Trendyol Group

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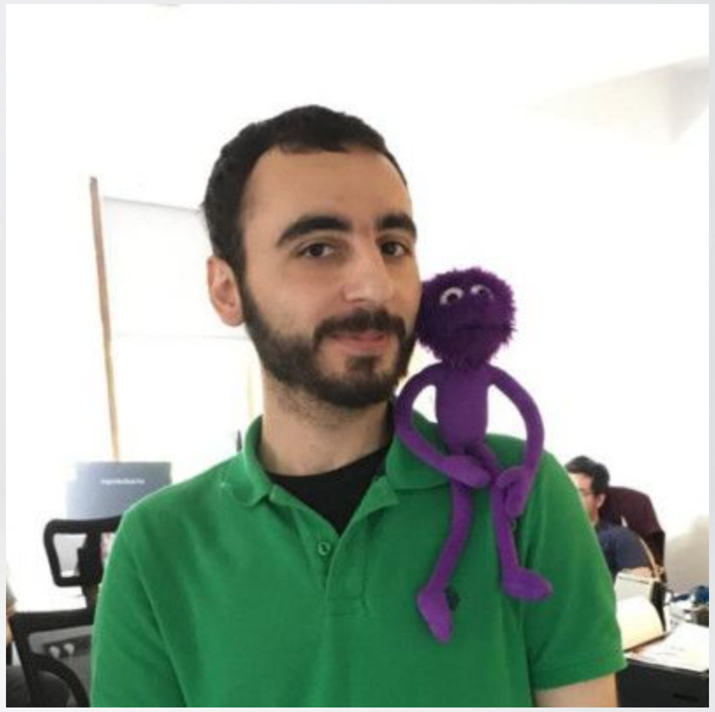
Meet Trendyol Wallet

Fatih Altuntaş

https://www.linkedin.com/in/fatih-altuntas/

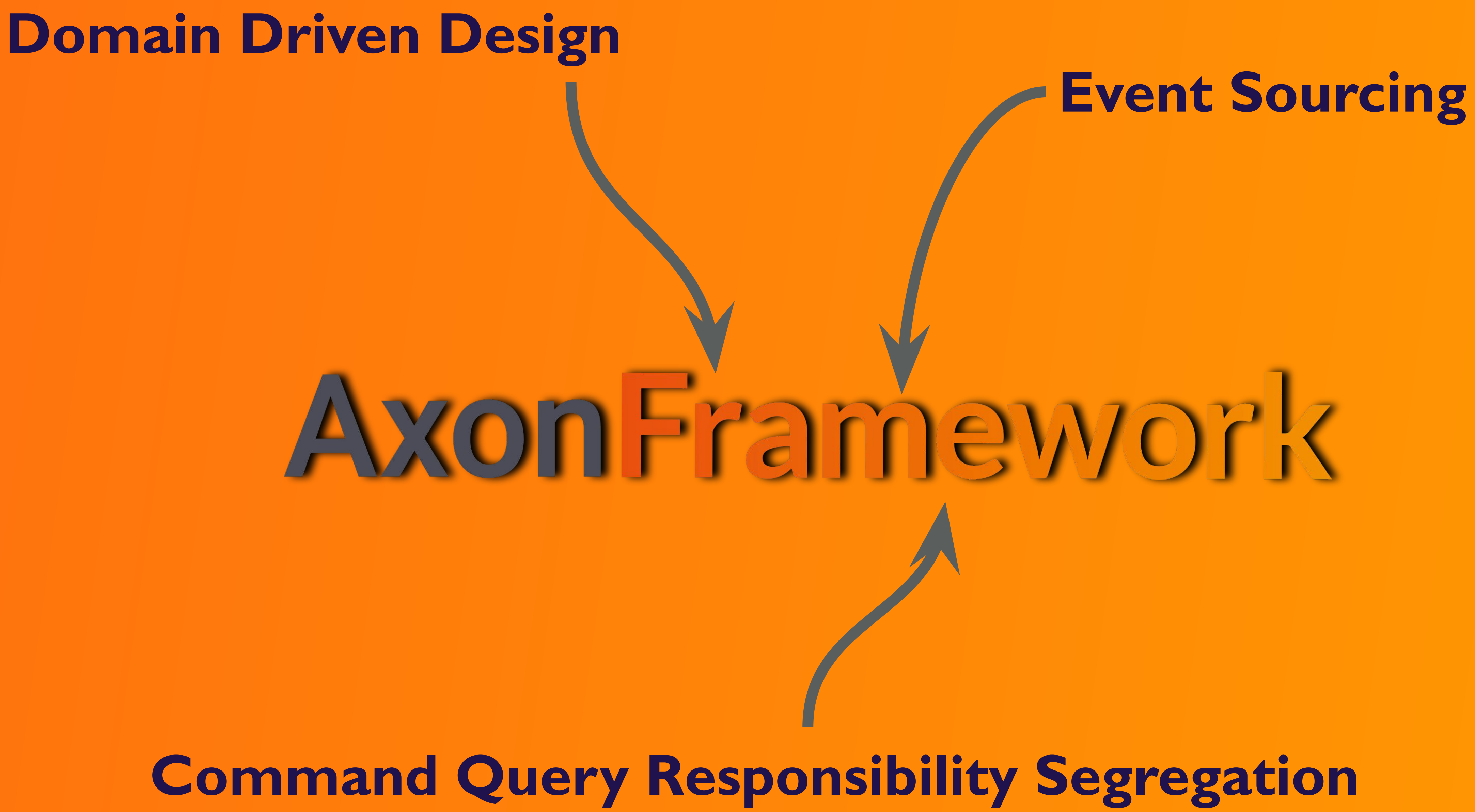
Fırat Payalan

https://www.linkedin.com/in/firat-payalan/



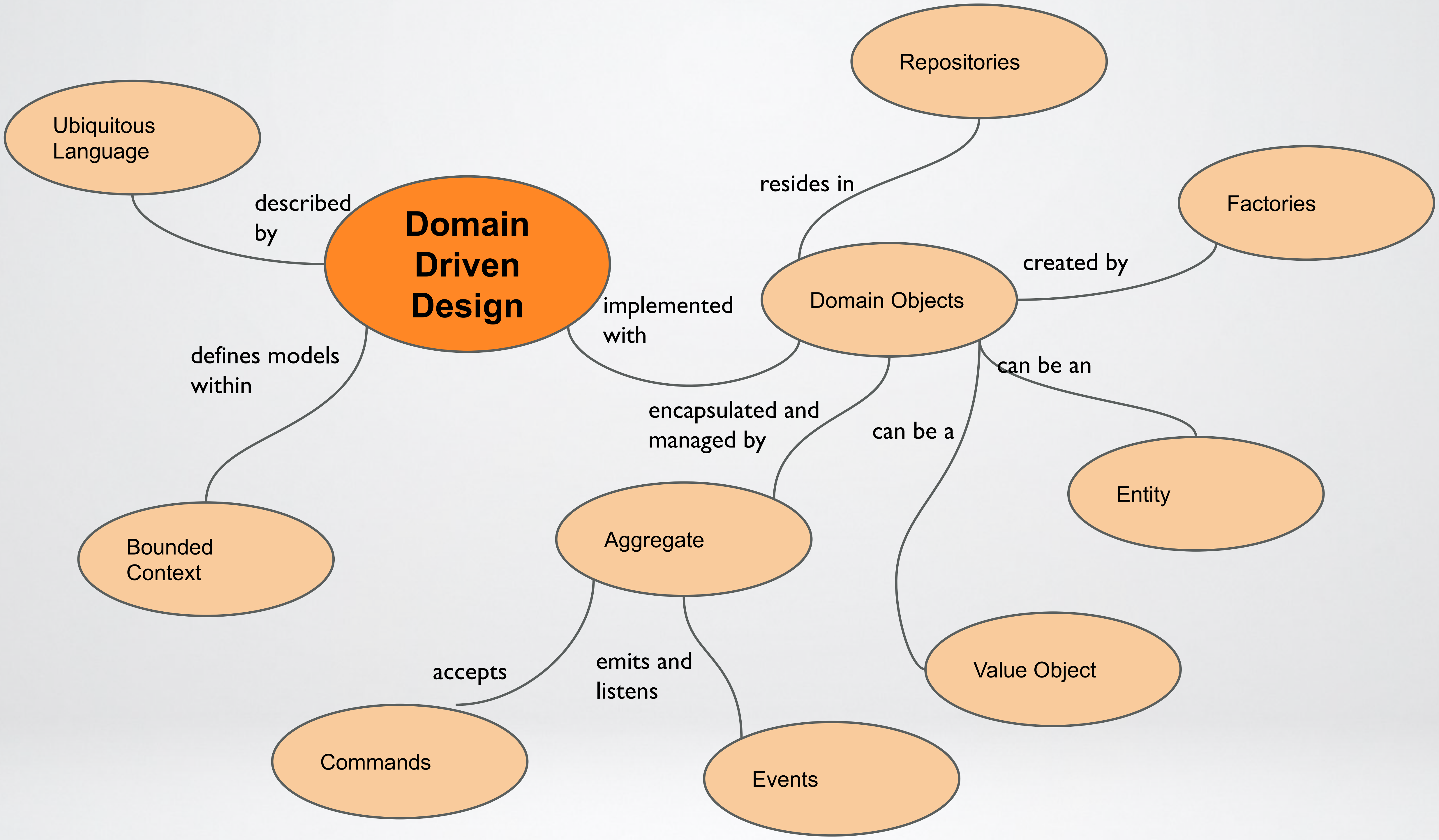
Agenda

- Fundamentals
  - DDD
  - CQRS
  - Event Sourcing
- Axon Framework Overview
- Experiences
- Q&A



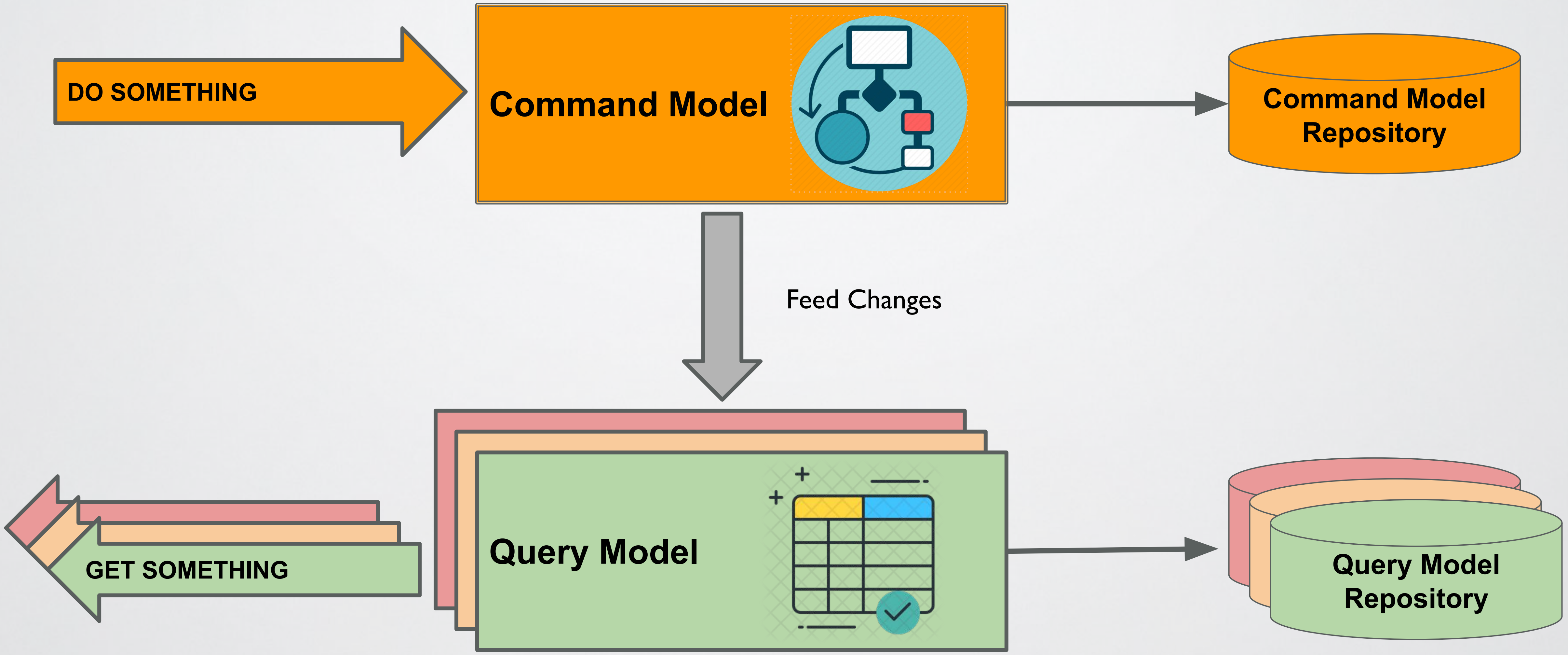
Fundamentals

Domain Driven Design Concepts



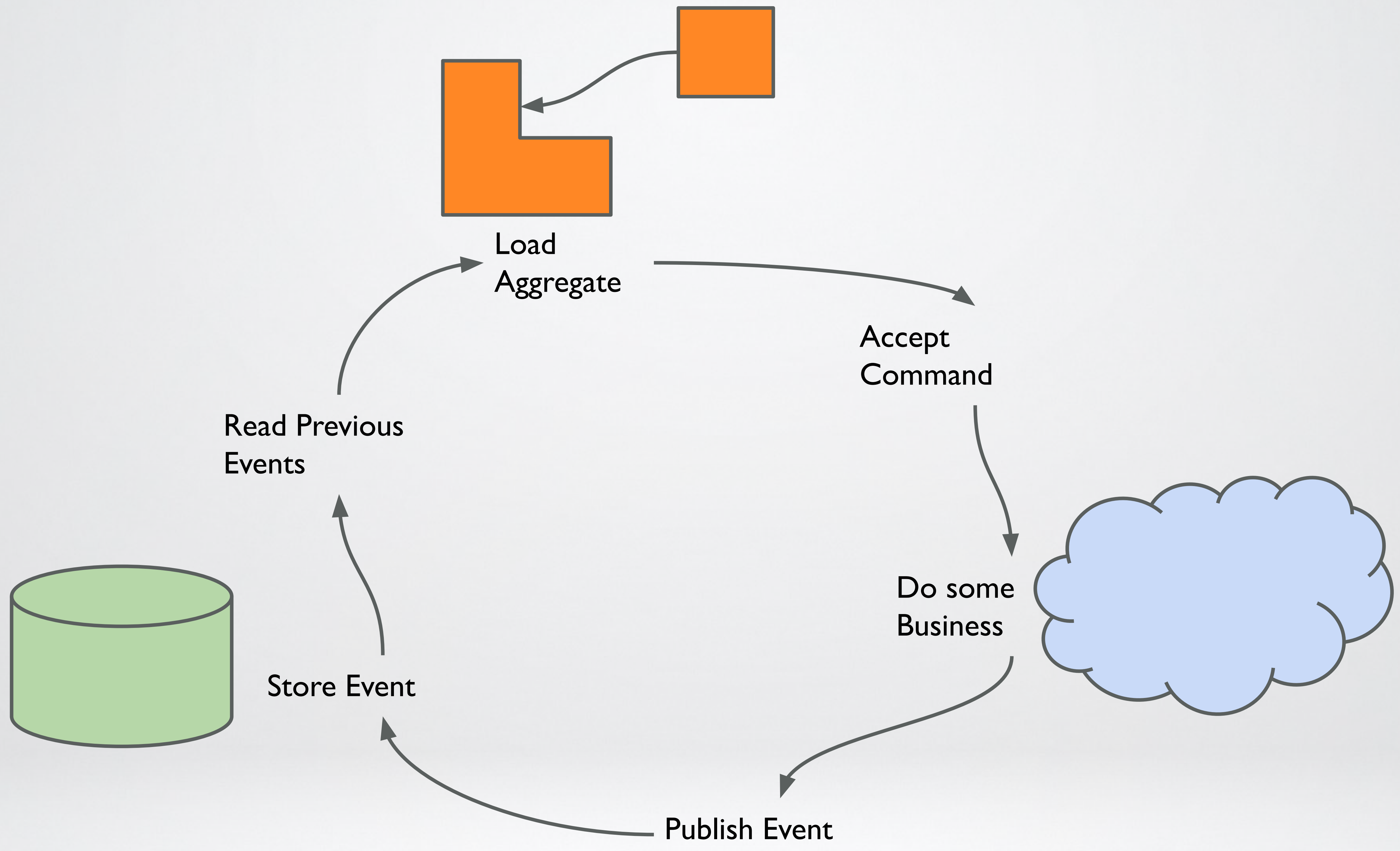
Fundamentals

CQRS



Fundamentals

Event Sourcing



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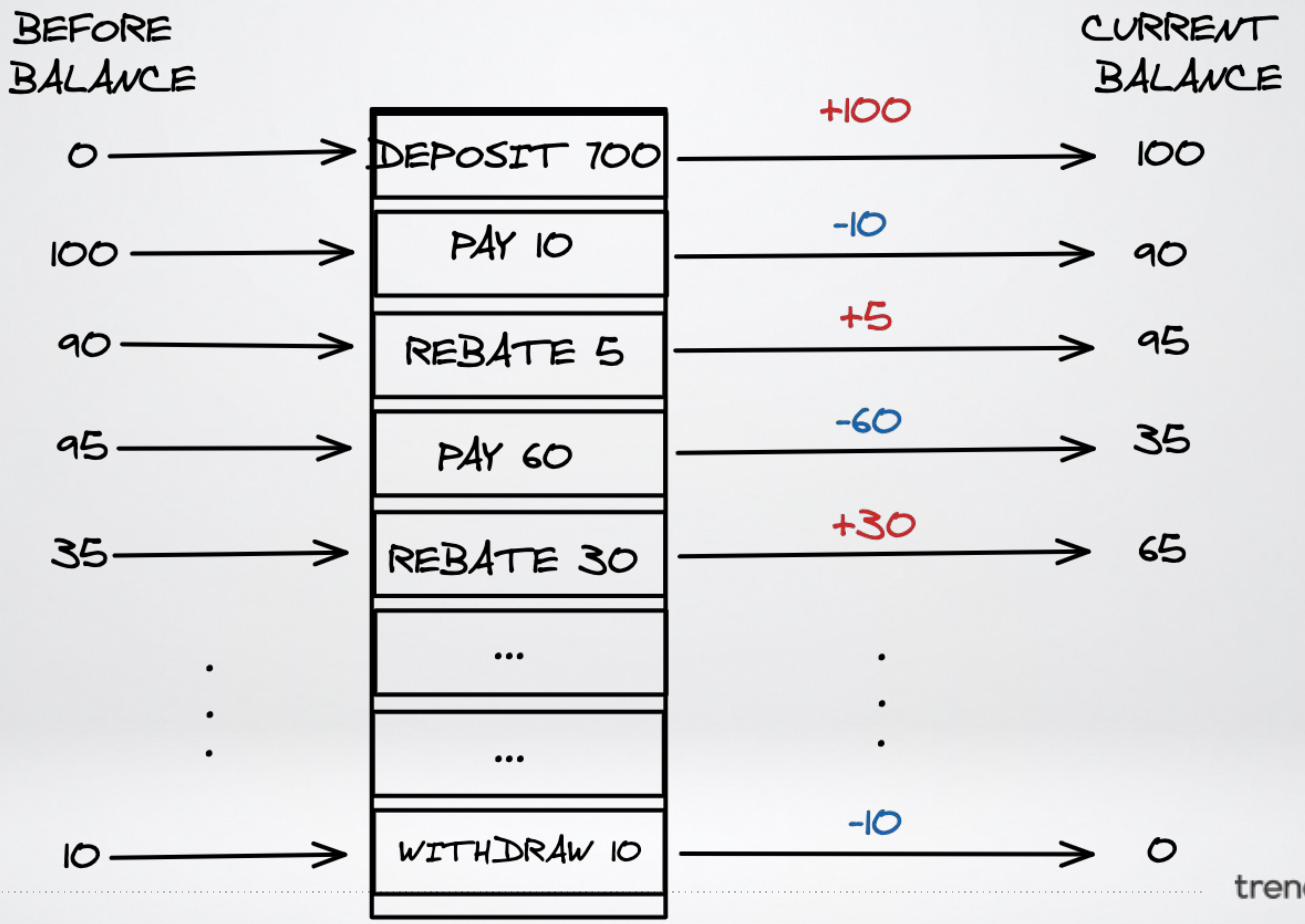
Event Sourcing as An Example



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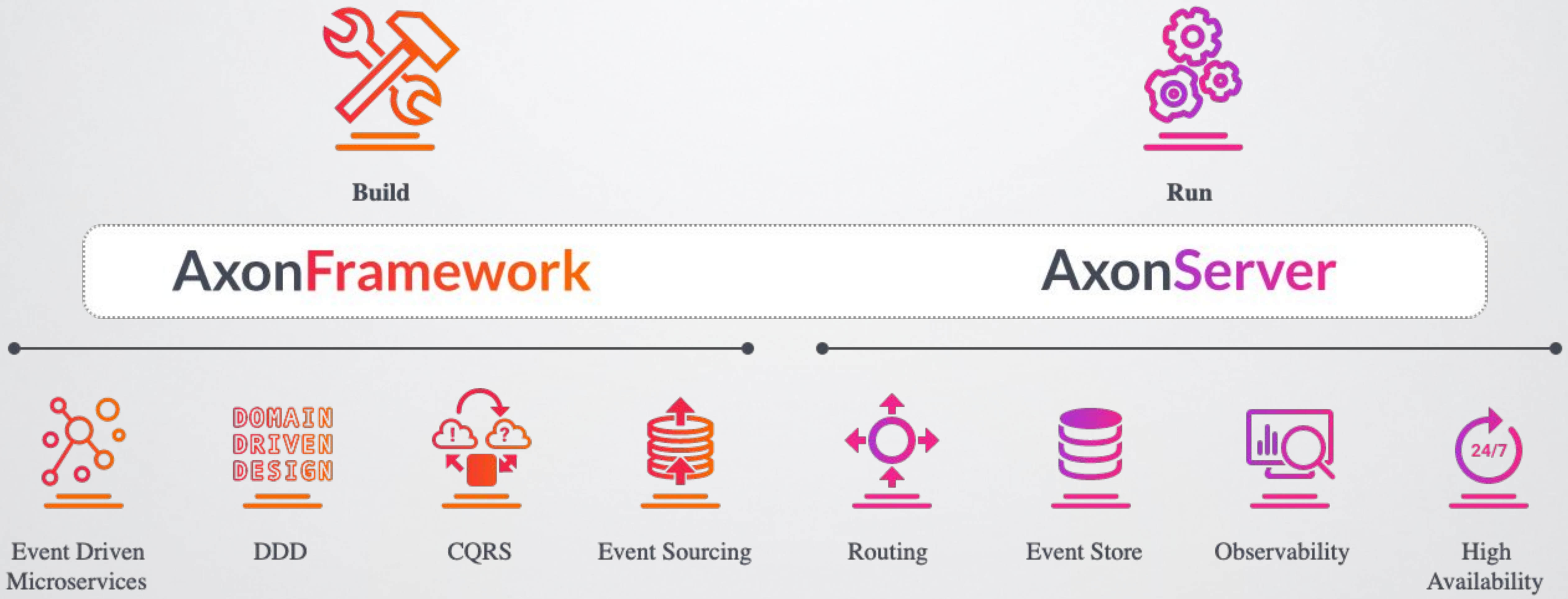
AxonFramework

Axon Framework Overview

Axon Framework Overview

Framework for Evolutionary Event-Driven Microservices on the JVM



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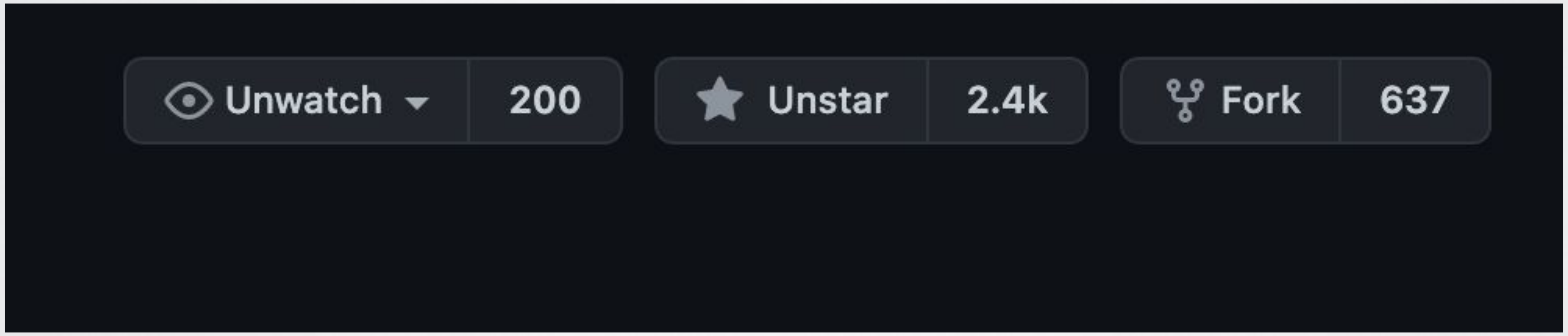
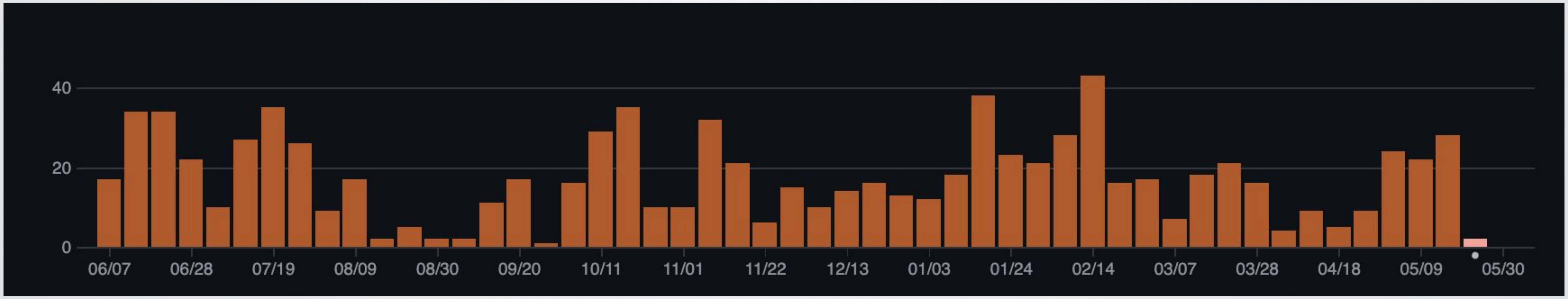
Axon Framework Overview





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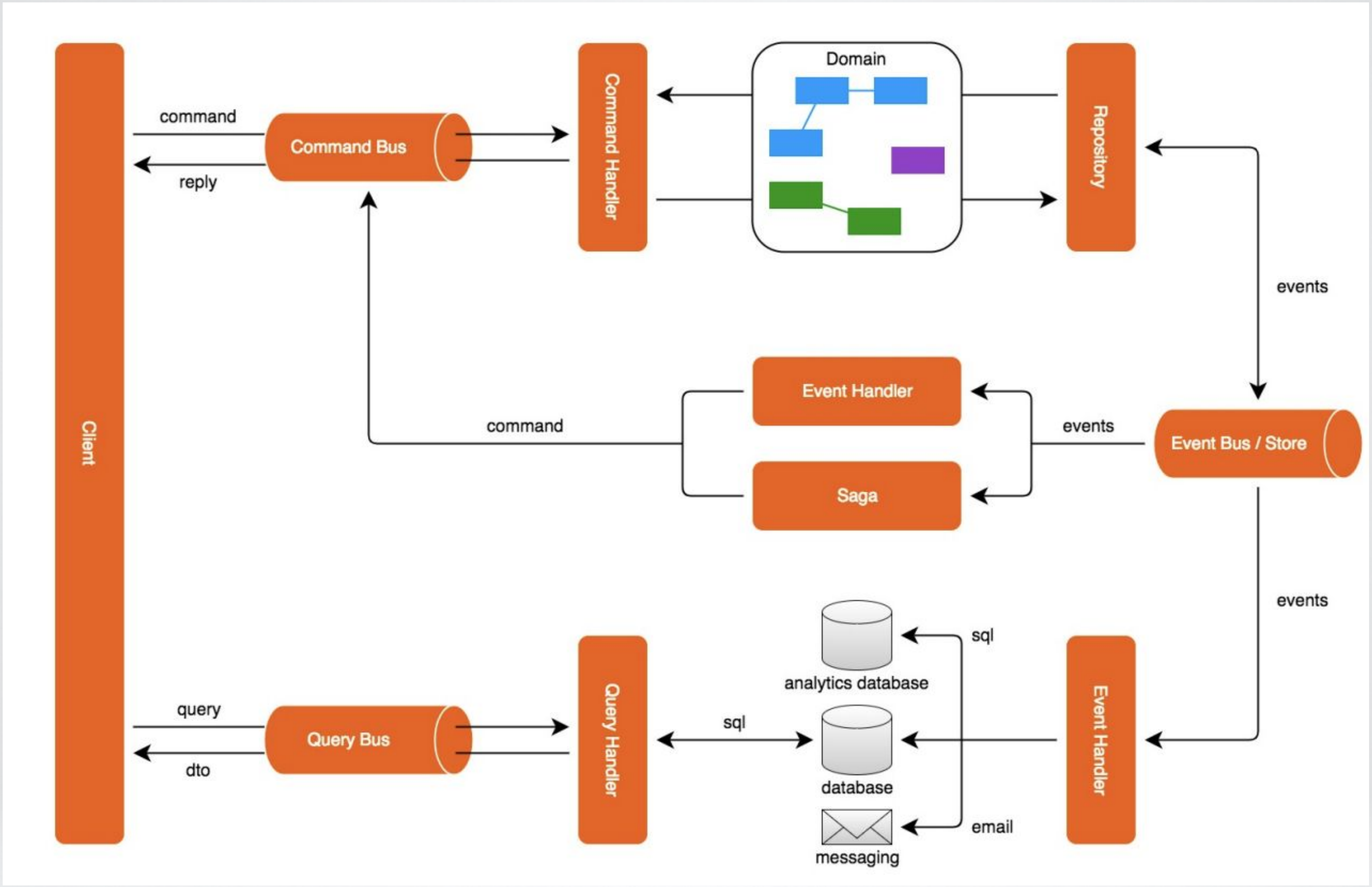
Axon Framework Overview

spring

mongoDB

PostgreSQL

Axon Framework Overview



Axon Framework Overview

Demo Wallet

- Deposit
- Pay
- Withdraw
- Refund

https://github.com/altuntasfatih/axon-presentation

Axon Framework Overview

Aggregate

An Aggregate is a regular object, which contains state and methods to alter that state

```
@Aggregate
public class Wallet {

    @AggregateIdentifier
    private String walletId;

    private BigDecimal balance;

    ...
}
```

Command

Command Represents that something should happen within a system

```
@Getter
public class DepositCommand {

    @TargetAggregateIdentifier
    private final String walletId;

    private final BigDecimal depositAmount;

    public DepositCommand(String walletId, BigDecimal depositAmount) {

        this.walletId = walletId;
        this.depositAmount = depositAmount;
    }
}
```

Axon Framework Overview

Command Handler

Command Handler Component that performs a task based on the command that it receives

```java
@Aggregate
public class Wallet {

   . . . . . .

   @CommandHandler
   public void handle(DepositCommand command) {


        final BigDecimal depositAmount = command.getDepositAmount();

       // check some business rules. i.e, check deposit amount

       var event = new DepositedEvent(depositAmount);
       AggregateLifecycle.apply(event);
   }

}
```

Event Sourcing Handler

Structure to apply Event Sourcing mechanism on a aggregate.

```
@Aggregate
public class Wallet {


    @CommandHandler
    public void handle(DepositCommand command) {
        ...
        var event = new DepositedEvent(depositAmount);
        AggregateLifecycle.apply(event);
    }


    @EventSourcingHandler
    public void on(DepositedEvent event) {
        this.balance = this.balance.add(event.getDepositAmount());

    }

}
```

Axon Framework Overview

Event

Represents that something has happened within the application.

```
public class DepositedEvent {
   private BigDecimal amount;
   private Card card;
    ...
}
```

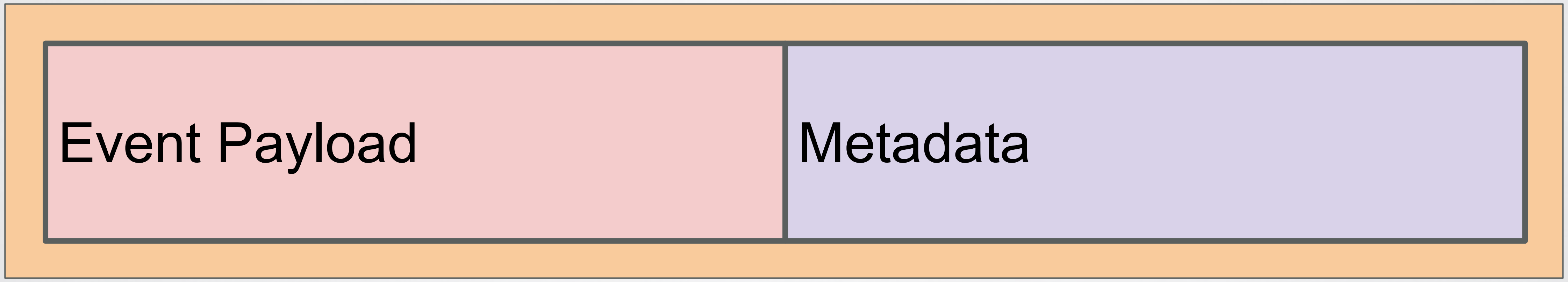
```
public class PaidEvent {
   private BigDecimal amount;
   private String orderId;
    ...
}
```

```
public class WithdrawnEvent {
   private BigDecimal amount;
   private Card card;
    ...
}
```

```
public class RefundedEvent {
   private BigDecimal amount;
   private String orderId;
    ...
}
```

Axon Framework Overview

Event = Event Payload + Metadata



```
public class DepositedEvent {
    private BigDecimal amount;
     ...
}
```

- Event Type
- Event Identifier
- Event Version
- Aggregate Identifier
- Sequence Number
- TimeStamp

Axon Framework Overview

Event Store

- Single source of truth
- Append only
- Preserve event order
- Consistent write
- Constant performance on huge storage size

Experiences

Event Design ?

- Consider deeply for designing the Domain Events.

Event revisions and upcasting

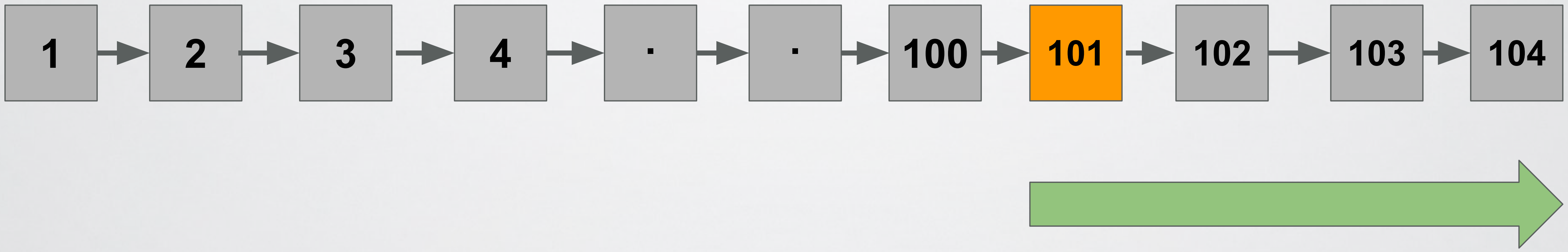
```
@Revision(1.0)
public class PaidEvent {
   private BigDecimal amount;
   private String orderId;
    ...
}
```

```
@Revision(1.1)
public class PaidEvent {
   ...
   private BigDecimal cashbackAmount;

}
```

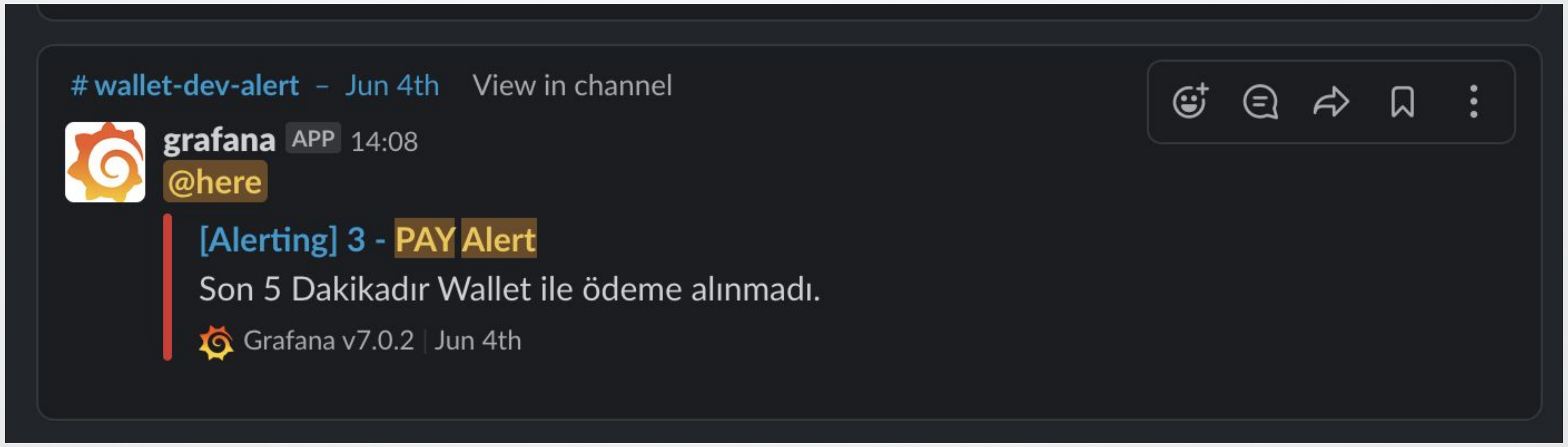
Experiences

Snapshotting



Eventuality is our REALITY !

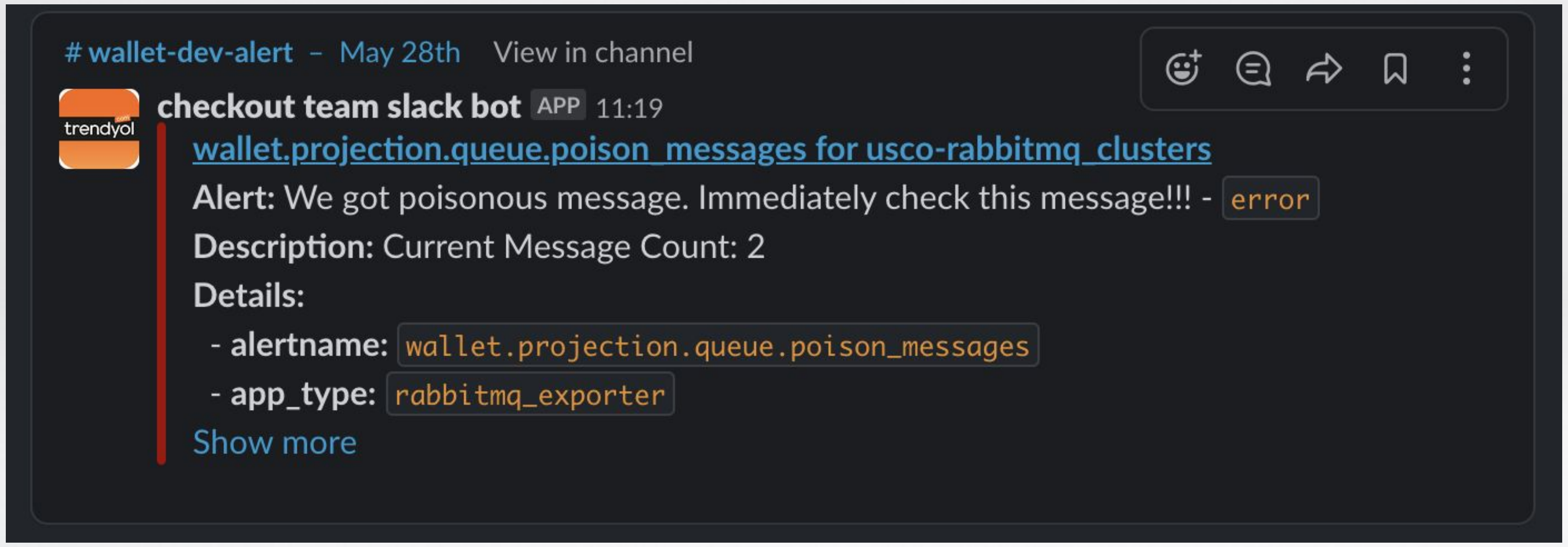
- There were no jokes when **looong-term** eventually processed events. We have lots of monitoring and alert mechanisms.



wallet-dev-alert – Jun 4th View in channel

grafana APP 14:08
@here

[Alerting] 3 - PAY Alert
Son 5 Dakikadır Wallet ile ödeme alınmadı.
Grafana v7.0.2 | Jun 4th



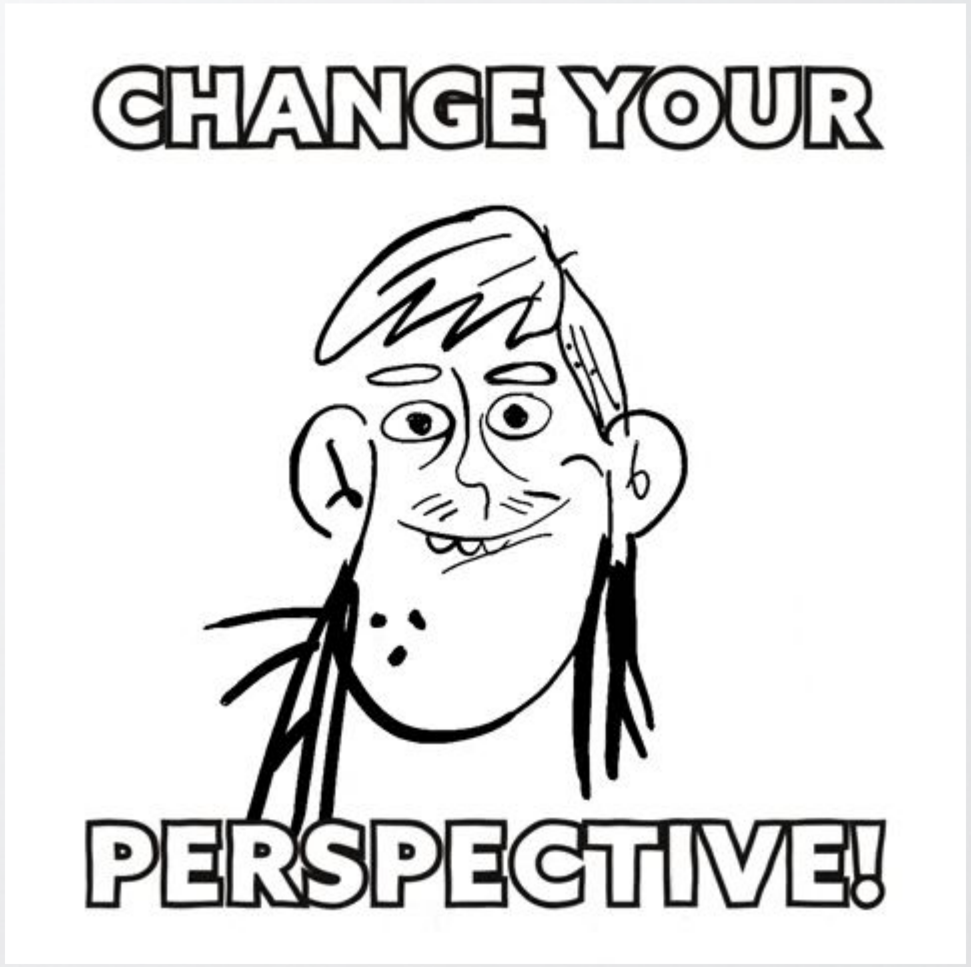
wallet-dev-alert – May 28th View in channel

checkout team slack bot APP 11:19
wallet.projection.queue.poison_messages for usco-rabbitmq_clusters
Alert: We got poisonous message. Immediately check this message!!! - `error`
Description: Current Message Count: 2
Details:
- **alertname:** `wallet.projection.queue.poison_messages`
- **app_type:** `rabbitmq_exporter`

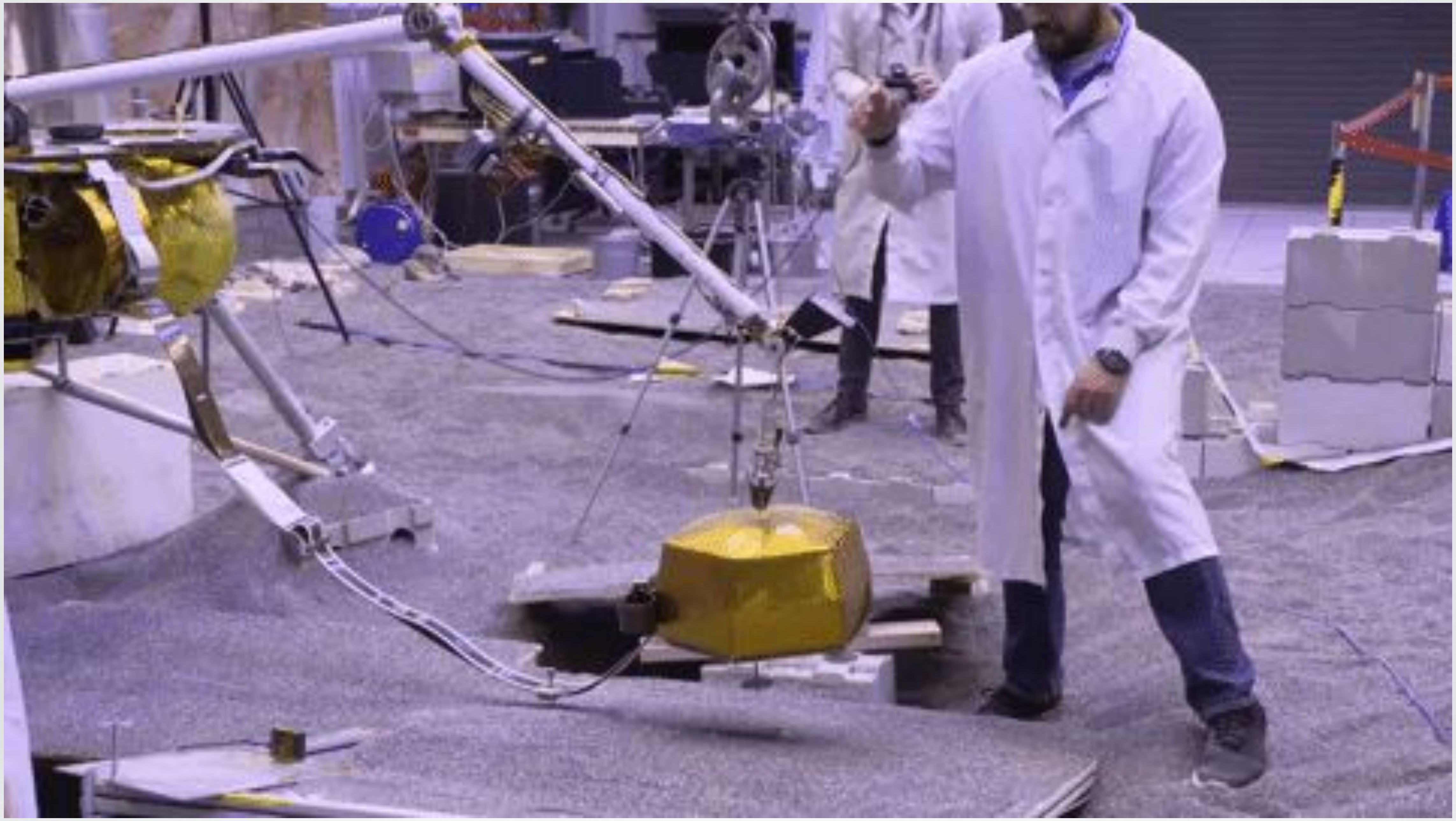
Show more

Lack of Immutability Perspective

- The consumers might not have an awareness of our immutability playground. Rollback is not a good choice on every situation.



Auditing and Testing



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