

DON'T REPEAT YOURSELF

Exactly once processing with Kafka®

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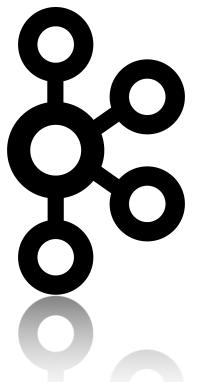
Agenda

Introduction

Problem with **duplication** & **not** being **idempotent**

What does it mean to be **idempotent** & how to **reach it**

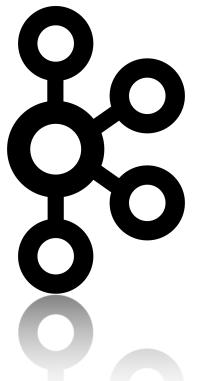
Scenario & Live-Demo



About adesso Austria

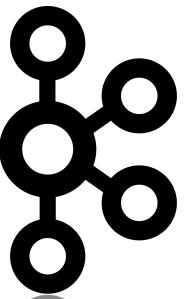


Business success is the result of innovative ideas, forward-looking strategies and perfectly tailored IT solutions that provide optimal support to companies as they face their own particular challenges. This always involves the contribution of people who bring the right mix of technological expertise and a deep understanding of the customer's particular business.



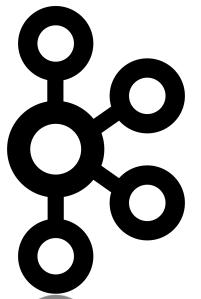
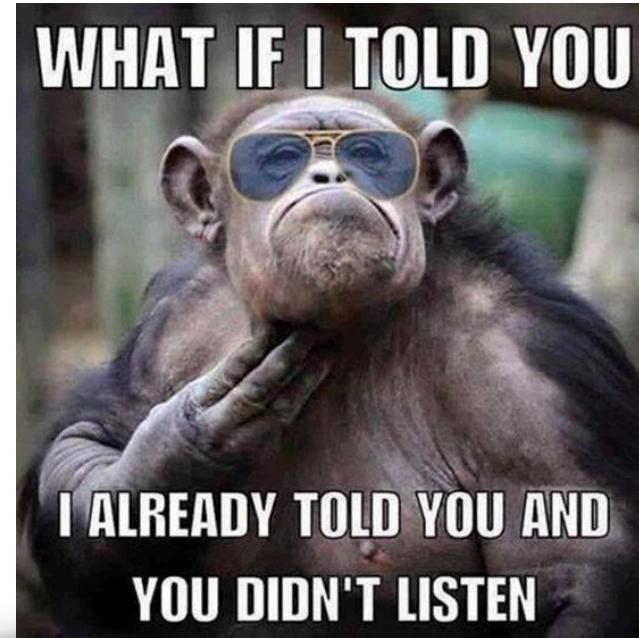
About Me

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Problem with **duplication** & not being **idempotent** (1)

Exactly once processing is hard & especially challenging in **distributed systems**.

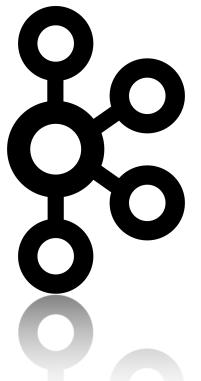


Problem with **duplication** & not being **idempotent** (2)

Your **messaging, producing & consuming** systems need to work together!



Apes together strong.



What does **idempotent** mean?

An **idempotent operation** is an operation that can be performed many times without causing a different outcome

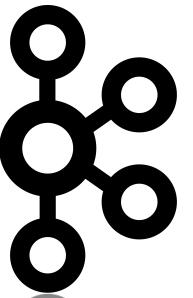
N > 0 identical requests produce the same output as a single request. - **RFC2616** (HTTP 1.1)

idempotent:

GET, HEAD, PUT, DELETE

not idempotent

POST



Possible ways to tackle **duplication**

You need to establish an **end-to-end guarantee**.

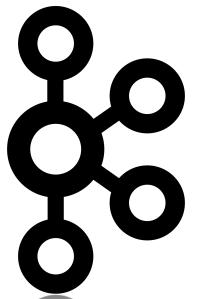
Possible **solutions** include:

Distributed
Transaction Logs

Committed Message
Consumption

LRU Cache Lookups

Bloom-Filter

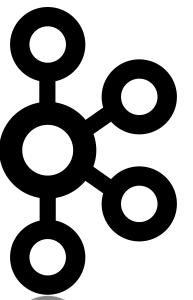


Possible ways to reach **idempotency**

Usage of **atomic transactions**



Usage of a **state-machine** (Cadence, Camunda, ...)



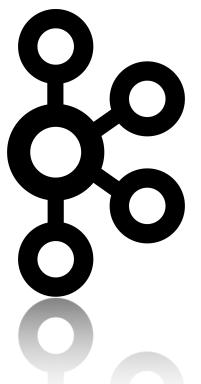
Scenario Details

Simulation of **wind turbines**

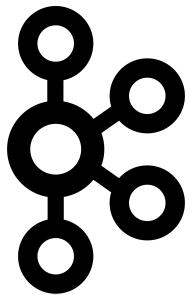
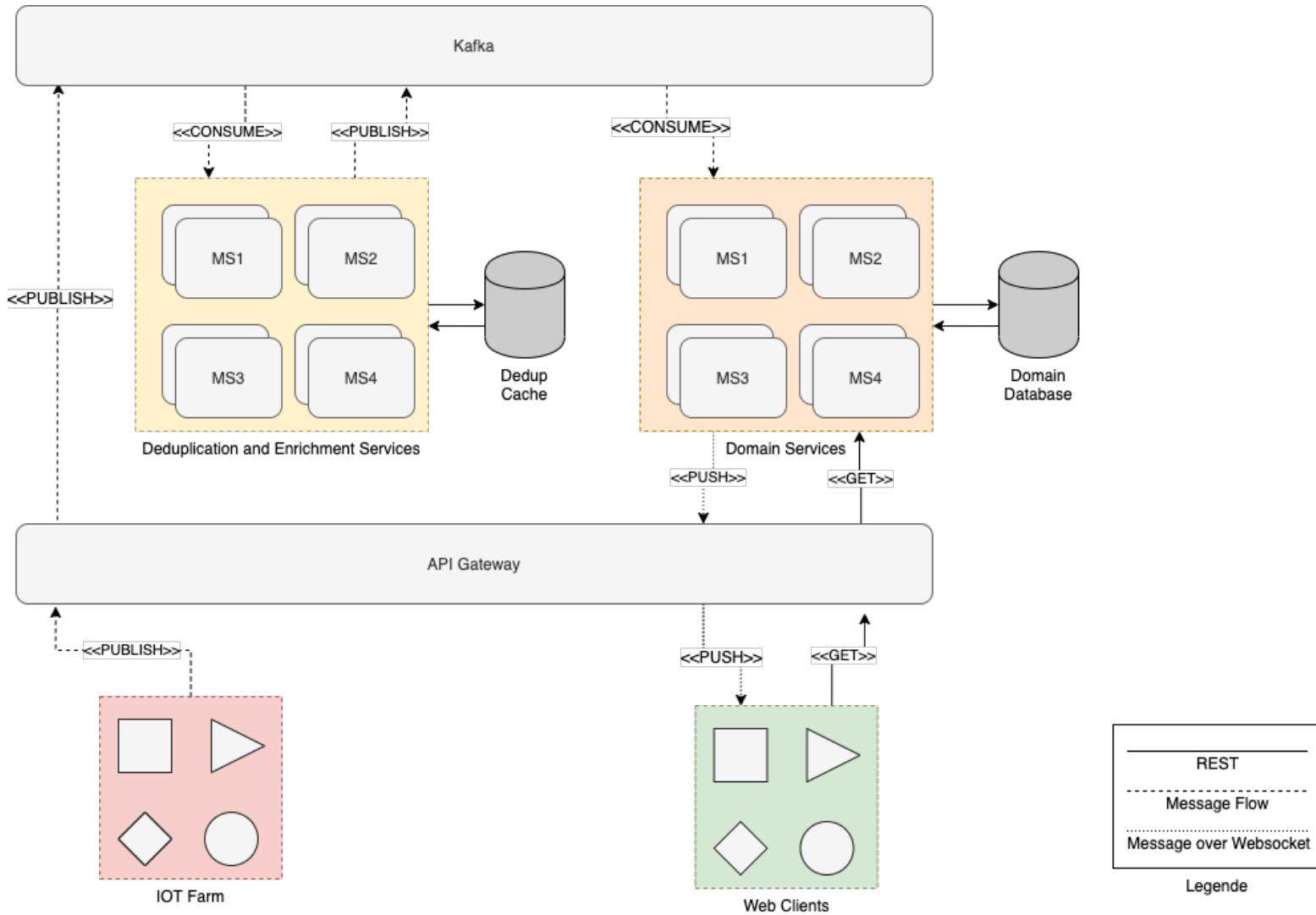
Sensory data gets sent to a **Kafka topic** (including temperature, wind-strength, ...)

Spring-based Micro-Services **enrich, transform & load** the data

An **Angular** based Dashboard that shows live data



Scenario Overview





LIVE DEMO



Sources, Links & Books

[1] *adesso Austria Github repository* | <https://github.com/adesso-austria/kafka-meetup>

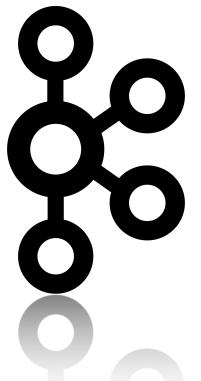
[2] *Exactly-once semantics are possible (Confluent)* | <https://bit.ly/2Up8IB2>

[3] *Getting started with microservices (Part 1 to 4, Oracle)* | <https://bit.ly/2SlXjKe>

[4] *"Building Microservices"* - Sam Newmann (O'Reilly)

[5] *"I ❤️ Logs"* - Jay Kreps (O'Reilly)

[6] *Microservice Patterns & Anti-Patterns* | <https://microservices.io>



Questions & Answers



business.
people.
technology.

Thank you for your attention!

