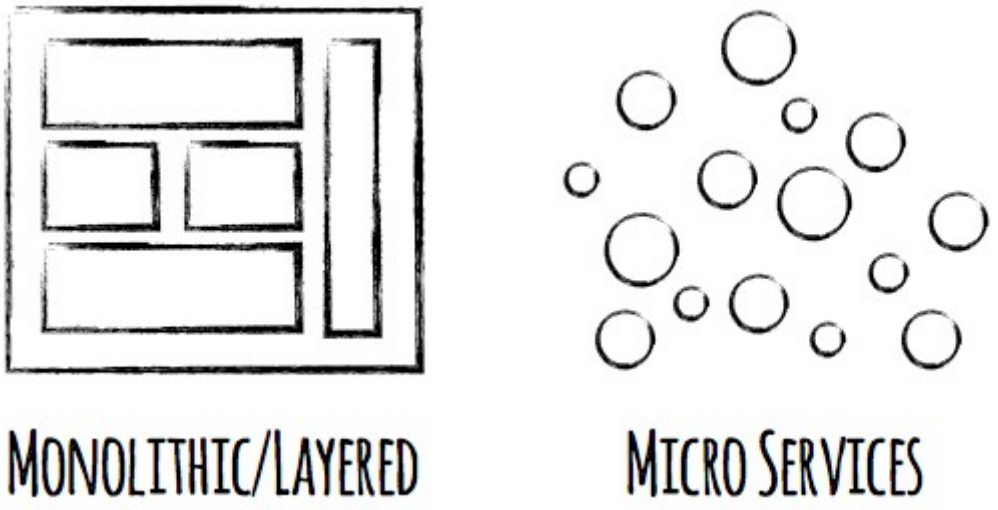
Integrationstests in einer Microservicearchitektur

Daniel Stepper



Quelle: http://eugenedvorkin.com/seven-micro-services-architecture-advantages/

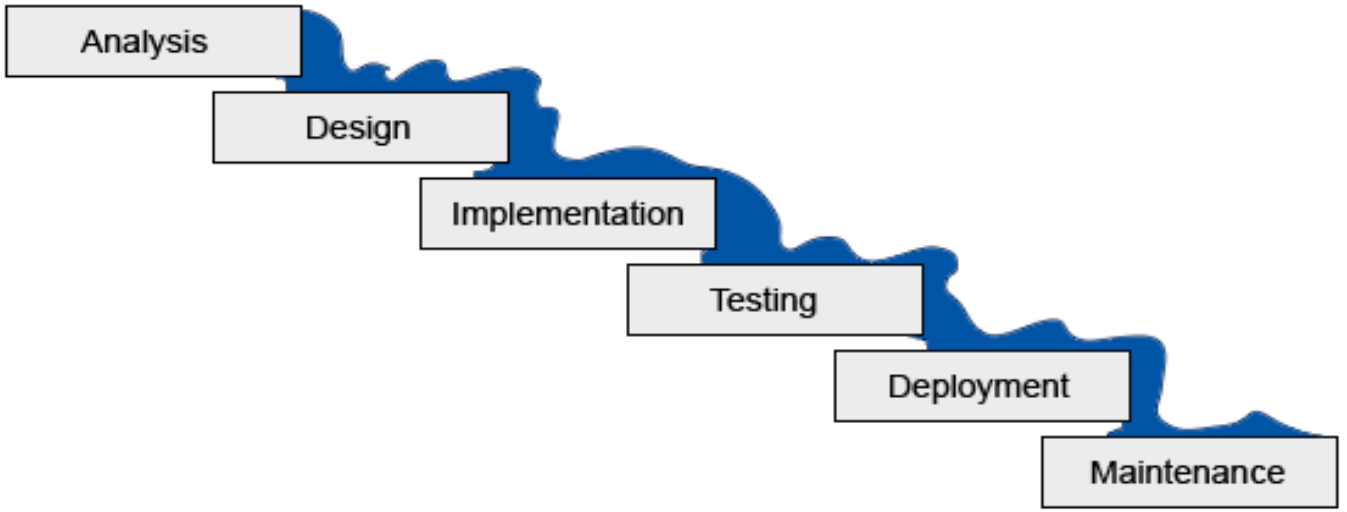
Kontakt

@danstepper

www.agile-qa.de

daniel.stepper@agile-qa.de

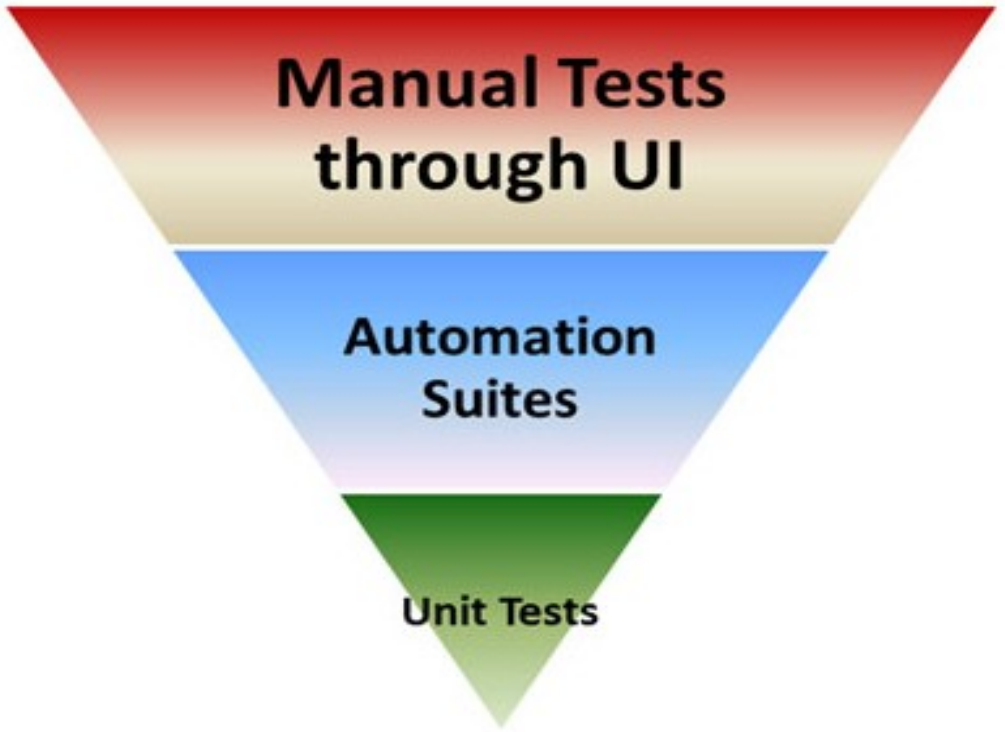
Der traditionelle Wasserfall-Prozess



Quelle: http://www.agile-scrum-master-training.com/agile-project-management/

Was ist, wenn eine Anforderung vergessen wurde und erst während der Tests festgestellt wurde?

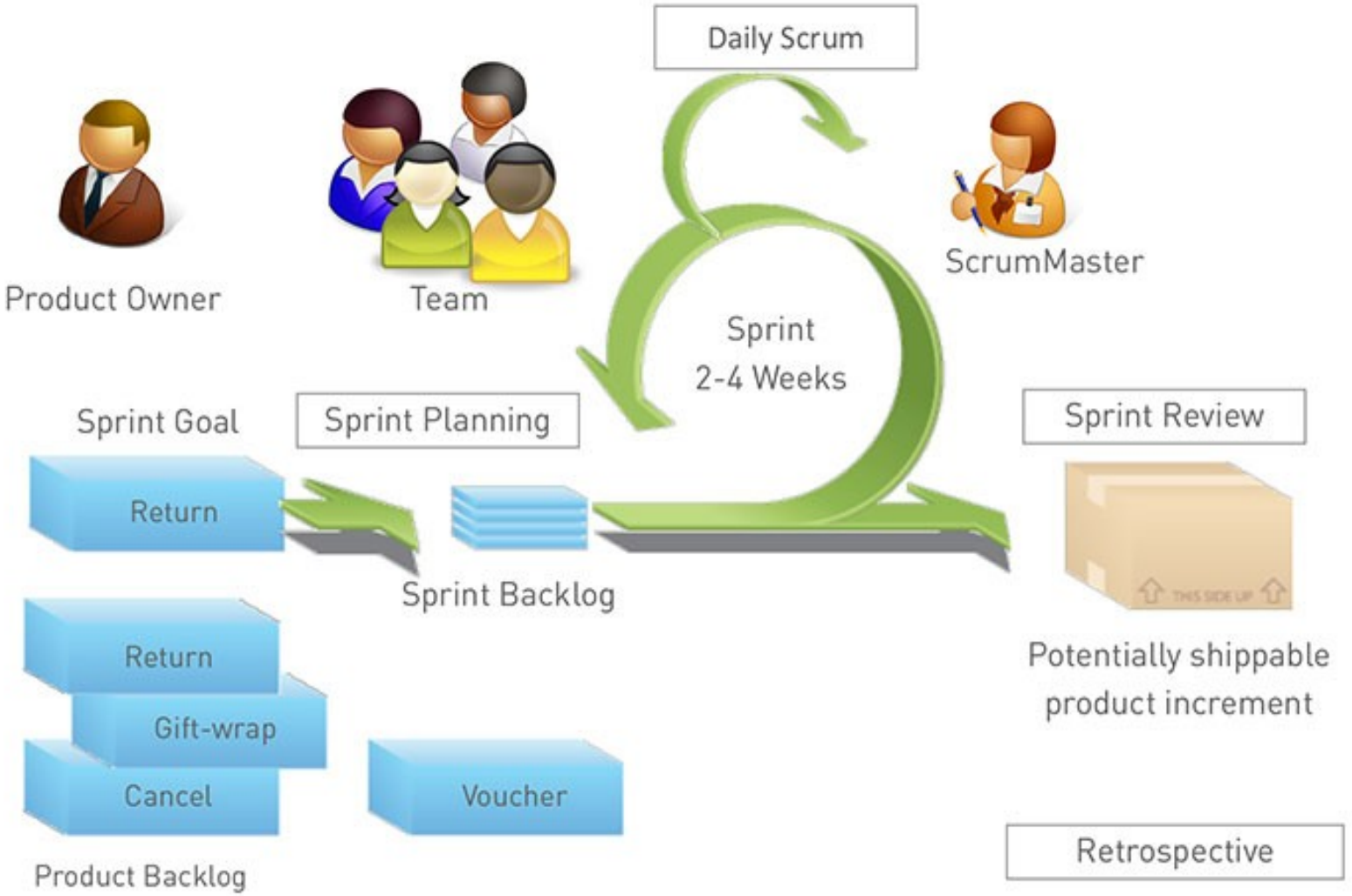
Was ist, wenn ein Doployment-Problem Anforderungen am System Design erfordern?



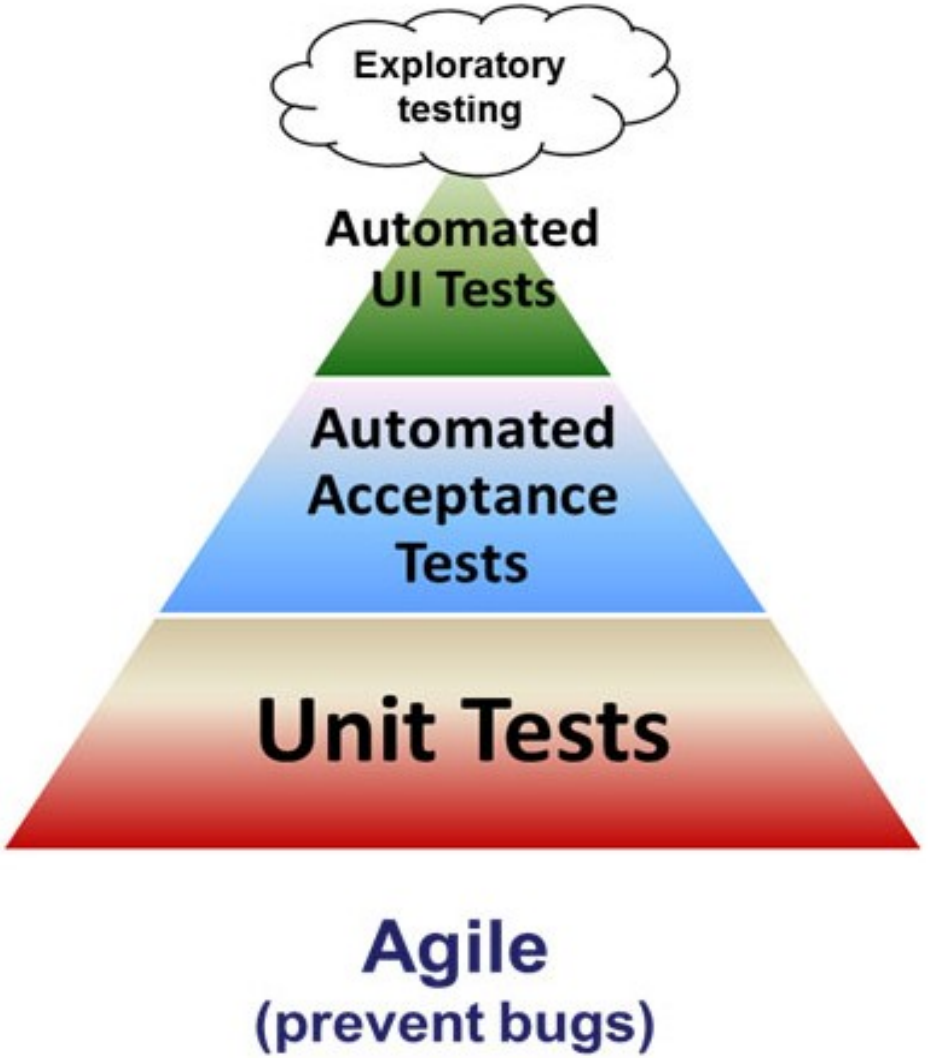
Traditional
(find bugs)

Quelle: http://www.agilecoachjournal.com/index.php/2014-01-28/testing-2/the-agile-testing-pyramid/

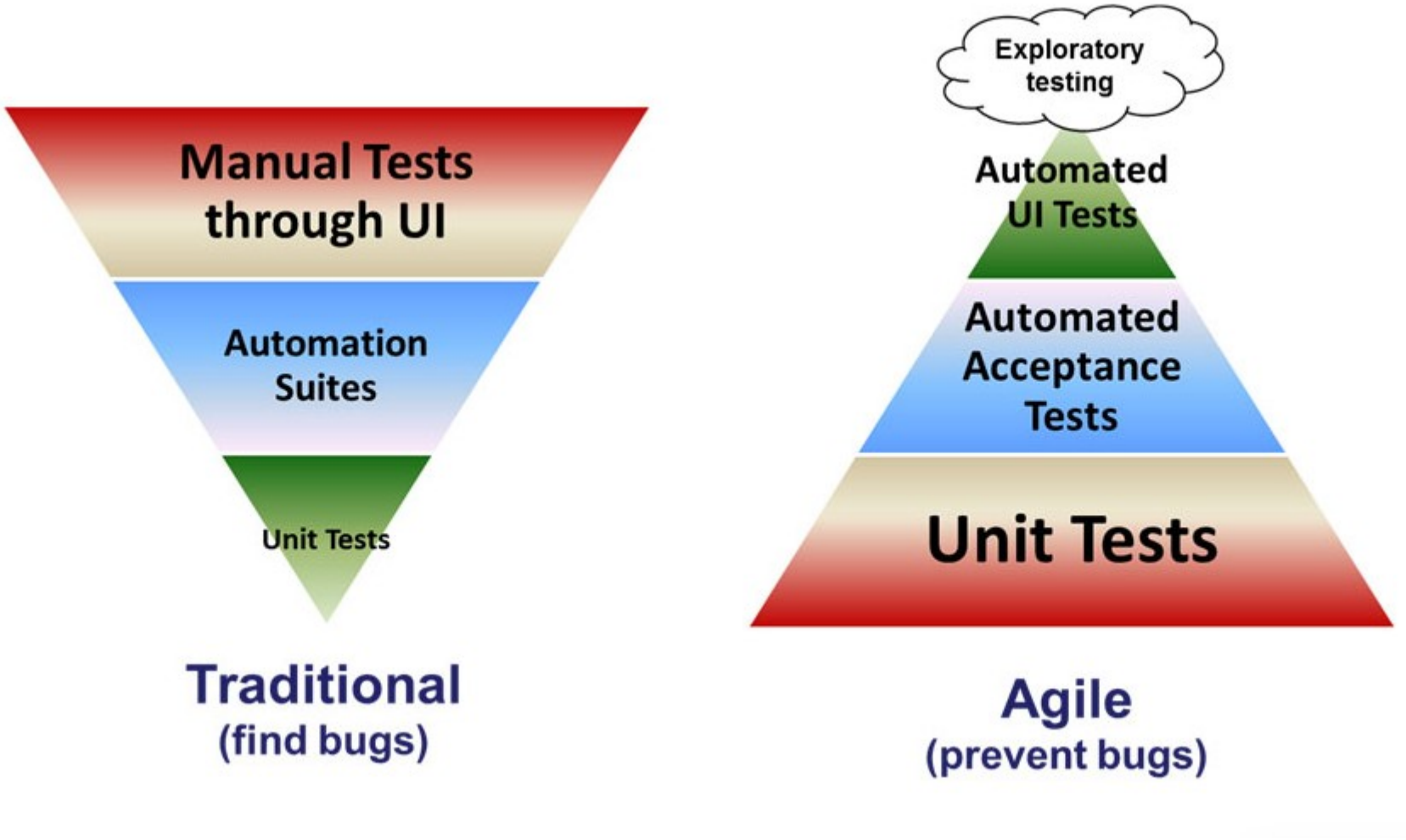
Scrum Flow



Quelle: http://improuv.com/scrum/methode/ueberblick



Quelle: http://www.agilecoachjournal.com/index.php/2014-01-28/testing-2/the-agile-testing-pyramid/

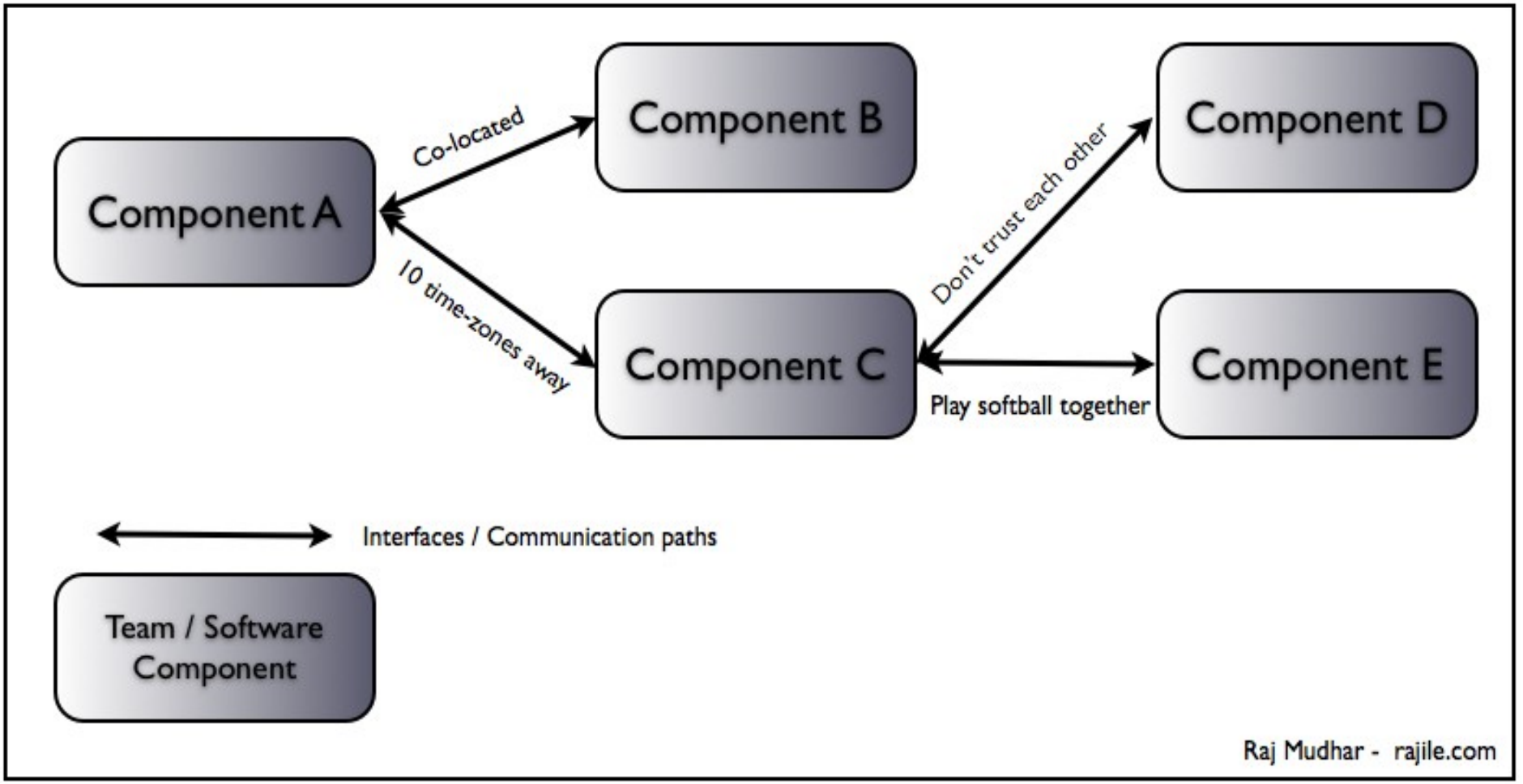


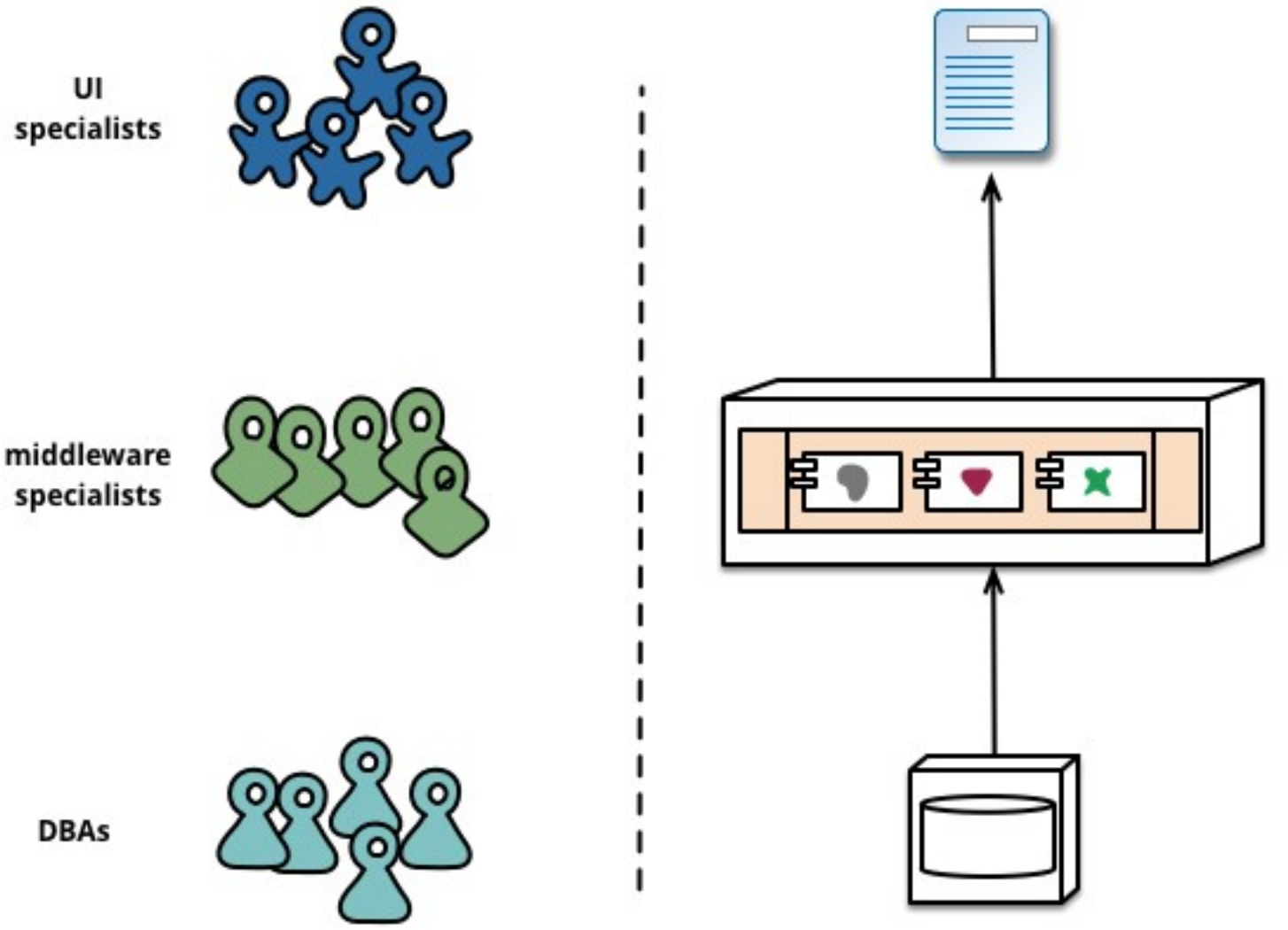
Quelle: http://www.agilecoachjournal.com/index.php/2014-01-28/testing-2/the-agile-testing-pyramid/

Monoliten vs. Microservices

Conway's Law 1968:

„Organisationen, die Systeme modellieren, […] sind auf Modelle festgelegt, welche die Kommunikationsstrukturen dieser Organisationen abbilden.“

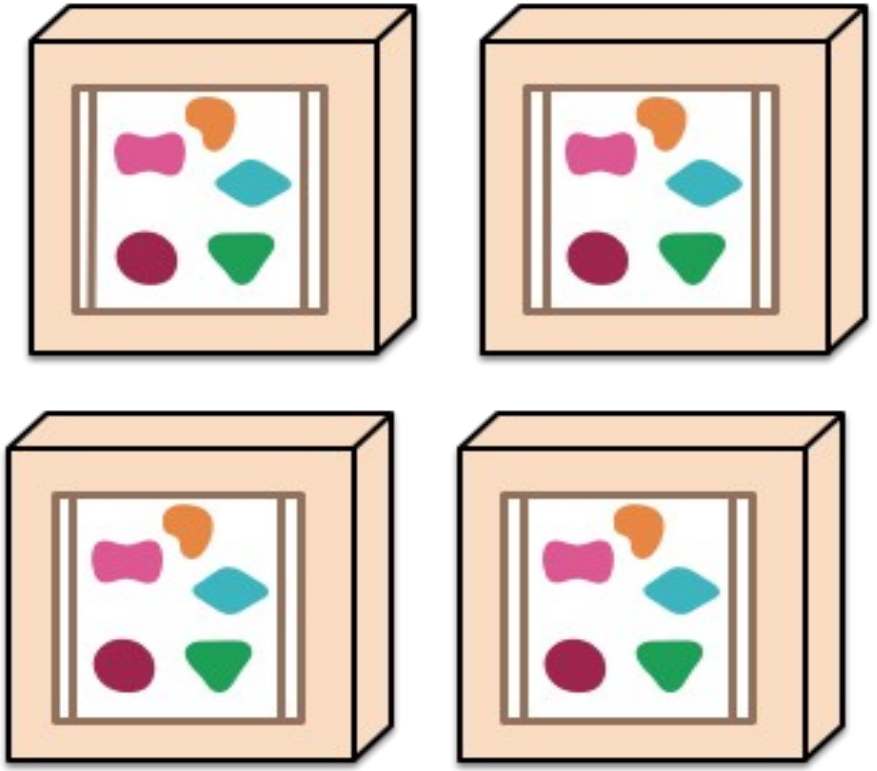

Component A
Co-located
Component B
10 time-zones away
Component C
Don't trust each other
Component D
Play softball together
Component E
Interfaces / Communication paths
Team / Software Component
Raj Mudhar - rajile.com



Quelle: http://martinfowler.com/articles/microservices.html

A monolithic application puts all its functionality into a single process...

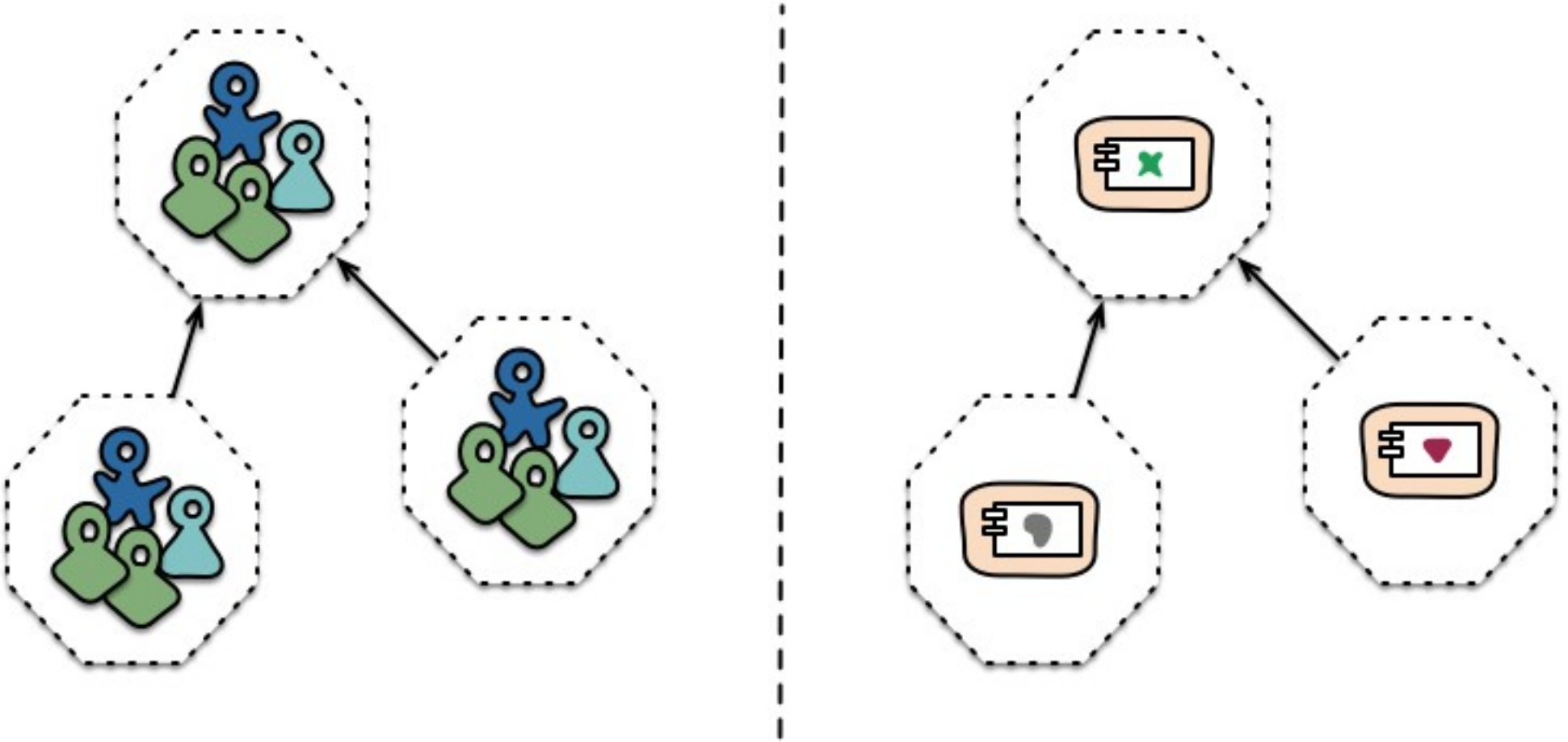
... and scales by replicating the monolith on multiple servers



Quelle: http://martinfowler.com/articles/microservices.html

Be of the web, not behind the web

-- Ian Robinson



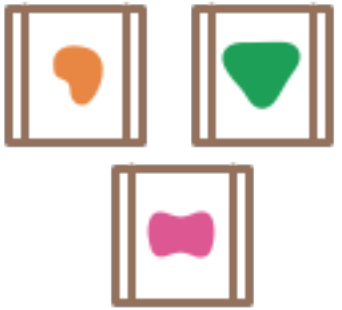
Cross-functional teams...

... organised around capabilities

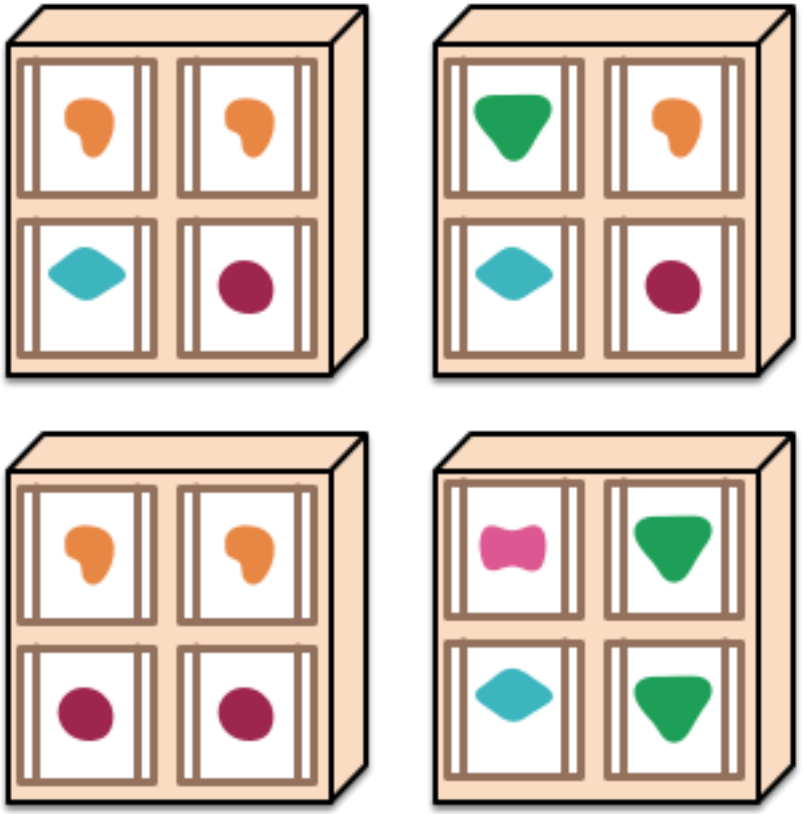
Because Conway's Law

Quelle: http://martinfowler.com/articles/microservices.html

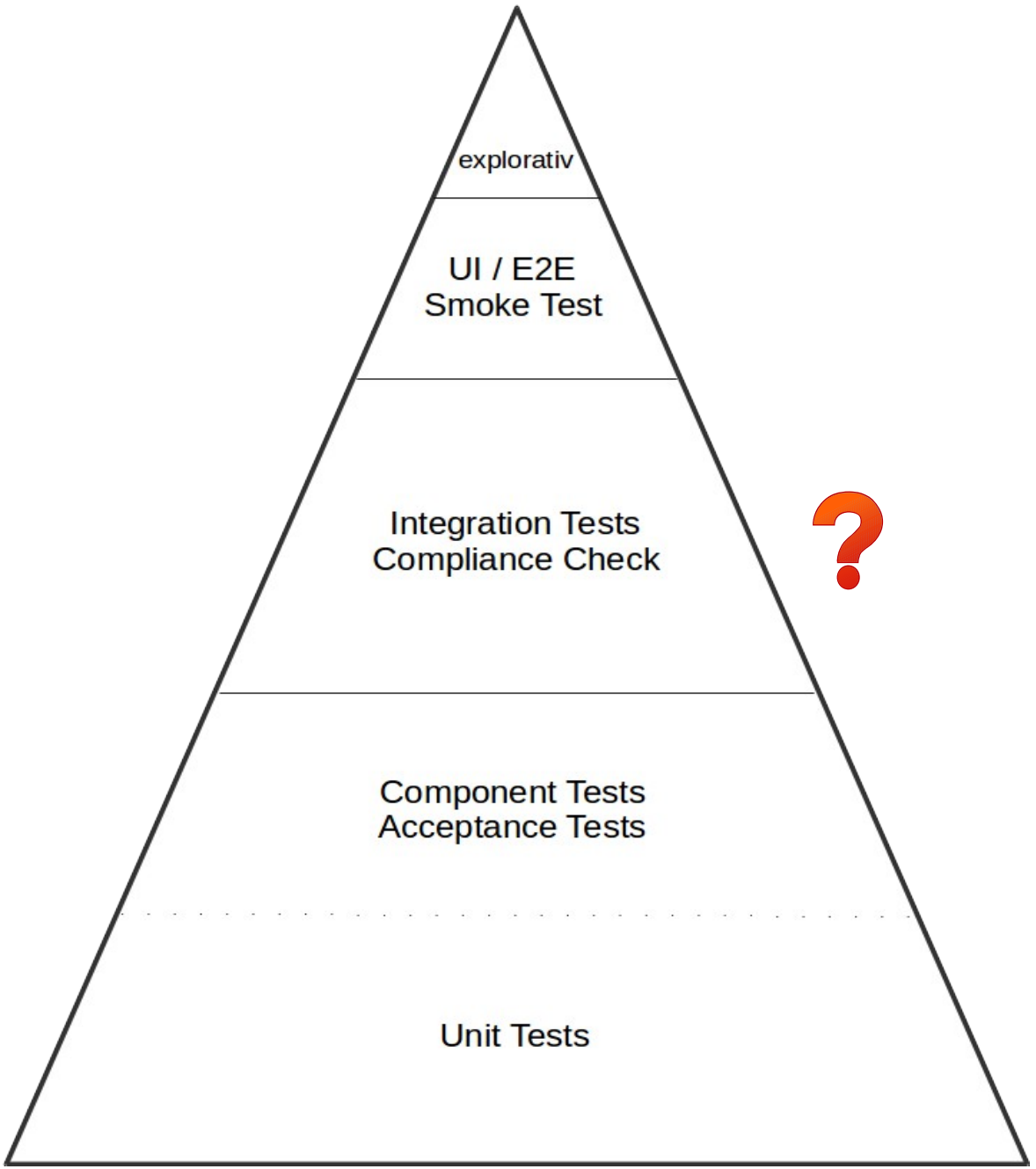
A microservices architecture puts each element of functionality into a separate service...



... and scales by distributing these services across servers, replicating as needed.



Quelle: http://martinfowler.com/articles/microservices.html


explorativ
UI / E2E
Smoke Test
Integration Tests
Compliance Check
?
Component Tests
Acceptance Tests
Unit Tests

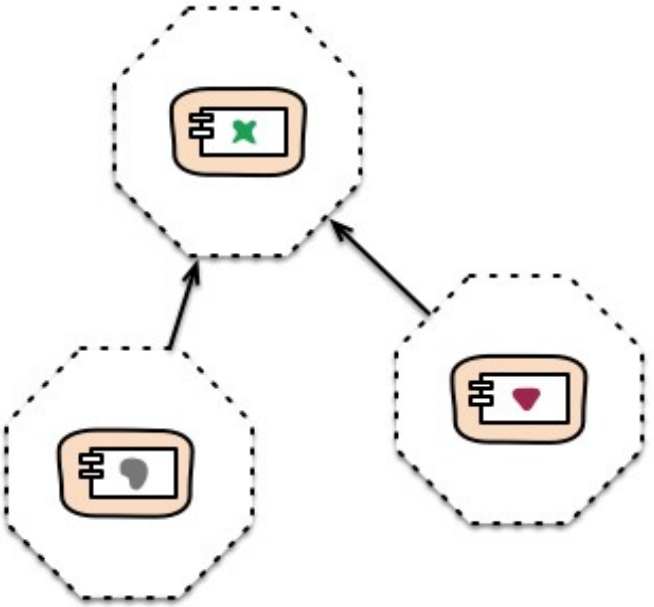
Viele kleine Services → viele Systemintegrationstests?

- langsam
- flaky
- viel Setup
- Infrastruktur …

Tolerant Reader:

be conservative in what you do, be liberal in what you accept from others.

-- Jon Postel



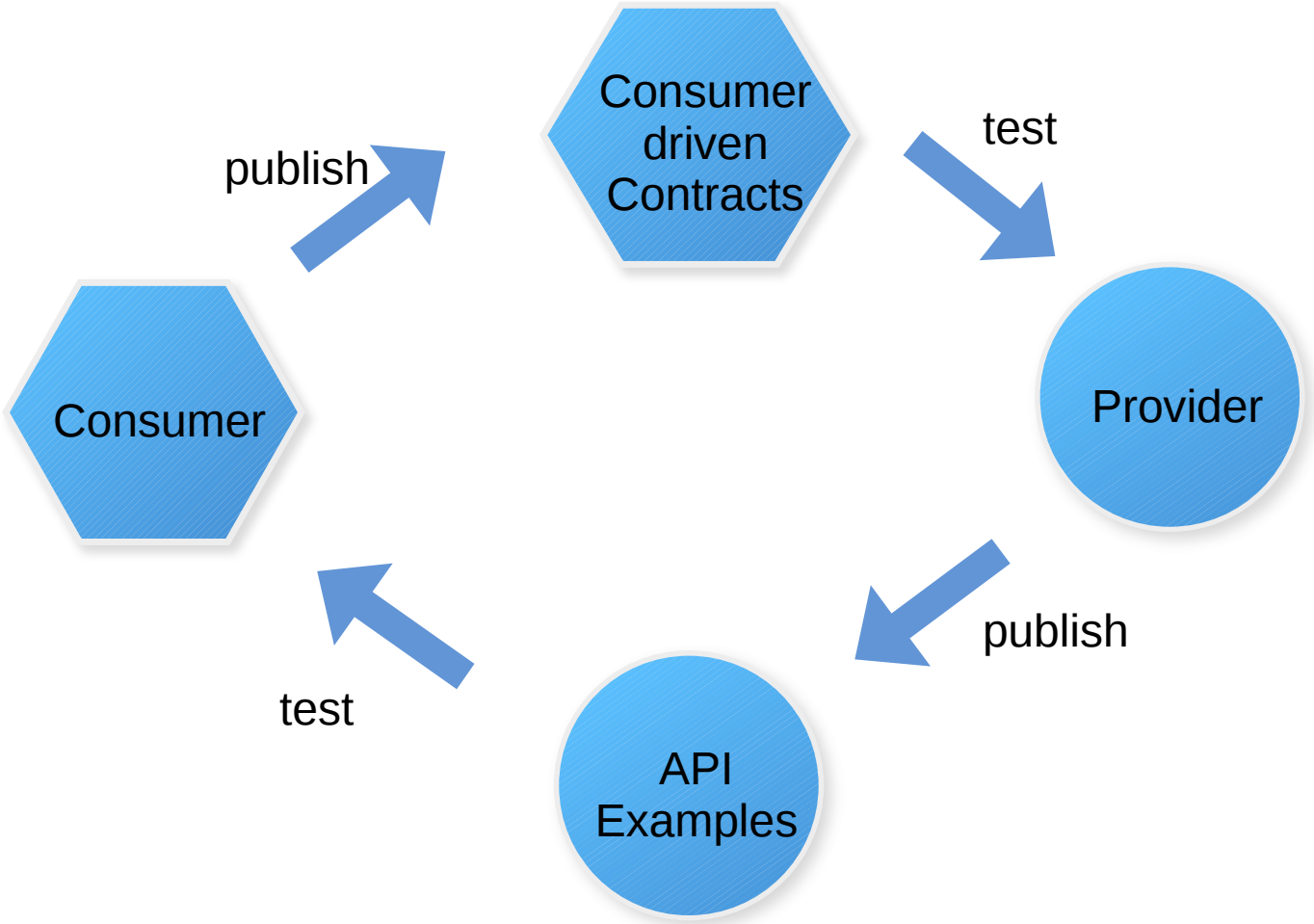
Quelle: http://martinfowler.com/articles/microservices.html

Trust your Consumer

Beispiel-Requests meiner Consumer
=
Vertrag

- Nur die Einhaltung meiner Seite des Vertrages wird getestet
+ weniger Test-Infratstruktur

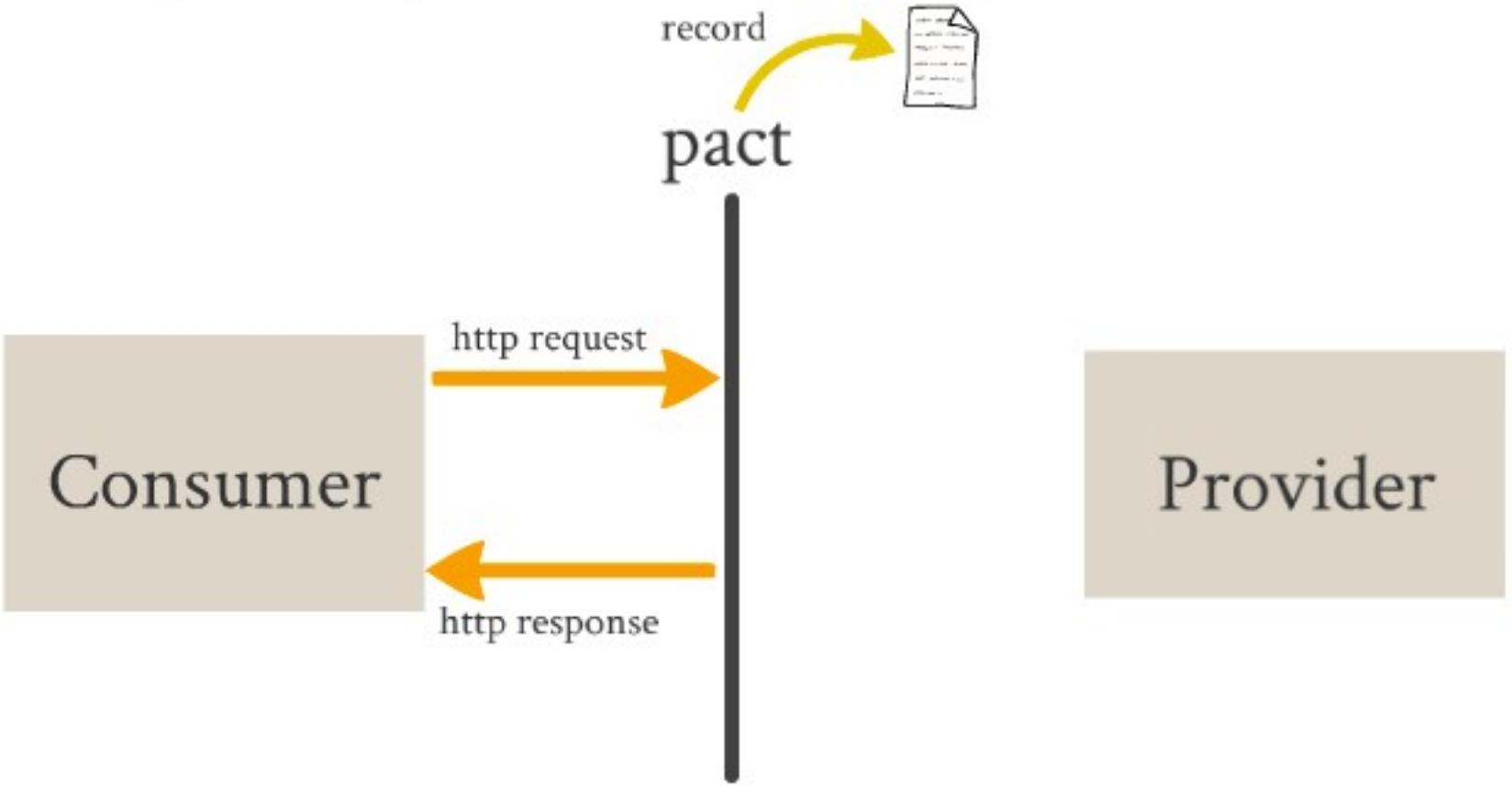
Contract Driven Test



Pact → unit-teste eine Integration

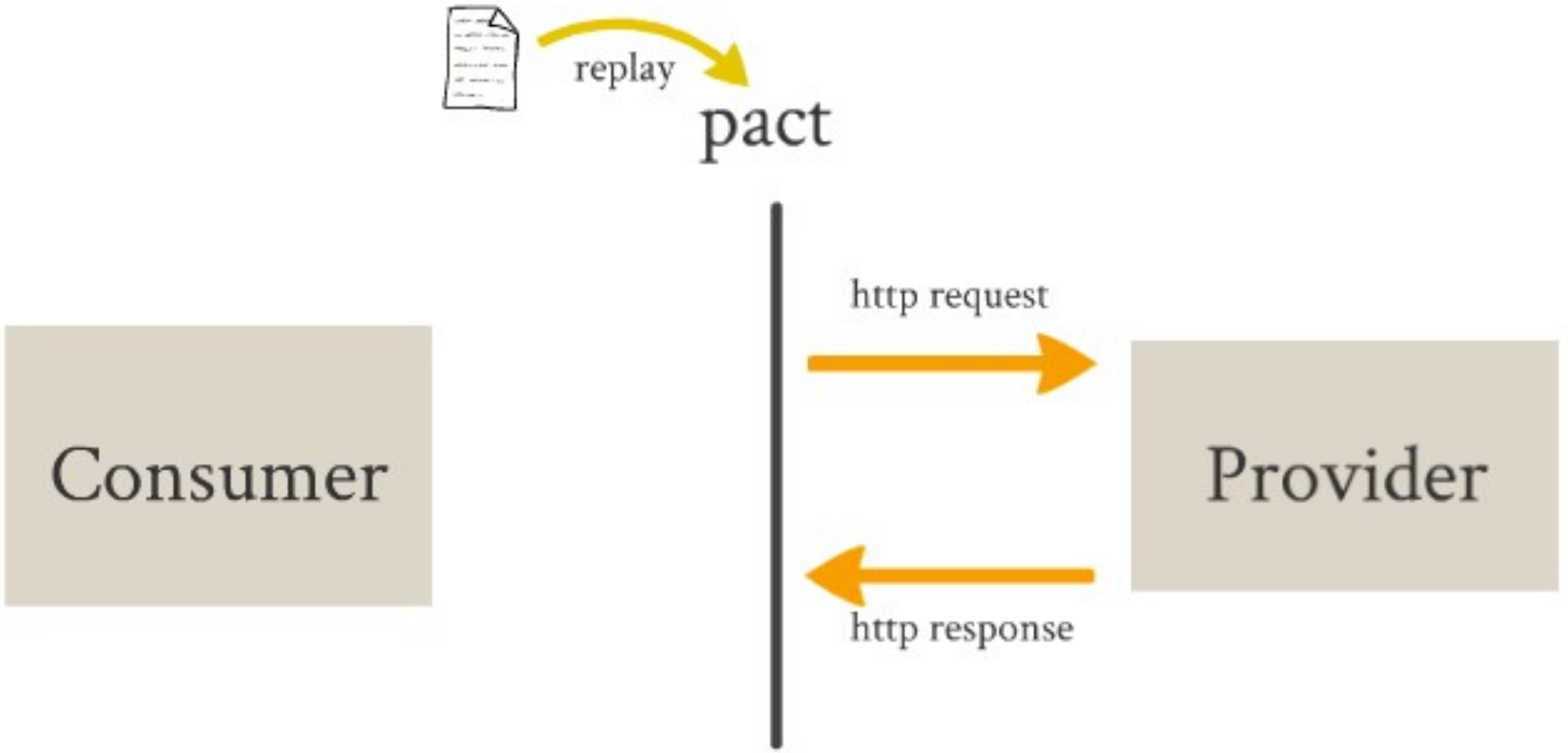
- mock service und DSL für den Consumer
- Interaktion, Playback und Verifikation für den Service Provider
- … Autogenerierte API Dokumentation
  https://github.com/realestate-com-au/pact

Step 1 - Define Consumer expectations



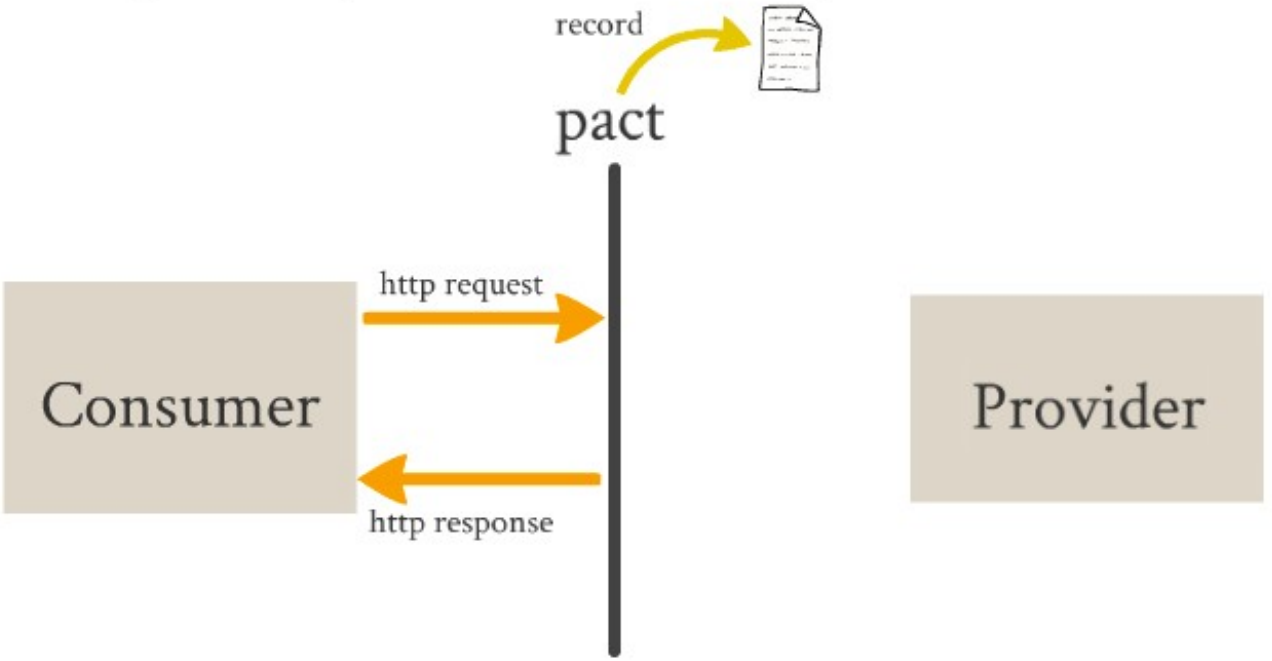
Quelle: http://dius.com.au/2014/05/19/simplifying-micro-service-testing-with-pacts/

Step 2 - Verify expectations on Provider

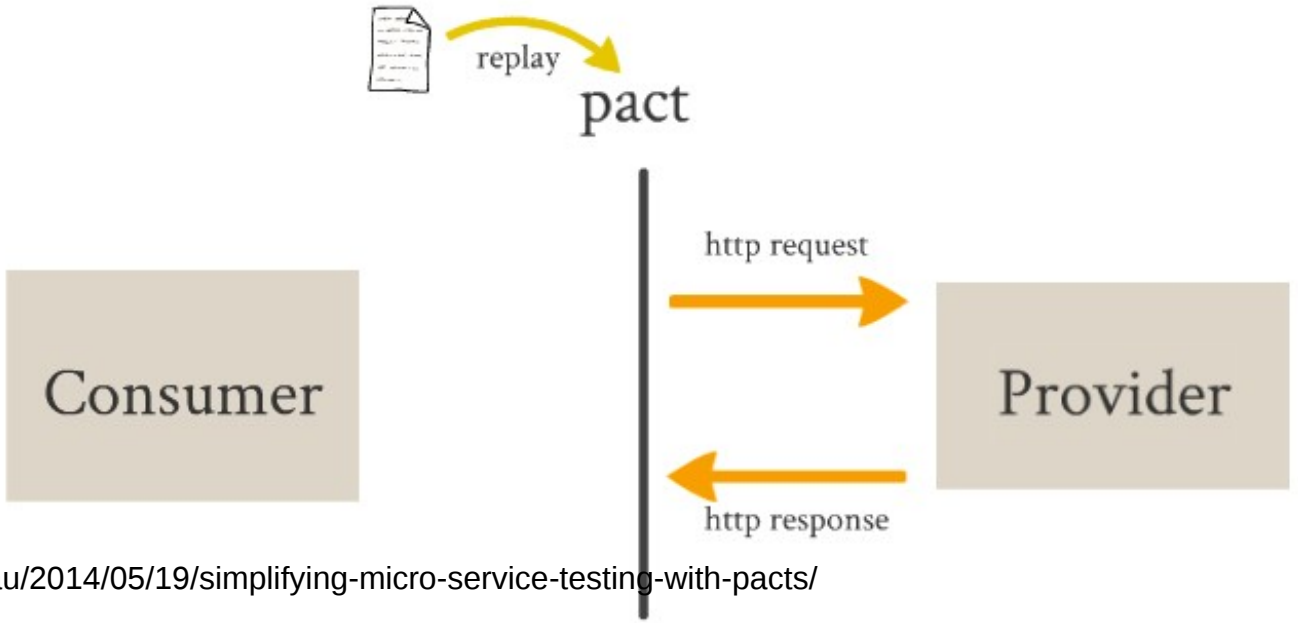


Quelle: http://dius.com.au/2014/05/19/simplifying-micro-service-testing-with-pacts/

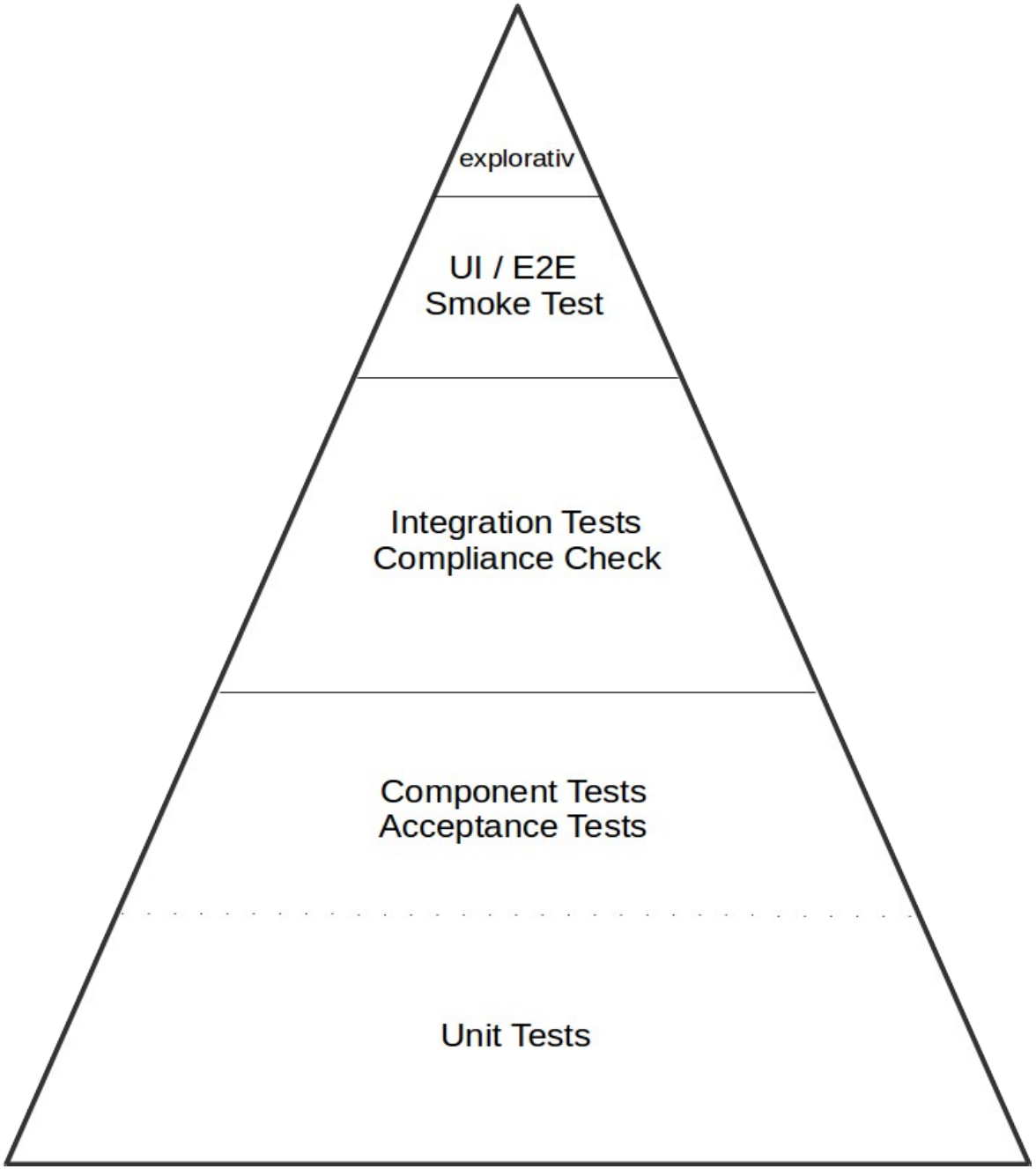
Step 1 - Define Consumer expectations



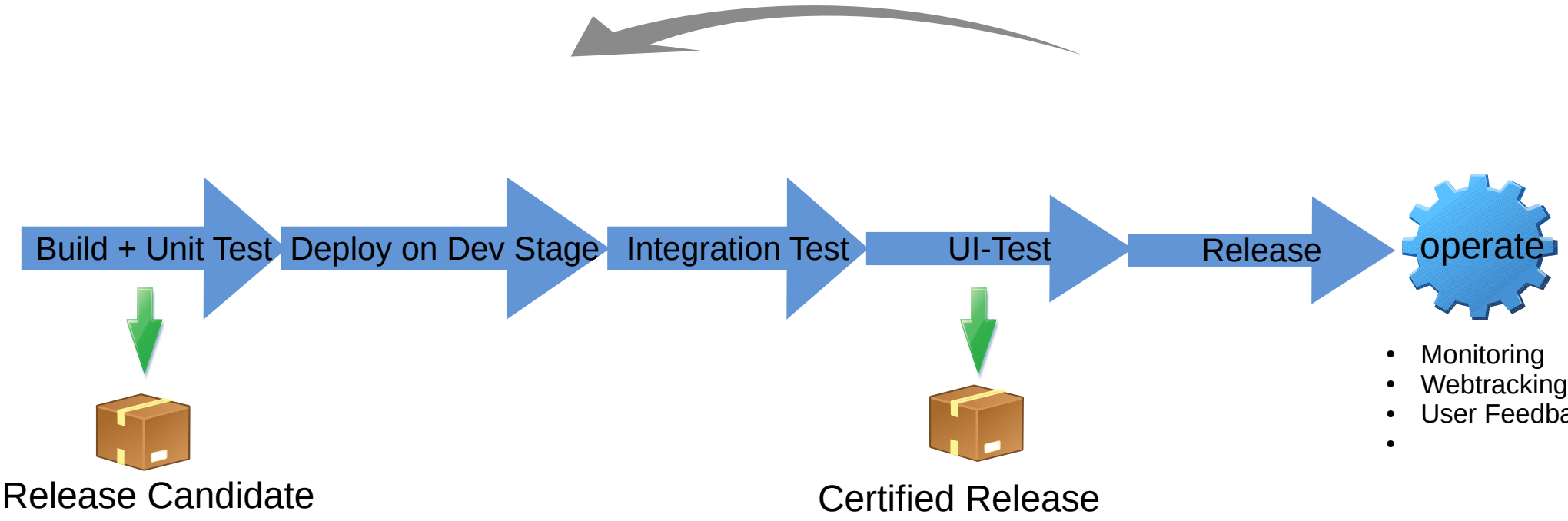
Step 2 - Verify expectations on Provider



Quelle: http://dius.com.au/2014/05/19/simplifying-micro-service-testing-with-pacts/


explorativ
UI / E2E
Smoke Test
Integration Tests
Compliance Check
Component Tests
Acceptance Tests
Unit Tests

Continous: Integration / Quality / Delivery



Jenkins TeamCity puppet labs VAGRANT

Best Practice

- Cross funktionale Teams
- Agiles Vorgehen (empirisch, inkrementell, iterativ)
- Lose gekoppelte Microservices
- Einfache Kommunikation untereinander (REST/HTTP)
- Continous Integration mit schnellen Feedback Zyklen
  - Wenig UI / Ende zu Ende Test
- Dev Ops

Links

Microservices - Martin Fowler

http://martinfowler.com/articles/microservices.html

Integrated tests are a scam - J.B. Rainsberger

http://vimeo.com/80533536

Consumer Driven Contracts - Ian Robinson

http://martinfowler.com/articles/consumerDrivenContracts.html

Simplifying microservices testing with pacts - Ron Holshausen (one of the original pact authors)

http://dius.com.au/2014/05/19/simplifying-micro-service-testing-with-pacts/

Integration Contract Tests - Martin Fowler

http://martinfowler.com/bliki/IntegrationContractTest.html