

EVENT-DRIVEN ARCHITECTURE



EKO KURNIAWAN KHANNEDY

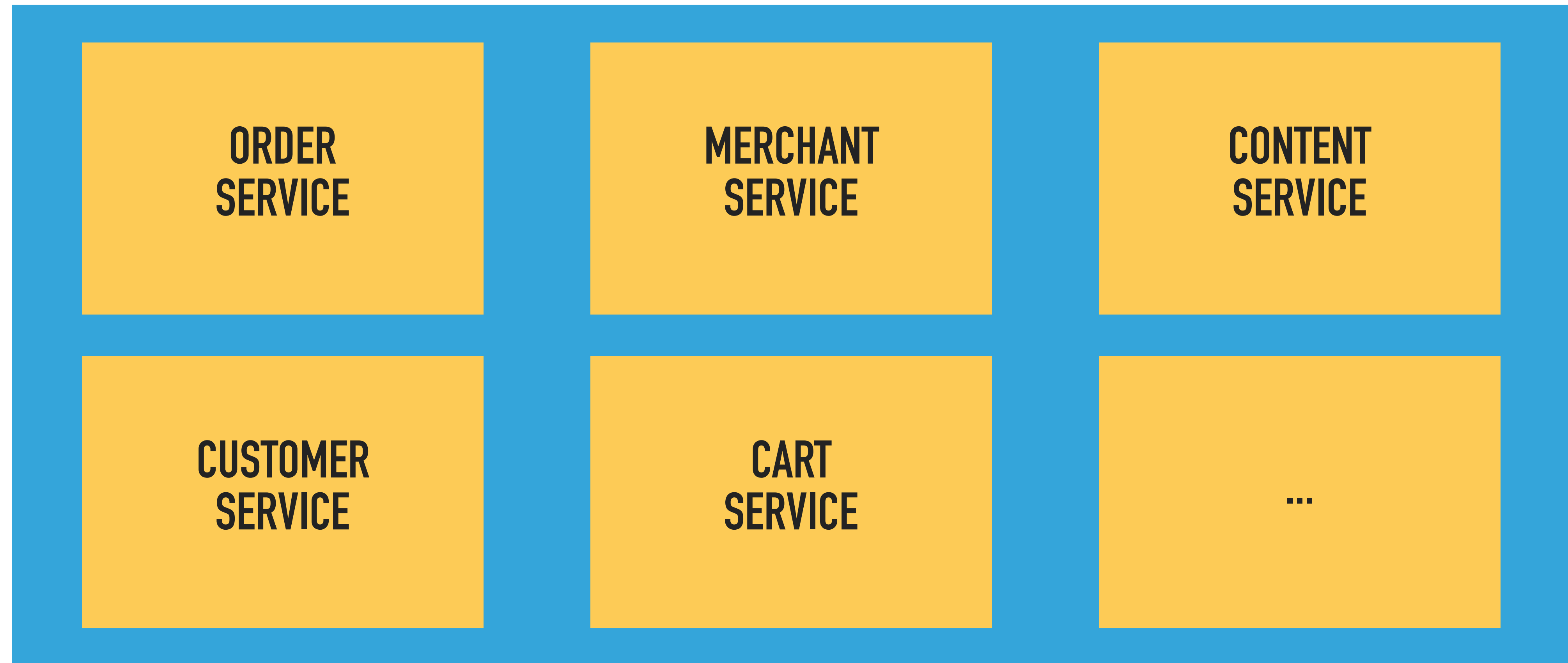
- ▶ Senior Principal R&D Engineer at Blibli.com
- ▶ Part of R&D Team
- ▶ eko.k.khannedy@gdn-commerce.com
- ▶ JVM User Group Indonesia Committee
- ▶ Spring Cloud Contributor



MONOLITH FIRST

LARGE MONOLITH APPLICATION

MONOLITH MODULES



MONOLITH PROBLEM

- ▶ The large monolithic code base intimidates developers.
- ▶ Overloaded IDE & web container.
- ▶ Scaling the application can be difficult.
- ▶ Requires a long-term commitment to a technology stack.

STRANGLER APPLICATION



MICROSERVICES ERA

ORDER
MANAGEMENT

MERCHANT
MANAGEMENT

CONTENT
MANAGEMENT

CUSTOMER
MANAGEMENT

CART
MANAGEMENT

...

TYPE OF MICROSERVICES

CART
SERVICE

PRODUCT
SERVICE

INVENTORY
SERVICE

MESSAGE
SERVICE

FLASHSALE
SERVICE

MEMBER
SERVICE

ORDER
SERVICE

RISK
SERVICE

...

PAYMENT
SERVICE

...

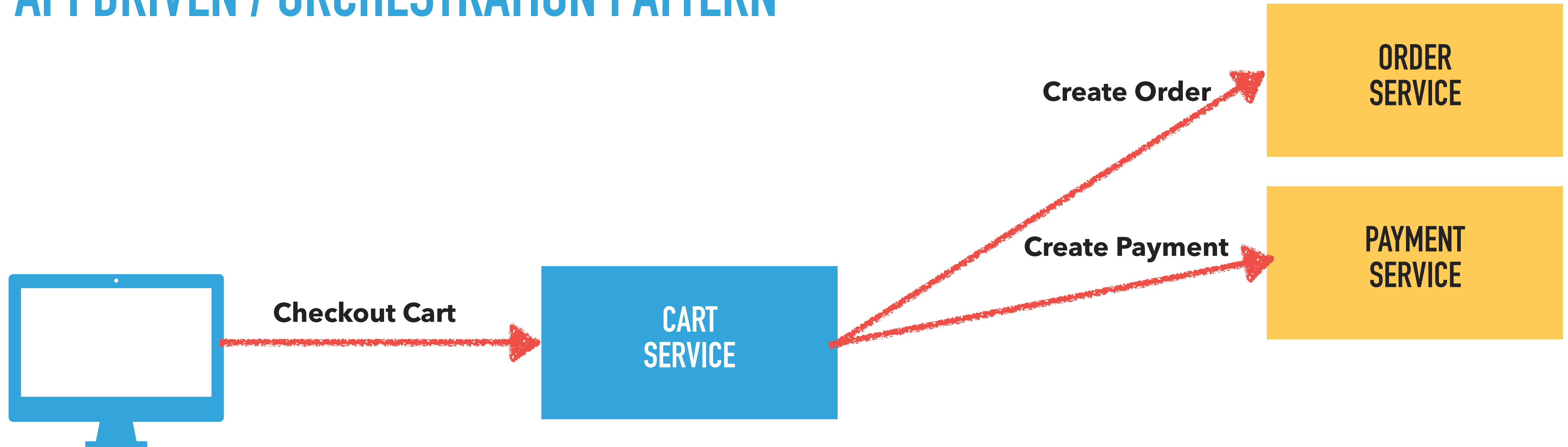
...

ORCHESTRATOR

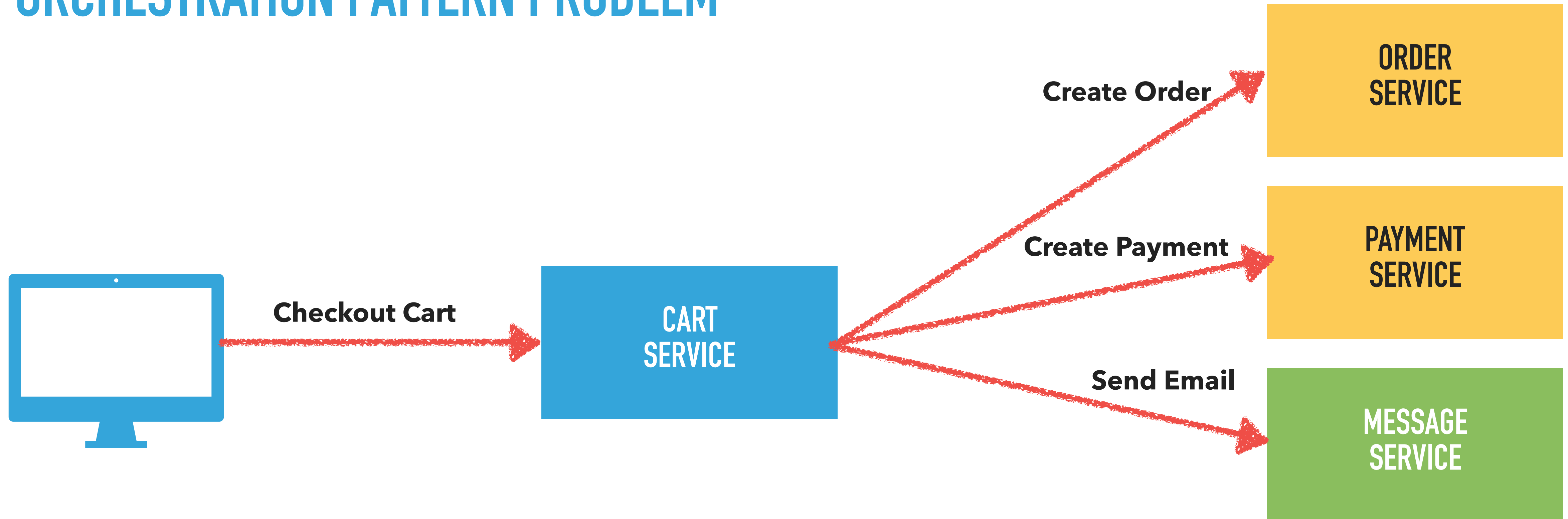
MASTER DATA

UTILITY

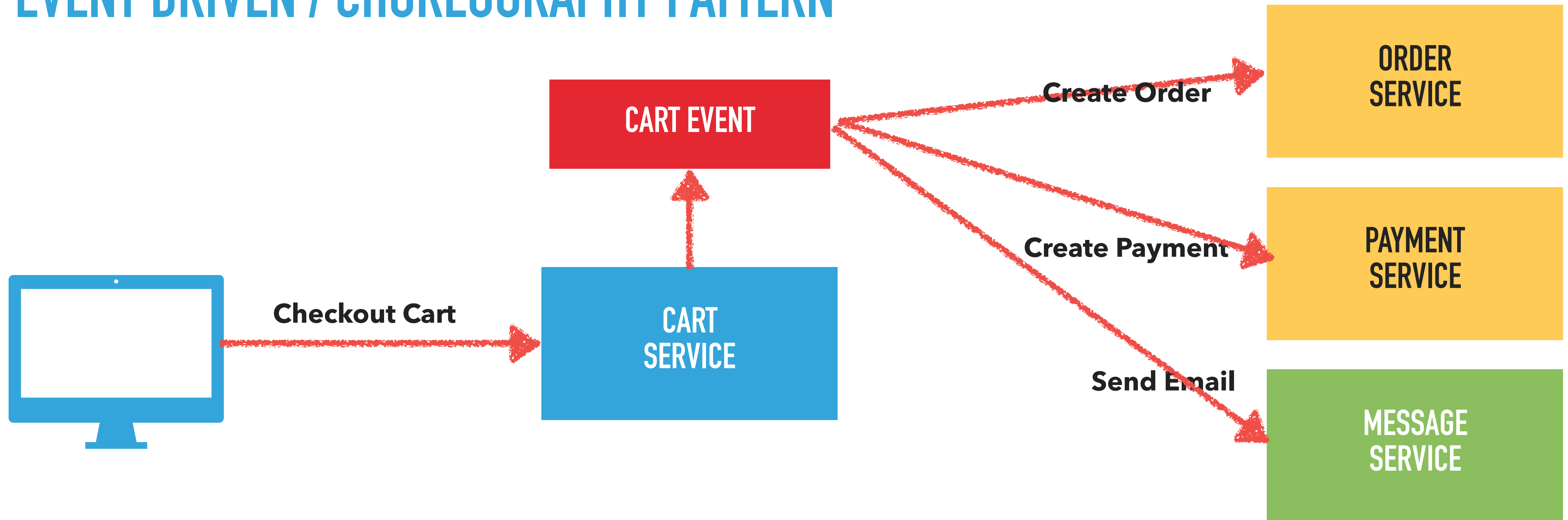
API DRIVEN / ORCHESTRATION PATTERN



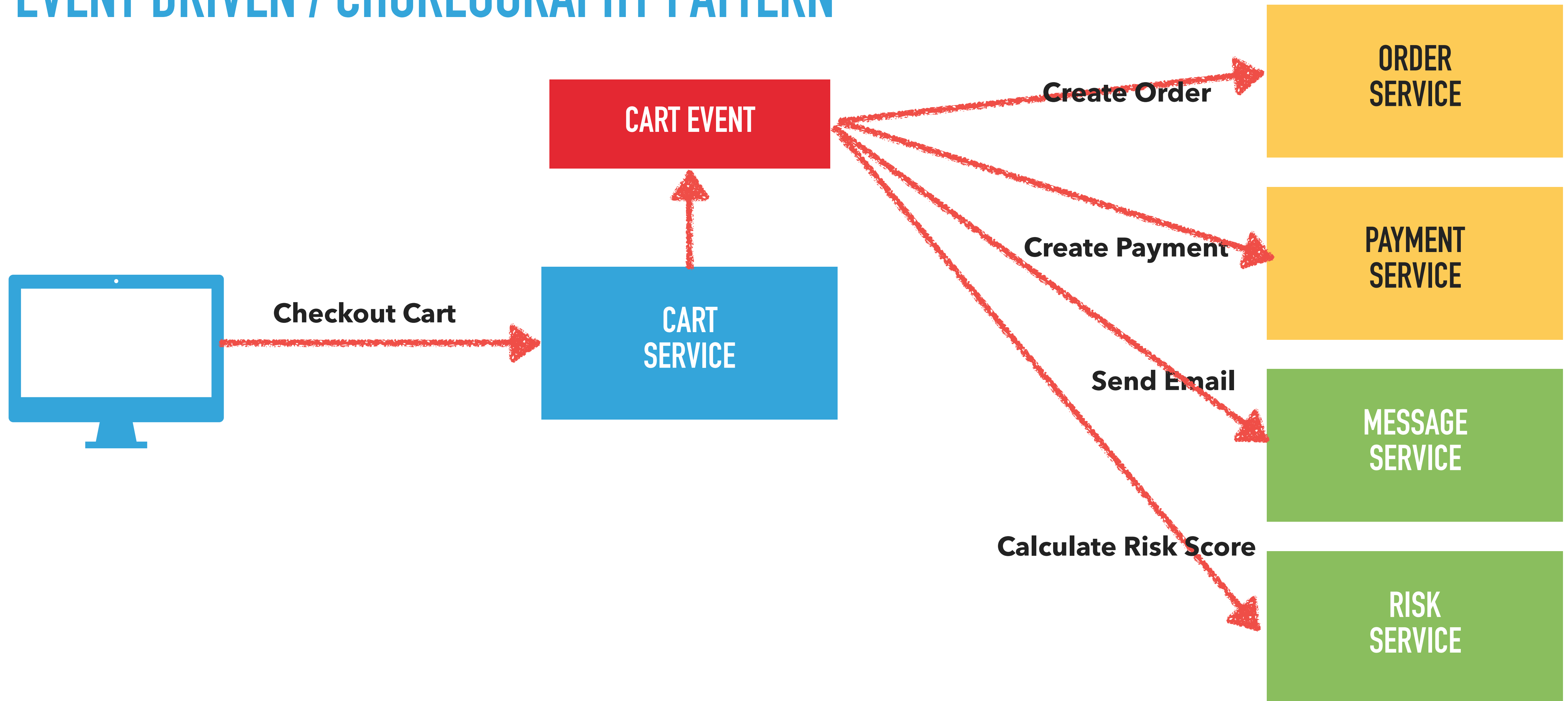
ORCHESTRATION PATTERN PROBLEM



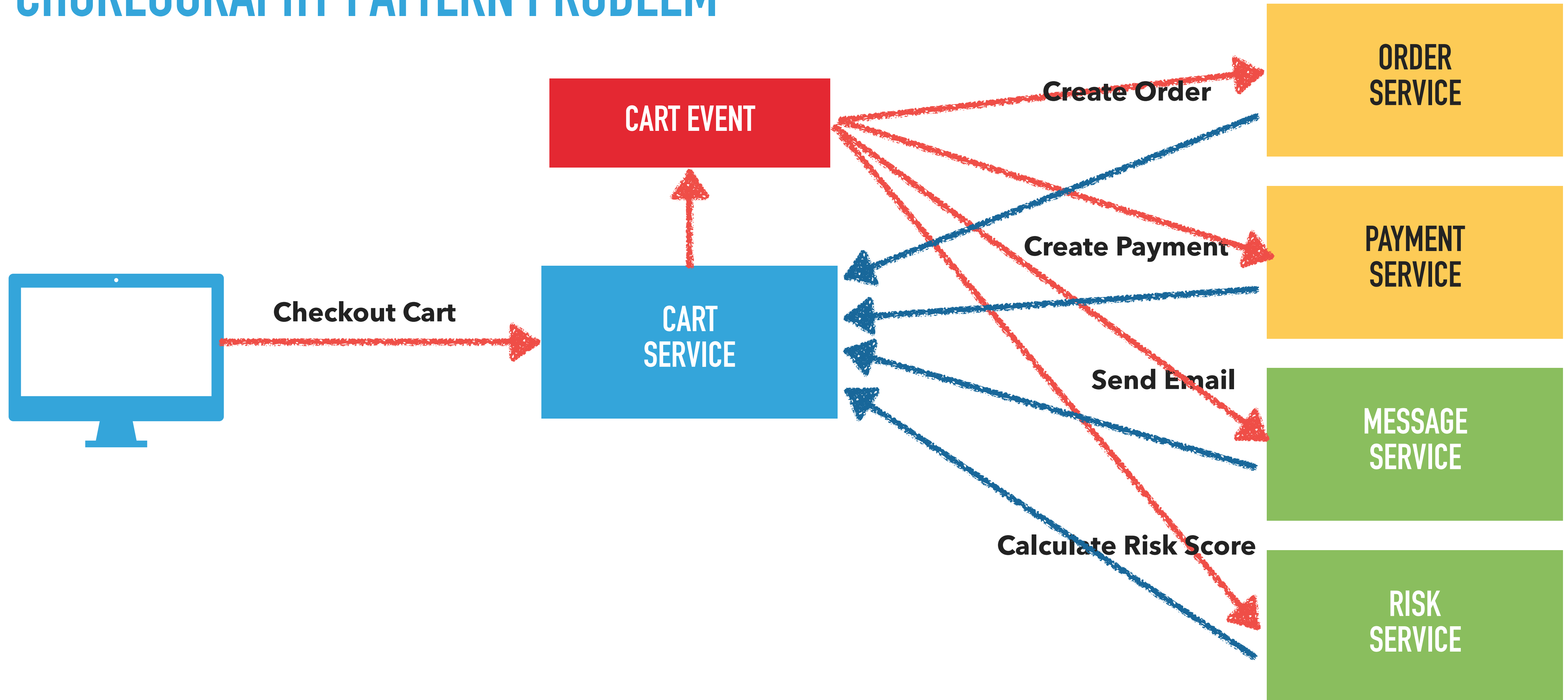
EVENT DRIVEN / CHOREOGRAPHY PATTERN



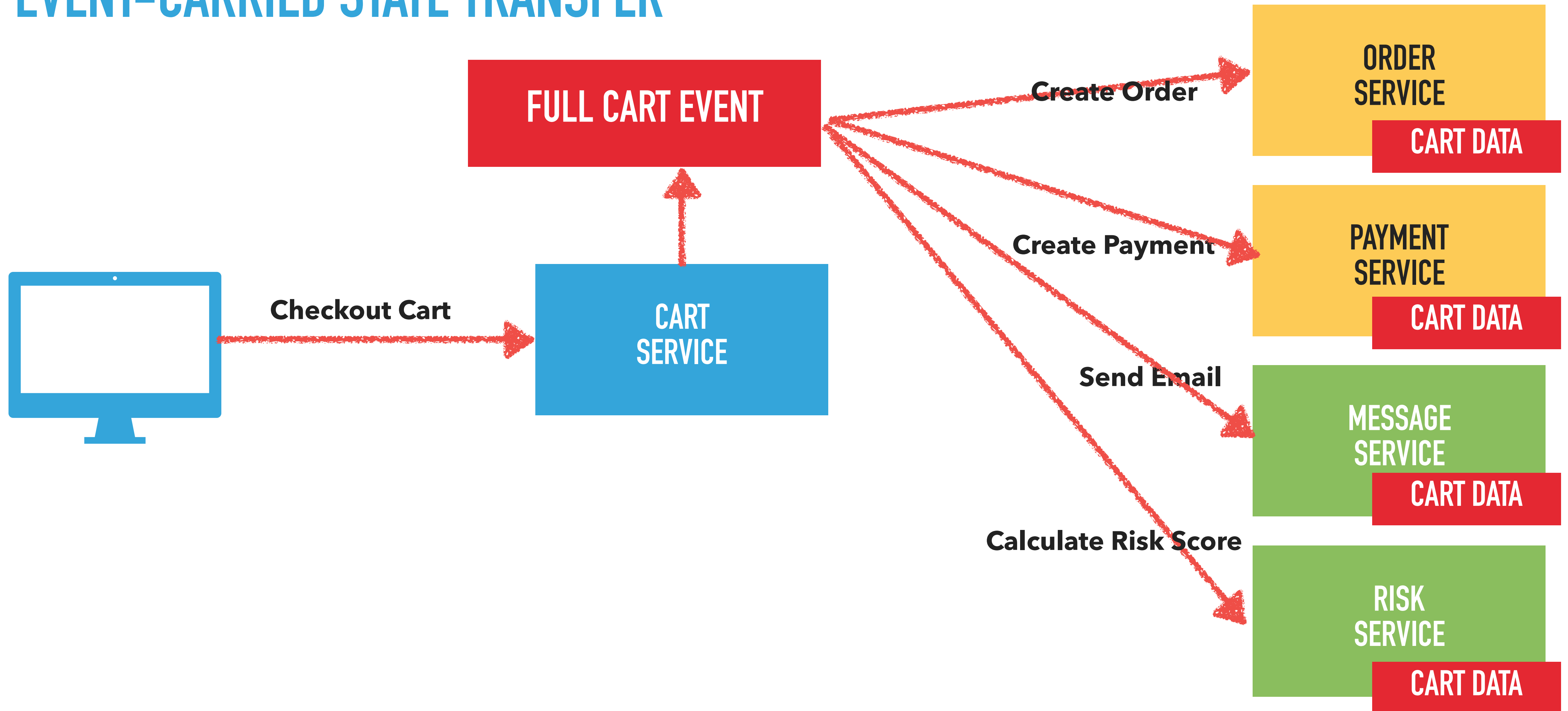
EVENT DRIVEN / CHOREOGRAPHY PATTERN



CHOREOGRAPHY PATTERN PROBLEM



EVENT-CARRIED STATE TRANSFER



EVENT-CARRIED STATE TRANSFER

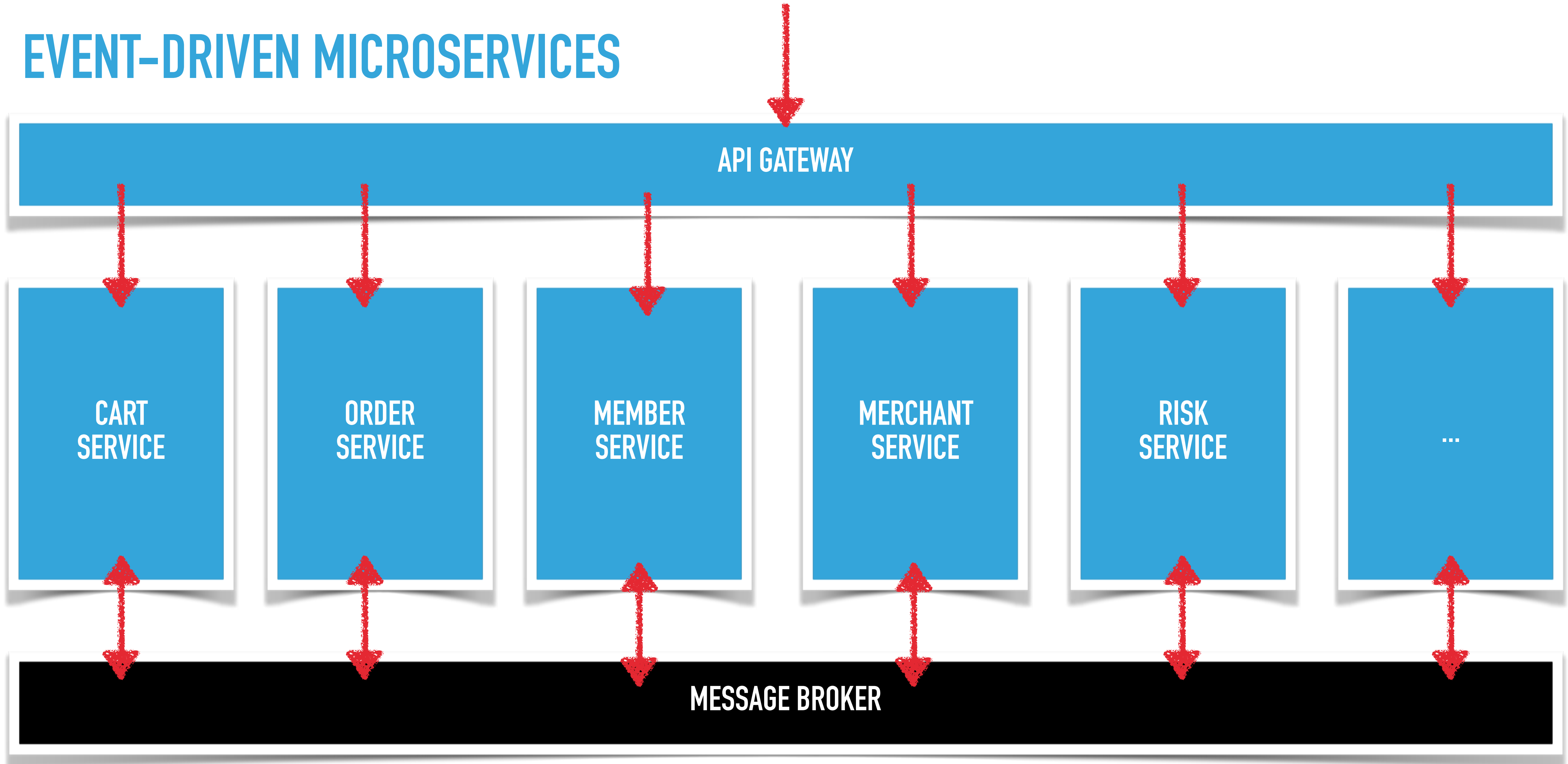
▶ **Good Part**

- ▶ Decoupling
- ▶ Reduced load on producer

▶ **Bad Part**

- ▶ Replicated Data
- ▶ Eventual Consistency

EVENT-DRIVEN MICROSERVICES



EVENT VS COMMAND

IDEMPOTENT

**SAME CALL REPEATEDLY WILL PRODUCE THE SAME RESULT.
IN OTHER WORDS, MAKING MULTIPLE IDENTICAL REQUESTS
HAS THE SAME EFFECT AS MAKING A SINGLE REQUEST**

What is idempotent mean?

IDEMPOTENT EVENT

- ▶ SaveMemberEvent
- ▶ MemberBalanceChangedEvent
- ▶ SaveOrderEvent
- ▶ SavePaymentEvent
- ▶ MemberAddressChangedEvent
- ▶ ...

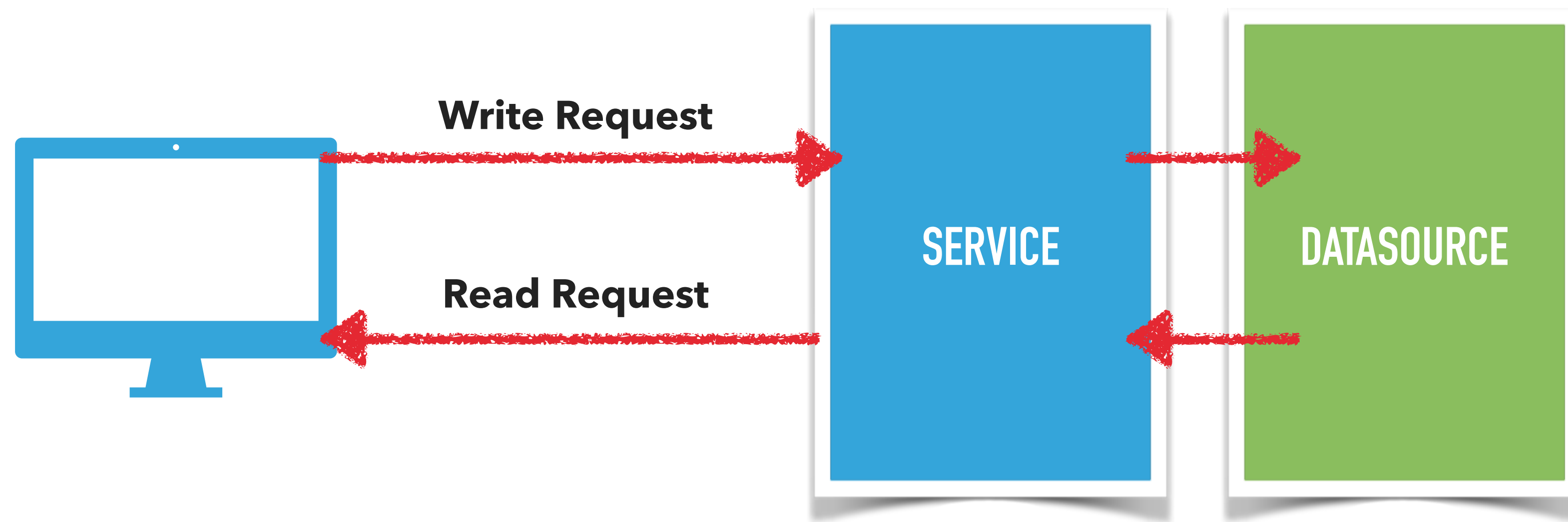
NON IDEMPOTENT EVENT

- ▶ IncreaseMemberBalanceEvent
- ▶ DecreaseMemberBalanceEvent
- ▶ SendAnEmail
- ▶ SendOrderNotification
- ▶ ...

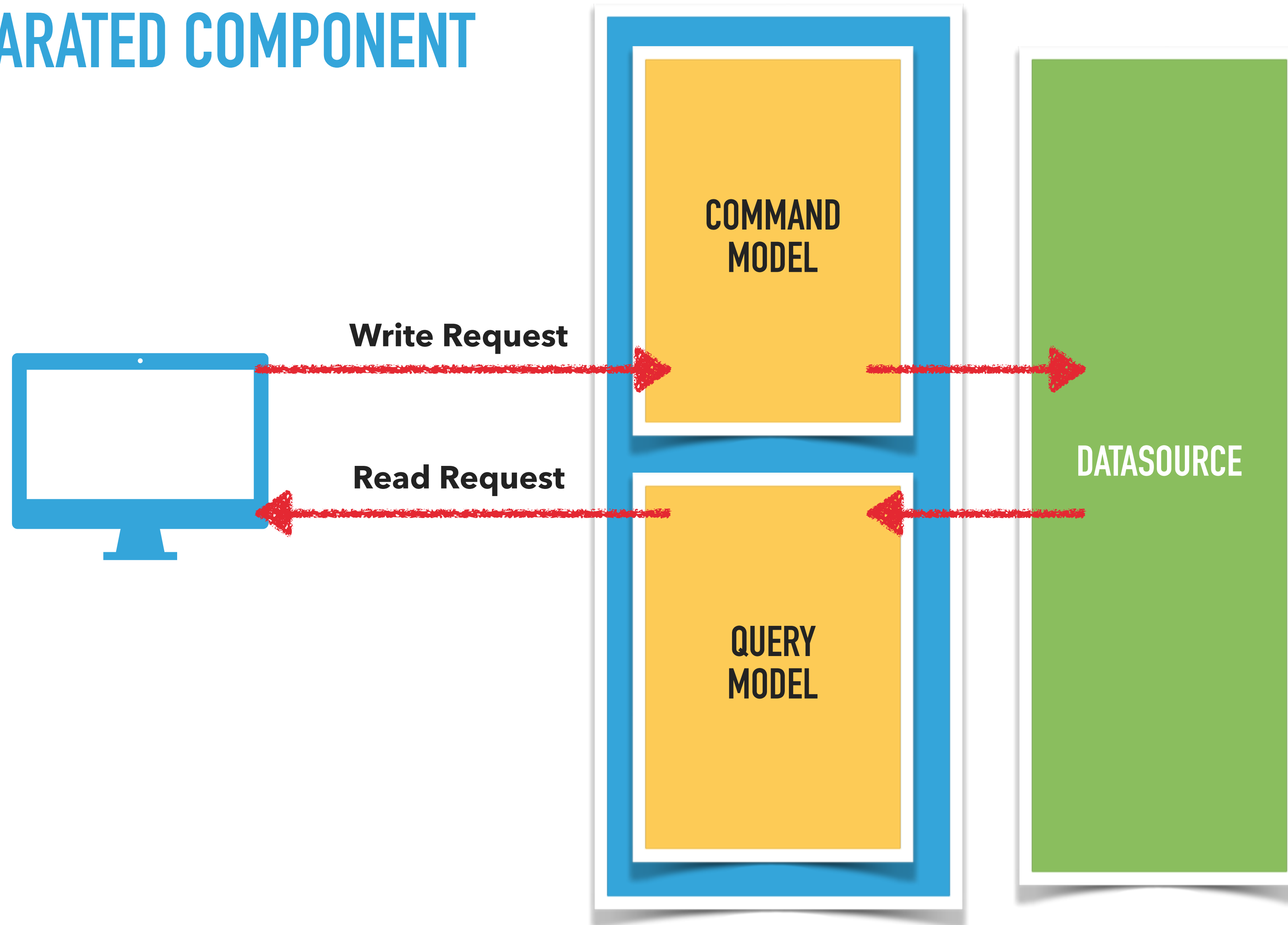
CQRS

(COMMAND QUERY RESPONSIBILITY SEGREGATION)

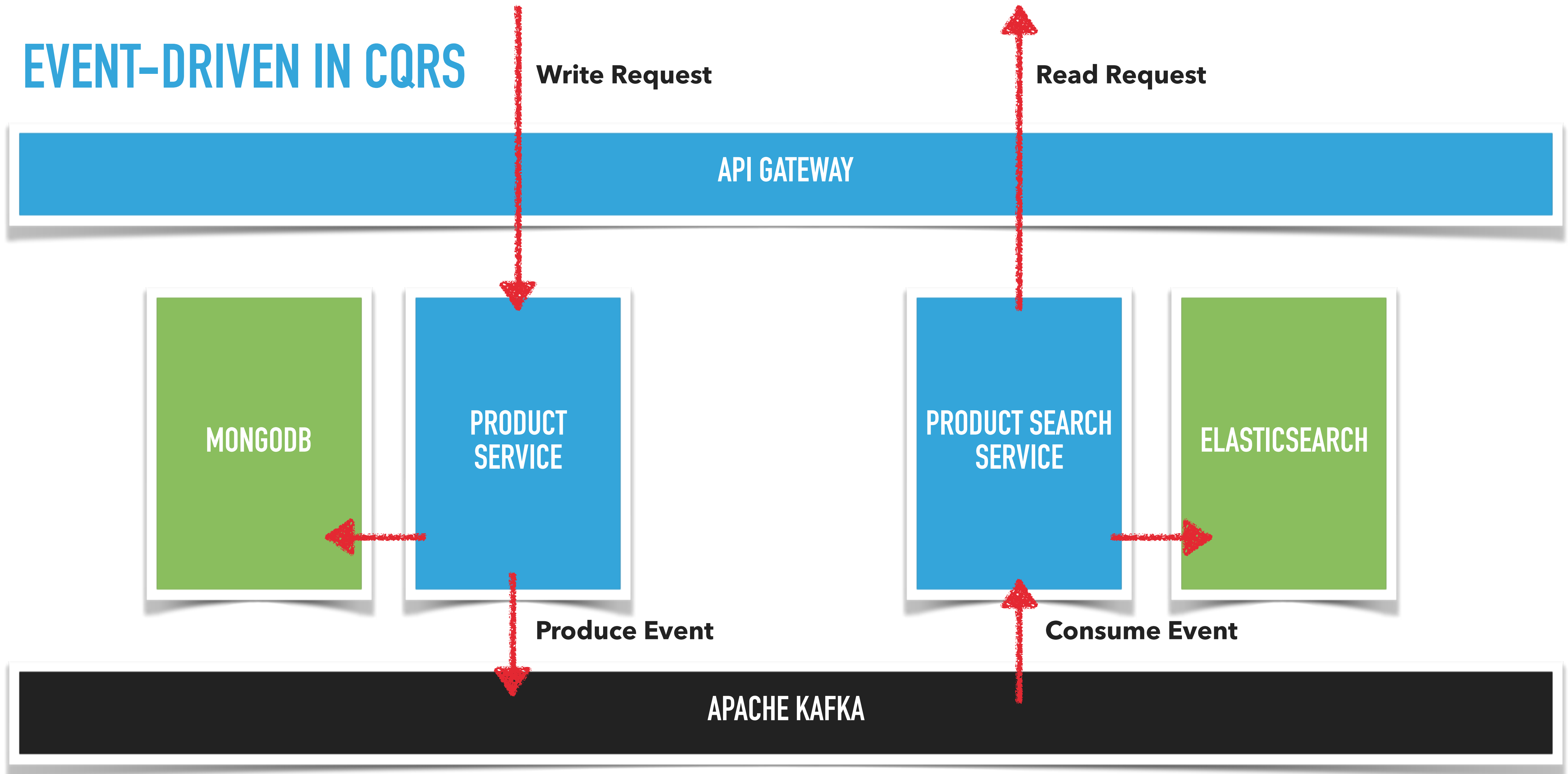
NON CQRS



CQRS – SEPARATED COMPONENT



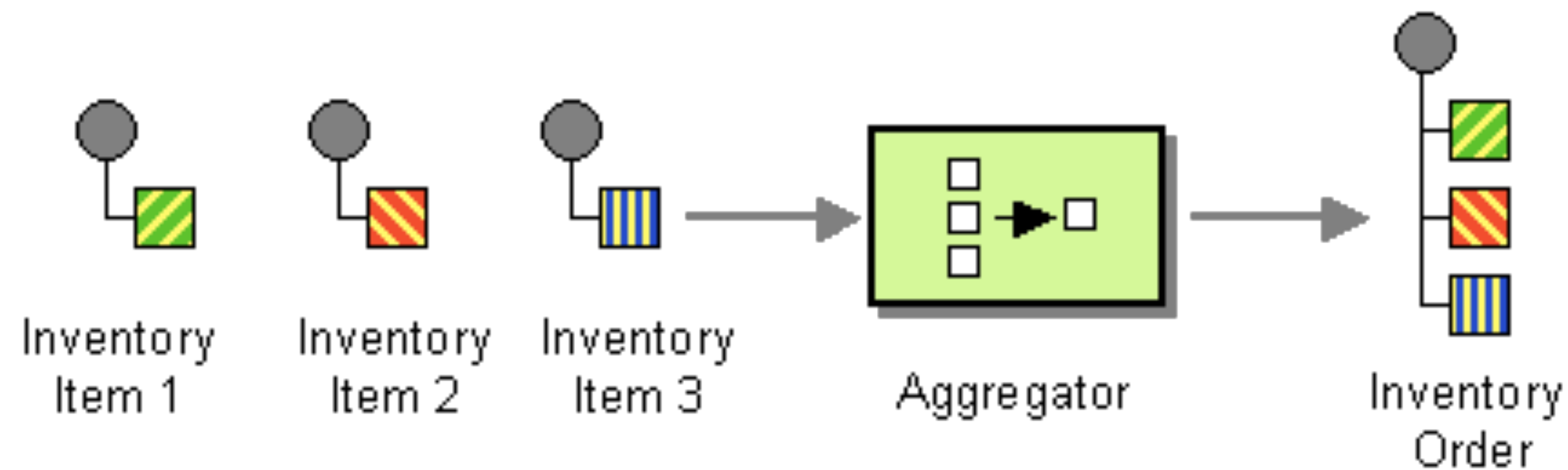
EVENT-DRIVEN IN CQRS



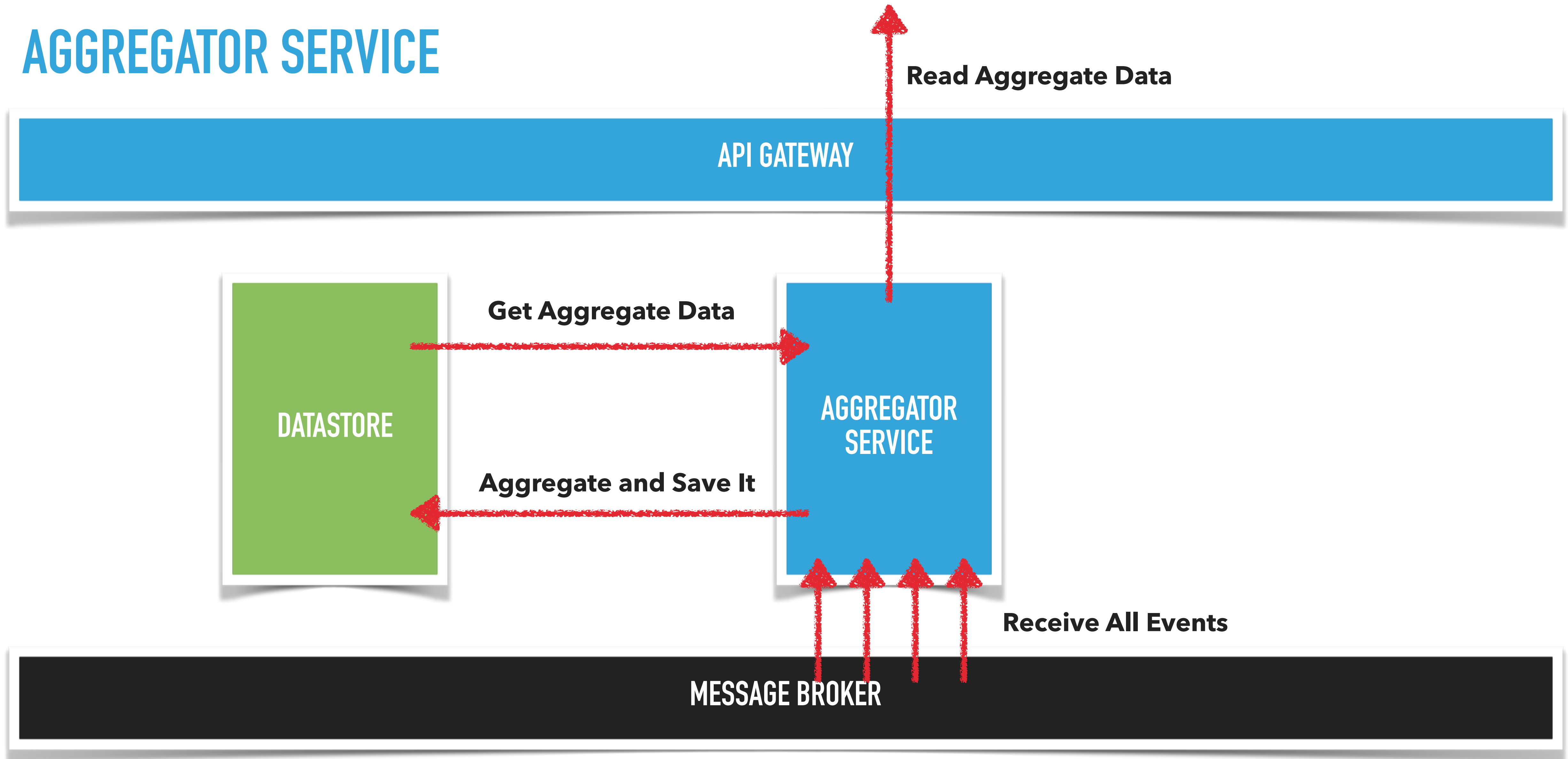
EVENT AGGREGATION

EVENT AGGREGATION PROBLEM

- ▶ How to aggregate data from several services?



AGGREGATOR SERVICE



THE CHALLENGES

THE CHALLENGES OF EVENT-DRIVEN ARCHITECTURE

- ▶ Asynchronous
- ▶ Message Schema
- ▶ Versioning
- ▶ Tracing
- ▶ Message Order
- ▶ Consumer Complexity
- ▶ Message Broker

BLIPAY


Mobile App Download

Bantuan 24x7

Jual di Blibli.com

Blibli.com Rewards

Cek Status Pesanan




Apa yang Anda cari hari ini?

0 Bag

Rp 0

Hi, Eko Kurniawa...



EKO KURNIAWAN KHANNEDY
PREMIER MEMBER
Member sejak Feb 2013

Profil

Pesanan


Pengembalian

Blipay


Rewards (2,618)

Wishlist

Blipay

 **Saldo Blipay**

Rp 0





Tarik Saldo

Riwayat

Promo

Metode Pembayaran Tersimpan

 **Kartu Kredit / Debit**
Terdapat 0 kartu yang tersimpan

 **OneKlik**
Tidak ada OneKlik yang tersimpan

Perlu Bantuan?

SAMPLE EVENT-DRIVEN IN BLIPAY

- ▶ Register new merchant
- ▶ Register new member
- ▶ Refund member cash
- ▶ Get member + balance
- ▶ Receive payment confirmation from Bank
- ▶ ...

REGISTER NEW MERCHANT

1. HTTP Request

BLIPAY-API

2. HTTP Request

BLIPAY-MEMBER

BLIPAY-MERCHANT

BLIPAY-CORE

BLIPAY-PAYMENT

BLIPAY-NOTIFICATION

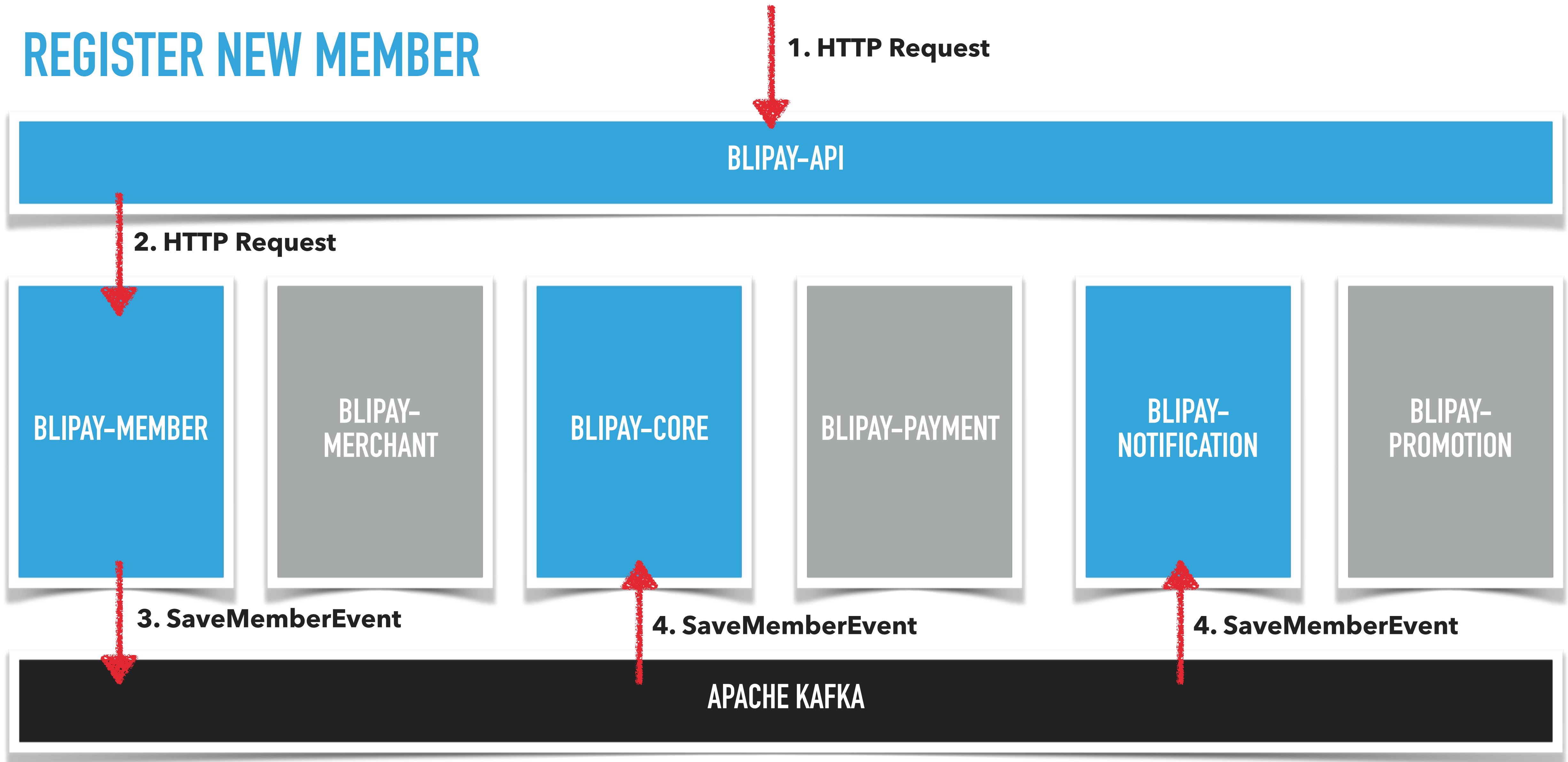
BLIPAY-PROMOTION

3. SaveMerchantEvent

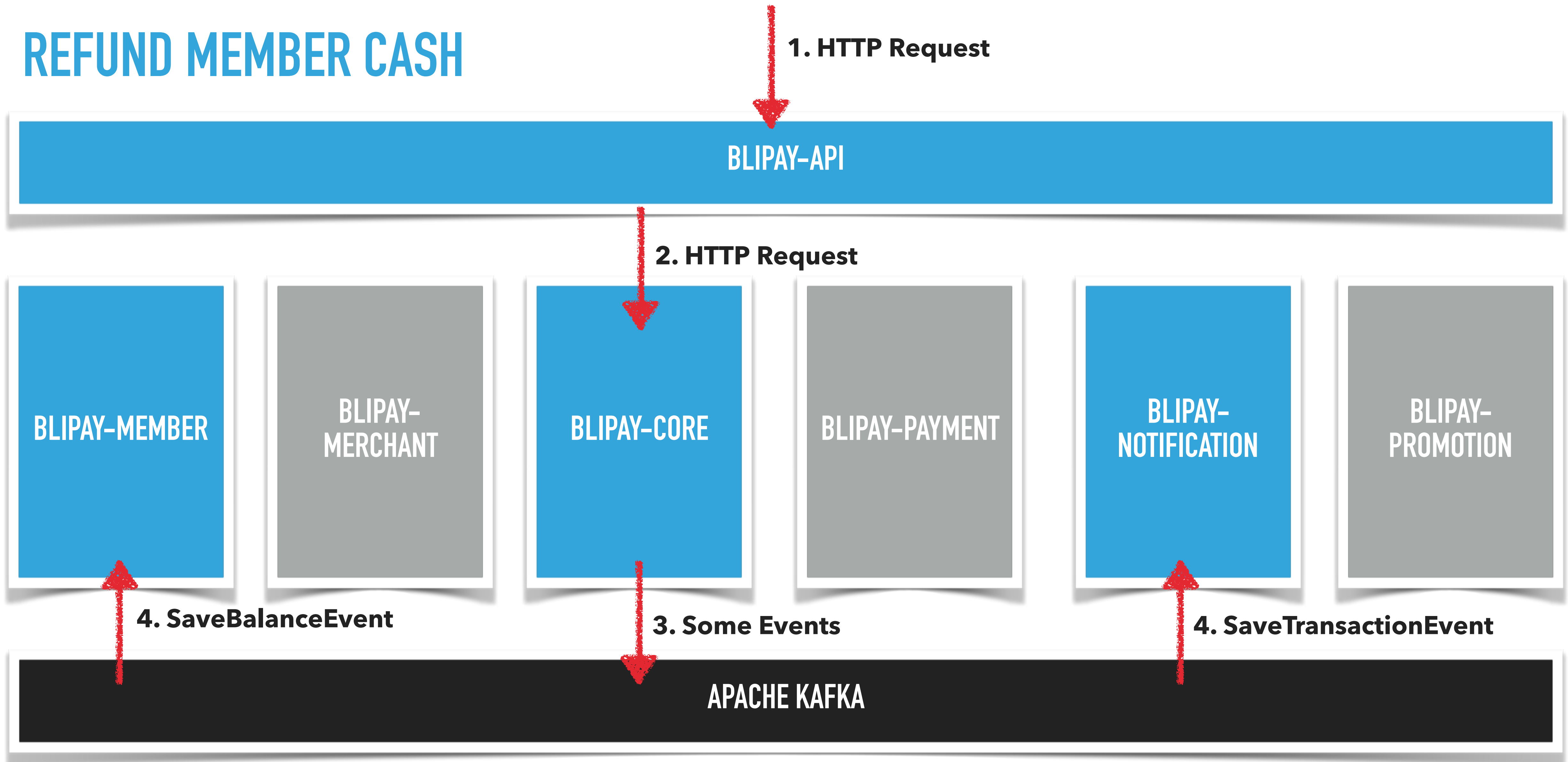
4. SaveMerchantEvent

APACHE KAFKA

REGISTER NEW MEMBER



REFUND MEMBER CASH



GET MEMBER + BALANCE

1. HTTP Request

BLIPAY-API

2. HTTP Request

BLIPAY-MEMBER

BLIPAY-MERCHANT

BLIPAY-CORE

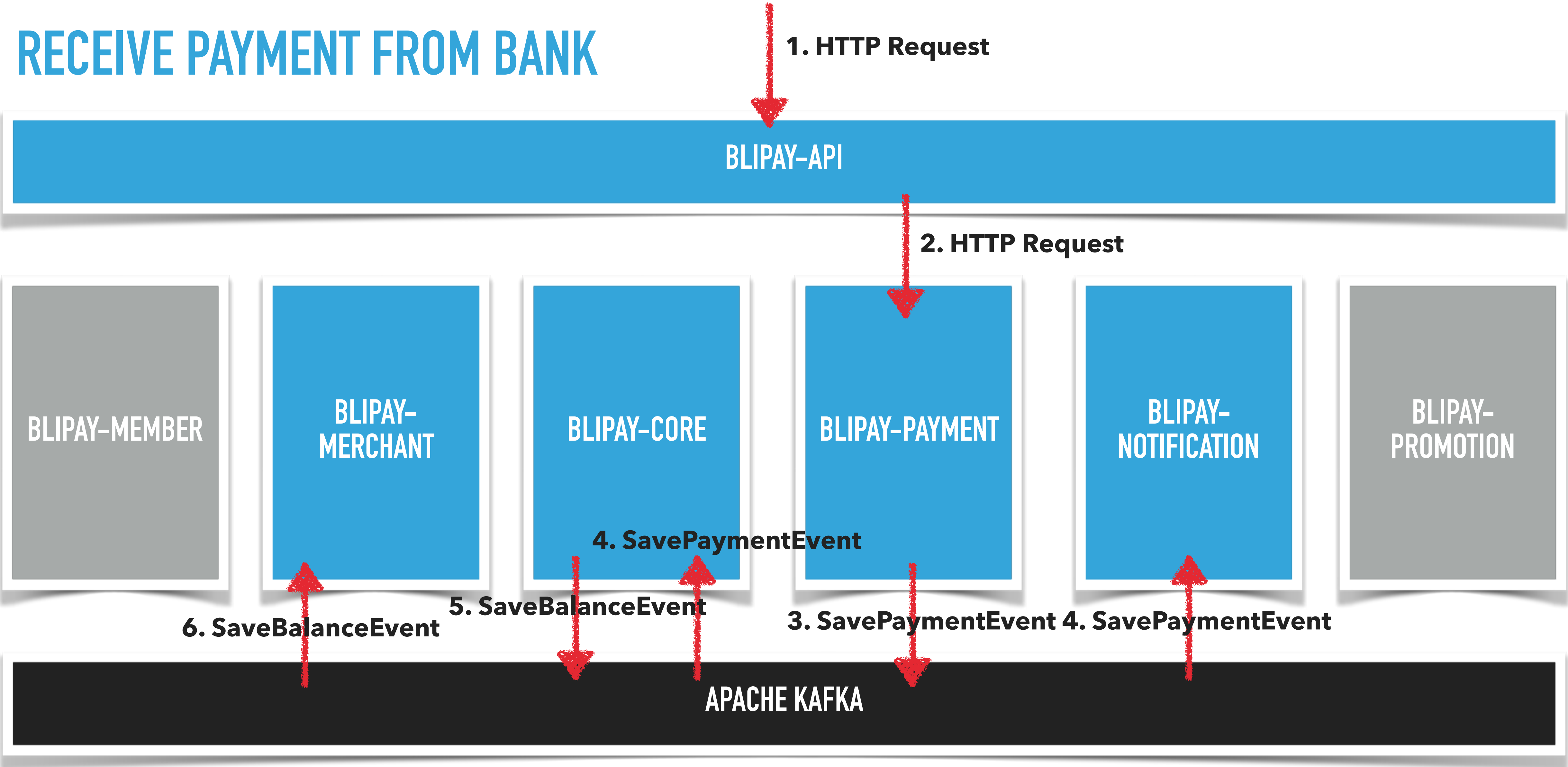
BLIPAY-PAYMENT

BLIPAY-NOTIFICATION

BLIPAY-PROMOTION

APACHE KAFKA

RECEIVE PAYMENT FROM BANK



ANY QUESTION?

<https://www.blibli.com/page/karir/>

<https://medium.com/bliblidotcom-techblog>