

Microservices with Spring Boot



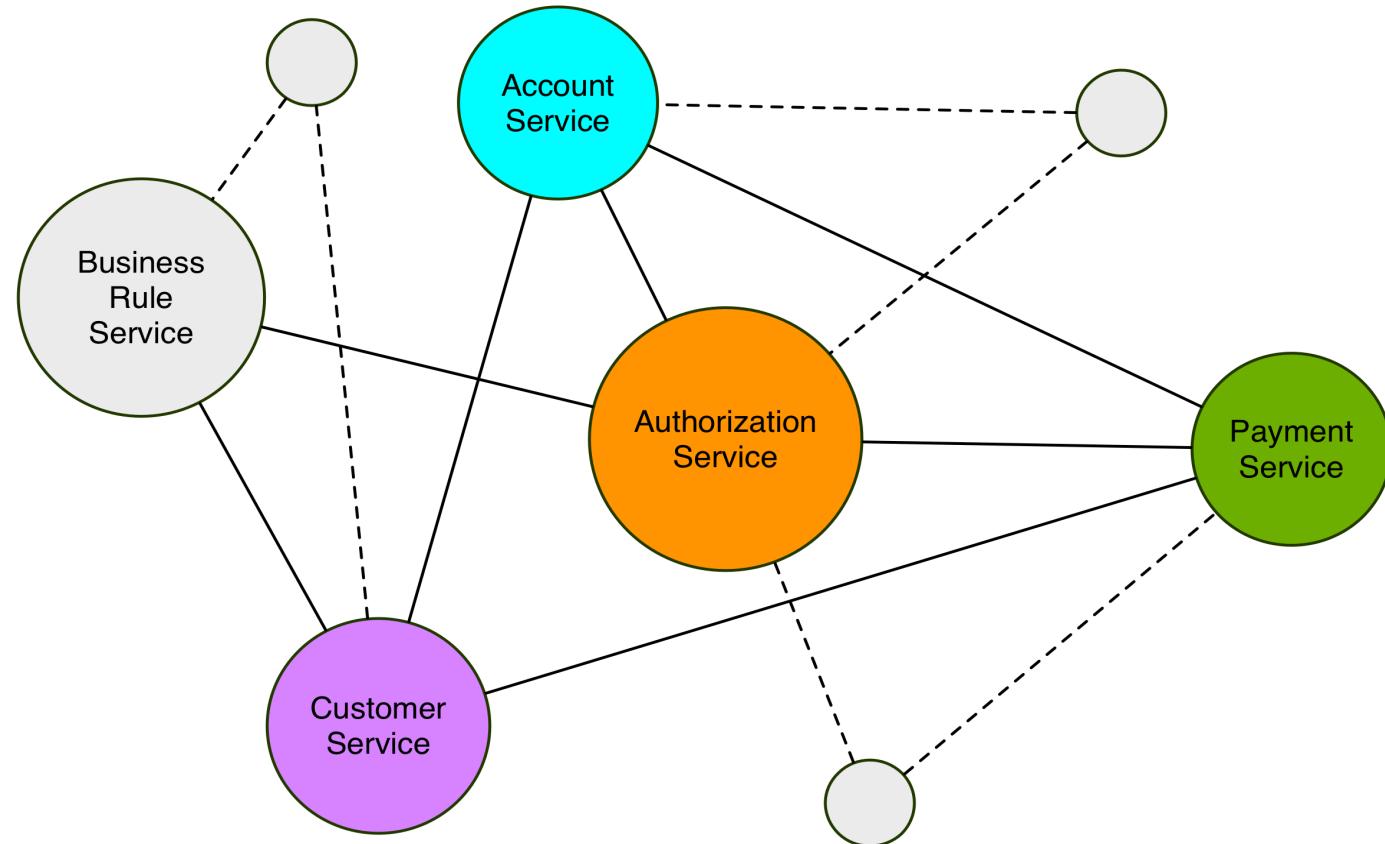
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Overview



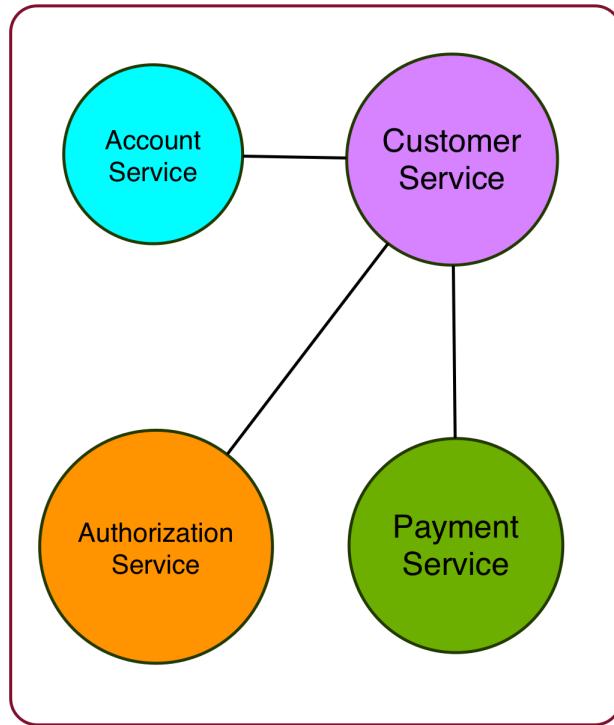
- Microservices Architecture
- Microservices Principles
- Monolithic to Microservice
- Pros & Cons of Microservices
- Second Payment Service Directive (PSD2)
- Spring Cloud
- Demo Application

Microservices Architecture

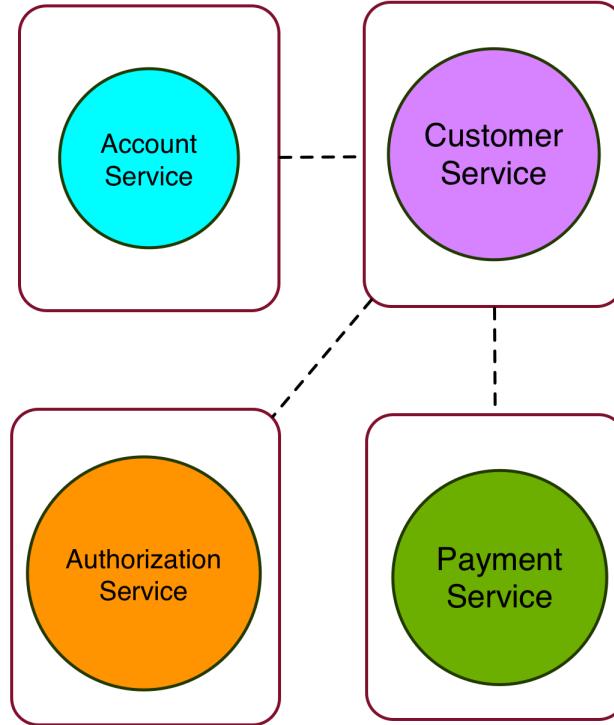


Monolithic vs. Microservices

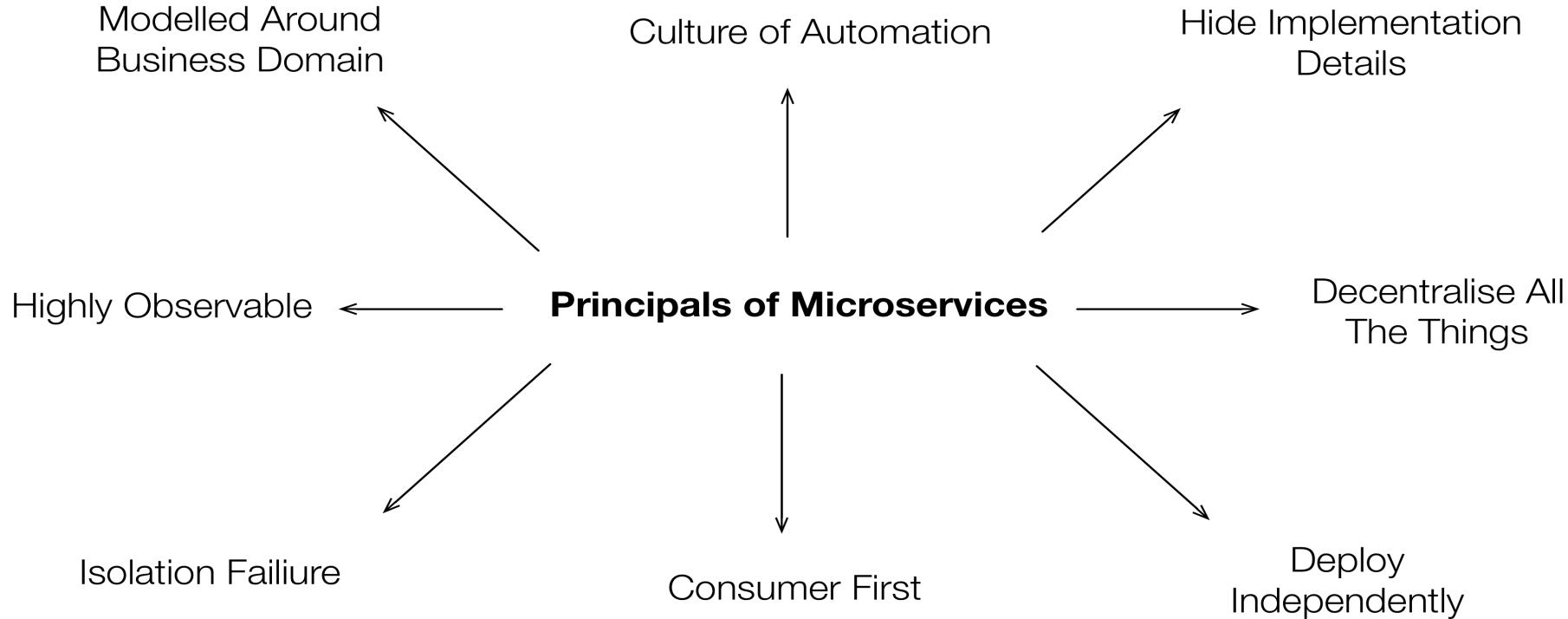
Monolithic



Microservices



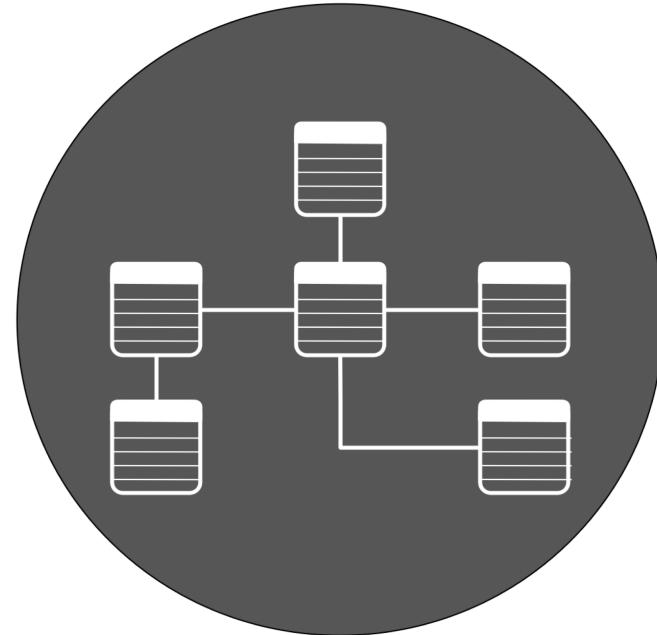
Principals of microservices



Source: Sam Newman

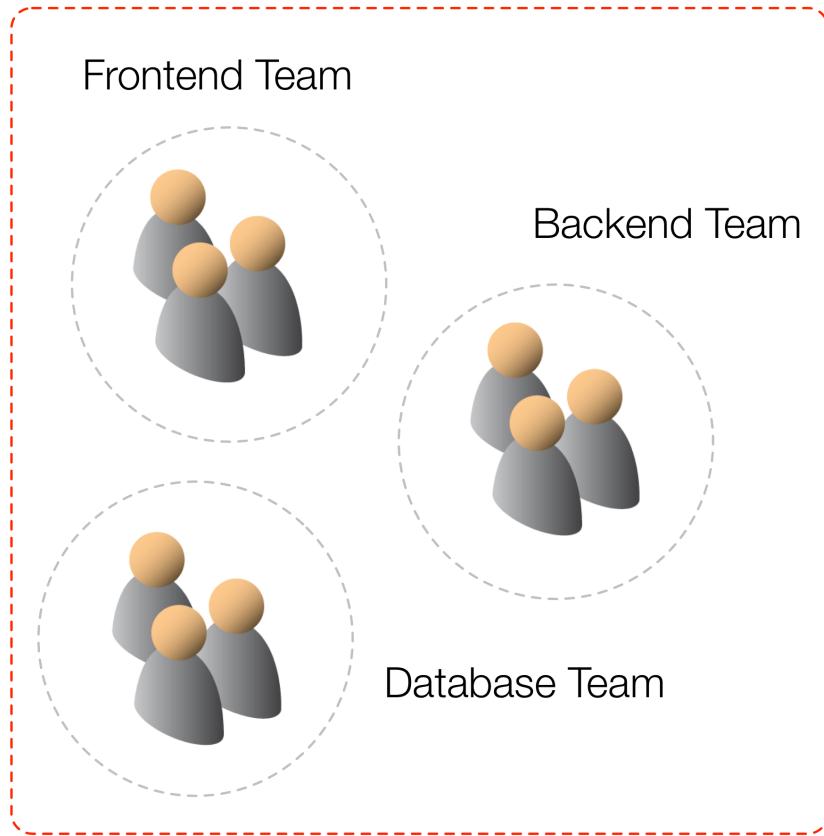
Principals of microservices

- Decentralizing
- Deploy Independently
- Consumer First
- Isolation Failure
- Highly Observable
- Modeled Around Business Domain
- Culture of Automation
- Hide Implementation Details

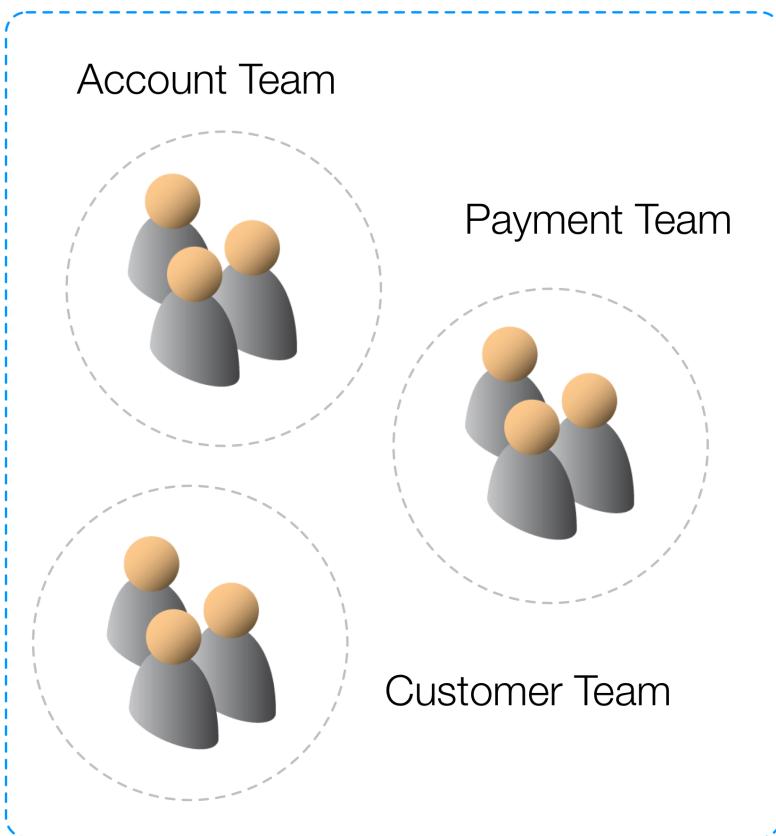


Teams in Microservices Architecture

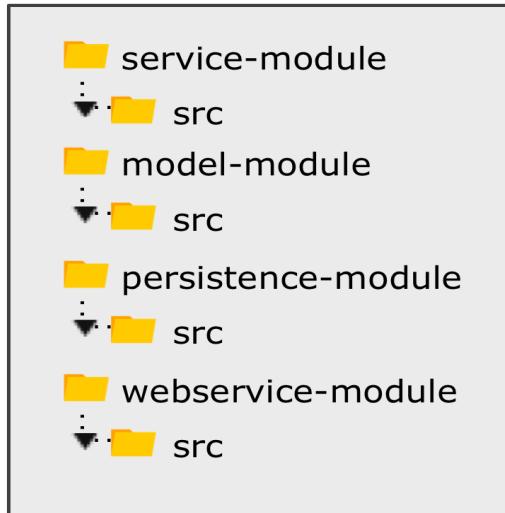
Teams in monolithic application



Teams in microservices application

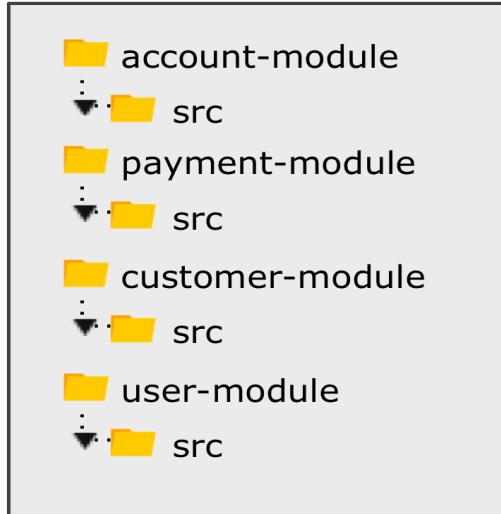


Monolithic to Microservice



- Service Module
- Models Module
- Persistence Module
- Web Service Module

Monolithic to Microservice



- Account Module
- Payment Module
- Customer Module
- User Module

Pros

- Small manageable functional units
- Scalability
- Polyglot programming
- Resiliency
- Small deployment units
- Replaceable Modules

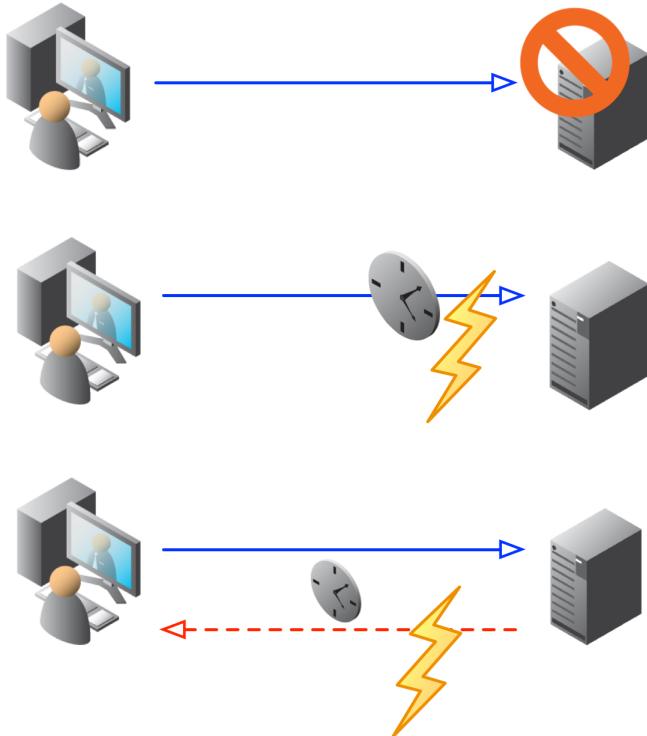
Pros & Cons of Microservices



Cons

- Increased effort for operation
- Well design and architecture
- Performance hit due to HTTP, (de)serialization (and network) overhead
- Complexity of Distributed Systems
- Data consistency

Idempotency Solution to inconsistency



- The initial connection could fail as the client tries to connect to a server.
- The call could fail midway while the server is fulfilling the operation, leaving the work in limbo.
- The call could succeed, but the connection break before the server can tell its client about it.

Who uses Microservices Architecture...

NETFLIX

amazon

ebay

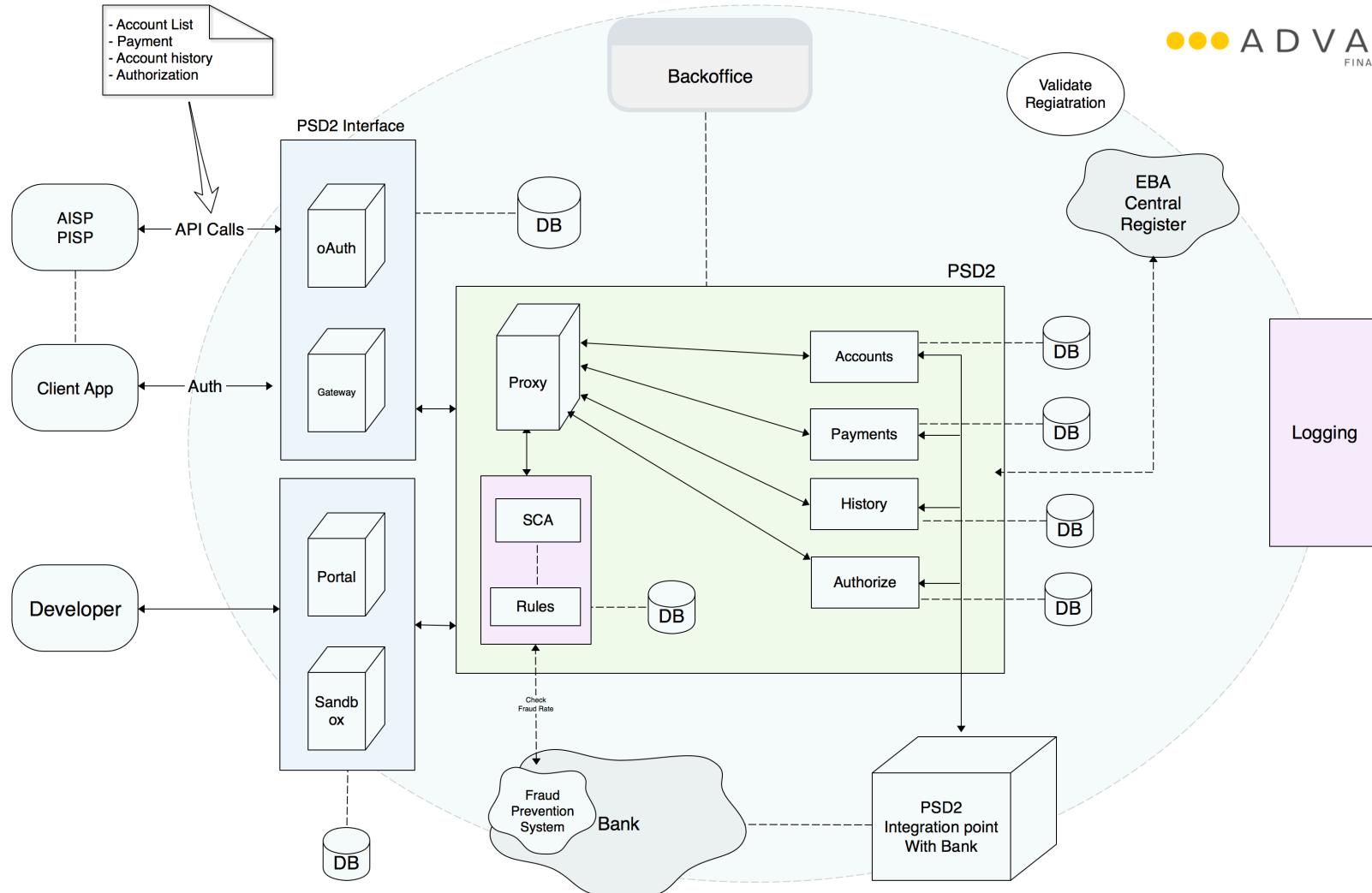
PayPal



twitter

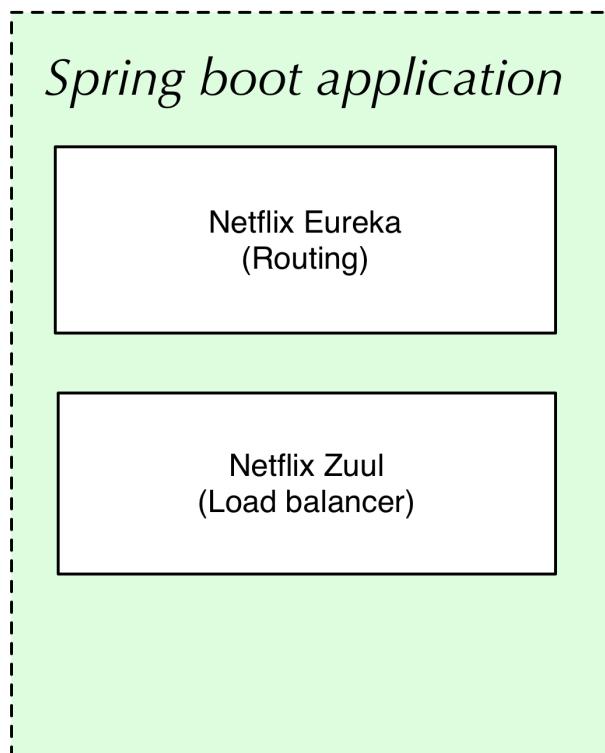






Spring Cloud Technologies

GATEWAY



- Eureka, Automatic Service Discovery
- Zuul: Load balancing and Partial Failure features

PSD2 Technology Stack



Omnia PSD2 Portal & API key management

Spring boot applications

Developer Portal

Thymeleaf

Spring Security

Spring MVC

Bootstrap

Logback Kafka Appender

API Documentation

Swagger

Sandbox

Docker Container
Mocked DA

Logback Kafka Appender

PSD2 Technology Stack

Auditing

Spring boot application

Kafka

Elastic Search

Kibana

Back Office

Spring boot application

Angular 4

Spring Security

Spring MVC

Bootstrap

Spring boot actuator
(Health Monitoring)

Logback Kafka Appender

Database

Postgres

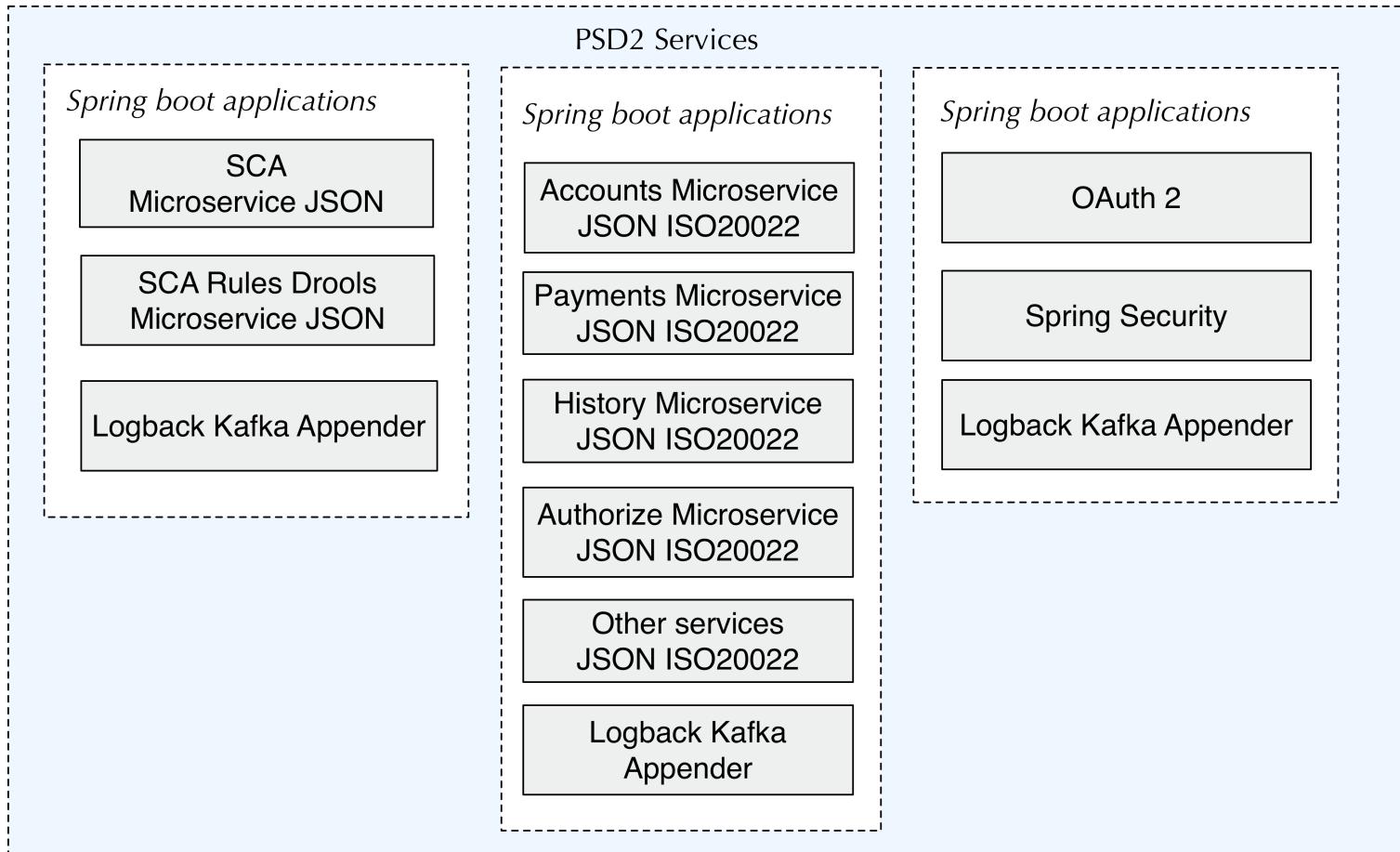
OR

DB2

PSD2 Technology Stack

PSD2 CORE

ADVANTAGE
FINANCIAL SYSTEMS EXPERTS



PSD2 Technology Stack



JEE application (DA) CBS - Sandbox

JEE application (DA) - Prod

Accounts Endpoint (JSON)
JAXRS - EJB

Payments Endpoint (JSON)
JAXRS - EJB

Authorize Endpoint (JSON)
JAXRS - EJB

History Endpoint (JSON)
JAXRS - EJB

Authentication Endpoint
(JSON)
JAXRS - EJB

Other extra Endpoint (JSON)
JAXRS - EJB



Demo