

GEDOPLAN

Expertenkreis Java

ArchUnit

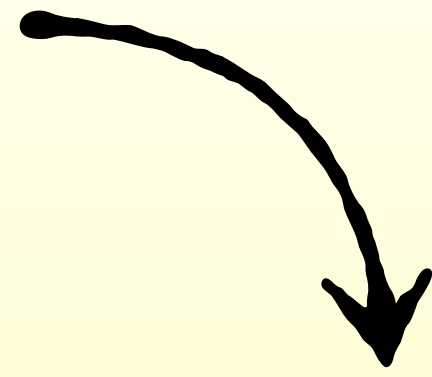
Testen von Architektur und Design

Thomas Much

 @thmuch

18.03.2021

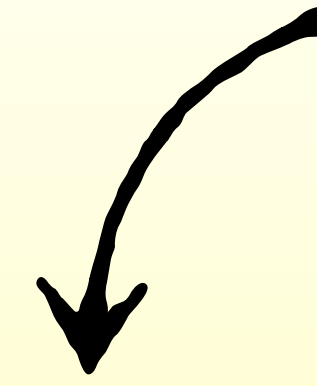
Autor



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@codecholeric
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zahlreiche
„Contributors“

glücklicher Anwender



Thomas Much
@thmuch



Was ist Architektur?

Entscheidungen, Technologien ...
alles „Wichtige“, was schwer zu ändern ist

Struktur und Konventionen innerhalb eines Artefakts (Services)

Kommunikation zwischen den (Teil-)Systemen

Gemeinsames Verständnis über das System und seine Teile

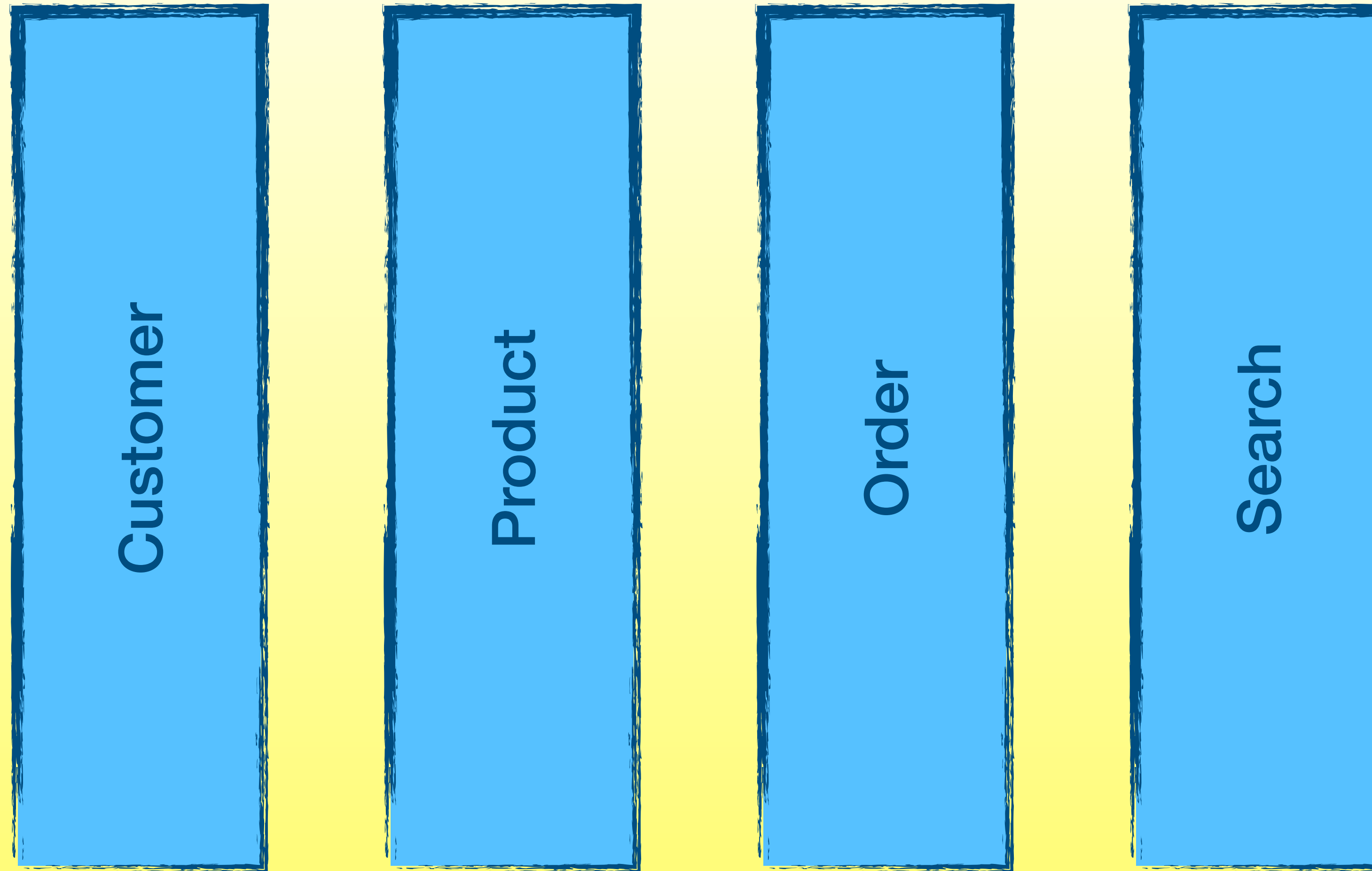
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Thema heute:
ArchUnit

Architektur und Design automatisiert prüfen –

Warum?

Microservices & SCS*

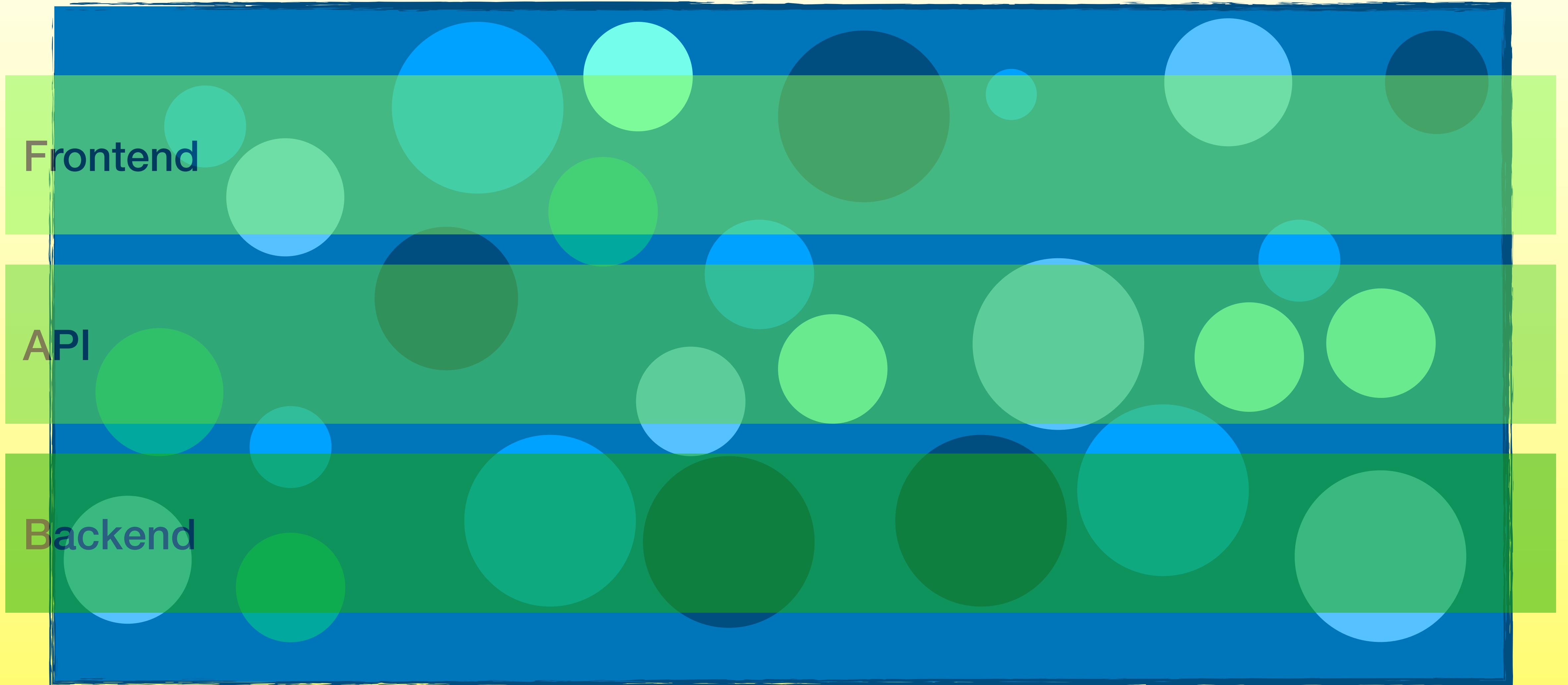


*) „Self-Contained Systems“, siehe z.B. <https://scs-architecture.org/>

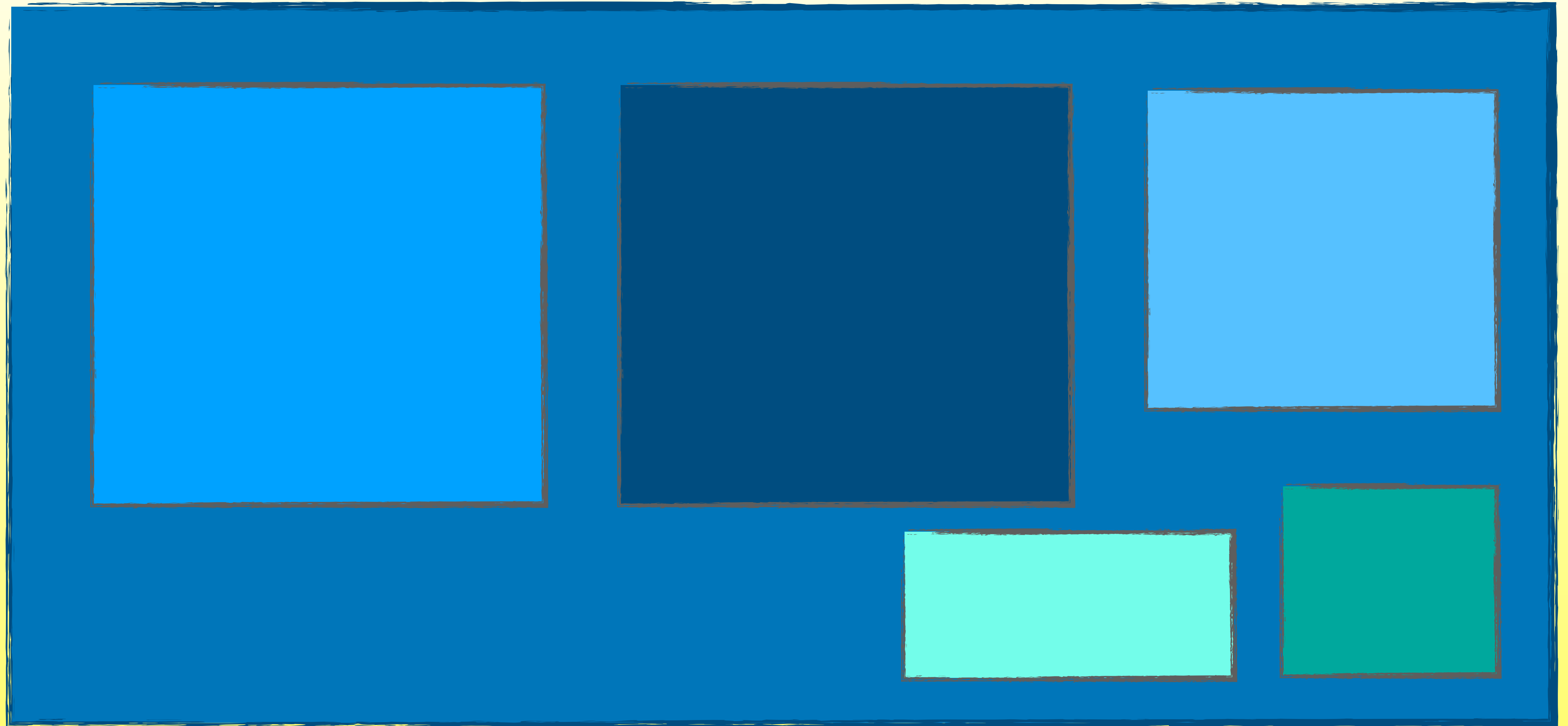
Monolithen



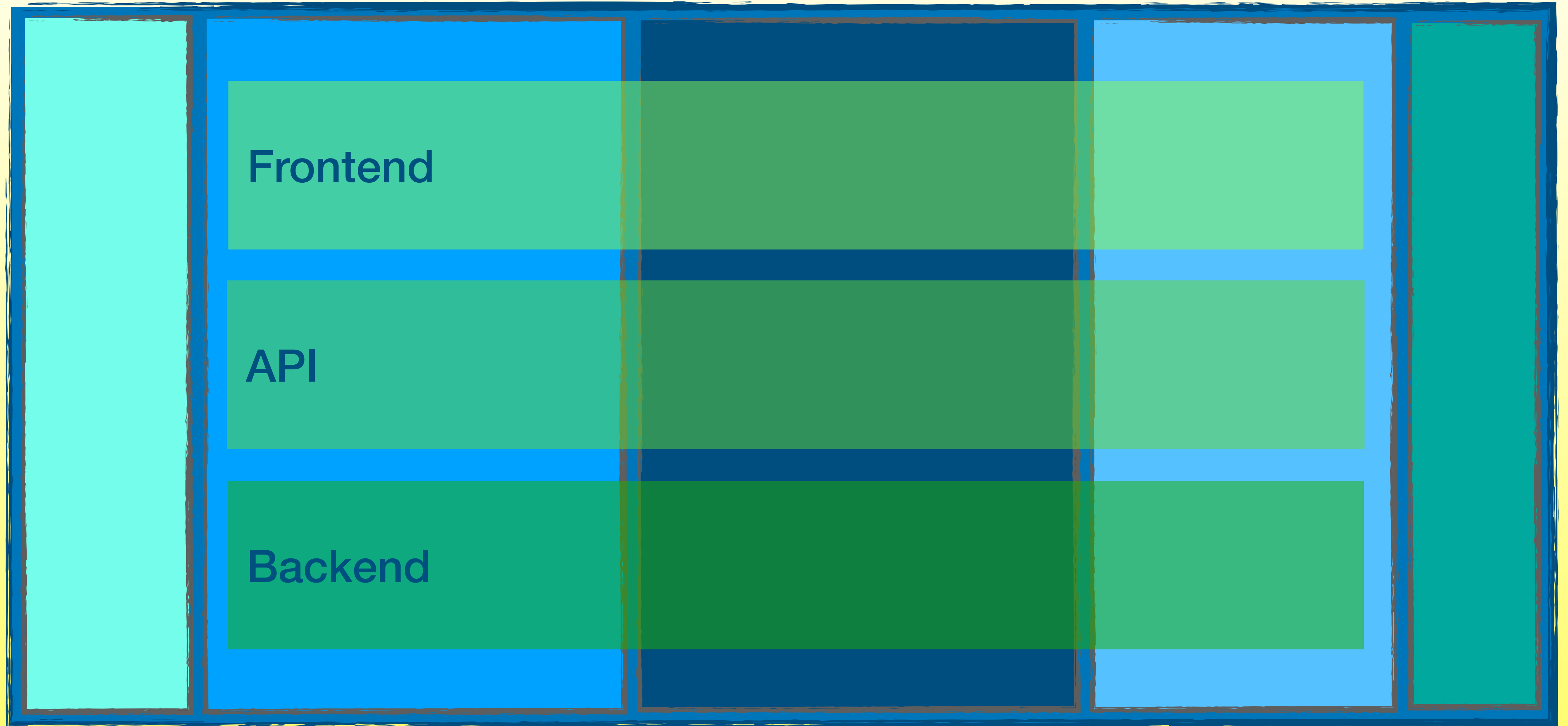
Monolithen



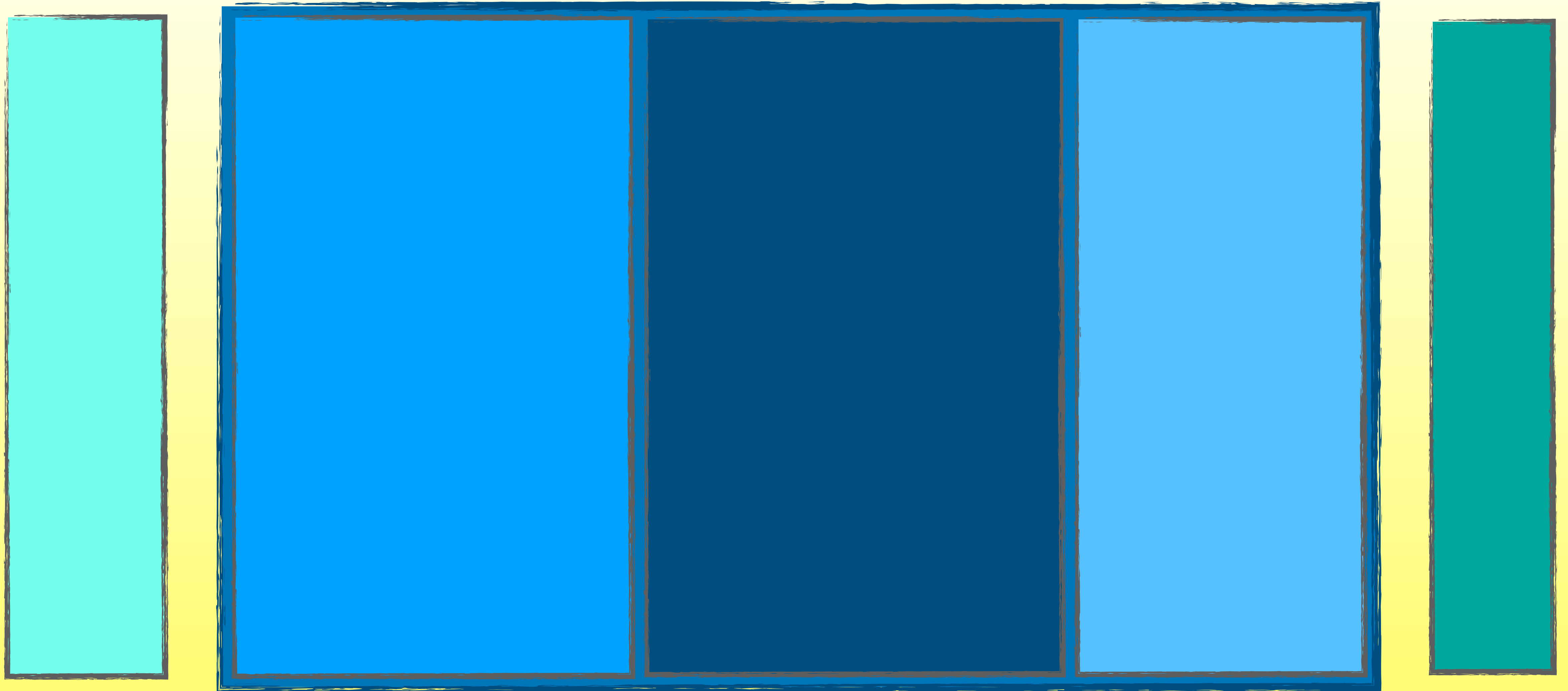
Freundliche Monolithen



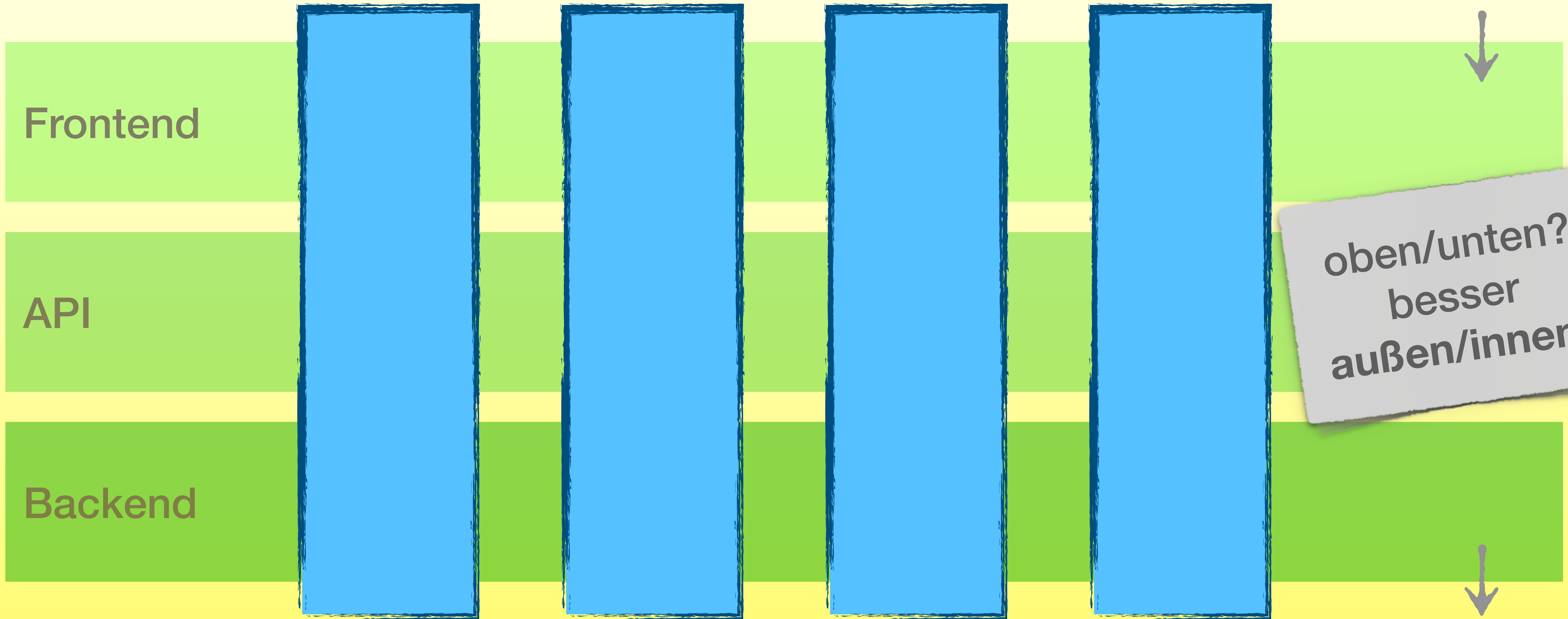
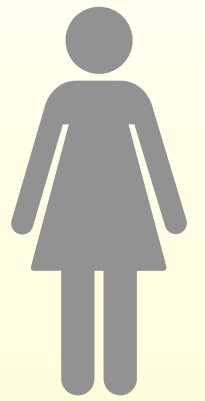
Noch freundlichere Monolithen



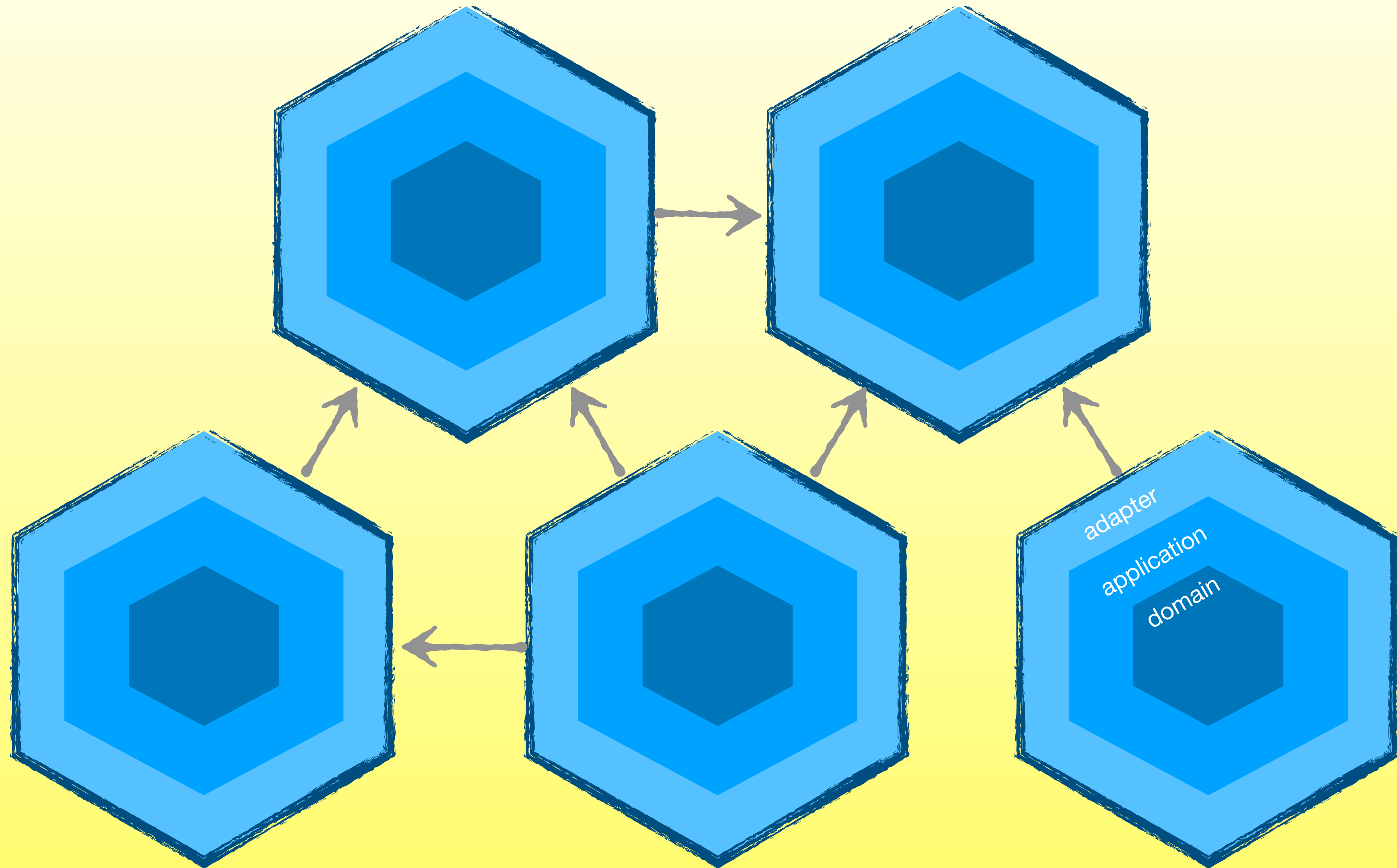
Abgespeckte Monolithen



Microservices / Schichten?



Microservices / DDD



Architektur testen – warum?

Wartbarkeit

Ersetzbarkeit

Code-Conventions

Verständlichkeit

Dokumentation

Kommunikation

Wir
sind
ein
Team!

Architektur testen

Abhängigkeiten, Kohäsion & Kopplung

Konventionen & Patterns

Unser Weg zu ArchUnit

JDepend

Degrath

jQAssistant

Classycle
Checkstyle

~~kommerziell~~

veraltet
oder
nicht flexibel genug
oder
eigene (Konfigurations-)Sprache



Ende 2017
„ArchUnit 0.4“



Architektur-Prüfungen als Unit-Tests

Normaler Java-Code!

Flexibel erweiterbar – auch Design-Prüfungen realisierbar

Prüfung auf Bytecode-Ebene

ArchUnit einbinden

Group ID	Artifact ID	Latest Version		Updated
com.tngtech.archunit	archunit-junit	0.8.3	(6)	20-Jul-2018
com.tngtech.archunit	archunit-junit5-engine-api	0.17.0	(16)	22-Feb-2021
com.tngtech.archunit	archunit-junit5-engine	0.17.0	(16)	22-Feb-2021
com.tngtech.archunit	archunit-junit5-api	0.17.0	(16)	22-Feb-2021
com.tngtech.archunit	archunit-junit5	0.17.0	(7)	22-Feb-2021
com.tngtech.archunit	archunit-junit4	0.17.0	(16)	22-Feb-2021
com.tngtech.archunit	archunit	0.17.0	(22)	22-Feb-2021

```
<dependency>  
  <groupId>com.tngtech.archunit</groupId>  
  <artifactId>archunit</artifactId>  
  <version>0.17.0</version>  
  <scope>test</scope>  
</dependency>
```

ArchUnit ausführen

Mit jedem Unit-Test-Framework nutzbar

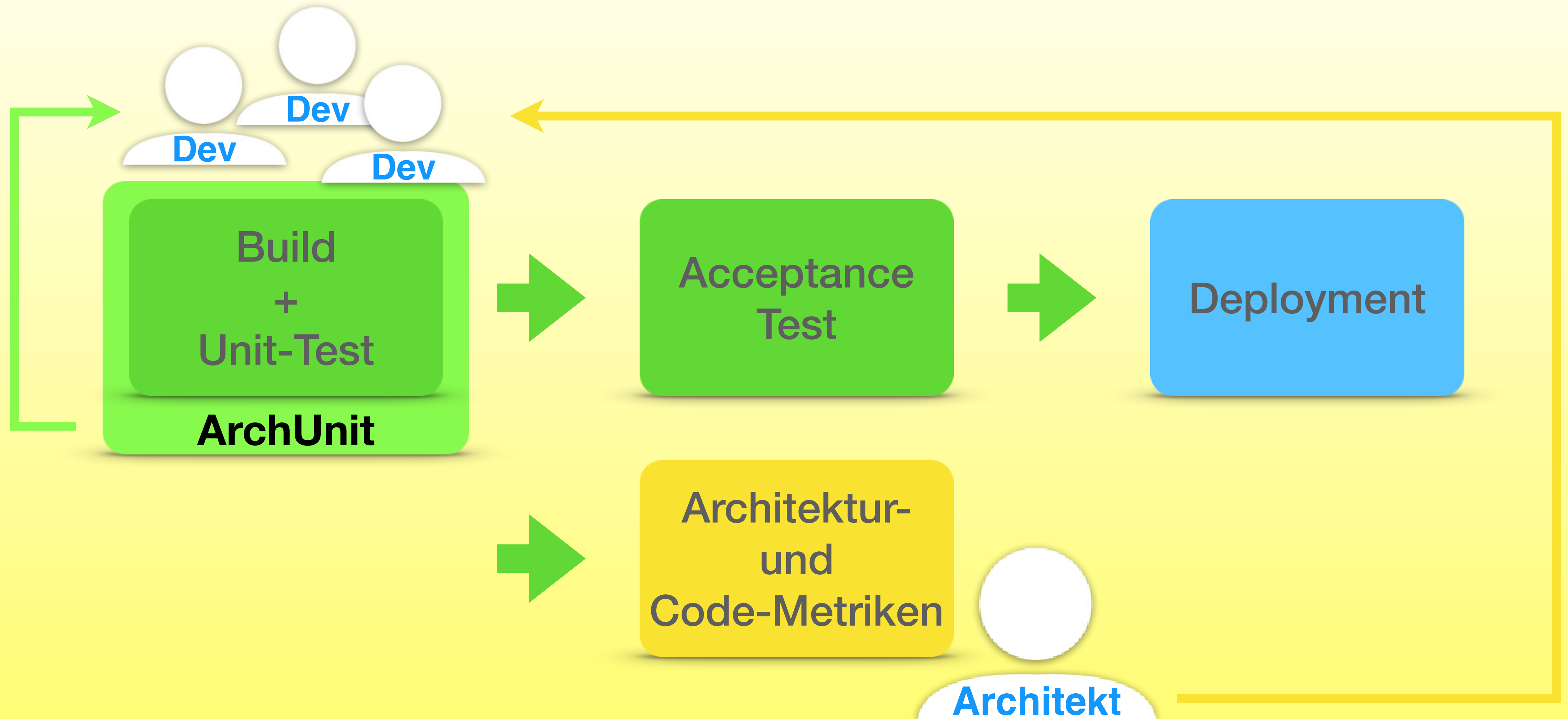
Spezielle Unterstützung für JUnit 4 / 5

Java & Kotlin

Maven- & Gradle-Plugin

Live-Demo

Warum ArchUnit?



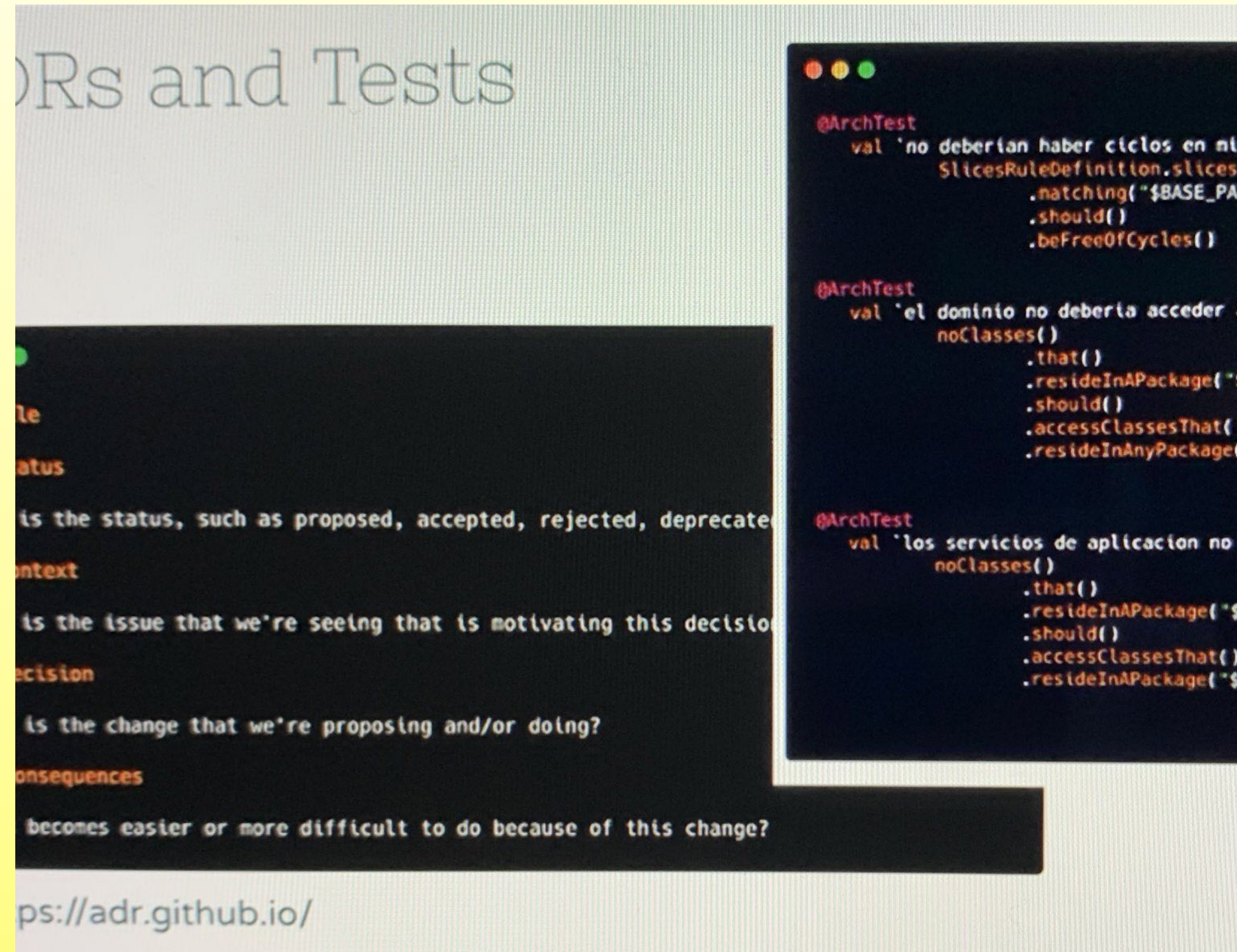
Architektur-Entscheidungen als Team

adr.github.io

Homepage of the ADR GitHub organization

Architectural Decision Records

An **Architectural Decision (AD)** is a software design choice that addresses a functional or non-functional requirement that is architecturally significant. An **Architecturally Significant Requirement (ASR)** is a requirement that has a measurable effect on a software system's architecture and quality. An **Architectural Decision Record (ADR)** captures a single AD, such as often done when writing personal notes or meeting minutes; the collection of ADRs created and maintained in a project constitute its *decision log*. All these are within the topic of Architectural Knowledge Management (AKM).



@JavitaLaso beim @ddd_eu: <https://twitter.com/gtielsch/status/1357716900084674562>

Alternativen & Ergänzungen

The logo for jQAAssistant features the text "jQAAssistant" in a dark grey font. A green checkmark is superimposed over the "j" and "Q" characters.

The logo for structure101 consists of the text "structure101" in a bold, dark blue, sans-serif font.

The logo for sonarqube features the text "sonarqube" in a dark grey font. To the right of the text are three blue curved lines that resemble a sonar wave or a signal.

The logo for Deptective features a yellow detective emoji wearing a brown hat and a magnifying glass, followed by the text "Deptective" in a dark grey font.

The logo for SONARGRAPH features the text "SONARGRAPH" in a dark grey font. The "A" is replaced by a red triangle pointing upwards. The text is underlined with a thin black line.

The logo for embold features a blue icon consisting of several horizontal lines of varying lengths, followed by the text "embold" in a bold, dark blue, sans-serif font.

u.a.

Modulithen mit Spring Boot

Moduliths

A playground to build technology supporting the development of

build passing

tl;dr

Moduliths is a Spring Boot extension based on ArchUnit to achieve

- *Verify modular structure between individual logical modules*

Prevents cyclic dependencies as well as explicitly defined all to public components in API packages (convention based, c)

- *Bootstrap a subset of the modules of a monolithic Spring P*

<https://github.com/odrotbohm/moduliths>

https://www.archunit.org

[Getting Started](#)[Motivation](#)[News](#)[User Guide](#)[API](#)[About](#)

Persistence

Unit test your Java architecture

Start enforcing your architecture within 30 minutes using the test setup you already have.

[Start Now](#)

ArchUnit is a free, simple and extensible library for checking the architecture of your Java code using any plain Java unit test framework. That is, ArchUnit can check dependencies between packages and classes, layers and slices, check for cyclic dependencies and more. It does so by analyzing given Java bytecode, importing all classes into a Java code structure. You can find examples for the current release at [ArchUnit Examples](#) and the sources on [GitHub](#).



<https://github.com/TNG/ArchUnit-Examples>

<https://github.com/thmuch/archunit-demos>



Schichten

Architektur

Slices

Design

Vertikalen

Konventionen

Fragen?

Monolithen

Module

SCS

Abhängigkeiten

Microservices

Kopplung

Kohäsion

GEDOPLAN

Expertenkreis Java

Vielen Dank!



Thomas Much

 @thmuch