

# Building Your First Streaming Application

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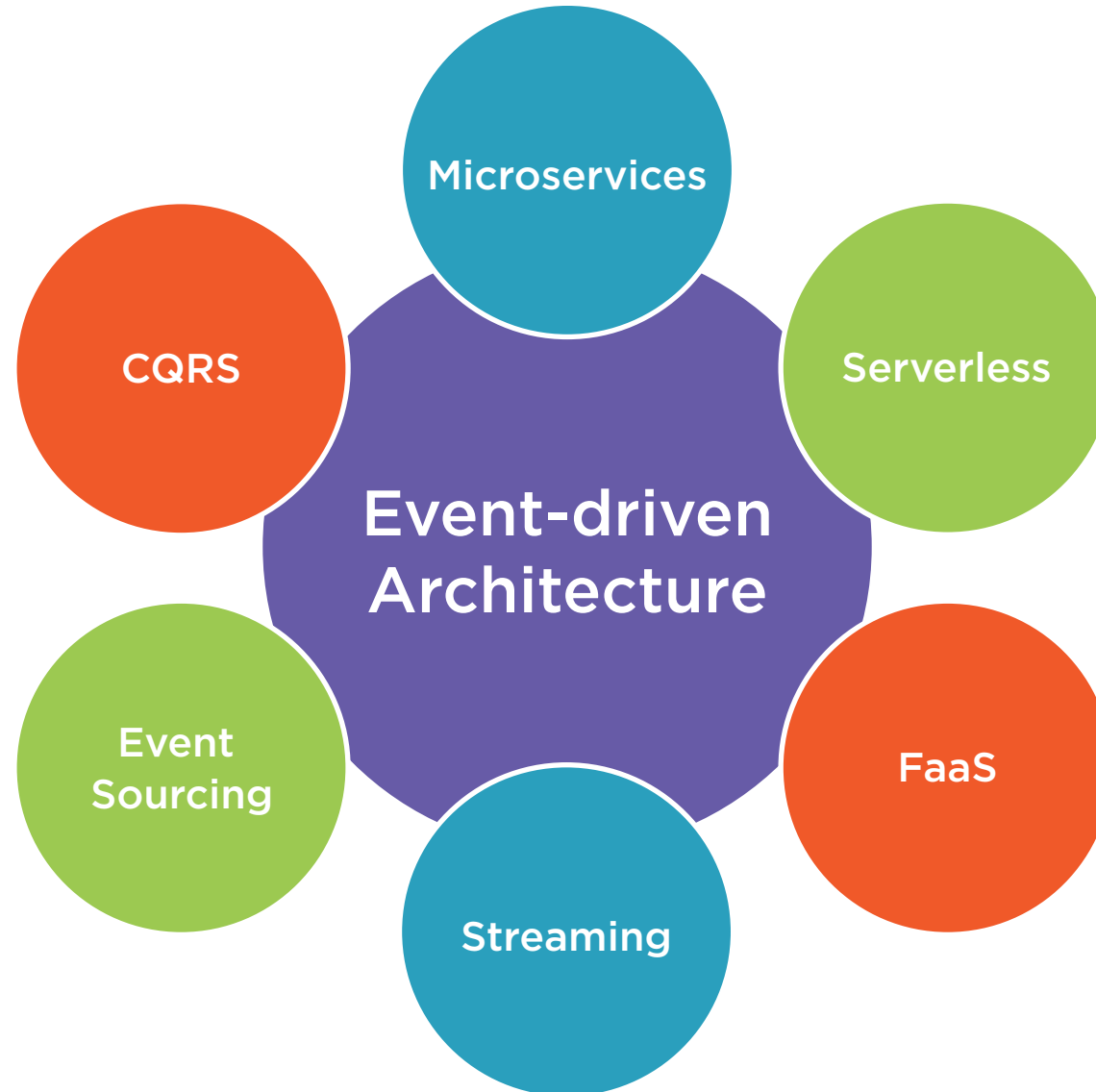
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SOFTWARE ENGINEER @ AXUAL

@BSucaciu



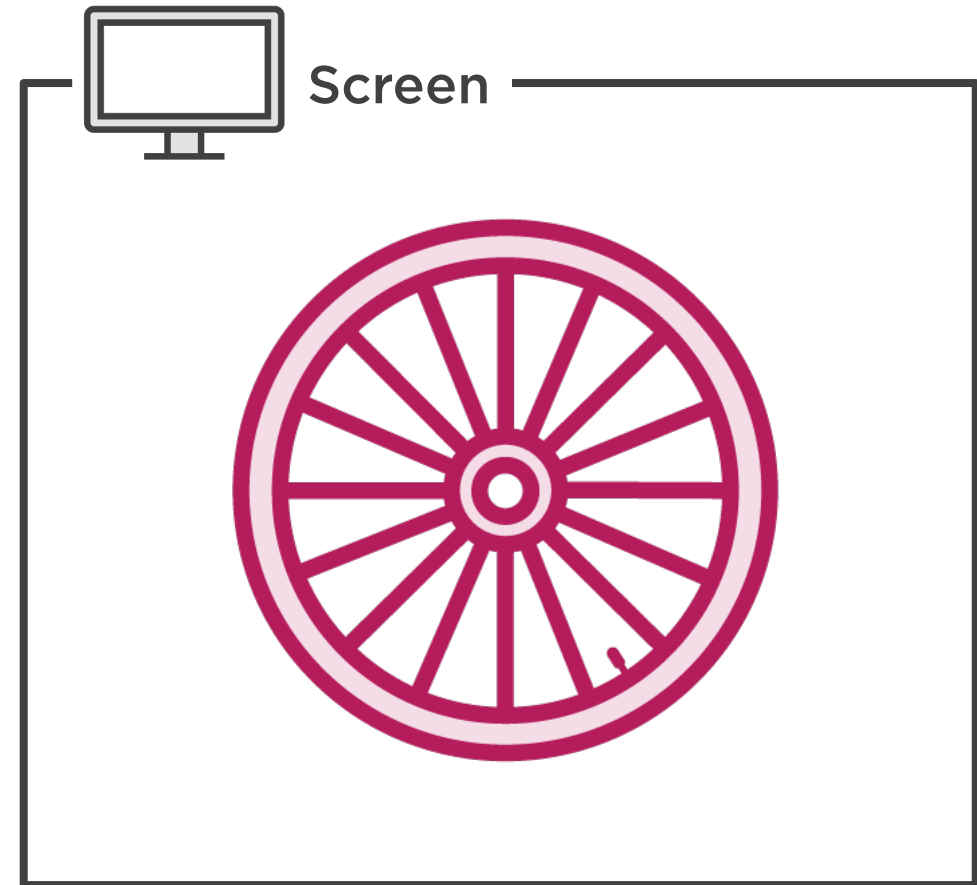
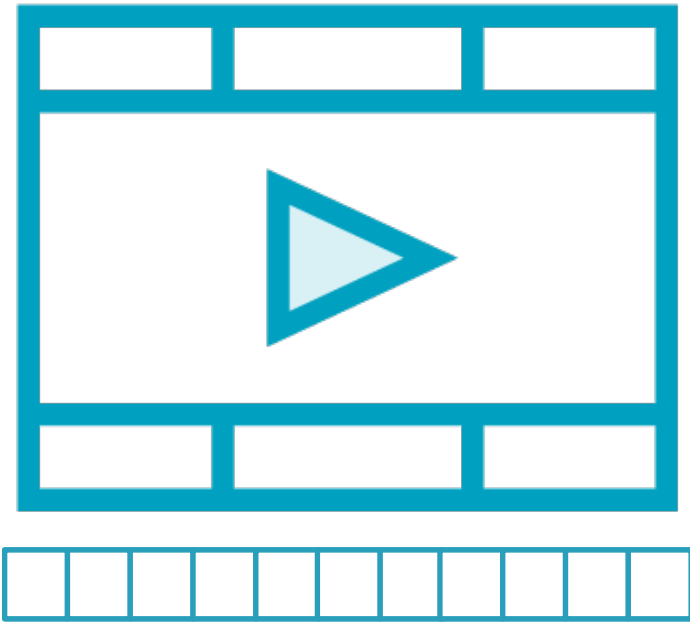
# Event-driven Architecture



# Streaming



# Streaming



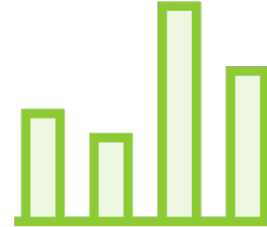
# Streaming Use Cases



Videos



Actions /  
Process execution



Data analytics



Sensor detection



Internet of Things



Alerts



# Fraud Detection System

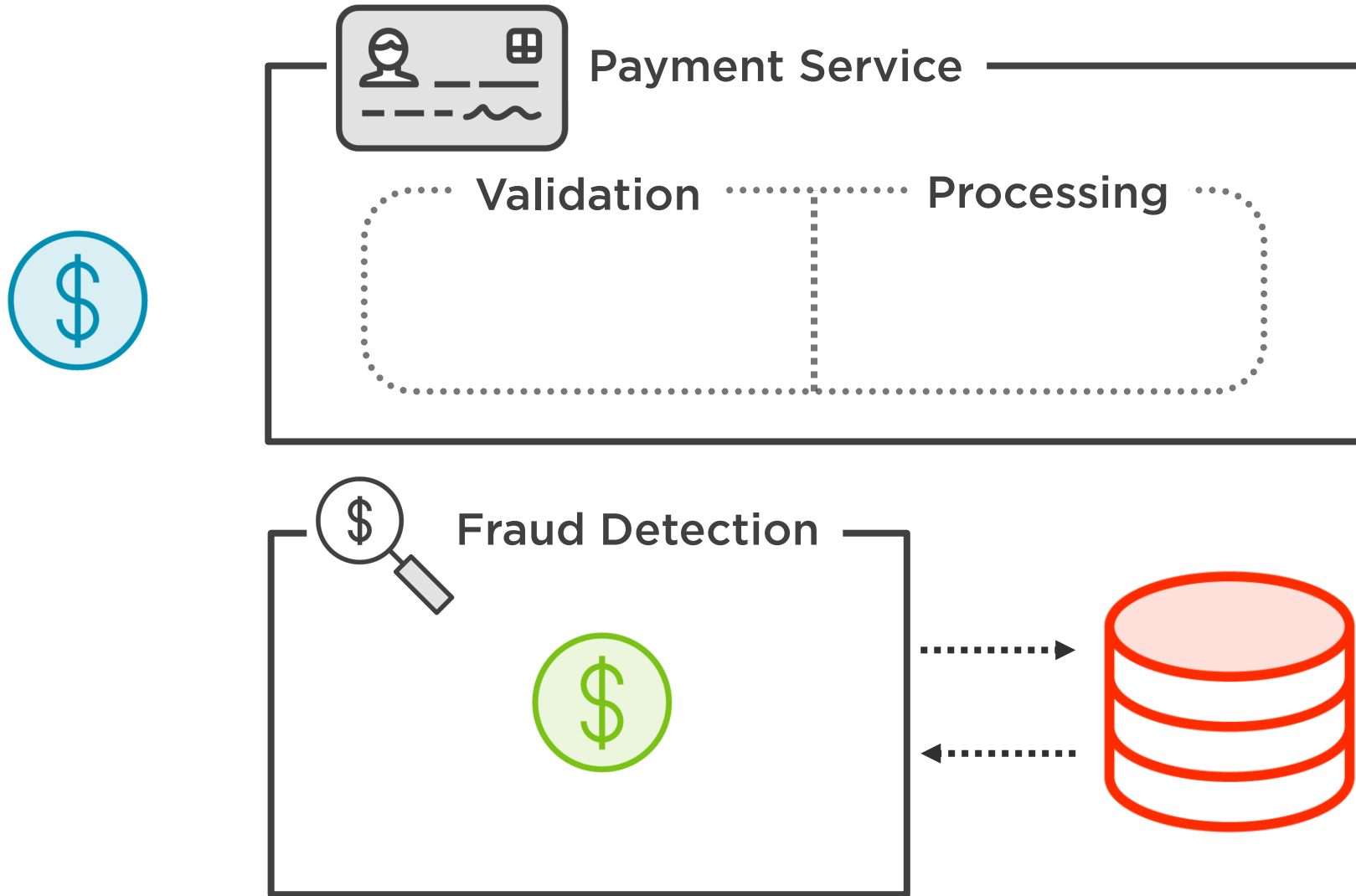
userId is present

# of items < 1.000

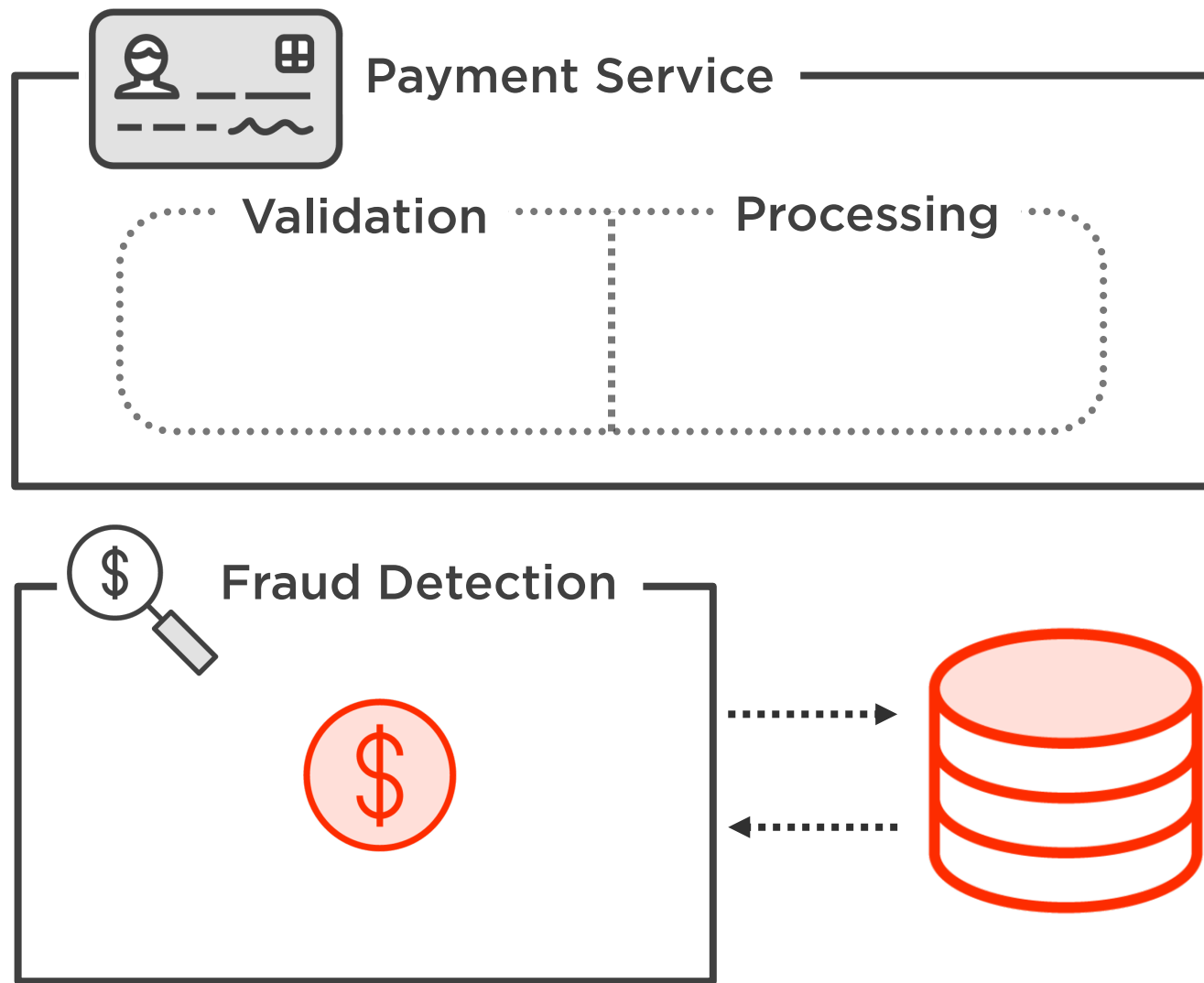
amount < \$10.000



# Traditional Design

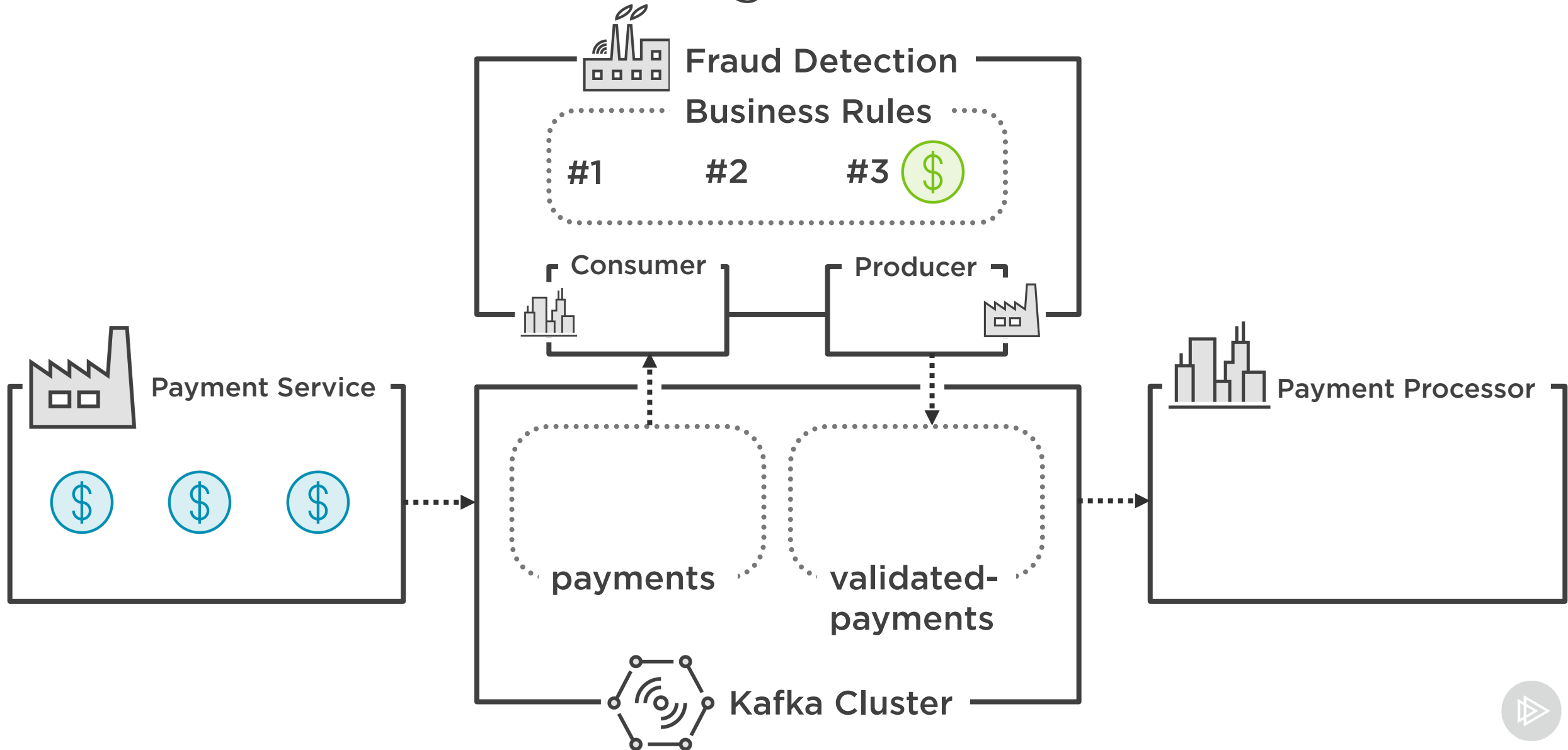


# Traditional Design

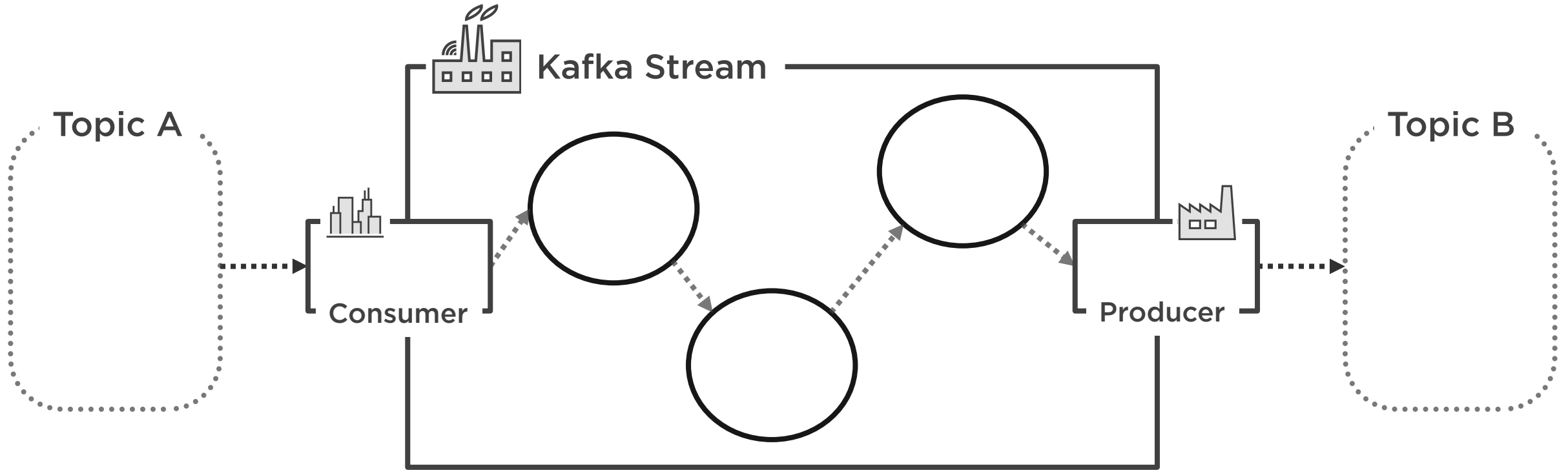




# Streaming with Kafka



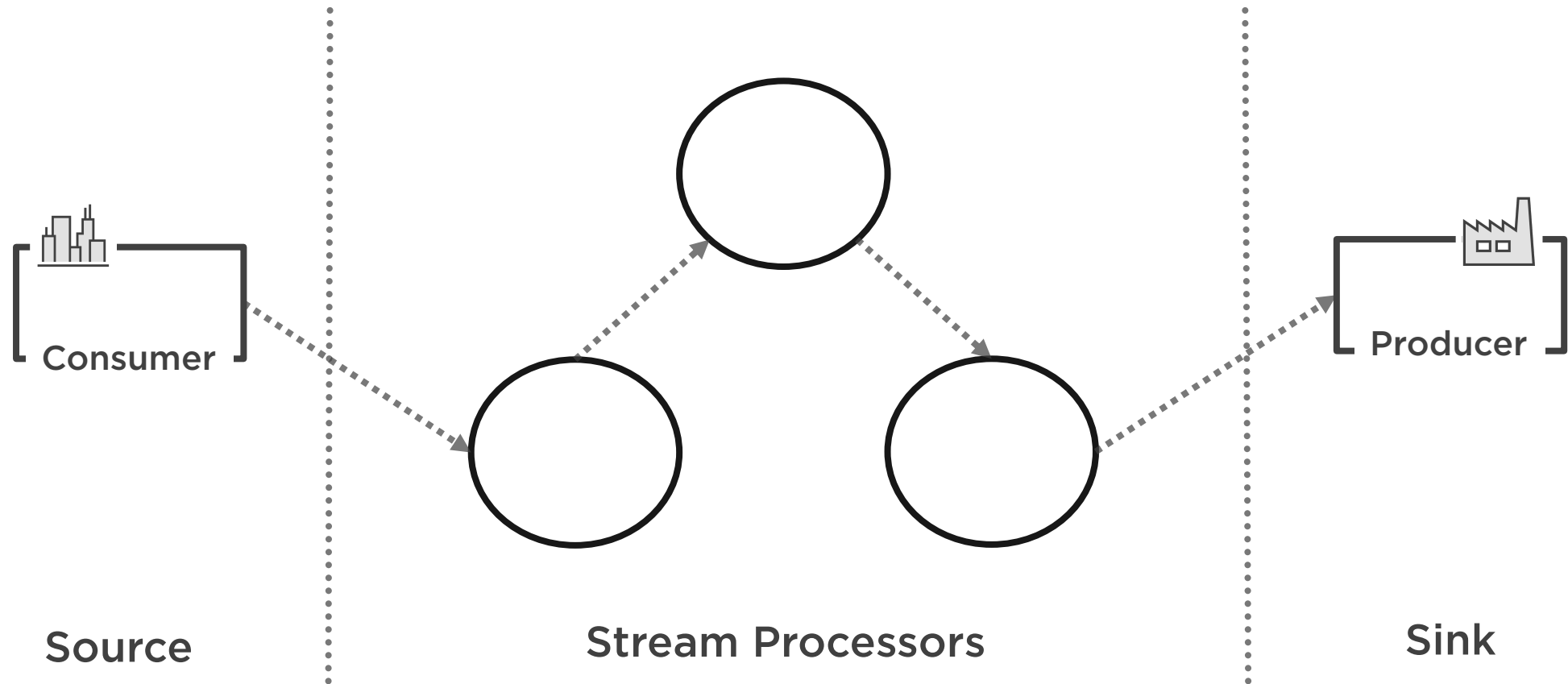
# Kafka Streams



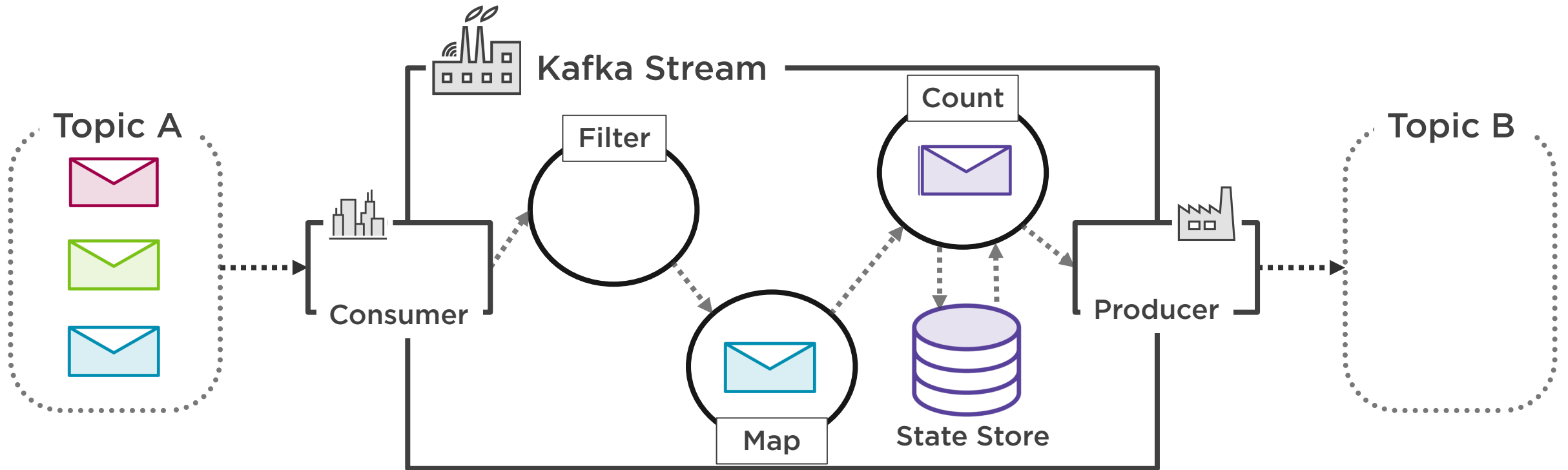
\*topology = acyclic graph of sources, processors, and sinks



# Stream Topology



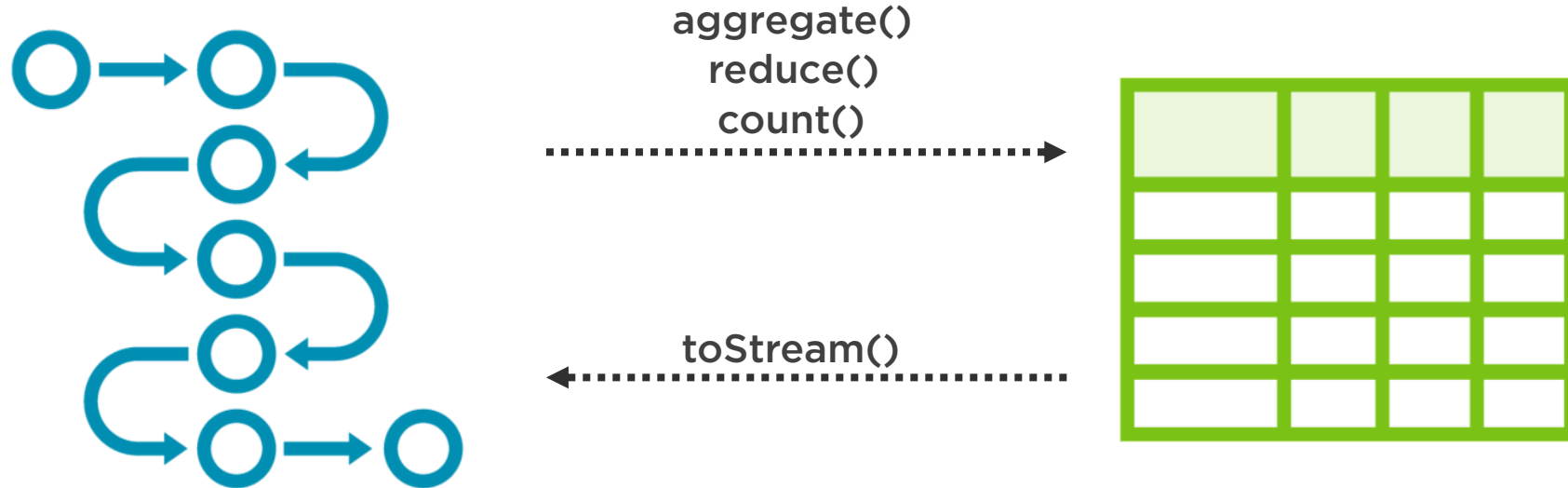
# Kafka Streams



\*topology = acyclic graph of sources, processors, and sinks



# Duality of Streams



## Stream

Processing independent events  
( delete topics )

## Table

Processing evolving events  
( compaction topics )



# Processors



## Stateless

Do not require state for processing



## Stateful

Require a state store



Branch  
Filter  
Inverse Filter  
Map  
FlatMap  
Foreach  
Peek  
GroupBy  
Merge

## Stateless Operations

<https://bit.ly/kstreamstateless>



# Stateful Operations

**Aggregations**

**Count**

**Joins**

**Windowing**

**Custom processors**

<https://bit.ly/kstreamstateful>





# Demo



Kafka streams

Fraud detection application



# Summary



**Streaming model**

**Kafka streams**

**Stateless & stateful operations**

**Fraud detection application**

