Contract Testing

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Outline

1. Problem statement
   - Company growth
   - Test Typology
   - How to test microservices?
2. Testing complex distributed architectures
   - Contract Testing
3. Demo Time
4. Worth thinking about

Let's start

It all started with Bob...

...and it continues with Bob

It all started with Bob…

They do work on my local machine though 😢

Bob

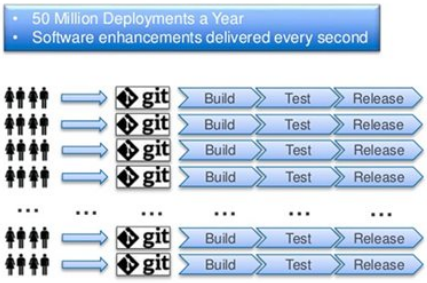
BOB ! the changes you made do not work on the live system 😡

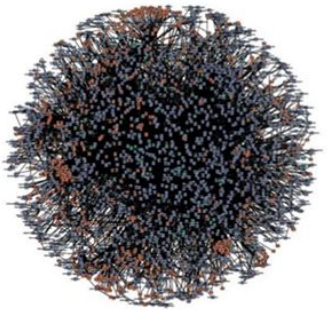
Angry chef

Bob has learnt the lesson...


MICROSERVICES
MICROSERVICES EVERYWHERE

Extreme examples...





Everybody loves microservices

- Big promise: Independent deployability

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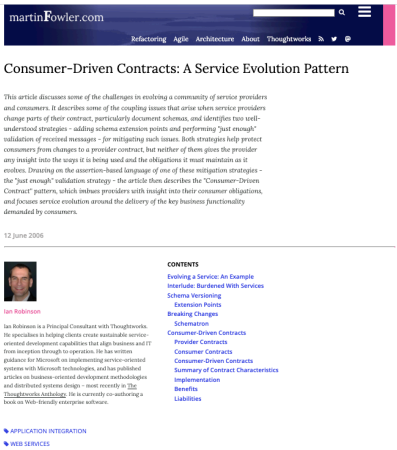
- Optimized Time to Market

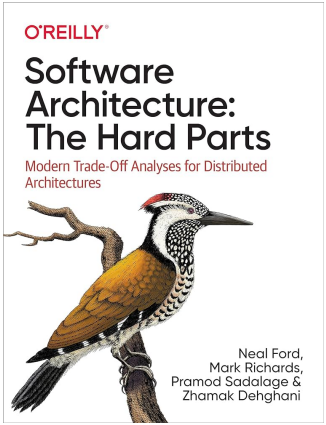
Everybody loves microservices

> *Chief among the benefits of service-enabling an enterprise's application landscape are* ***increased organizational agility*** *and* ***reduced overall cost*** *of implementing change.*
>
> *A SOA increases organizational agility by placing high-value business functions in* ***discrete, reusable services****, and then connecting and orchestrating these services to satisfy core business processes.*
>
> *It reduces the cost of change by* ***reducing the dependencies*** *between services, allowing them* ***to be rapidly recomposed and tuned*** *in response to change or unplanned events.*



Is always a tradeoff

> *There is only one hard rule in software development:* ***Everything is a tradeoff****.*
>
> *– Neal Ford*



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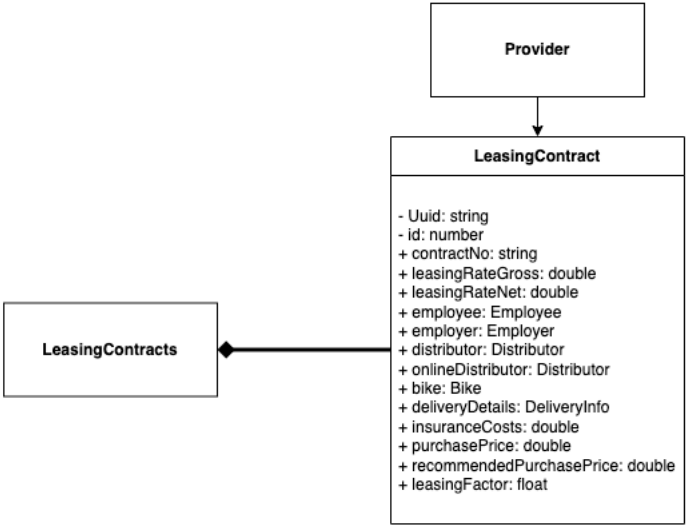
Bob's company is being very successfull...

A company growth... so its architecture



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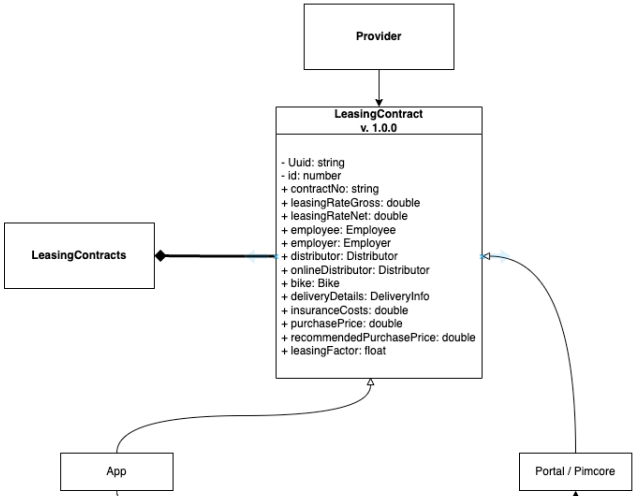

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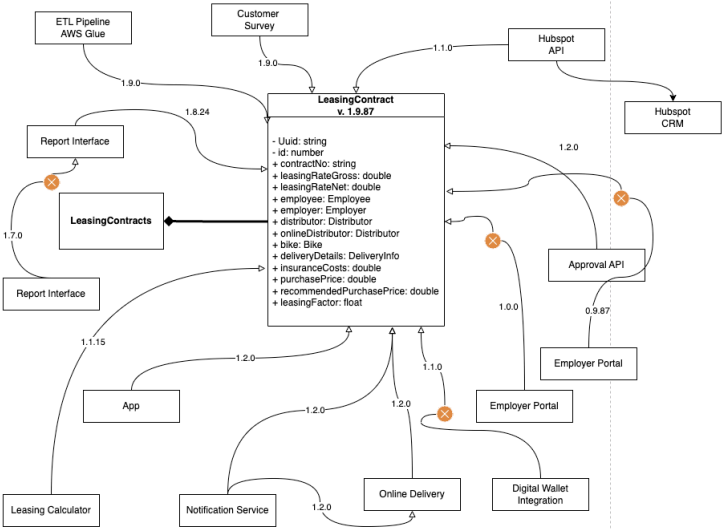
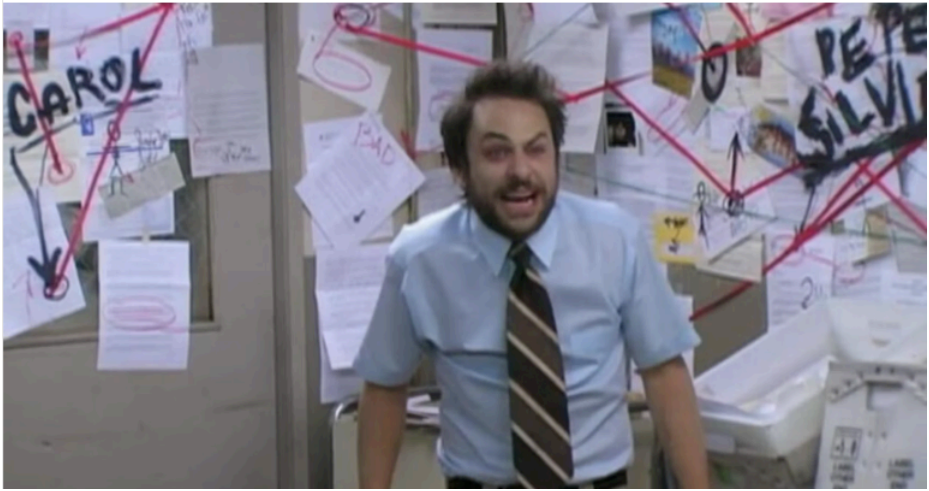


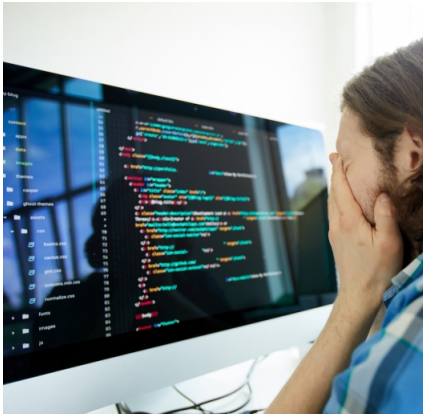
Bob is happy...



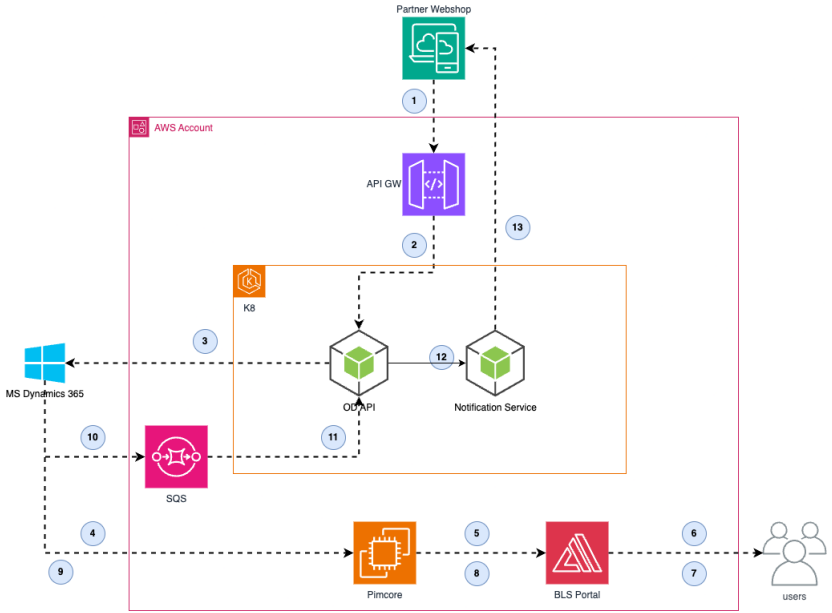
The Problem...

> *Every time we touch one service, all the others break :(*

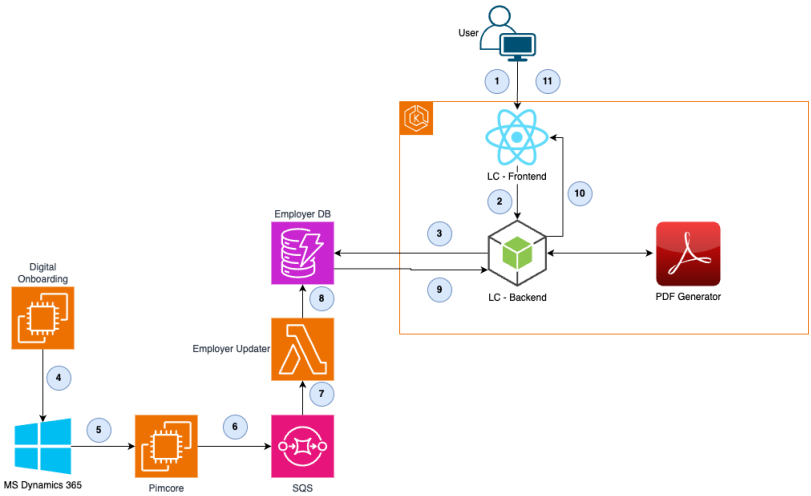
- Dependency hell
- Devs don't have confidence in deploying changes
  - Consequences of changes are hard to track
  - Distributed architectures are hard to test



Architecture example: Online Delivery



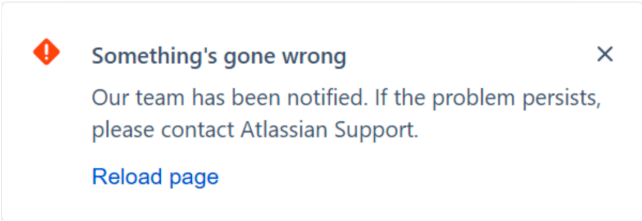
Architecture example: Leasing Calculator



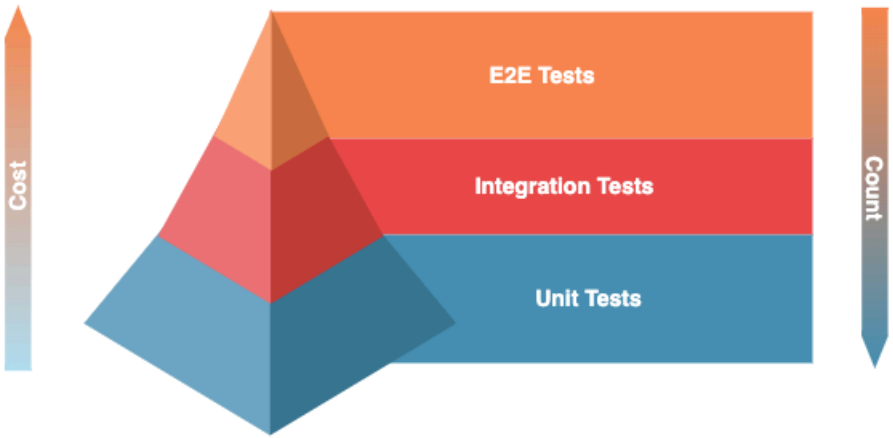
Updating a microservice: the sad Atlassian case

```
{
  "users": "Mike",
  "address": "Something"
}
```

```
{
  "user": "Mike",
  "address": "Something"
}
```



Test Typology



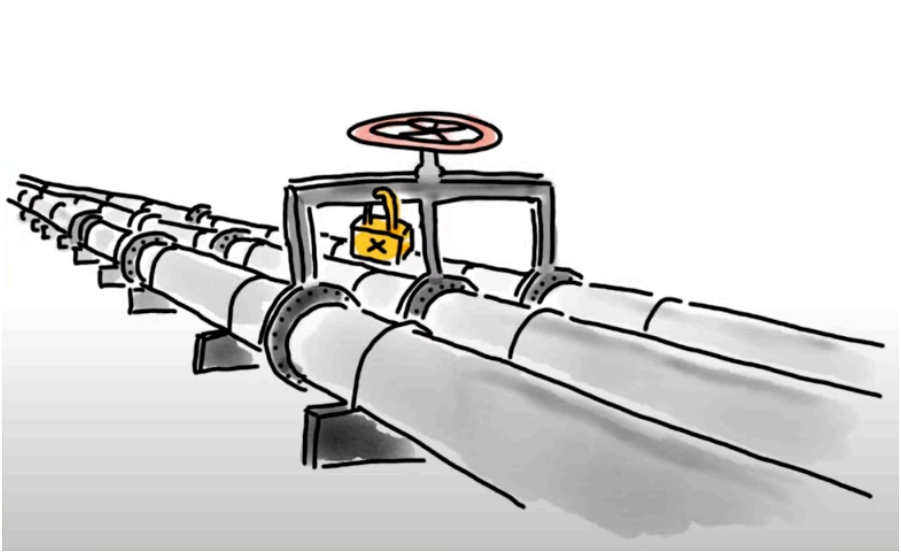
The problem with Unit Tests alone

- Local changes, even if tested, do not assure that the system as whole is working
- Mocks are not guaranteed to really represent the other part of the system

Problem with E2E Tests

- Hard or impossible to test some scenarios (system not available)
- Expensive (timely and money)

Distributed $\neq$ Decoupled



Is this one or three pipelines?

Mocks

- Mocking

Problem Statement

When organizations grow and so do the number of services

- How can we know, that the **whole** system works, when I publish changes?
- How can I avoid dependency on E2E tests for deployment and still be confident?
  - Testing microservices in isolation is not enough

Many hops...

- Show here what it would mean for us to have pure e2e tests

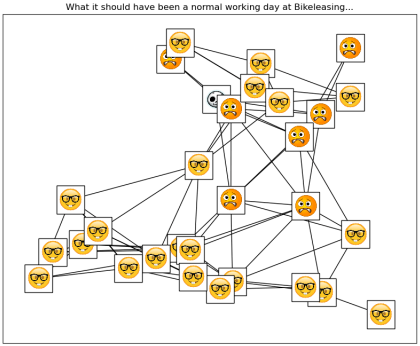
Problems

- Local changes, even if tested, do not assure that the system as whole is working

Problems

- Local changes, even if tested, do not assure that the system as whole is working
- Loosely coupled architecture but tightly coupled teams. Such systems are - no matter the architecture - still monolithic from a CD perspective

Embedded Animation



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Hintergrund

- ja, something

Pacts

Pact

A formal agreement between parties or individual. Synonyms: agreement, protocol, deal

— Oxford English Dictionary

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