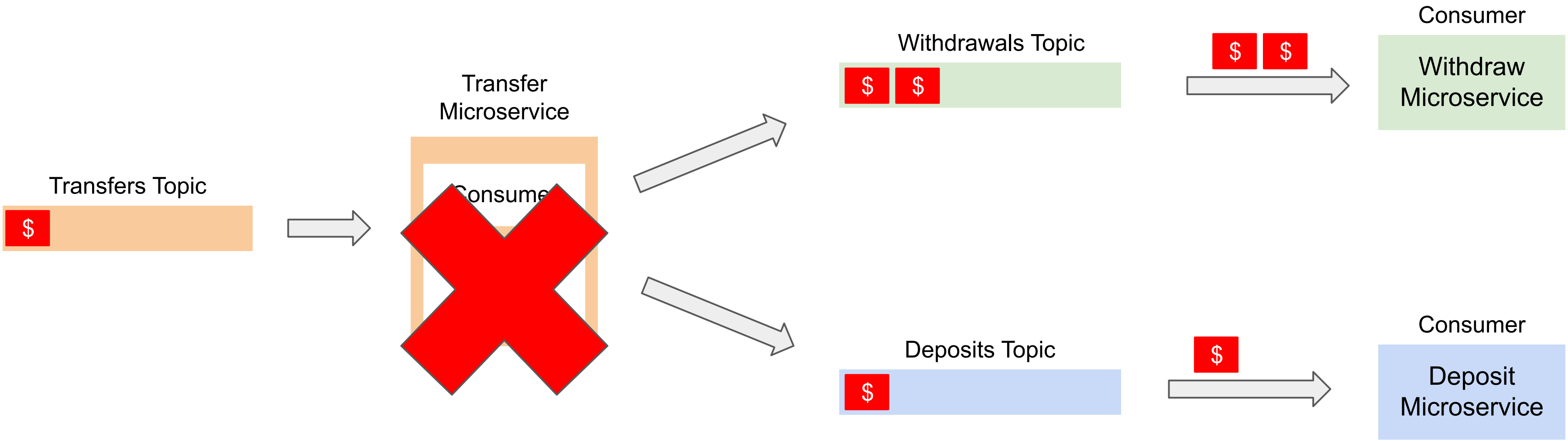
Kafka Transactions

Introduction

Why use transactions in Apache Kafka?

- All or nothing
- Exactly once
    - Idempotent Producer,
    - Transactions



Transfers Topic

Transfer Microservice

Consume

Withdrawals Topic

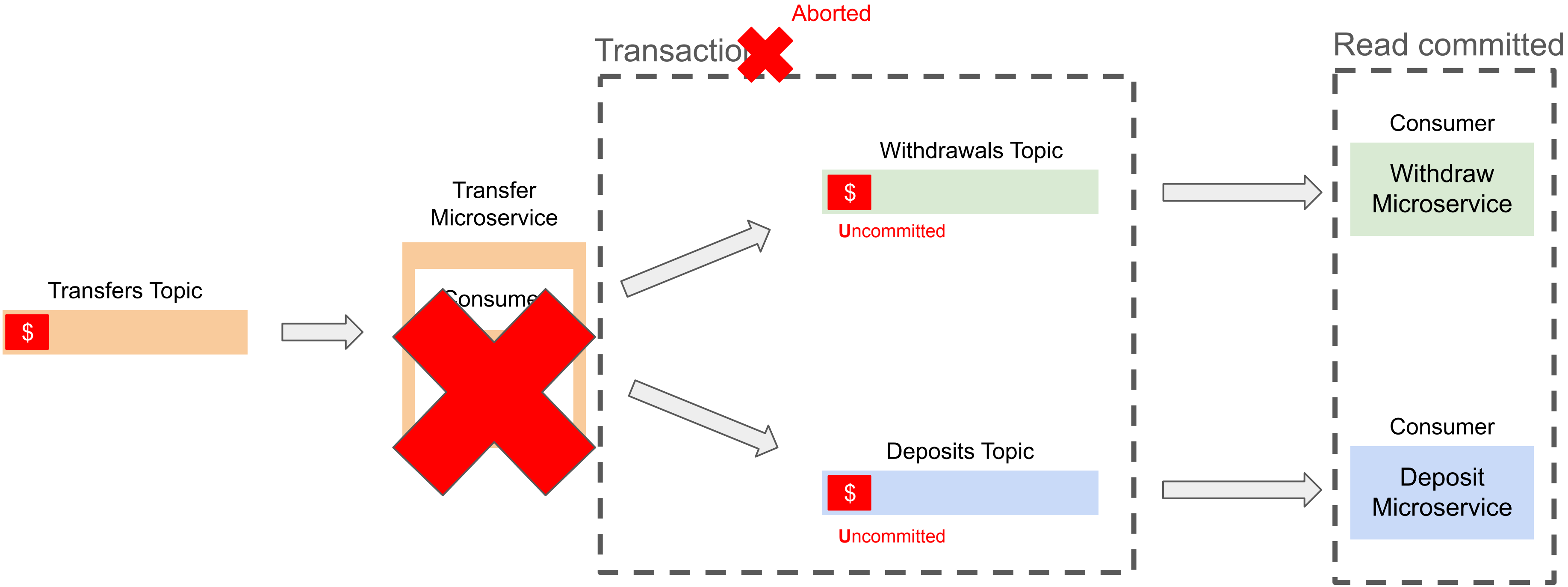
Deposits Topic

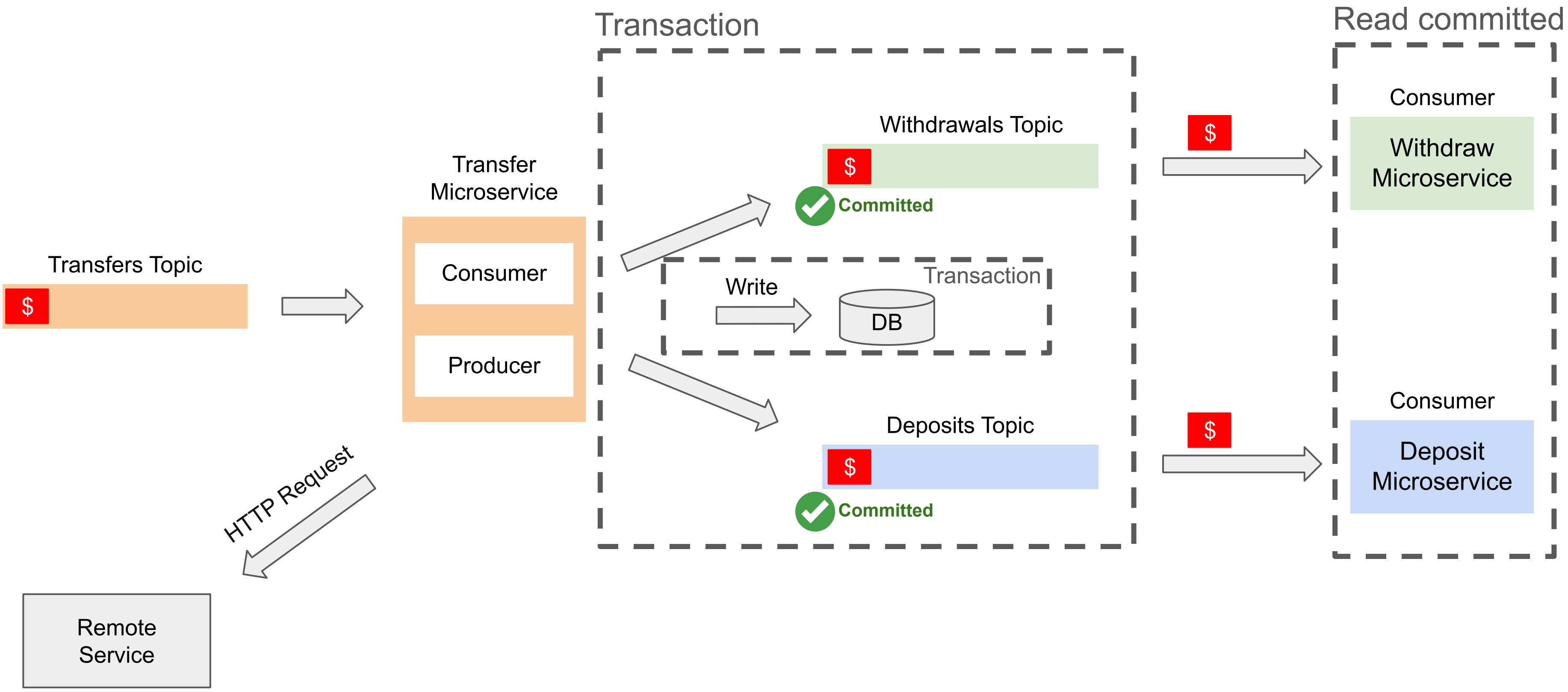
Consumer

Withdraw Microservice

Consumer

Deposit Microservice


Aborted
Transaction
Read committed
Transfers Topic
$
Transfer
Microservice
Consume
Withdrawals Topic
$
Uncommitted
Deposits Topic
$
Uncommitted
Consumer
Withdraw
Microservice
Consumer
Deposit
Microservice


Transaction
Read committed
Withdrawals Topic
$
Committed
Transfer Microservice
Consumer
Withdraw Microservice
$
Transfers Topic
$
Consumer
Producer
Write
Transaction
DB
Deposits Topic
$
Committed
Consumer
Deposit Microservice
$
HTTP Request
Remote Service

Local Transactions

Introduction

```
boolean returnValue = kafkaTemplate.executeInTransaction(t -> {


        t.send("withdraw-money-topic", withdrawalEvent);

          throws Exception
        callRemoteServce();

        t.send("deposit-money-topic", depositEvent);

        return true;


 });
```

Scope of the Transaction

```
@Transactional(“kafkaTransactionManager”)
public void transfer(TransferRestModel transferRestModel)  {

    …

            kafkaTemplate.send("withdraw-money-topic", withdrawalEvent);

   …

            kafkaTemplate.send("deposit-money-topic", depositEvent);

   …

}
```

Scope of the Transaction

Managed by Spring framework

Managed by Kafka’s internal Transaction manager

```
@Transactional(“kafkaTransactionManager”)
public void transfer(TransferRestModel transferRestModel)  {

          boolean returnValue = kafkaTemplate.executeInTransaction(t -> {

               t.send("withdraw-money-topic", withdrawalEvent);

               t.send("deposit-money-topic", depositEvent);

             return true;
           });

         if(true) throw new Exception(“Forcing exception”);

}
```

```
logging.level.org.apache.kafka.clients.producer.internals.TransactionManager=TRACE

logging.level.org.springframework.kafka.transaction.KafkaTransactionManager=TRACE
```

Scope of the Transaction

```
~~@Transactional(“kafkaTransactionManager”)~~
public void transfer(TransferRestModel transferRestModel)  {

            boolean returnValue = kafkaTemplate.executeInTransaction(t -> {

                   t.send("withdraw-money-topic", withdrawalEvent);

                   t.send("deposit-money-topic", depositEvent);

                  return true;
               });


}
```