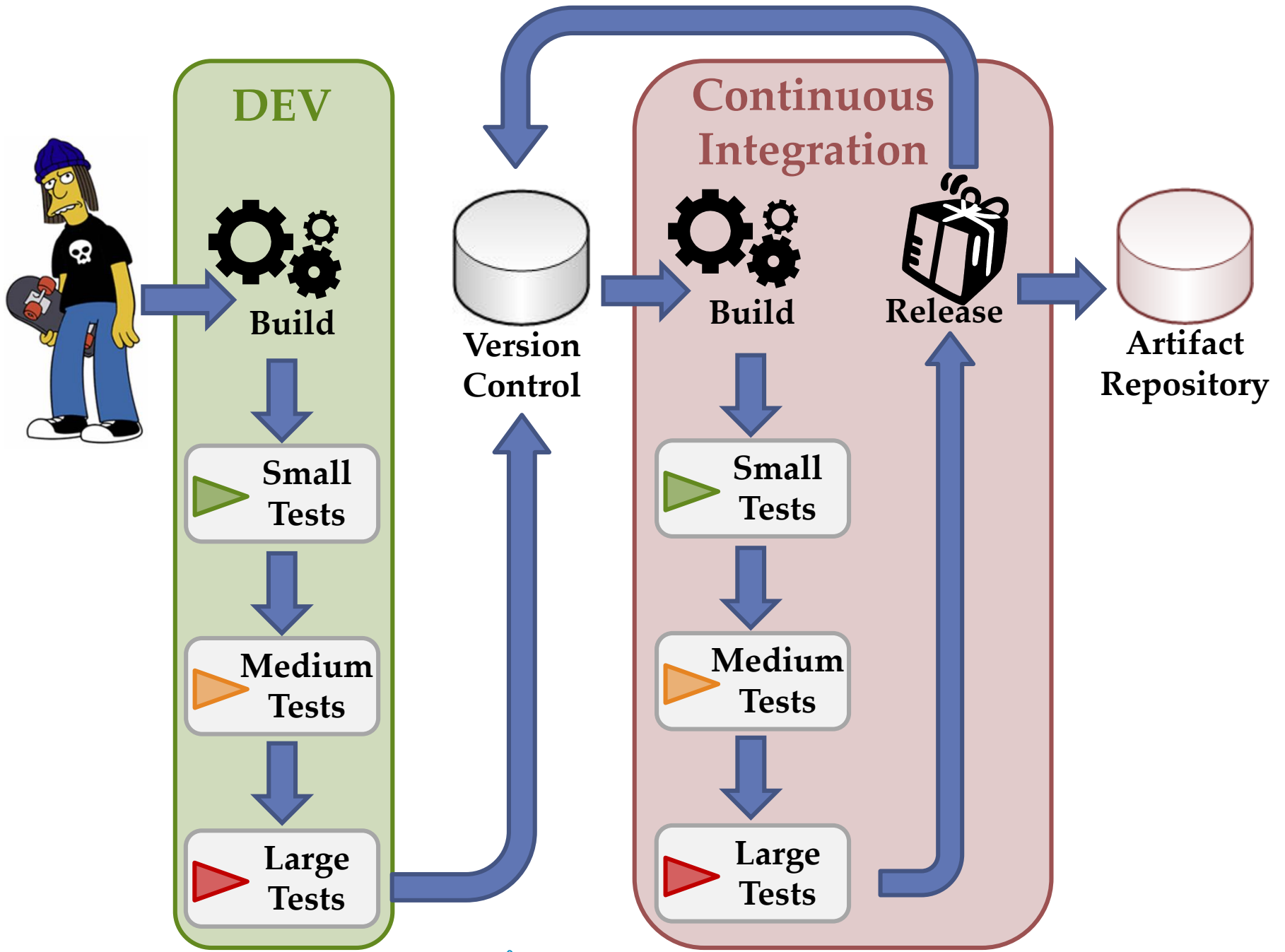


do

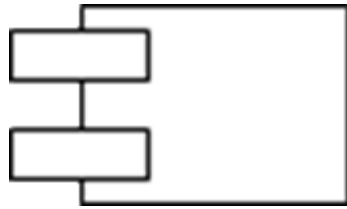
NOT

deploy

SNAPSHOTS !



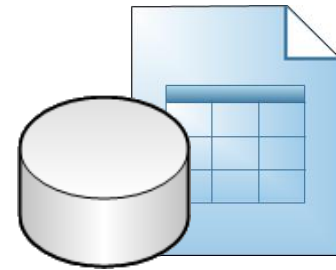
What gets deployed?



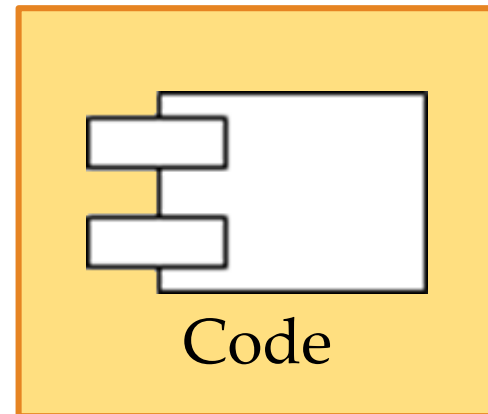
Code



Configuration



DB Delta



Code

**Deployment
Package**

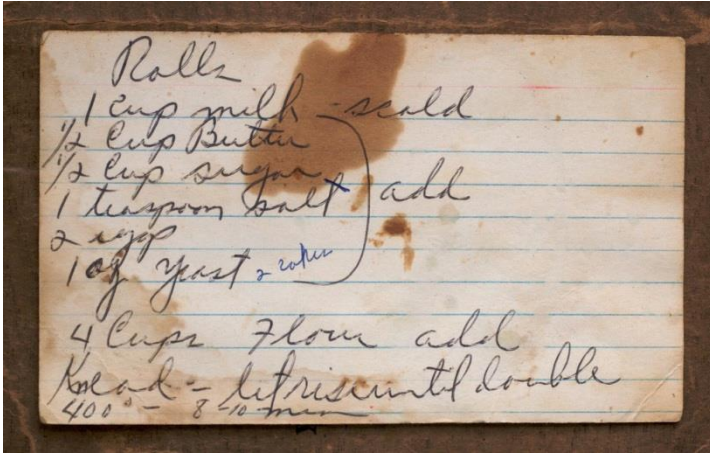
Rolls

1 cup milk - scald
1/2 cup Butter
1/2 cup sugar
1 teaspoon salt
2 eggs
1 oz yeast & water

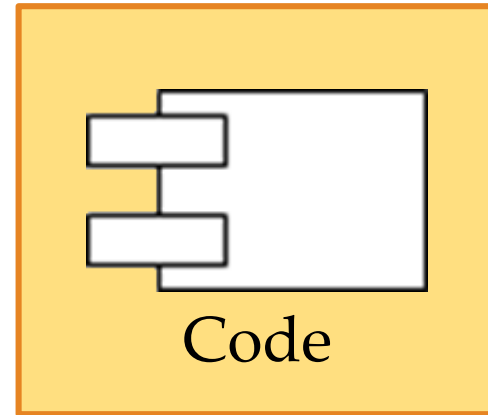
add

4 cups flour add

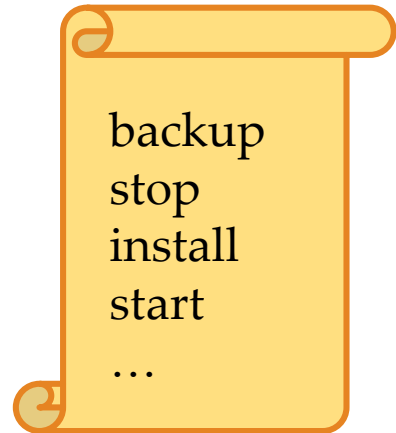
Knead - let rise until double
400° - 8-10 min



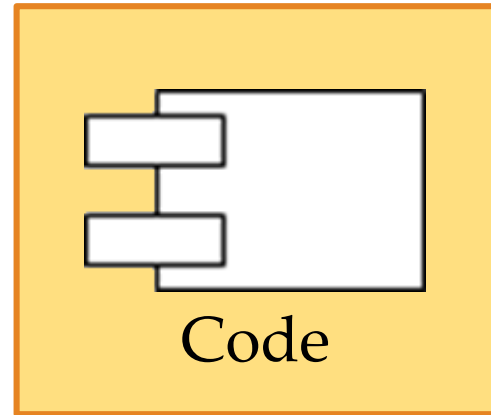
**Deployment
Script**



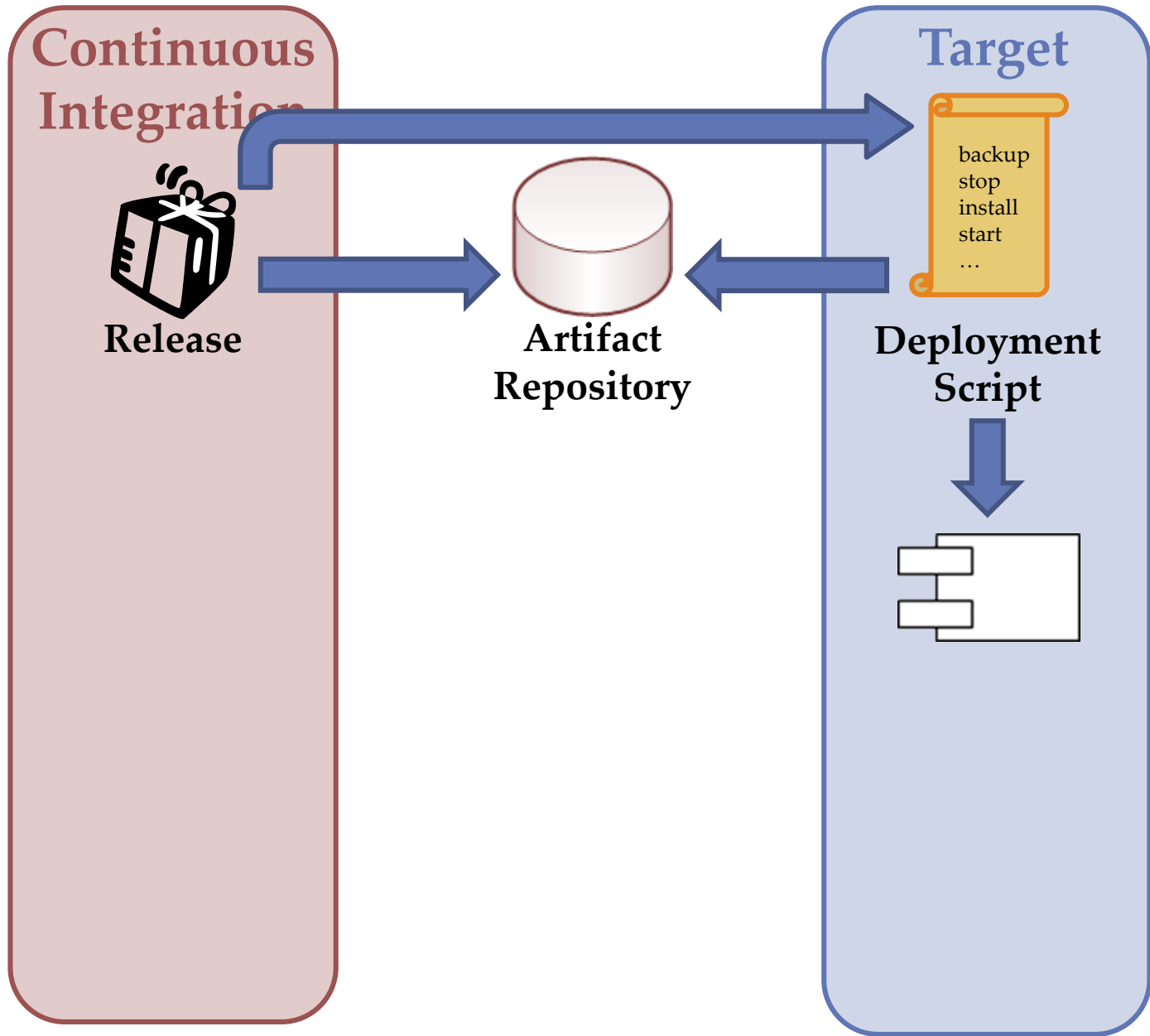
**Deployment
Package**



**Deployment
Script**



**Deployment
Package**



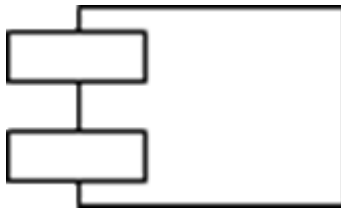
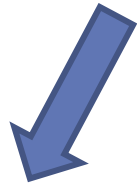


Configuration



Maybe it could
change one day

≠ Environments

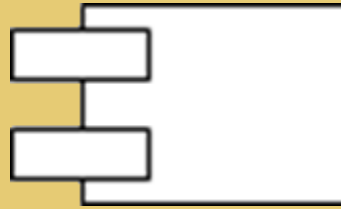


Code



Deployment
Package

Environment Detection



Code

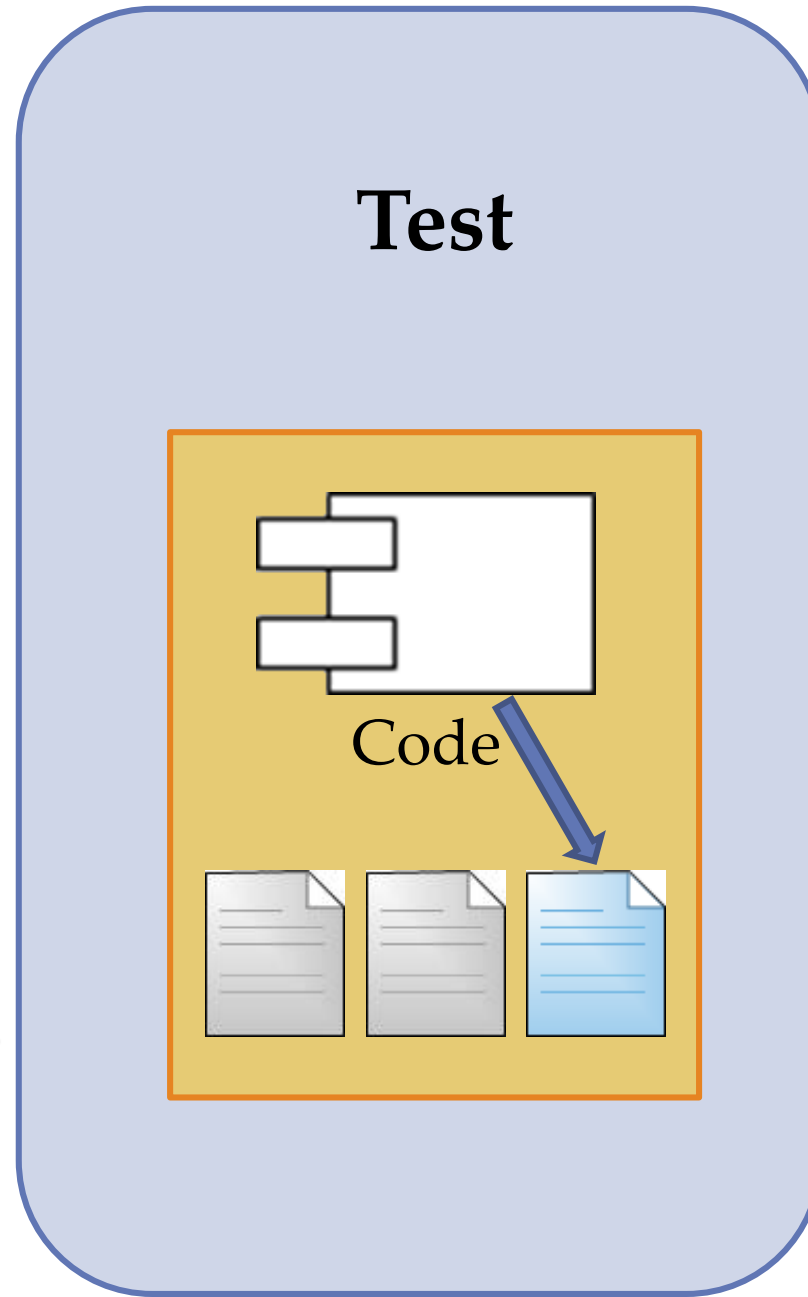


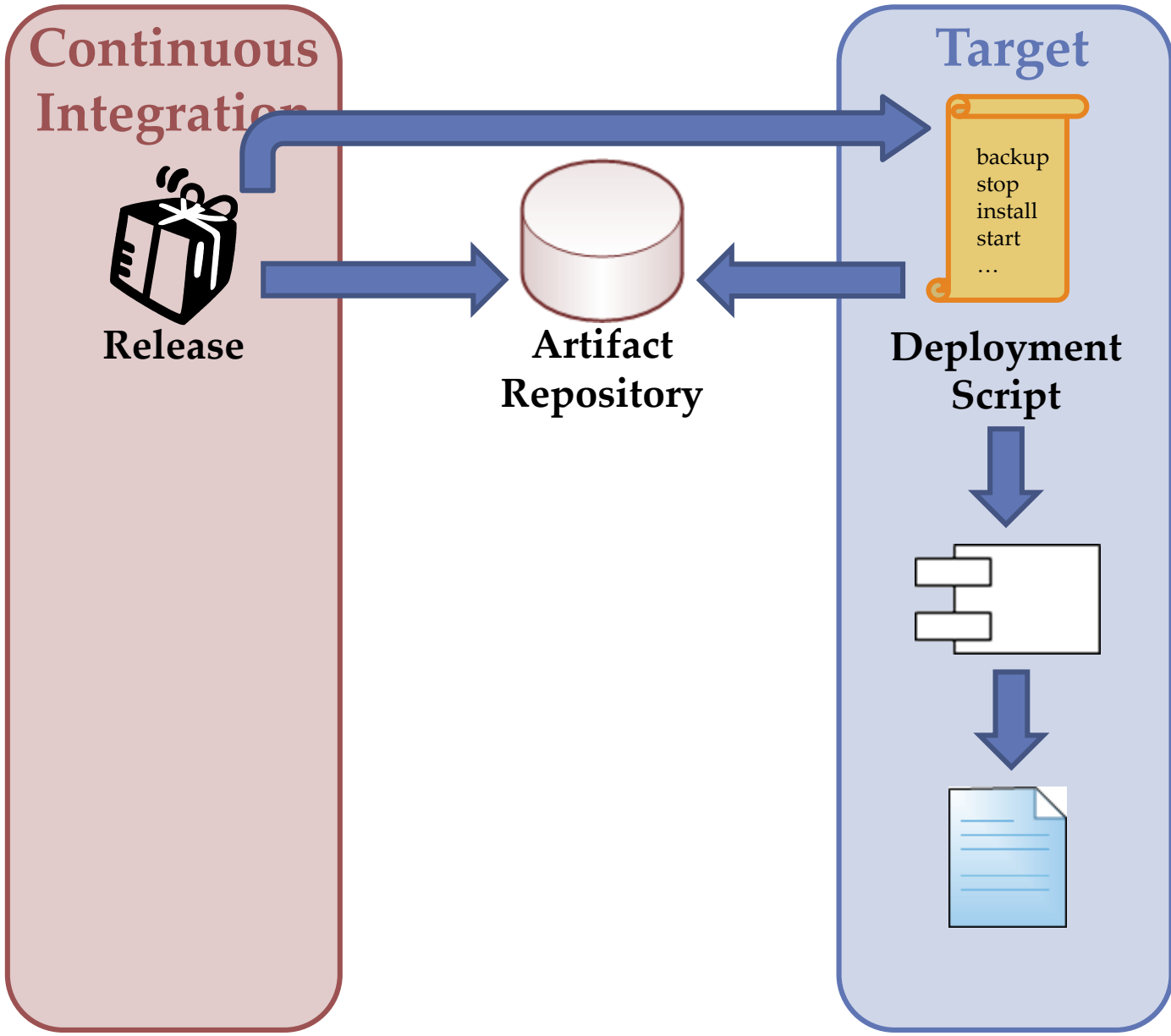
Deployment
Package

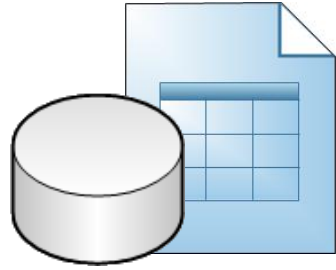
Environment Detection



Auto- Configuration







DB Delta



The Fear

of

DDL



DML

VS



DDL

Name	Balance
Homer	163
Marge	214
Bart	9
Lisa	25

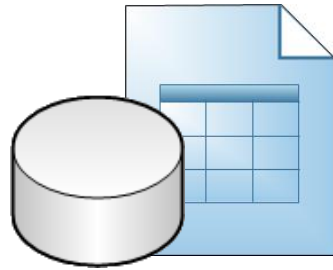
Name	Balance
Homer	0
Marge	0
Bart	0
Lisa	0

DML

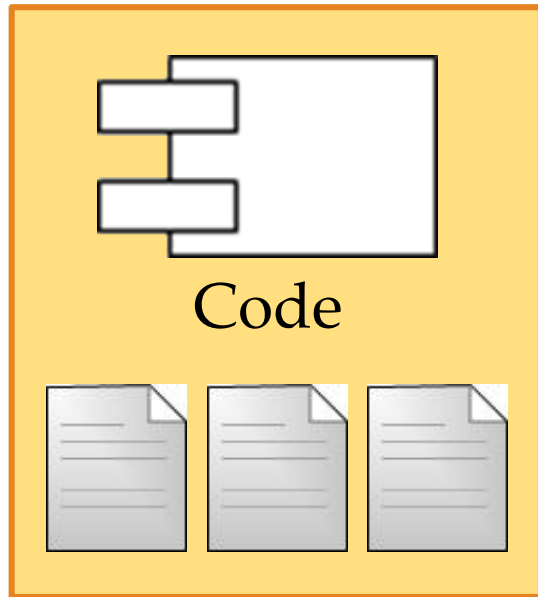
VS

Name
Homer
Marge
Bart
Lisa

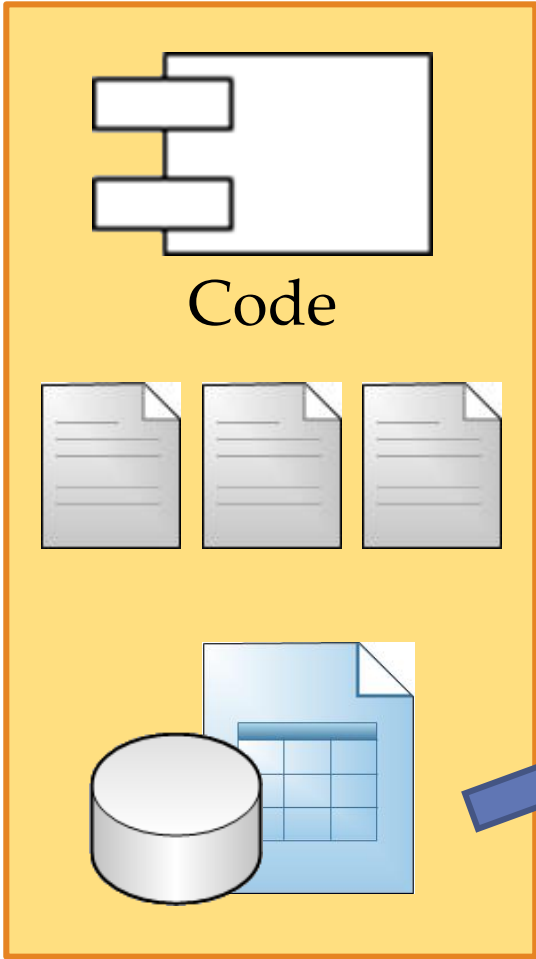
DDL



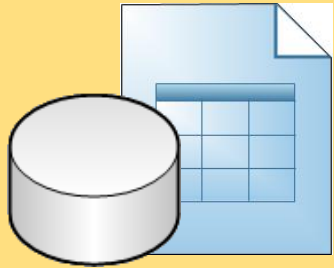
DB Delta



**Deployment
Package**

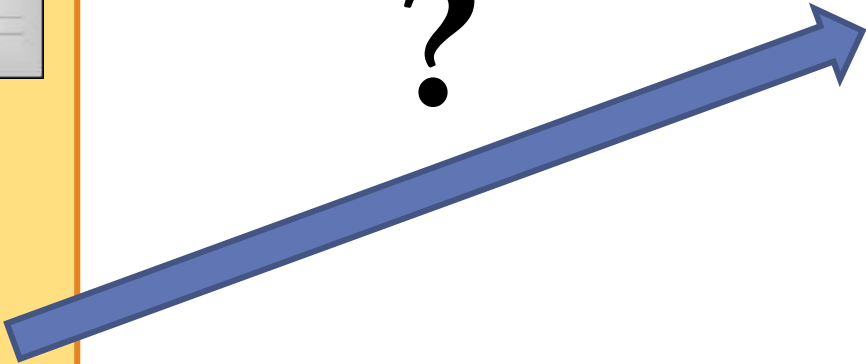


Code

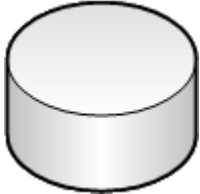


**Deployment
Package**

?



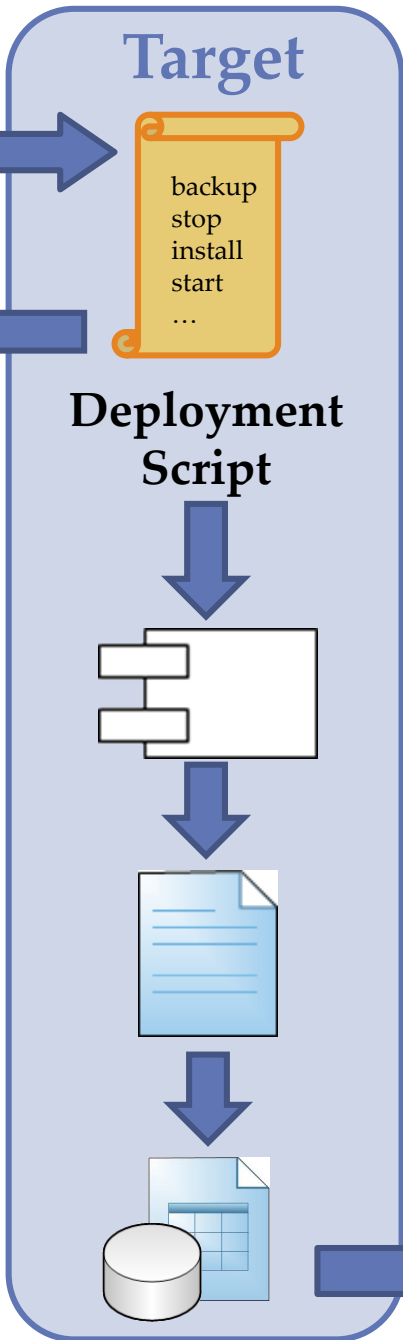
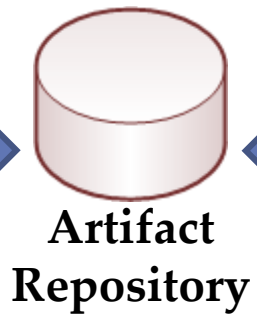
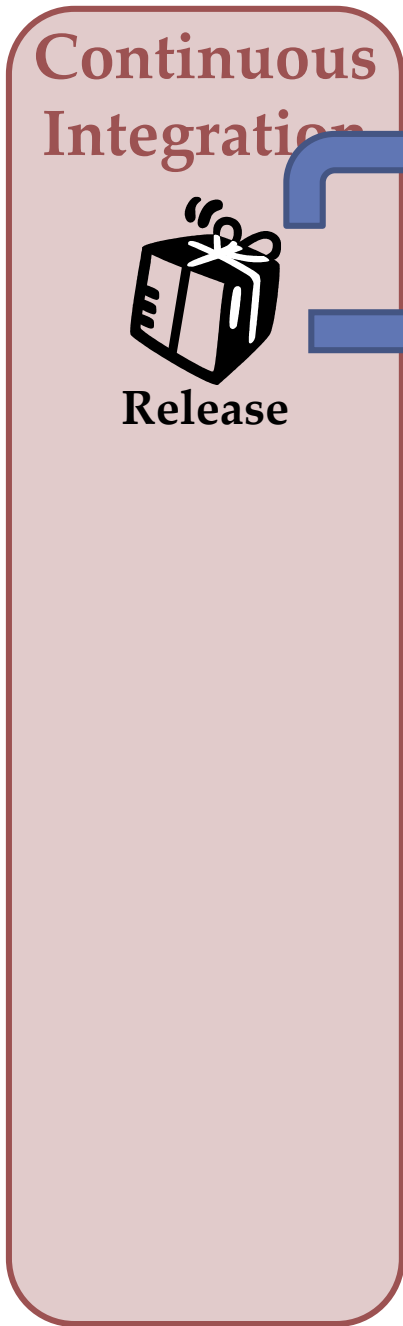
?

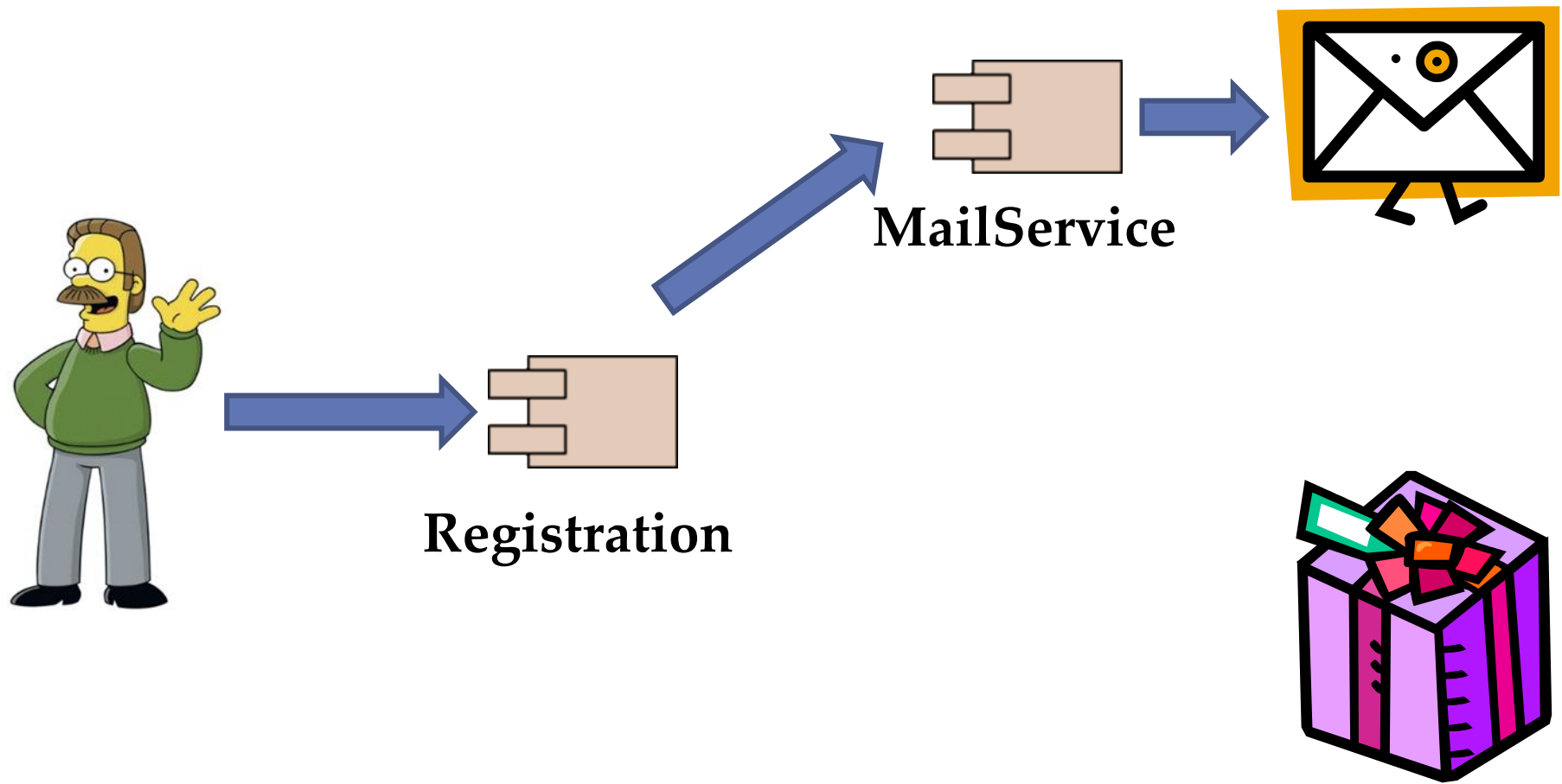


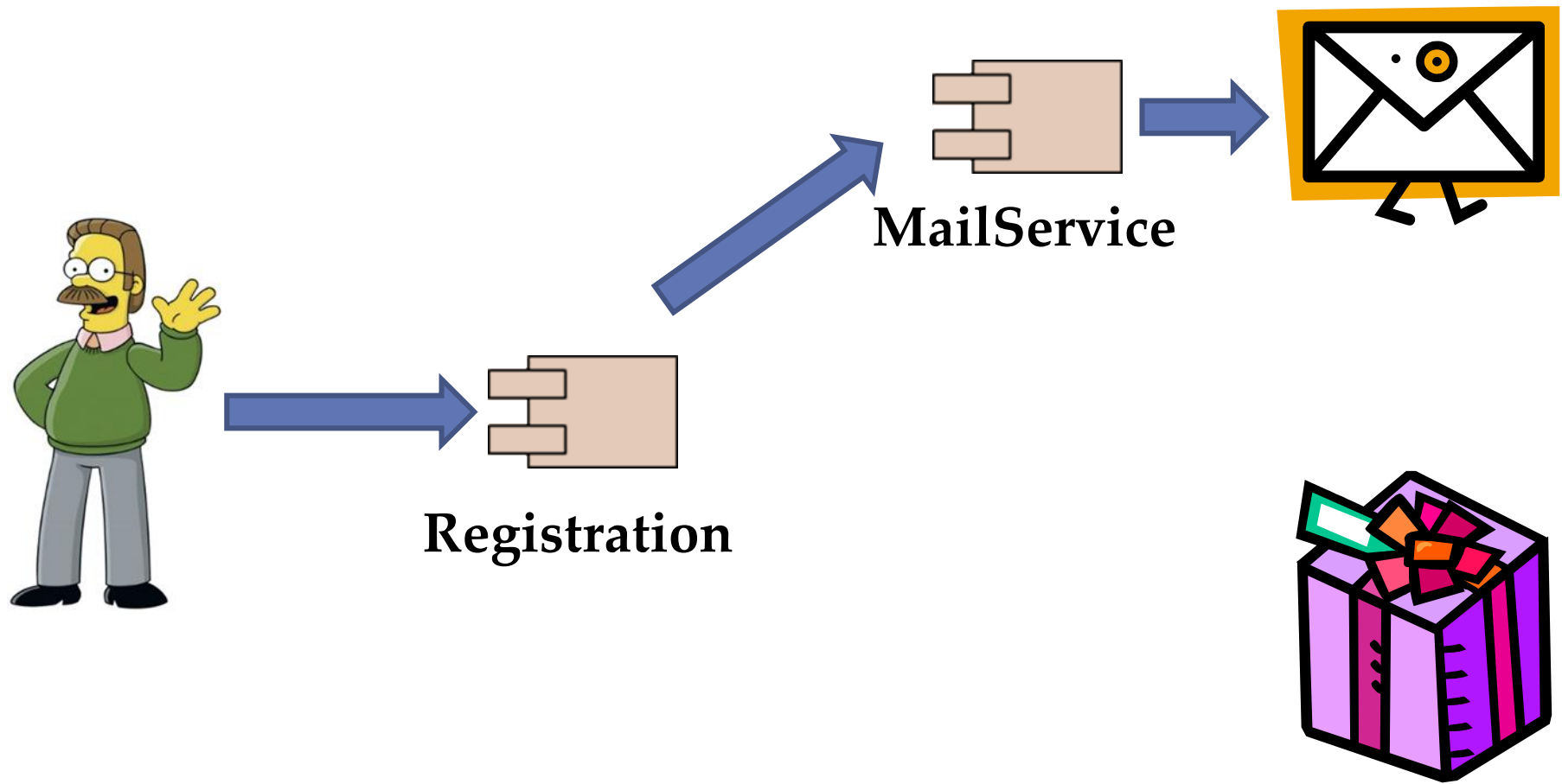
DB

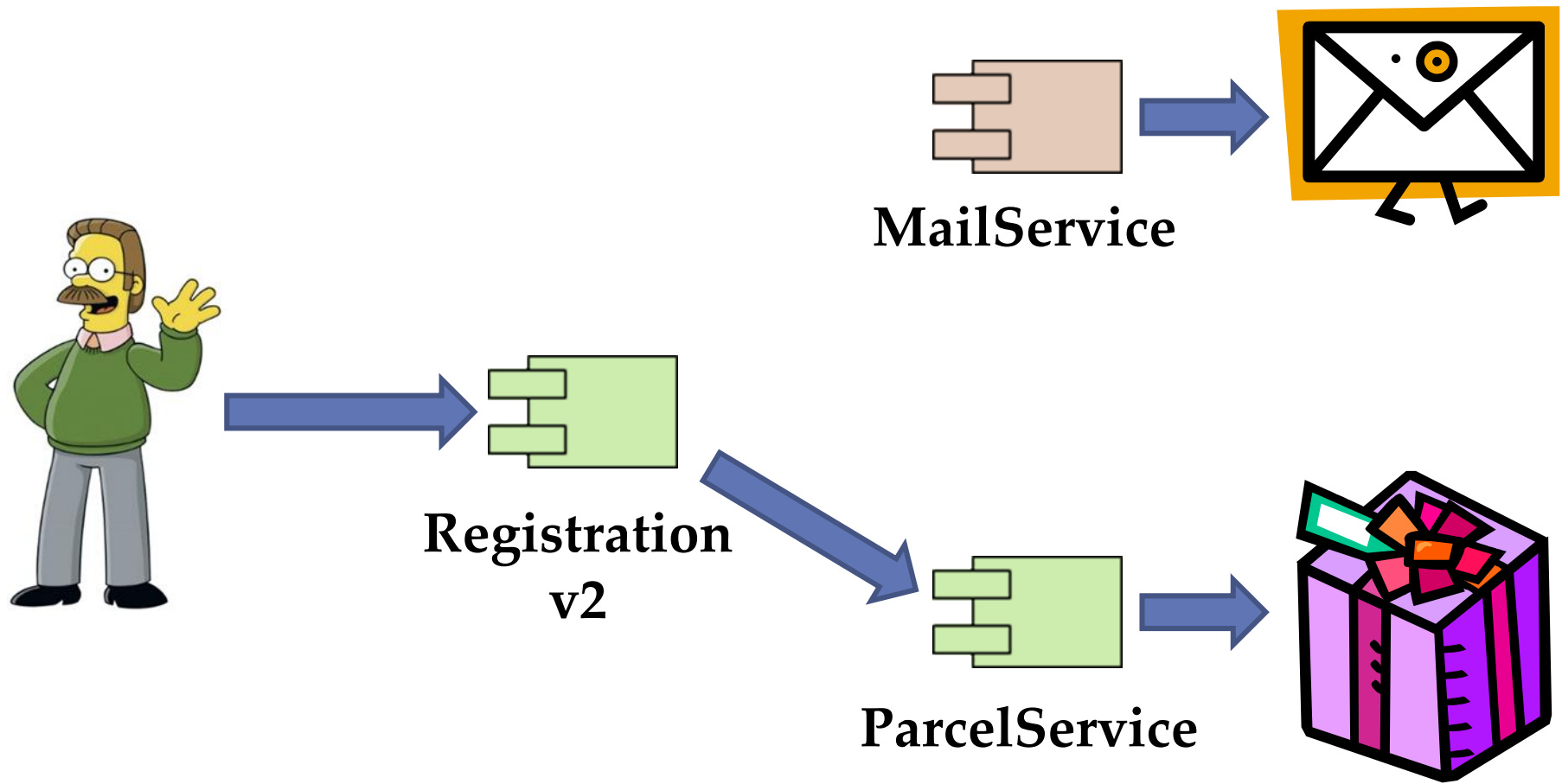


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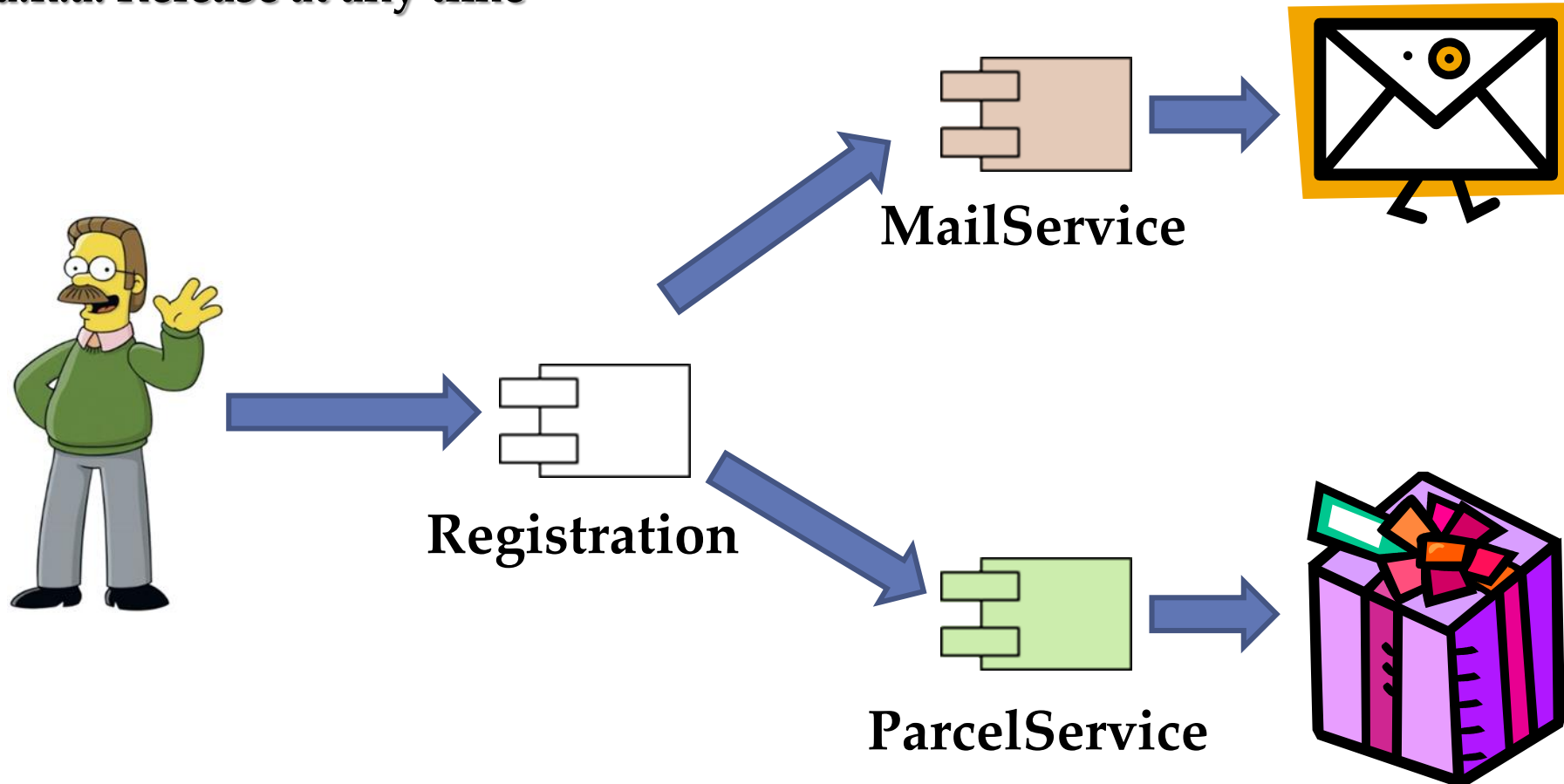






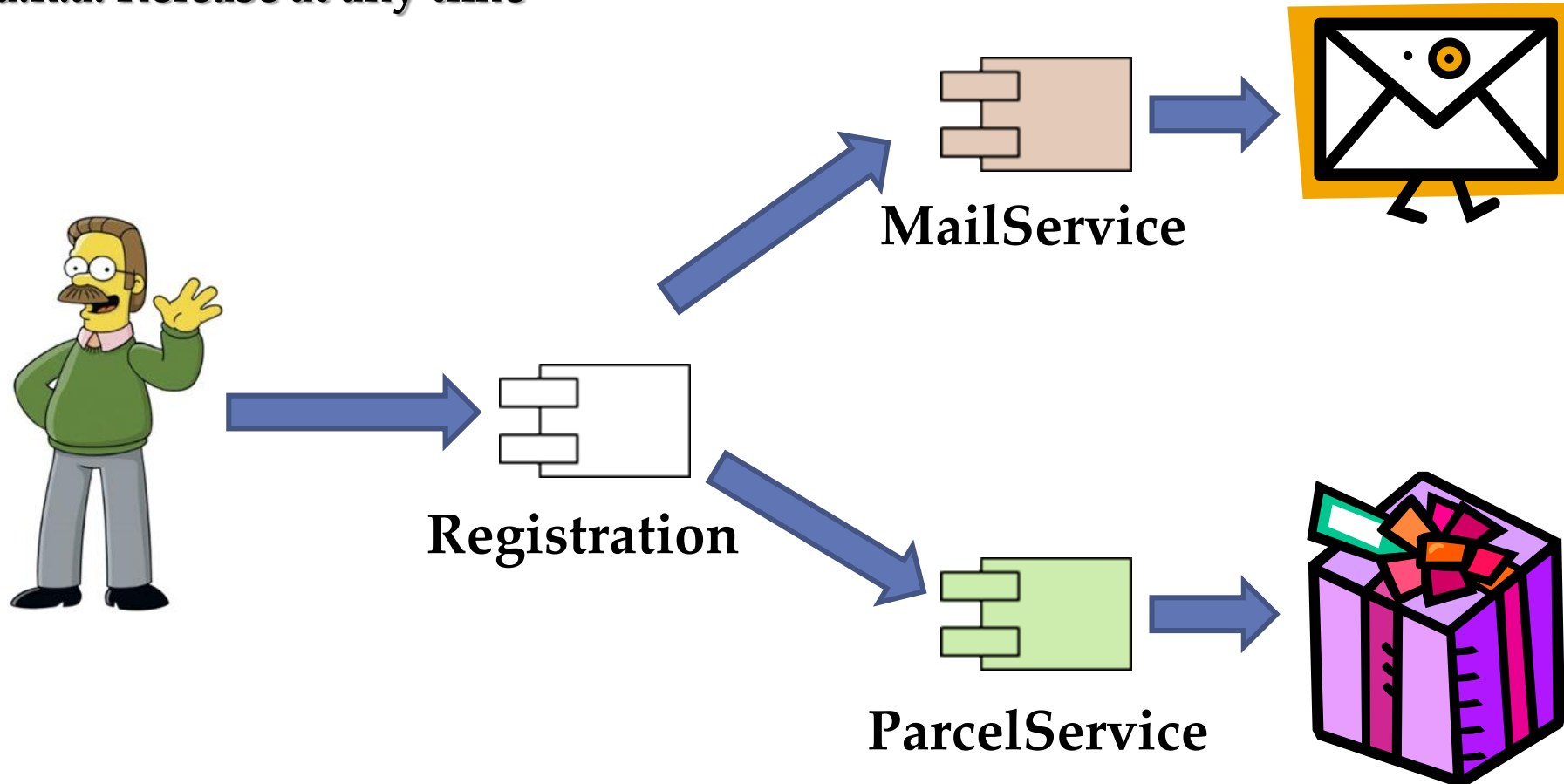
Feature Toggles

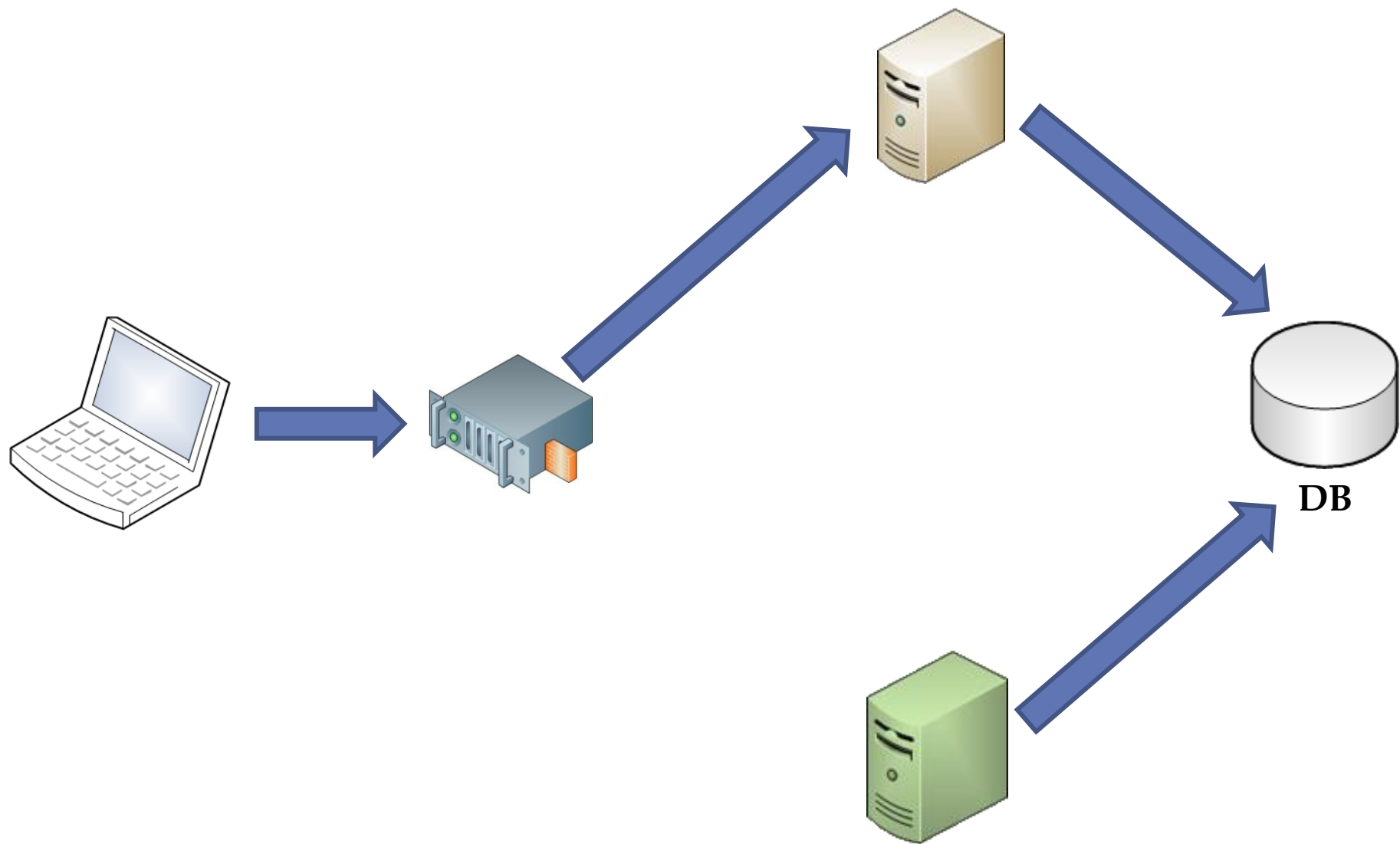
a.k.a. Release at any time

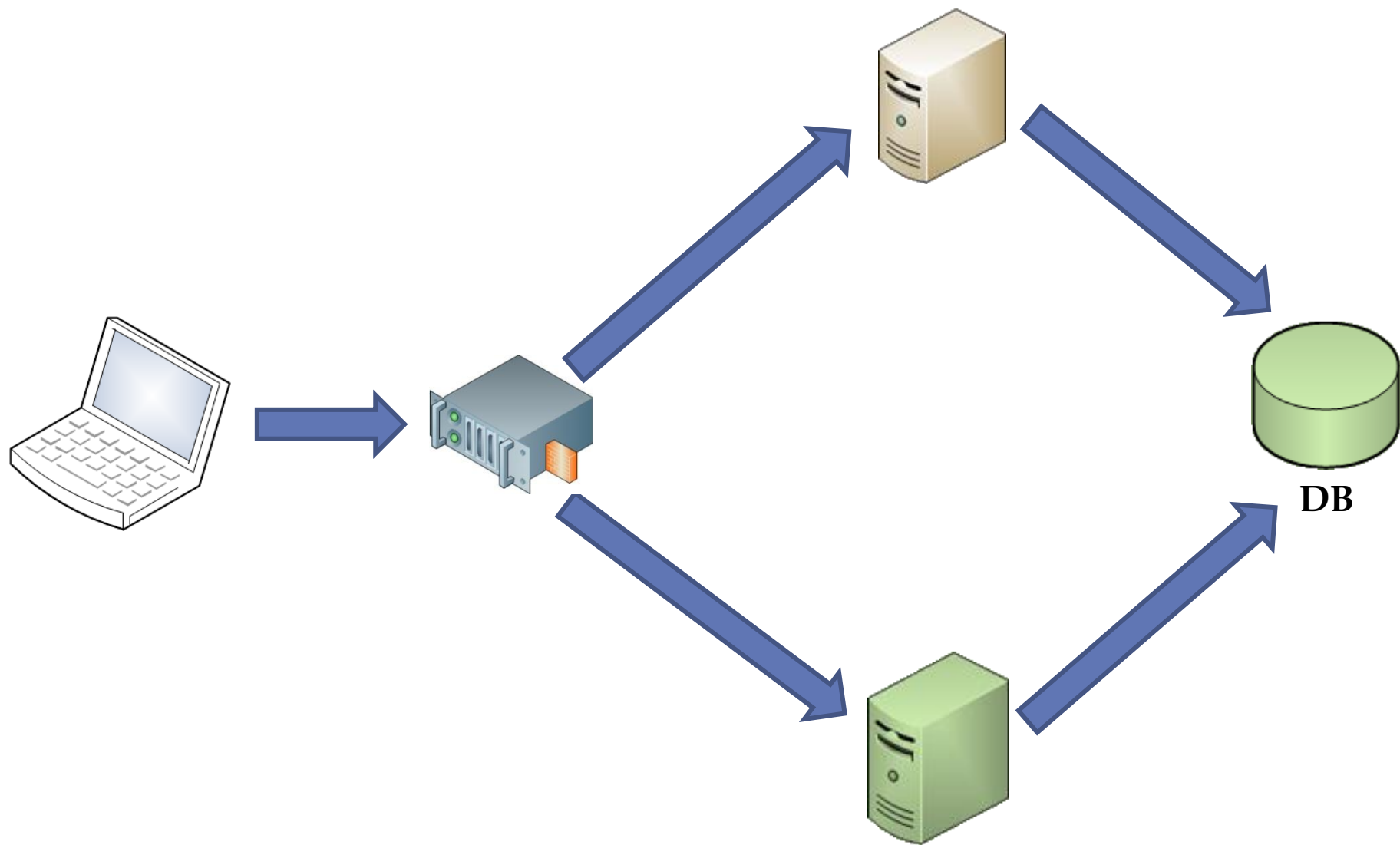


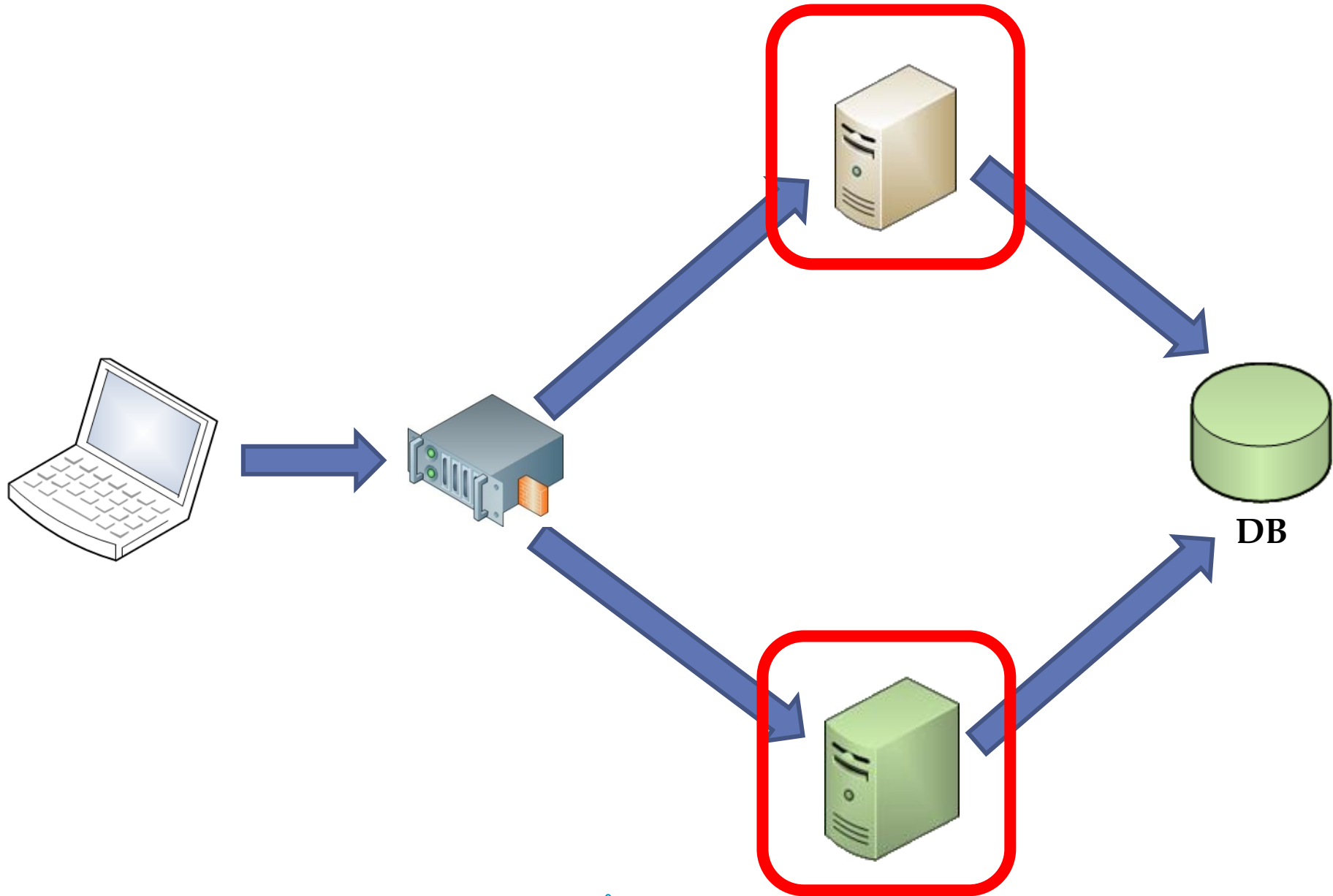
Feature Toggles

a.k.a. Release at any time



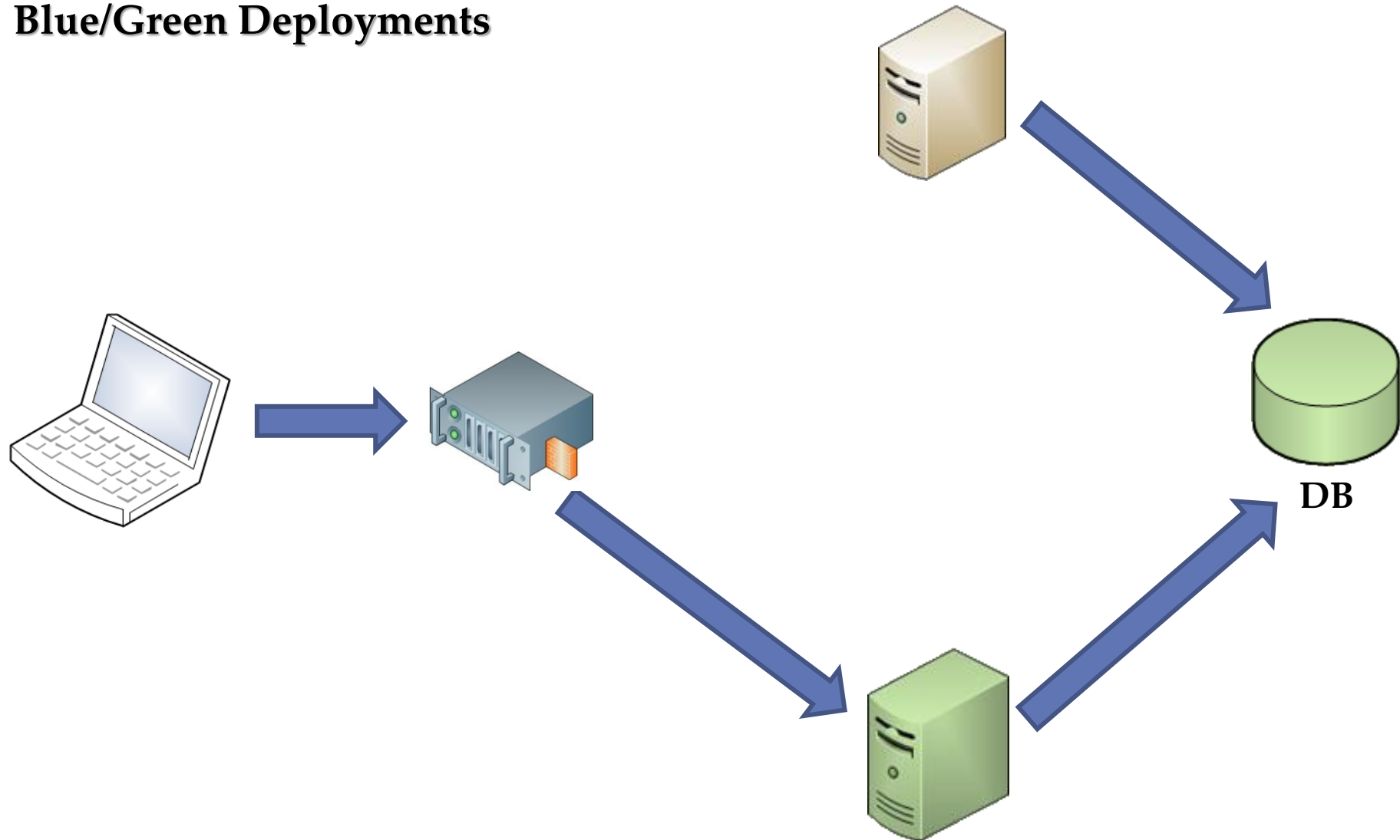


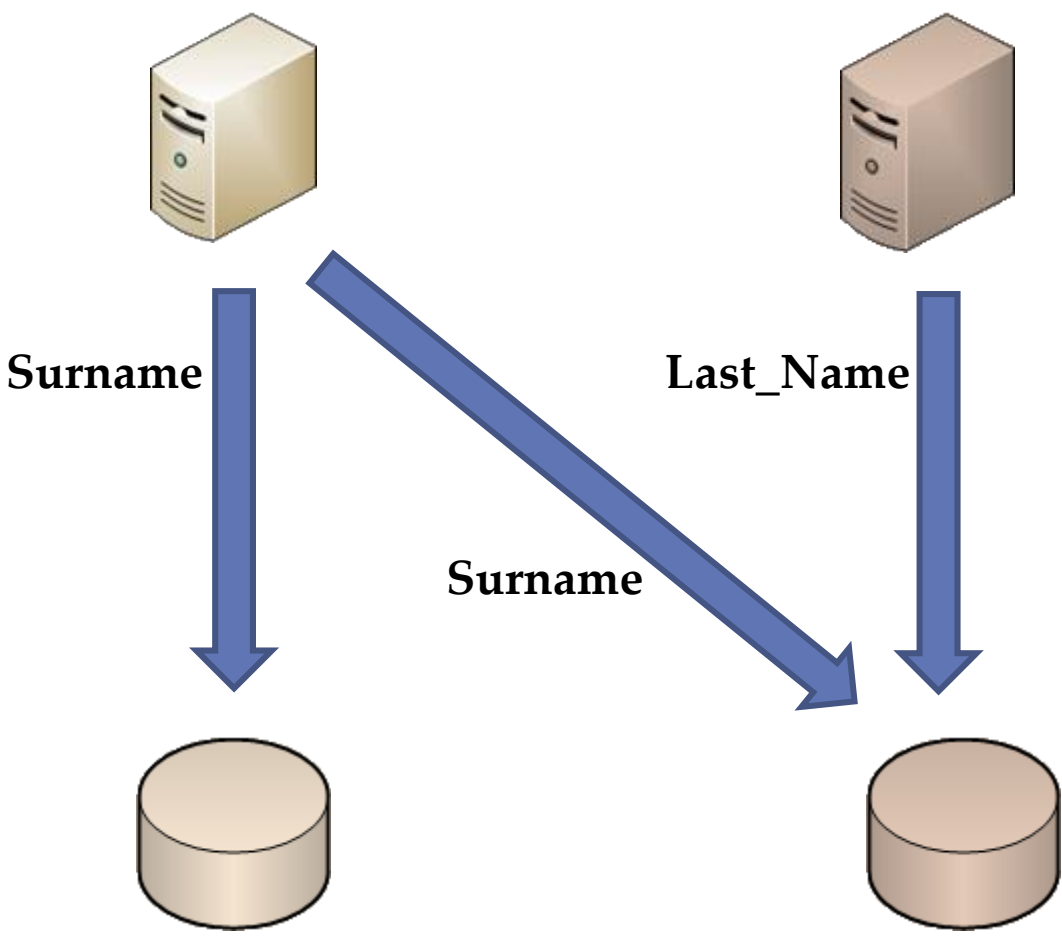




Zero Downtime

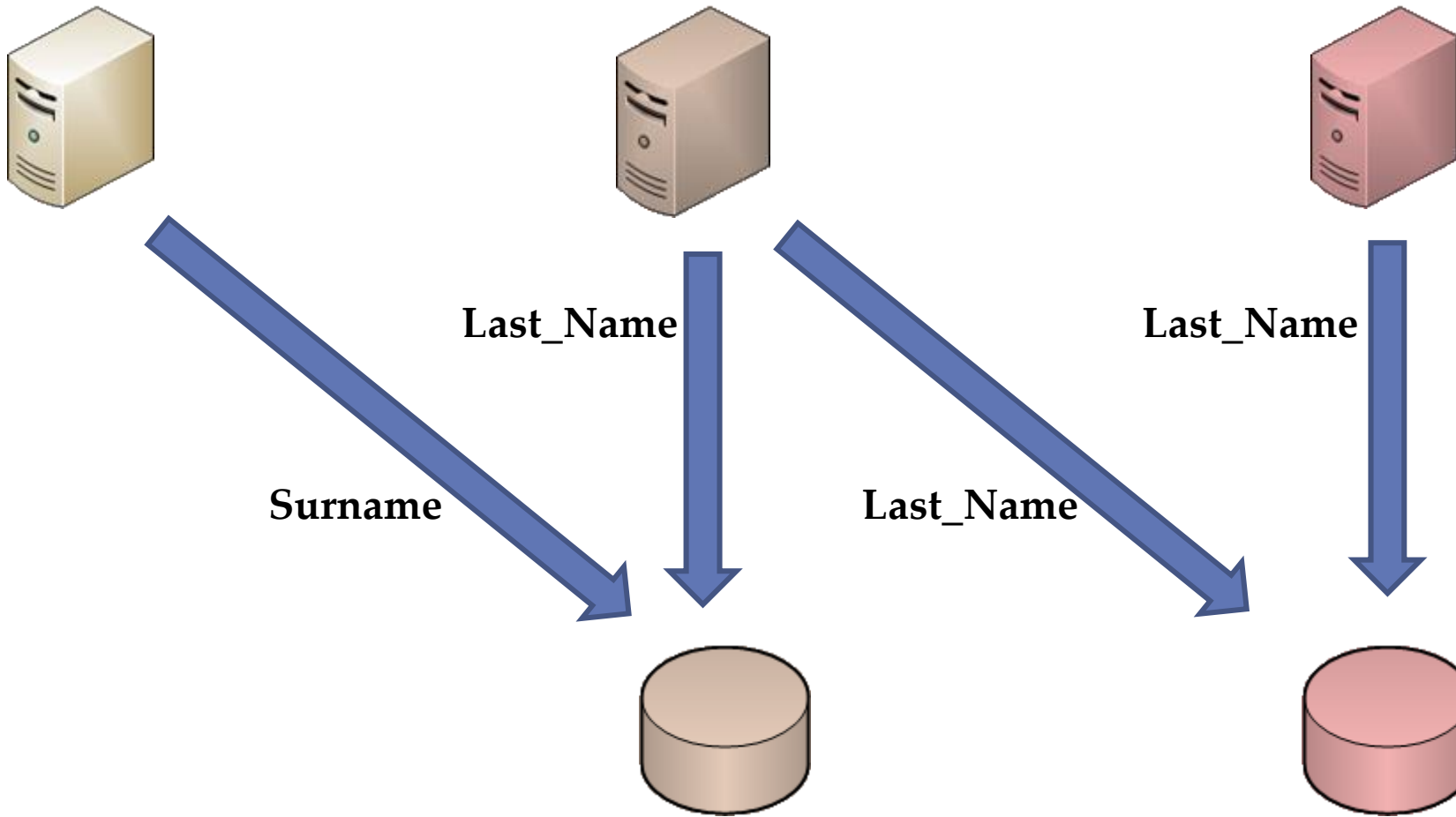
Blue/Green Deployments





FirstName	Surname
Homer	Simpson
Roger	Rabbit
Lucky	Luke

~~ALTER TABLE RENAME COLUMN~~



```

ALTER TABLE ...
  ADD COLUMN Last_Name
CREATE TRIGGER ...
UPDATE ... SET Last_Name =
Surname

```

```

DROP TRIGGER ...
ALTER TABLE ...
  DROP COLUMN
Surname

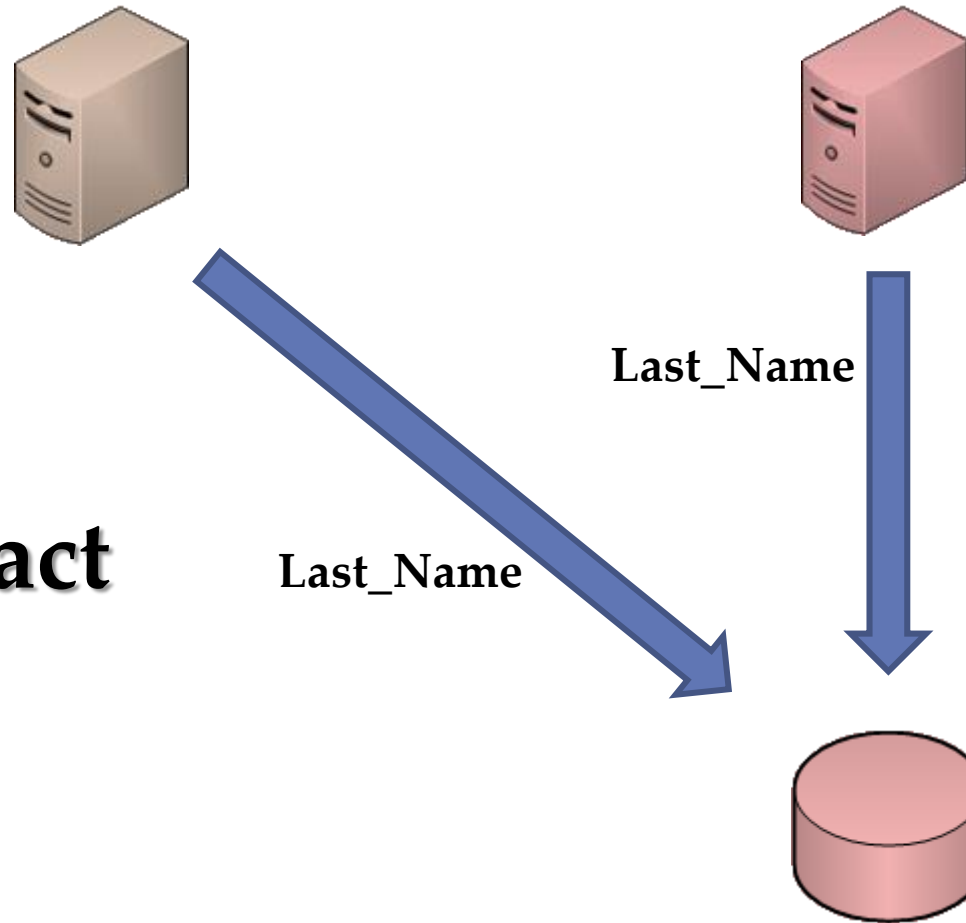
```

FirstName	Surname	Last_Name
Homer	Simpson	Simpson
Roger	Rabbit	Rabbit
Lucky	Luke	Luke

The table shows a transition from 'Surname' to 'Last_Name'. A large red 'X' is placed over the 'Surname' column, and a green arrow points from the 'Surname' column to the 'Last_Name' column. A green arrow also points from the 'Last_Name' column to the 'Surname' column, indicating a bidirectional relationship or a specific migration step.

Expand & Contract

a.k.a. Release Independently



FirstName	Last_Name	ast_Name
Homer	Simpson	mpson
Roger	Rabbit	abbit
Lucky	Luke	uke

A green arrow points from the 'Last_Name' column to the 'ast_Name' column, and a red 'X' is drawn over this arrow, indicating a transformation or error.

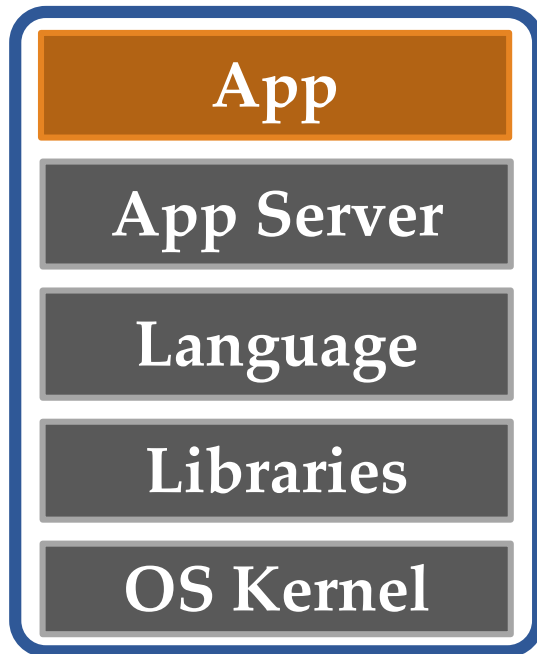
DROP TRIGGER ...
ALTER TABLE ...
DROP COLUMN Surname





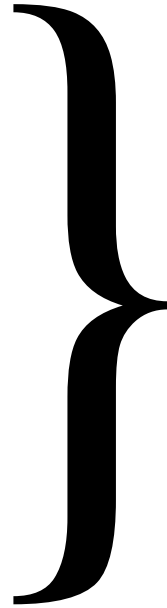
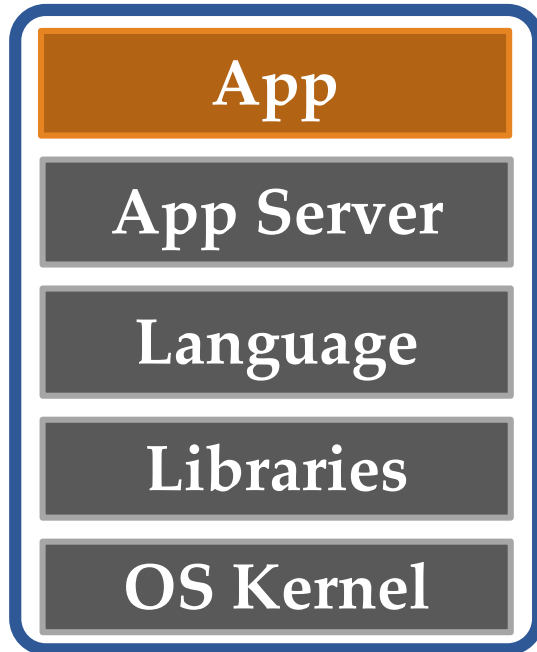
One immutable unit
Regenerated after every commit
Promoted from Env to Env

???



One immutable unit
Regenerated after every commit
Promoted from Env to Env

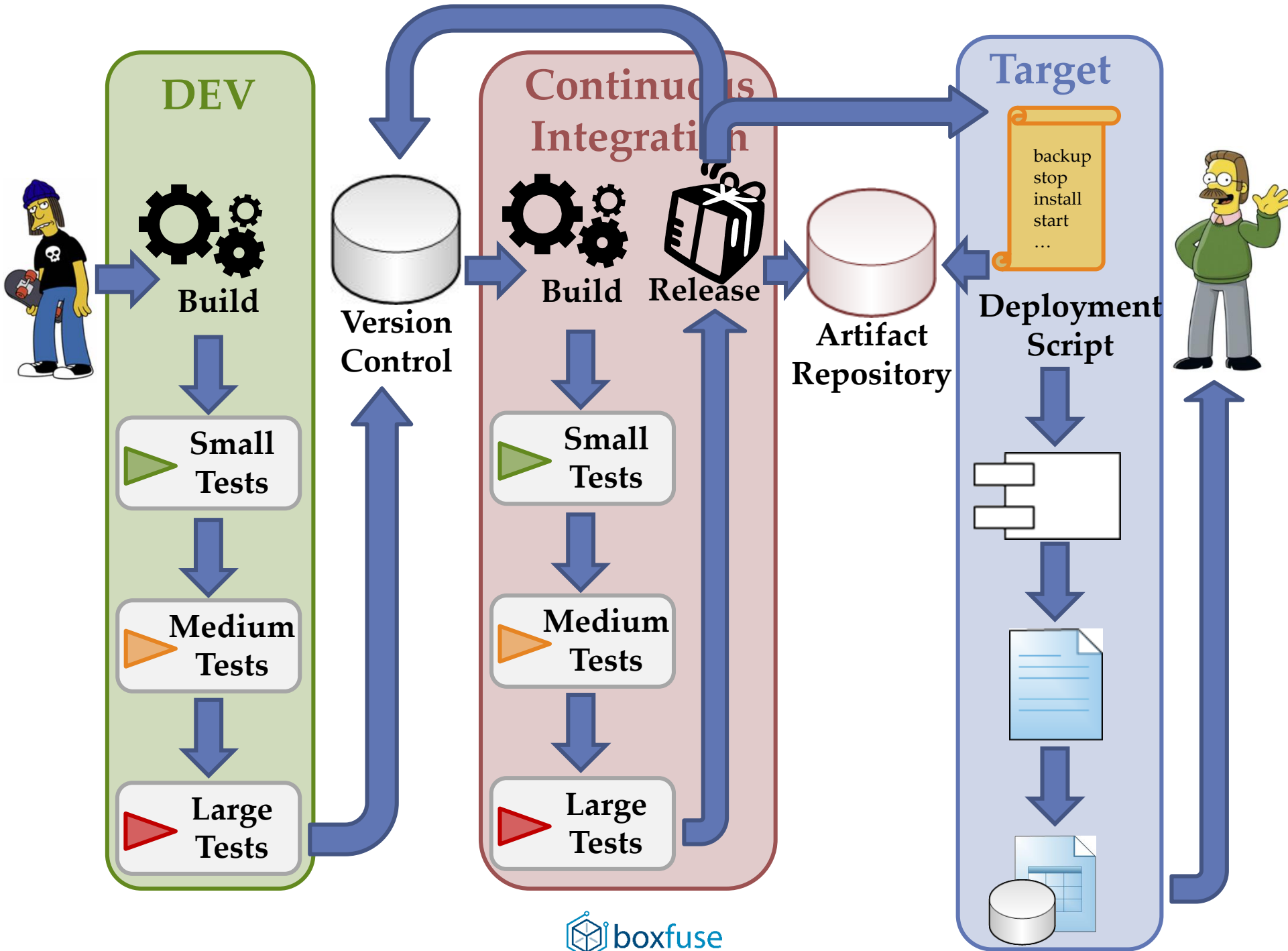
Immutable Infrastructure



One immutable unit
Regenerated after every commit
Promoted from Env to Env



Summary



CHRISTOPHER LAMBERT

SEAN CONNERY

HIGHLANDER

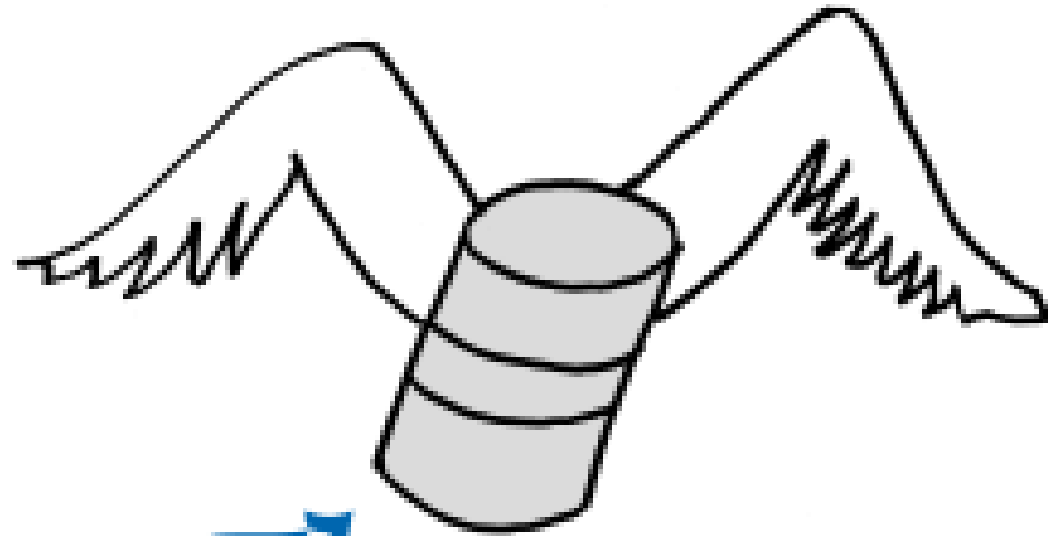
THERE CAN BE ONLY ONE DIRECTED BY RUSSELL MULCAHY



STUDIO CANAL







Flyway

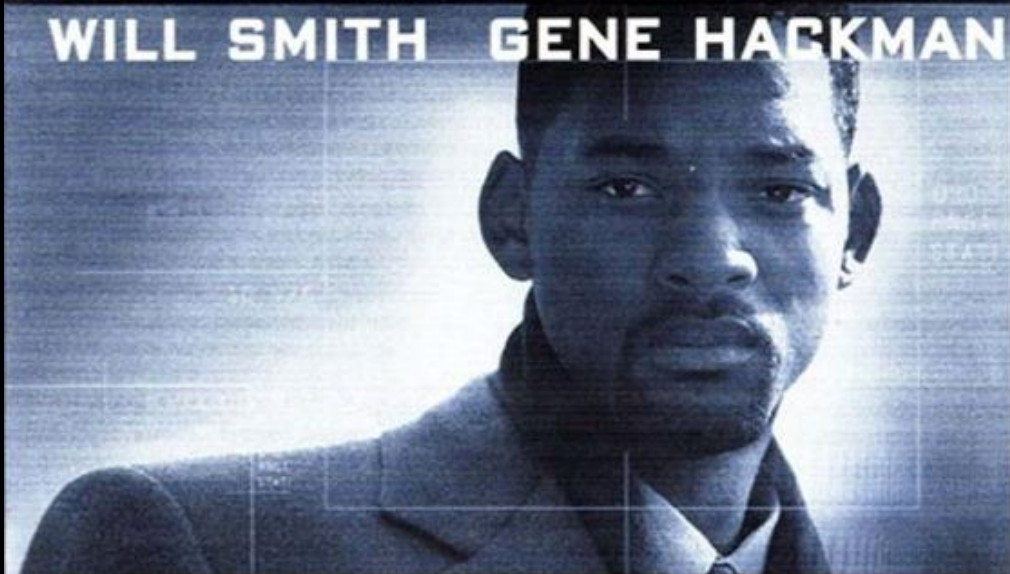
flywaydb.org



WIDE DIGITALLY MASTERED **SCREEN**

A
DON SIMPSON/JERRY BRUCKHEIMER
PRODUCTION
A FILM BY
TONY SCOTT

WILL SMITH GENE HACKMAN



ENEMY OF THE STATE

IT'S NOT
PARANOIA
IF THEY'RE REALLY
AFTER YOU.

DVD
VIDEO

15



boxfuse

boxfuse.com



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axel@boxfuse.com

Thanks !



Further reading:

<http://axelfontaine.com/blog/final-nail.html>

<http://axelfontaine.com/blog/environment-detection.html>

<http://martinfowler.com/bliki/FeatureToggle.html>

<http://googletesting.blogspot.com/2010/12/test-sizes.html>

<http://blog.shinetech.com/2012/12/18/simple-session-sharing-in-tomcat-cluster-using-the-session-in-cookie-pattern/>