Muon Workshop

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http://muoncore.io/

http://github.com/muoncore/muon-workshop

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What we will discuss...

1)Why you should care about Microservices

2)What this costs you...

3)Examples of decomposition & recomposition

4)Muon Core

5)Building Event Systems

6)DDD Patterns and Newton

7)Wrap up

Why you should care about Microservices?

What is a Microservice Architecture?

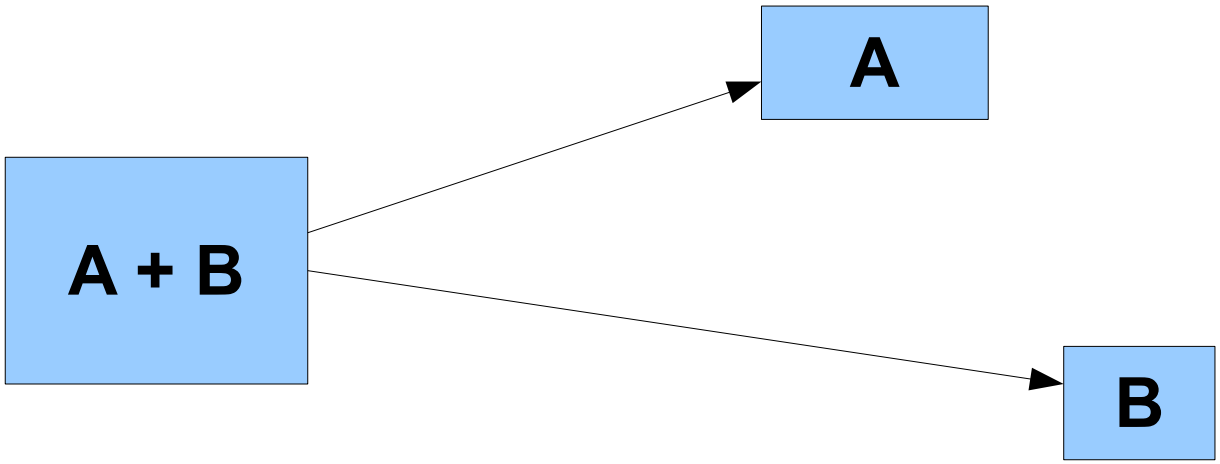
Isolation

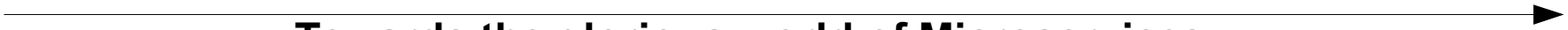
Isolation

+

Aspiration

What this costs you





Towards the glorious world of Microservices …

What this costs you

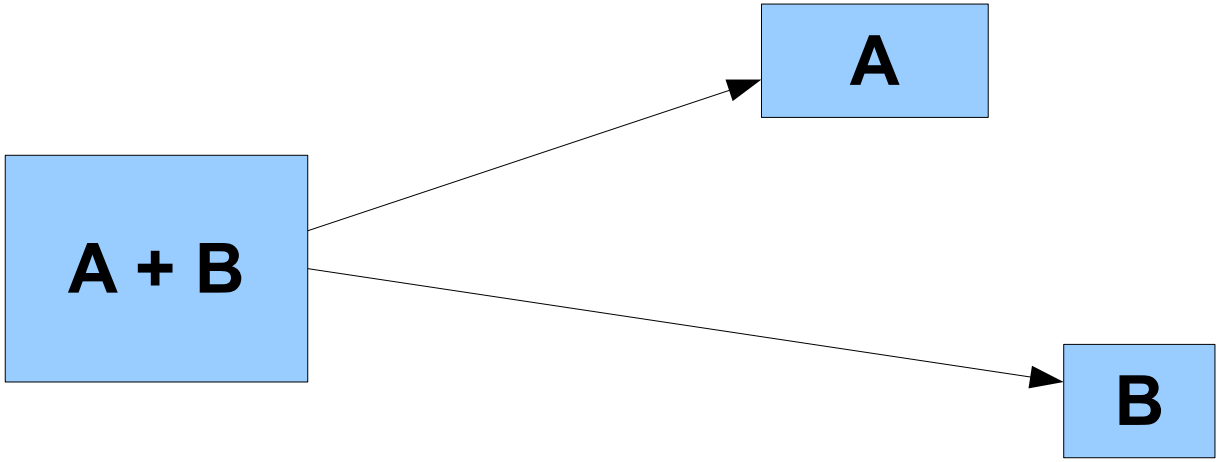
Benefit

- Component change is easy
- Can scale teams with components
- Take advantage of cloud platforms
- Polyglot

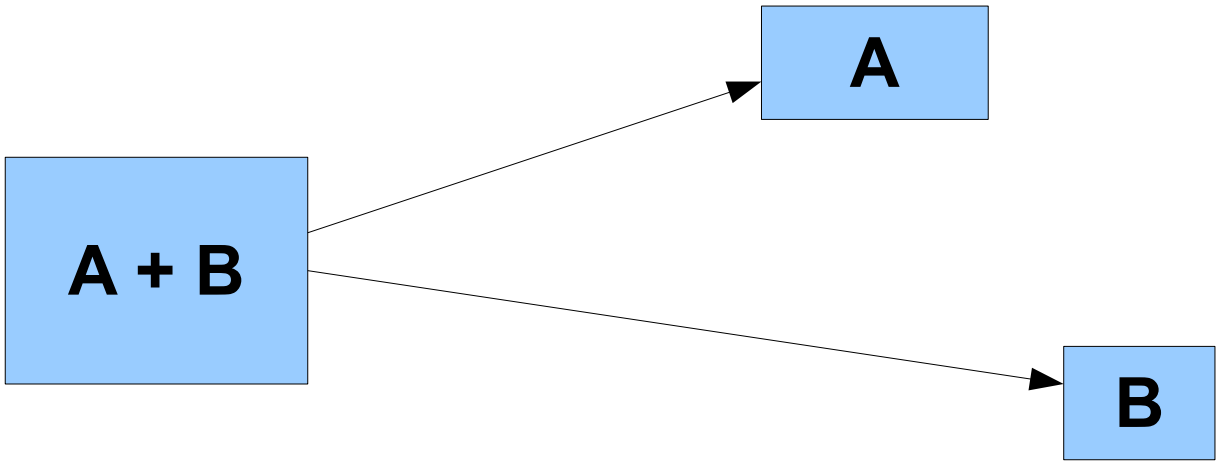
Costs

- Systemic change is harder
- Discovery is harder
- APIs are networked
- Data is not globally consistent
- Production may not be fully deterministic (ask me what I mean by this...)

Decomposition

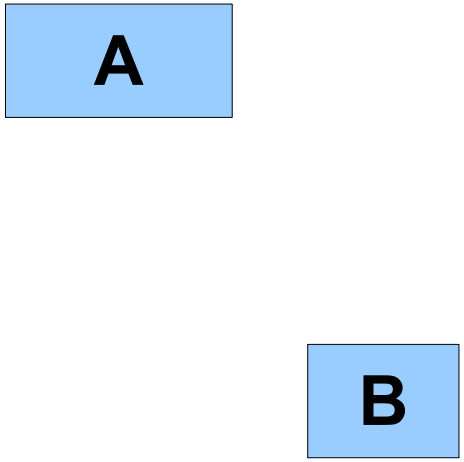


Decomposition

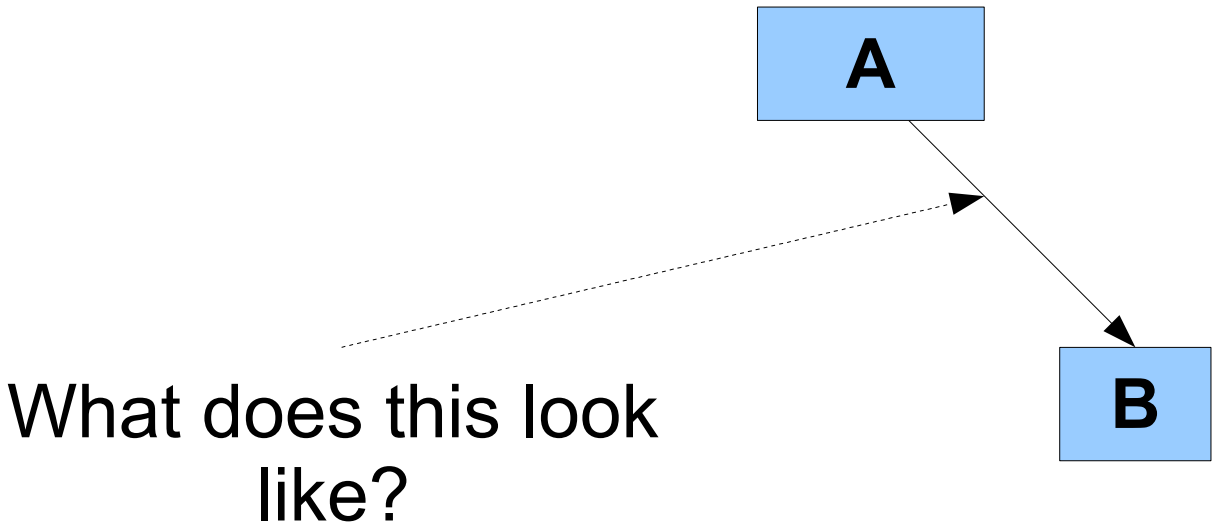


How do we decide what A and B are?

Recomposition



Recomposition



Recomposition using RPC (http anyone?)

- Easy to understand
- Fragile.
- Semantically limited
- Affects your design in bad ways
- Great tooling support

Recomposition
using
Messaging

- Harder to understand
- Semantically very rich and expressive
- Gives better options for design
- Currently poor tooling support (hence Muon)

Recomposition
Using
Events

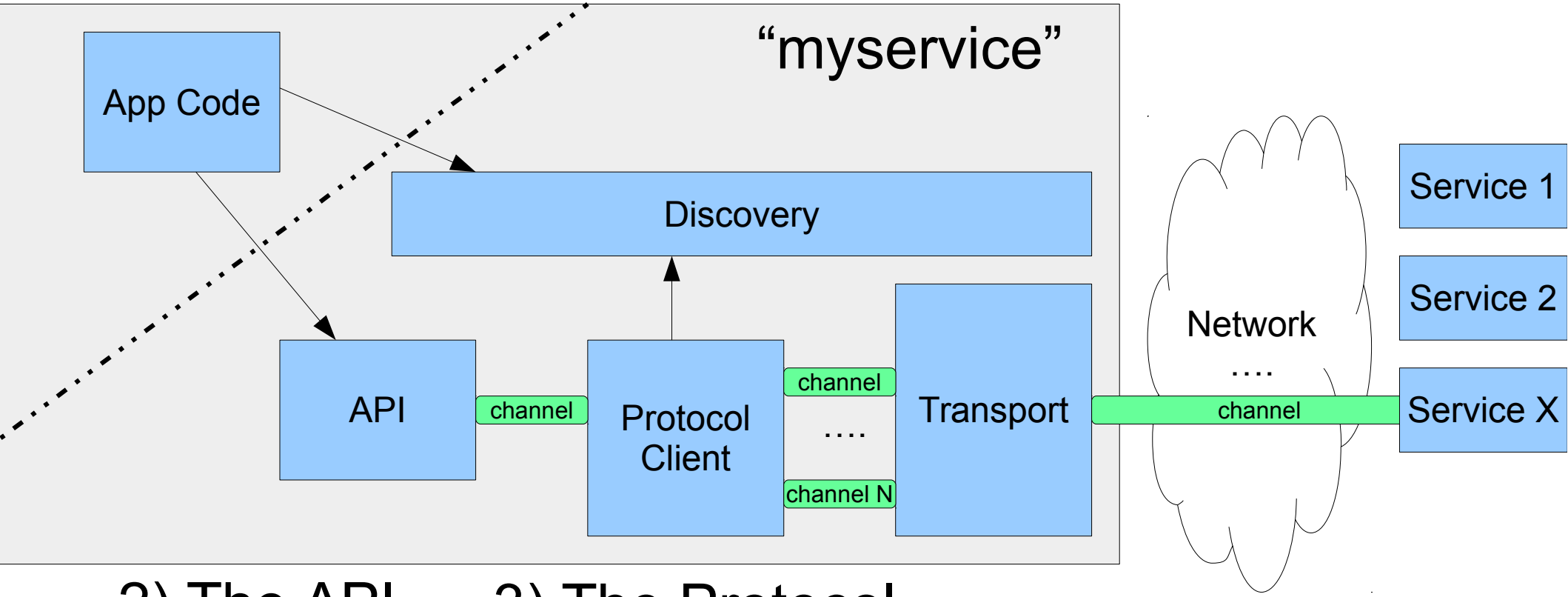
- Middle ground of understanding
- Robust
- Semantically Strong, **models time**
- Leads to good design
- Poor tooling support (hence Muon + Photon +Newton)

Muon Core

Make building message based microservices easy

Muon

1) Your code uses an API



2) The API creates a Protocol

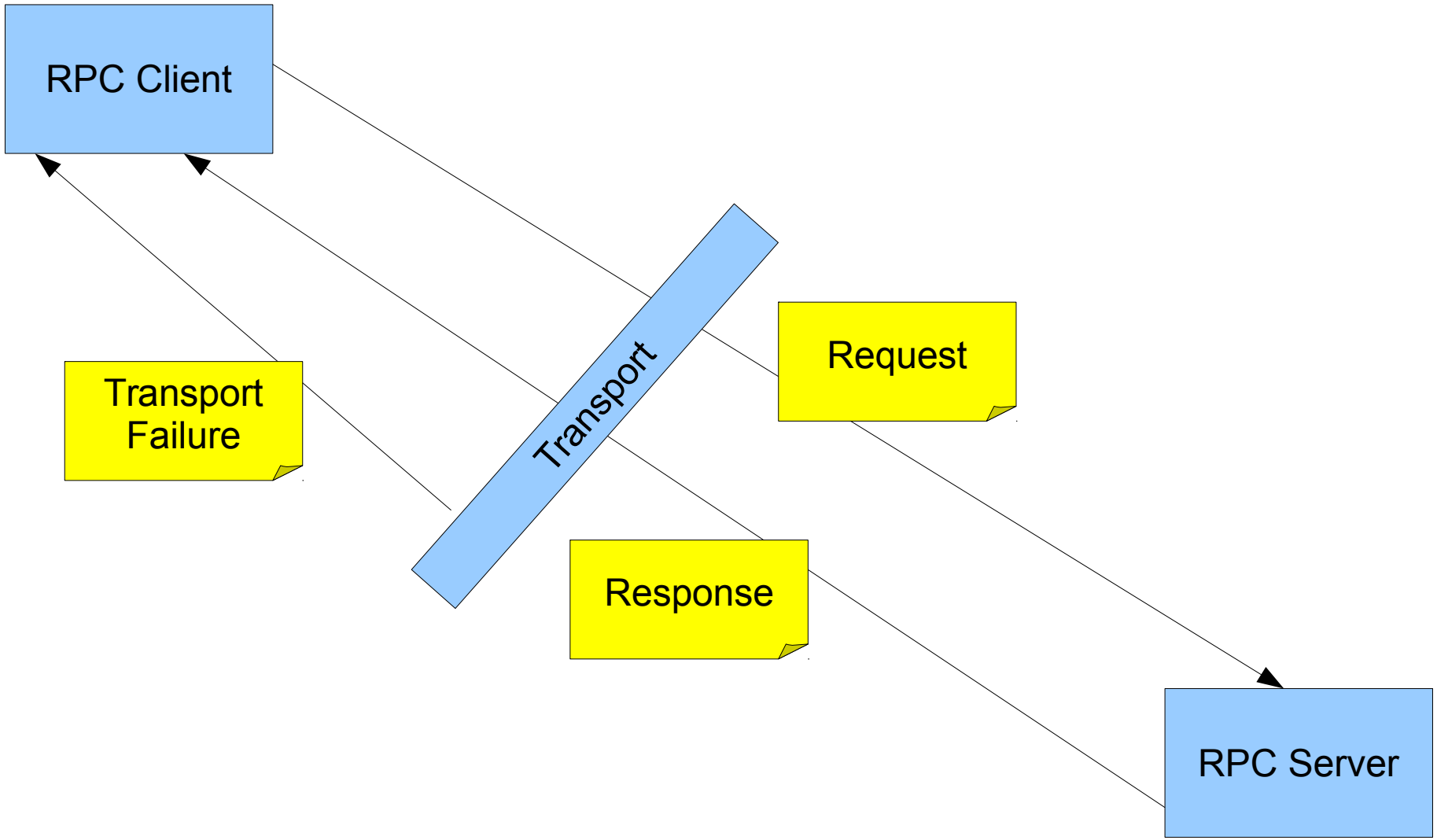
3) The Protocol communicates with others using messages

4) The transport routes them over the network

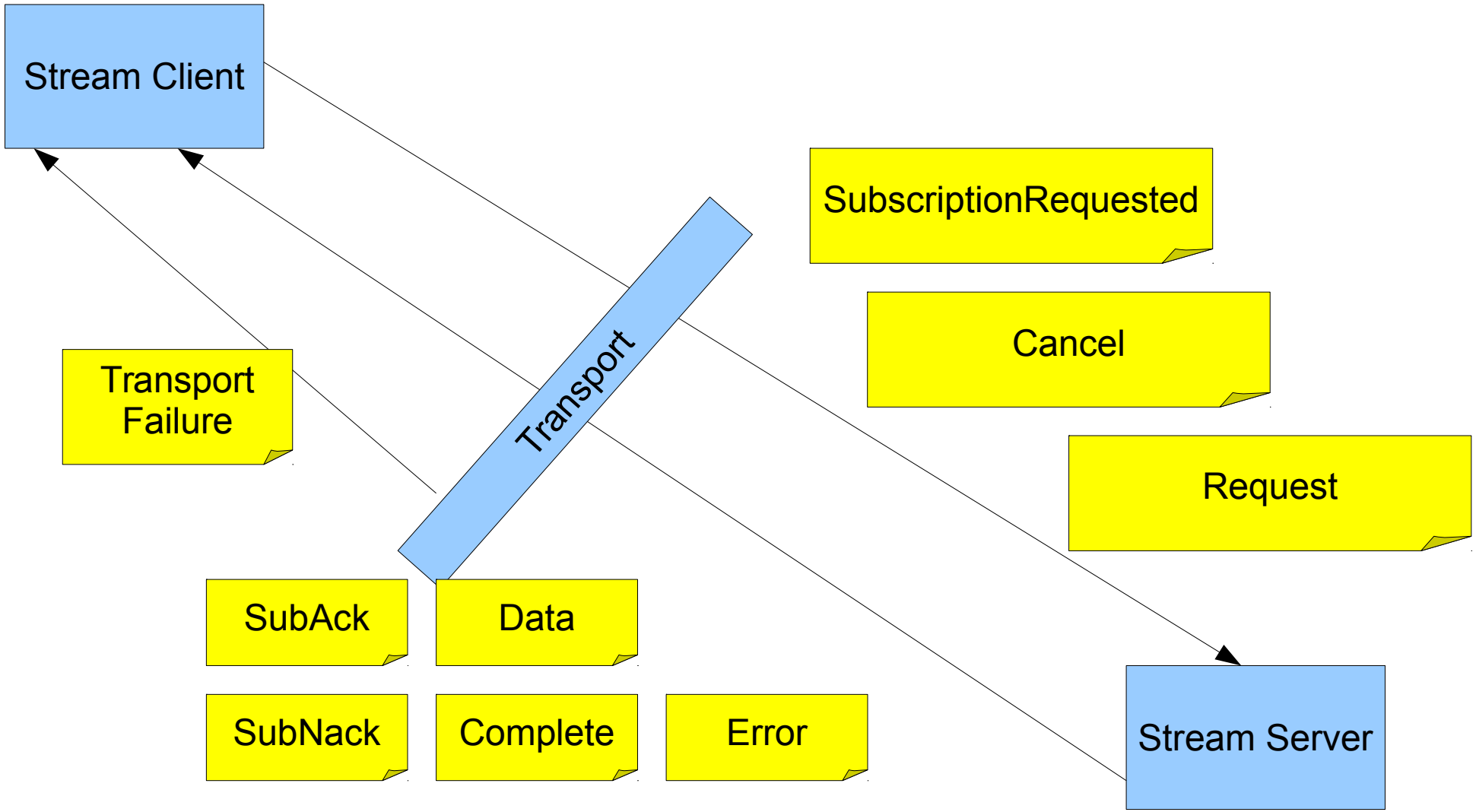
Protocols

- RPCish
- Reactive Streams
- Introspection
- Pipeline/ Multi process Co-ordination
- Events
- [your protocol here]

Protocol - RPC



Muon Reactive Streams



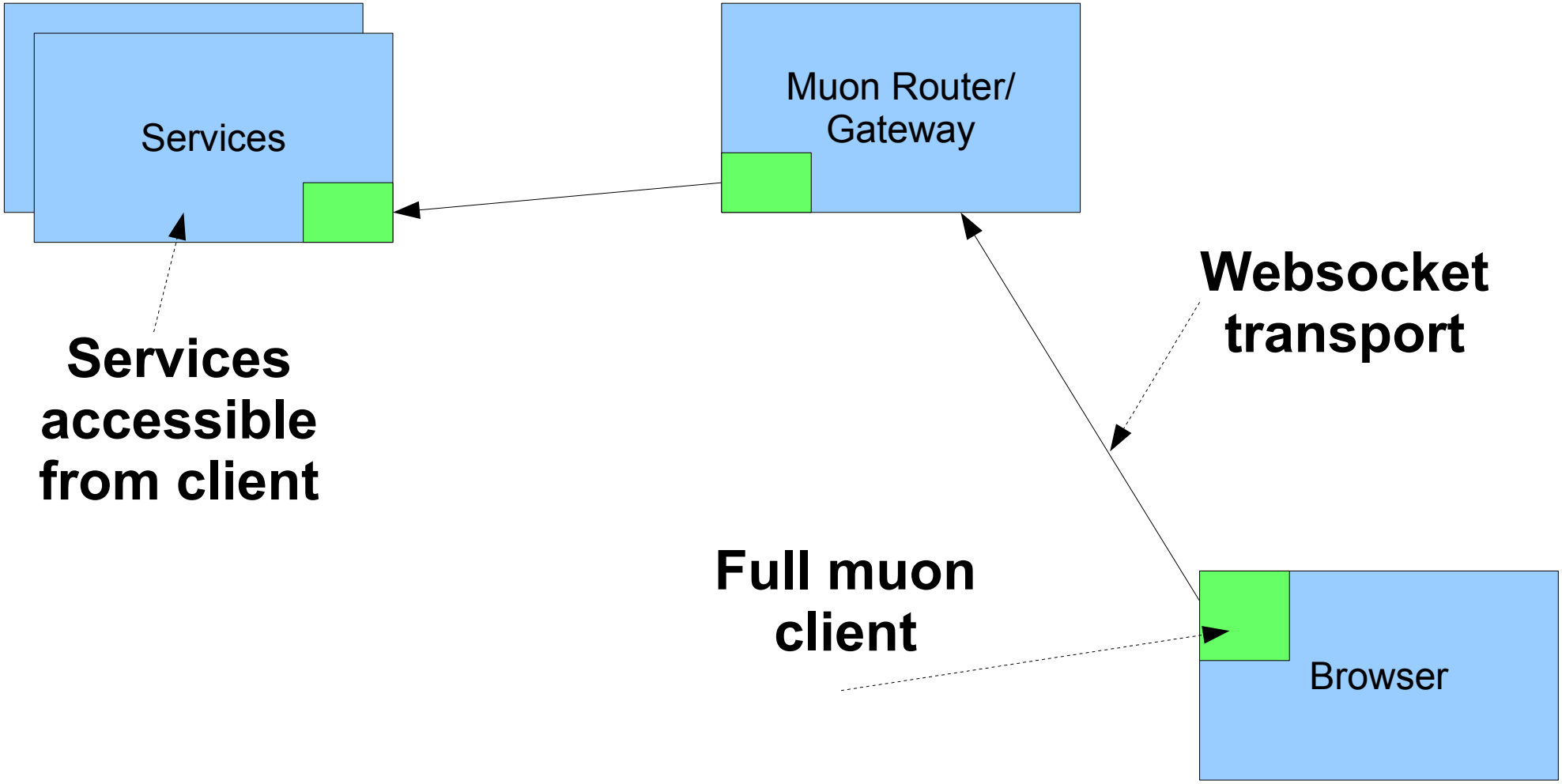
Running the demos

- http://github.com/muoncore/muon-workshop
- You need to get a base env
  – see http://github.com/muoncore/muon-starter
- Java
- NPM
- Muon CLI

Demo

1 - Muon intro

Muon.js
in the Browser



Demo

2 – Muon.js

Recomposition using Events

Events

Events

Order Placed

Events

Order Placed

Payment Taken

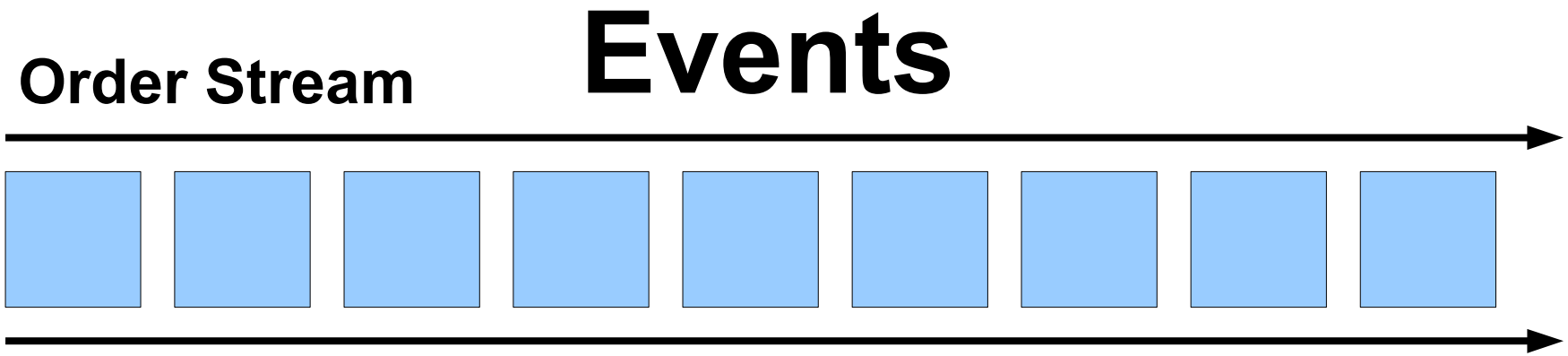
Events

Order Placed

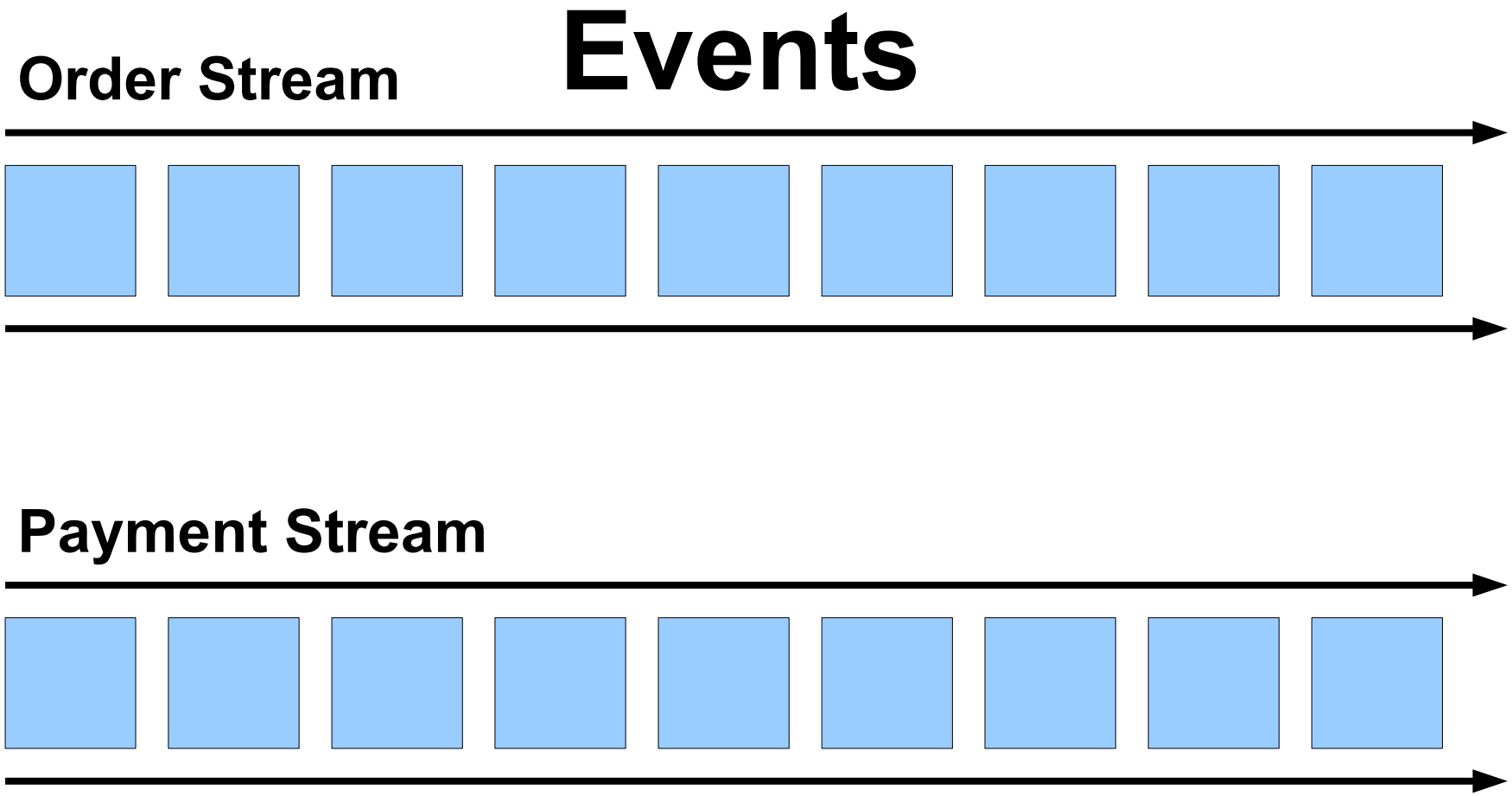
Payment Taken

Email Sent

Events



Events



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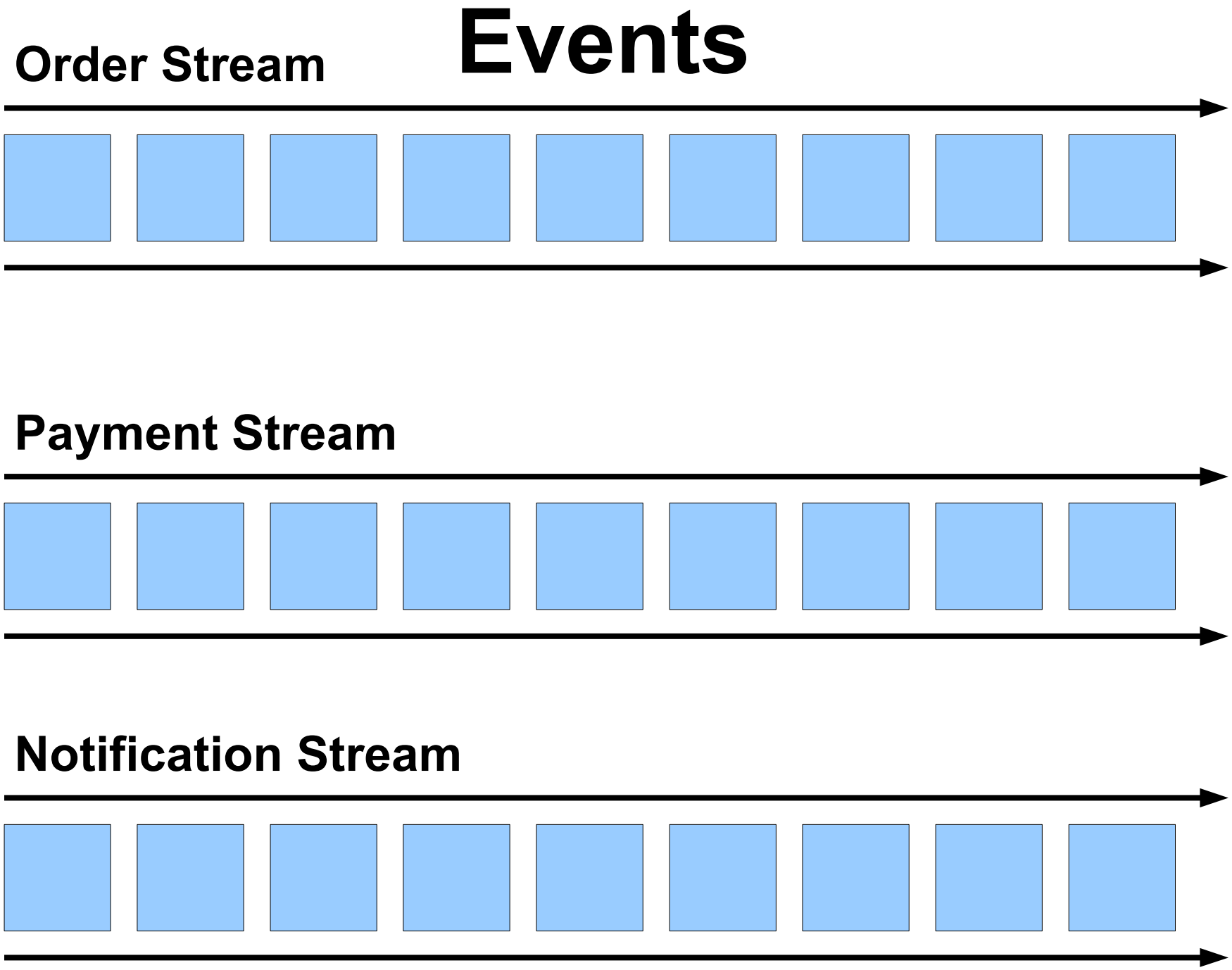
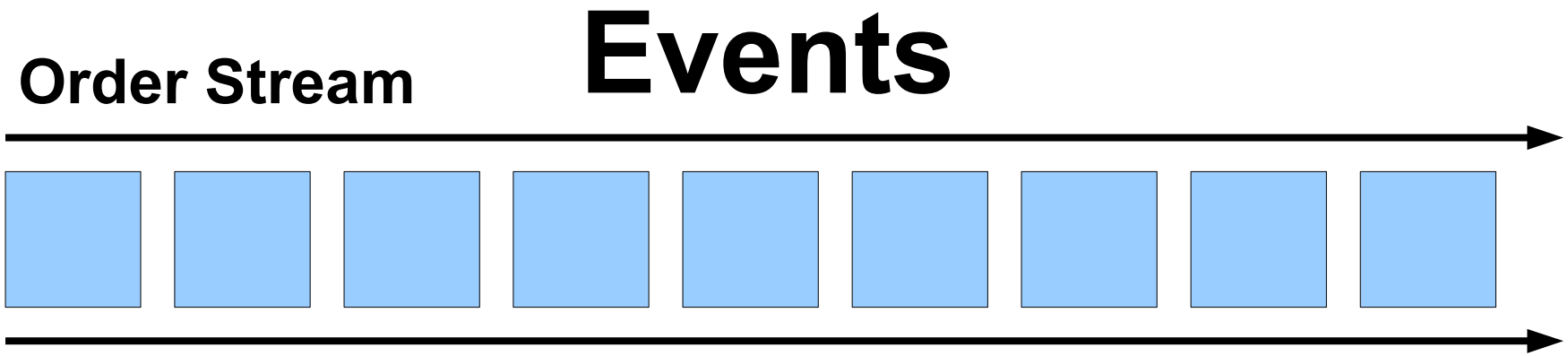


Events



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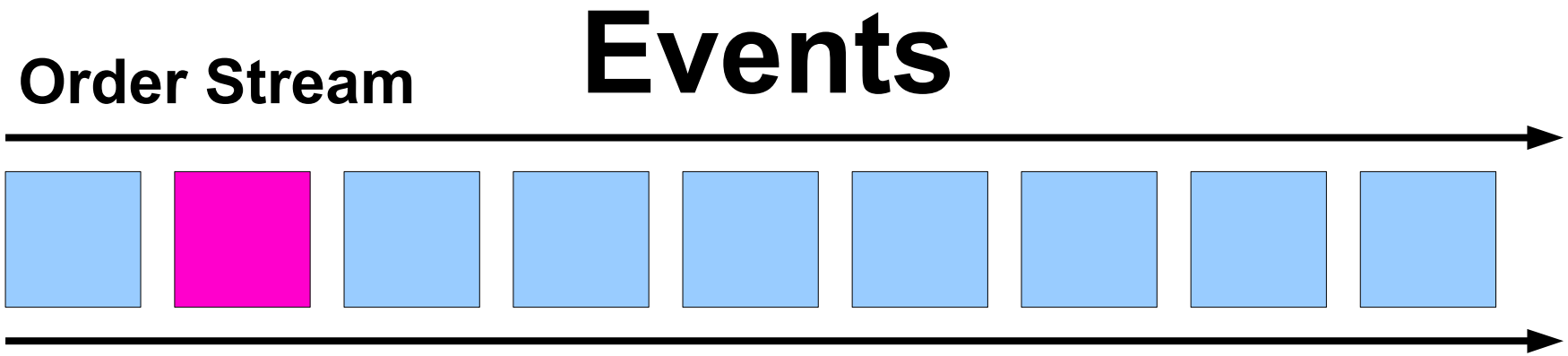
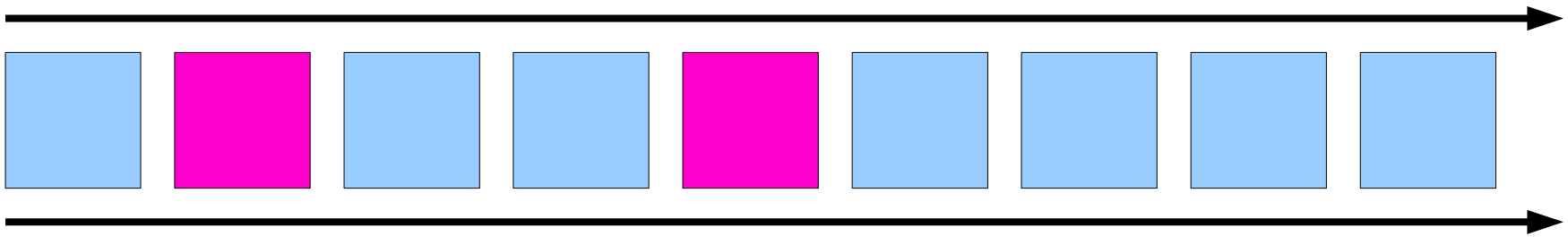
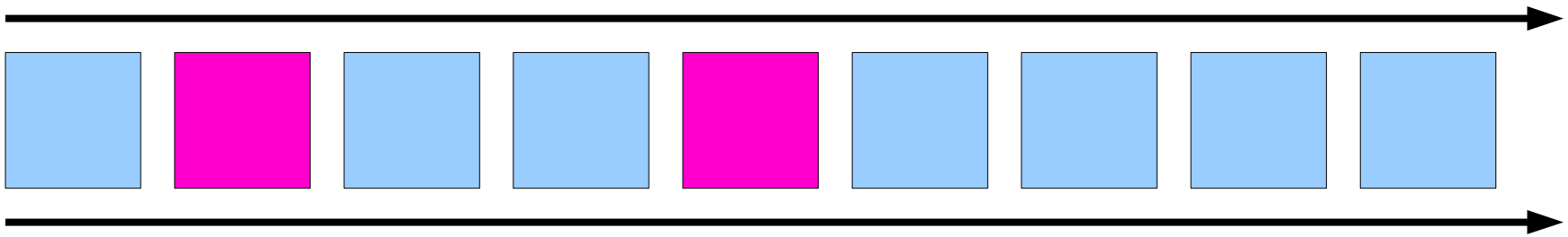


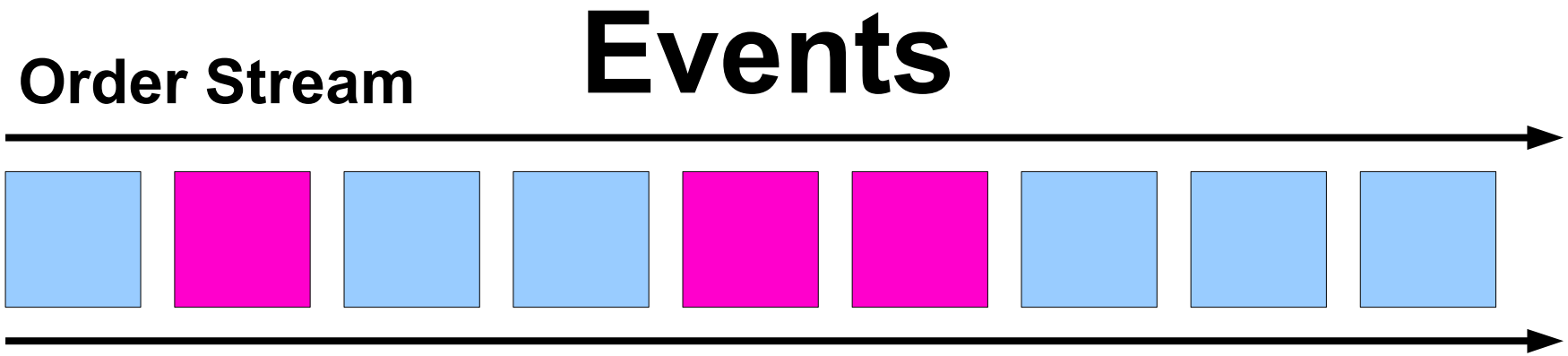
Events

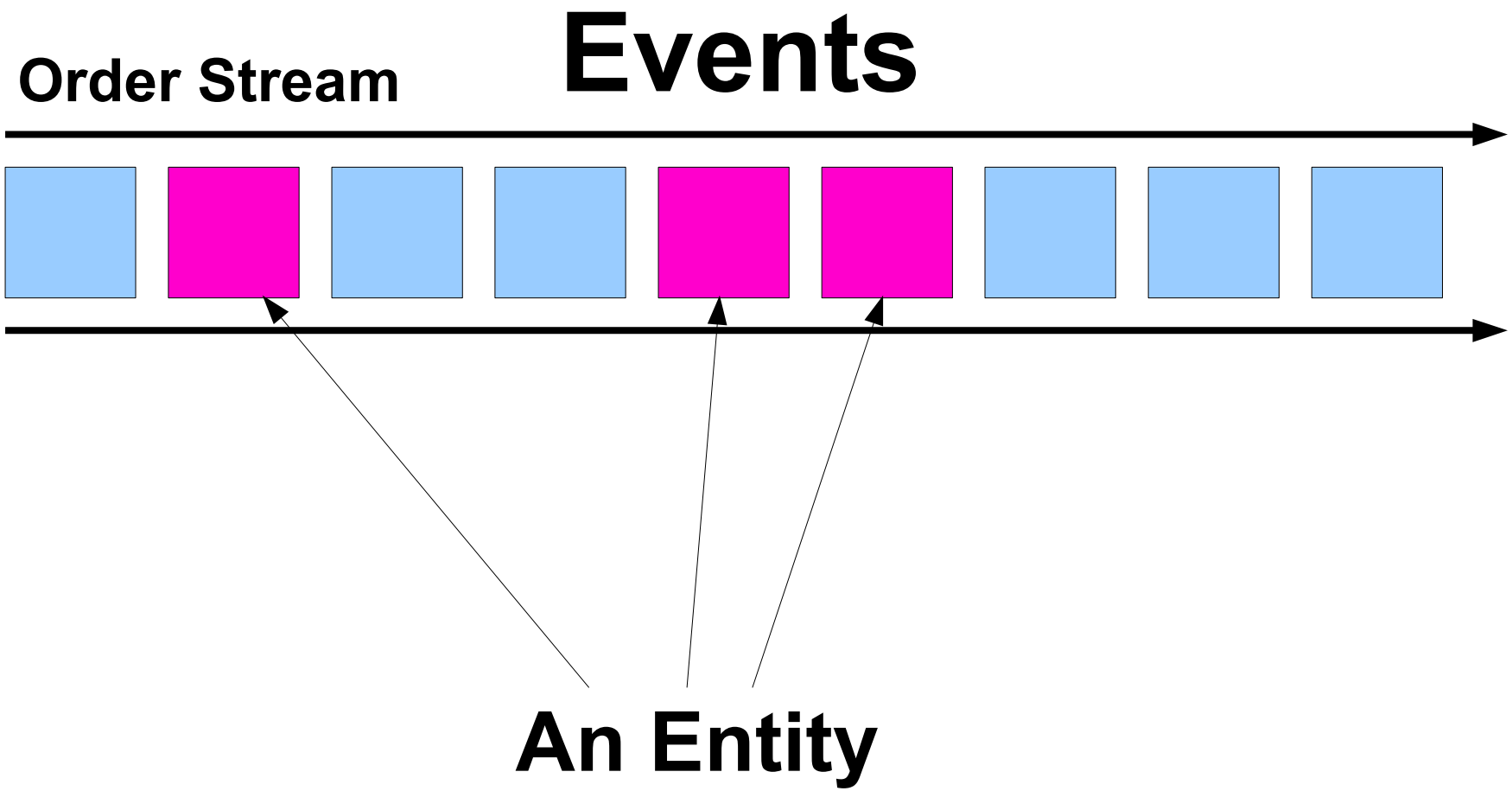


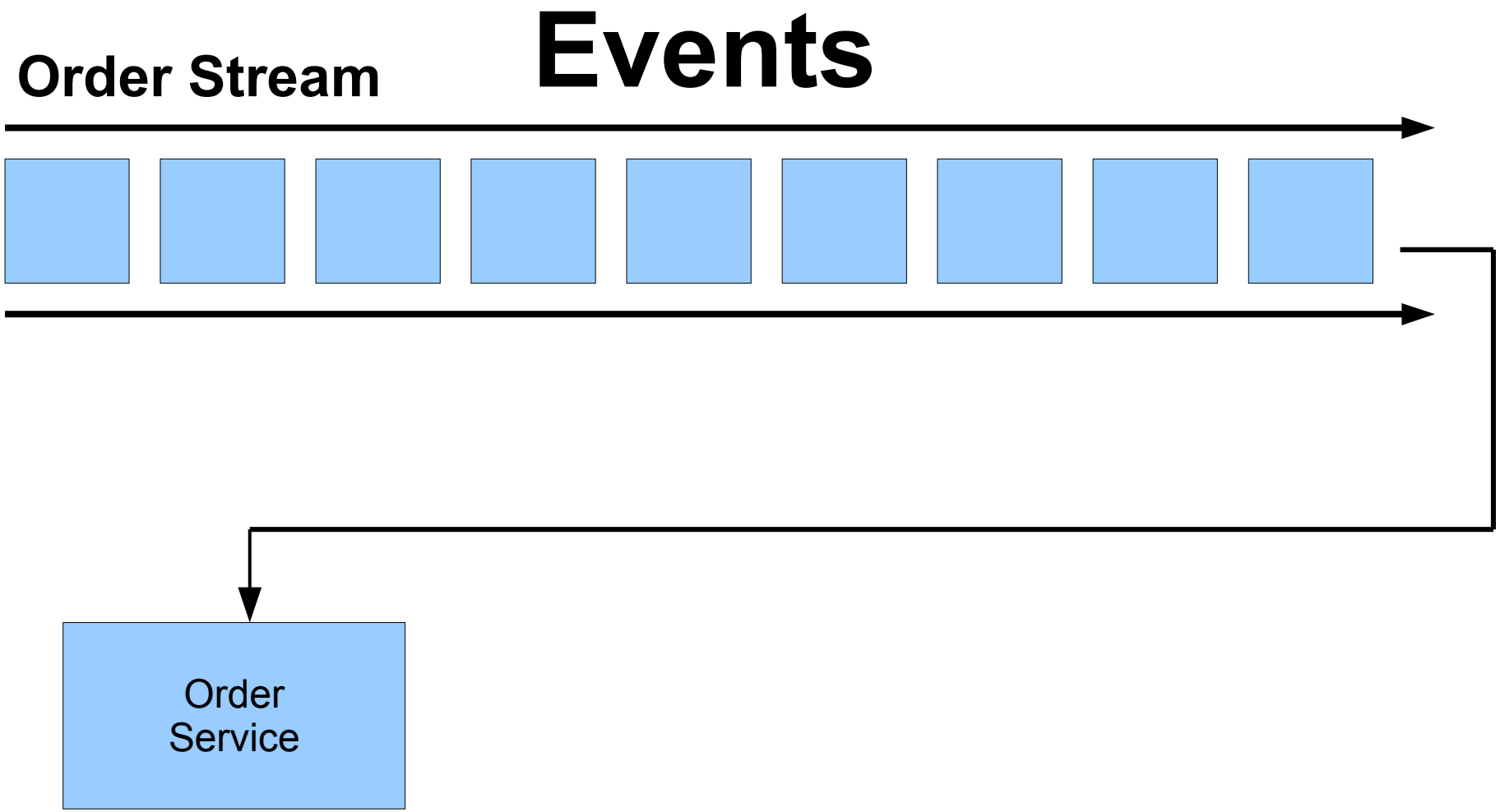
Events

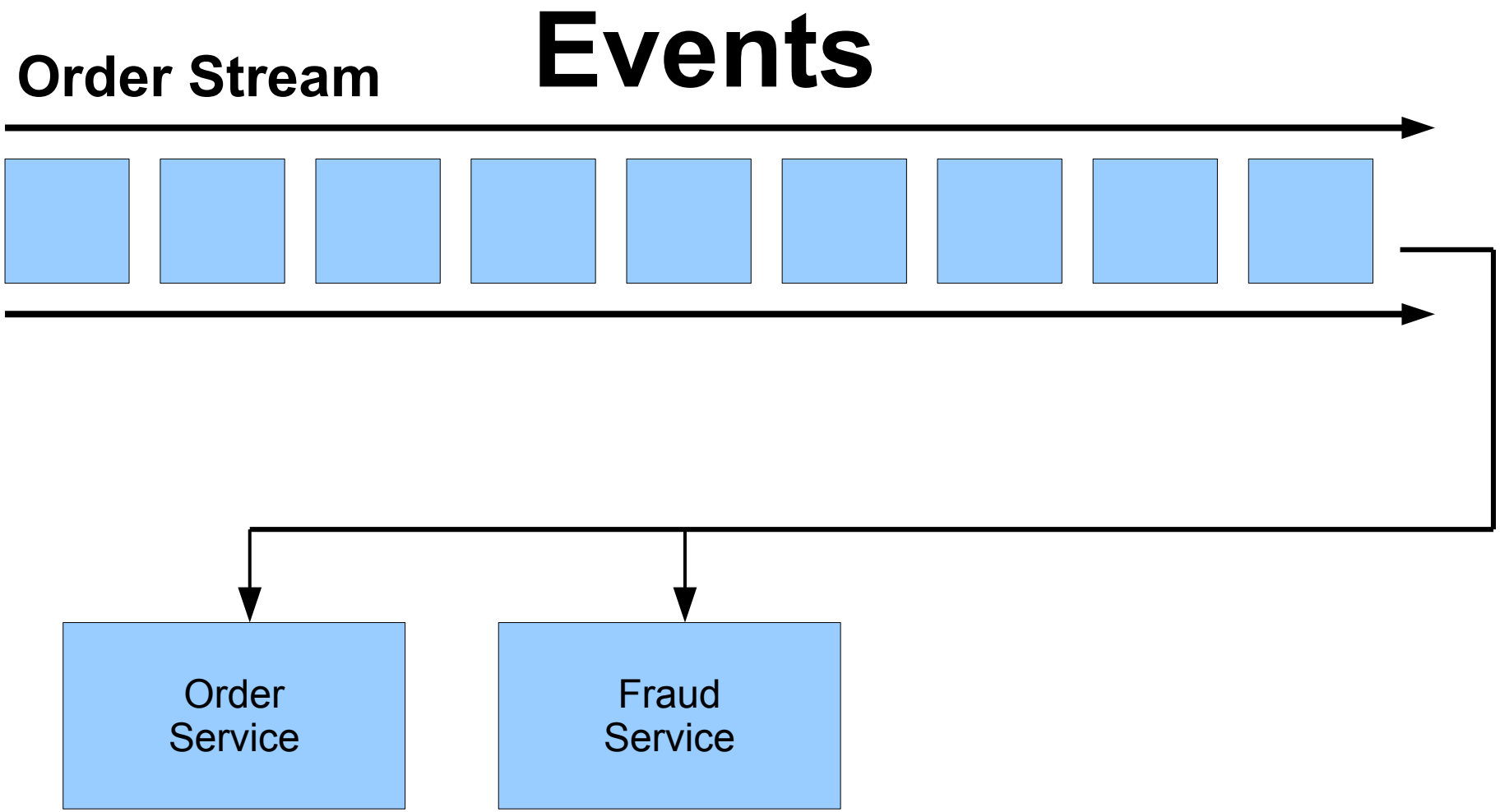


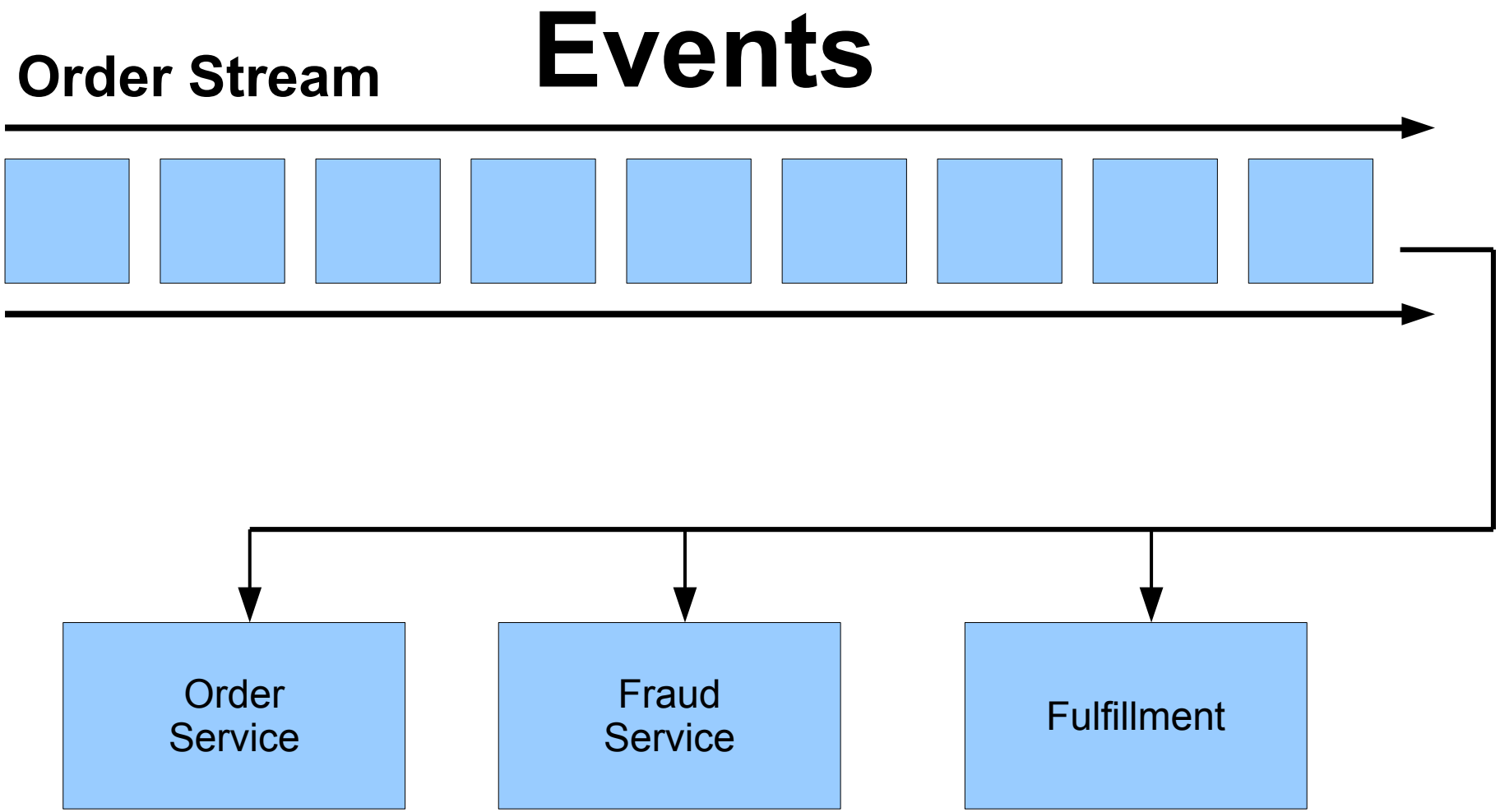
Events



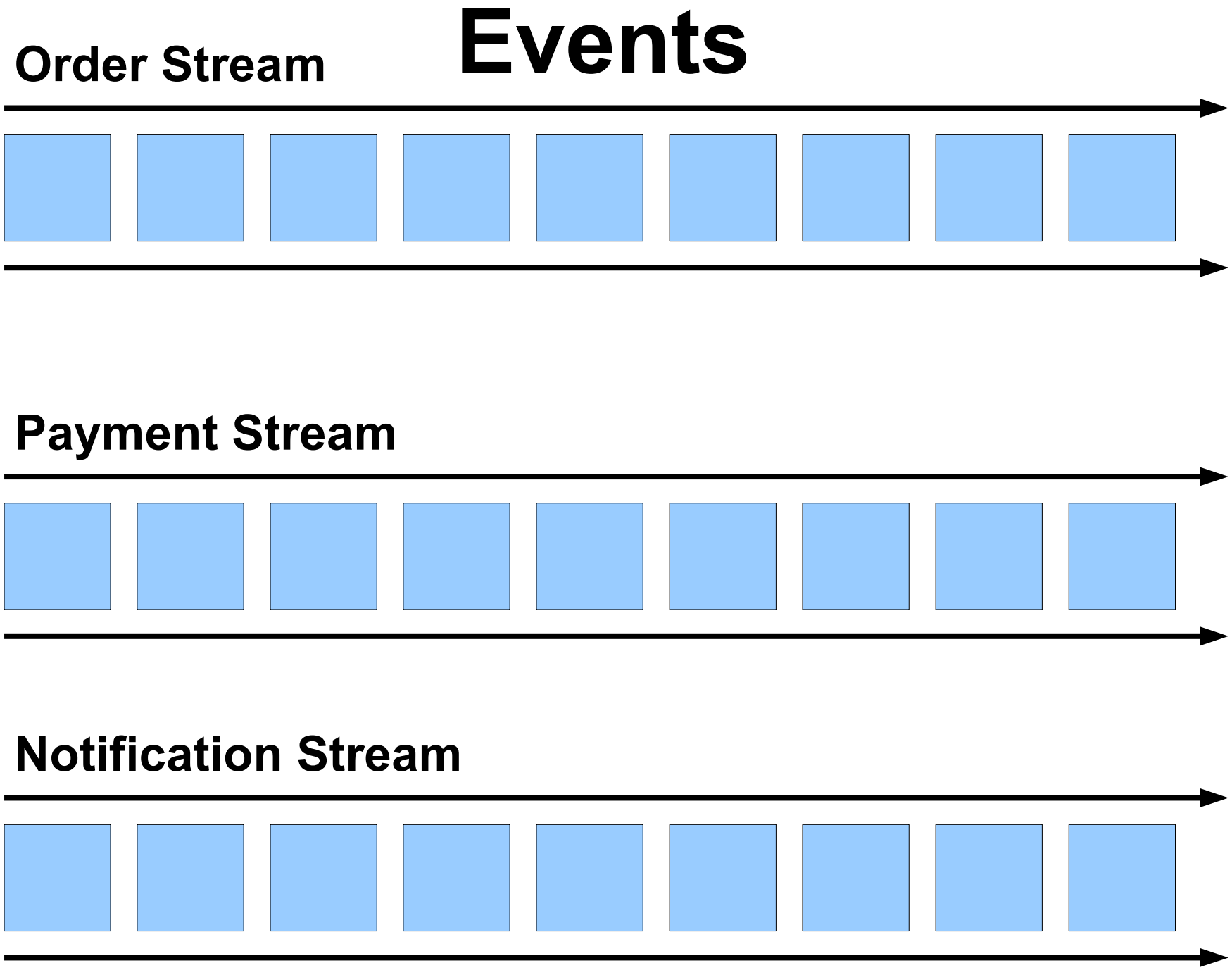

Order Stream
Events
An Entity

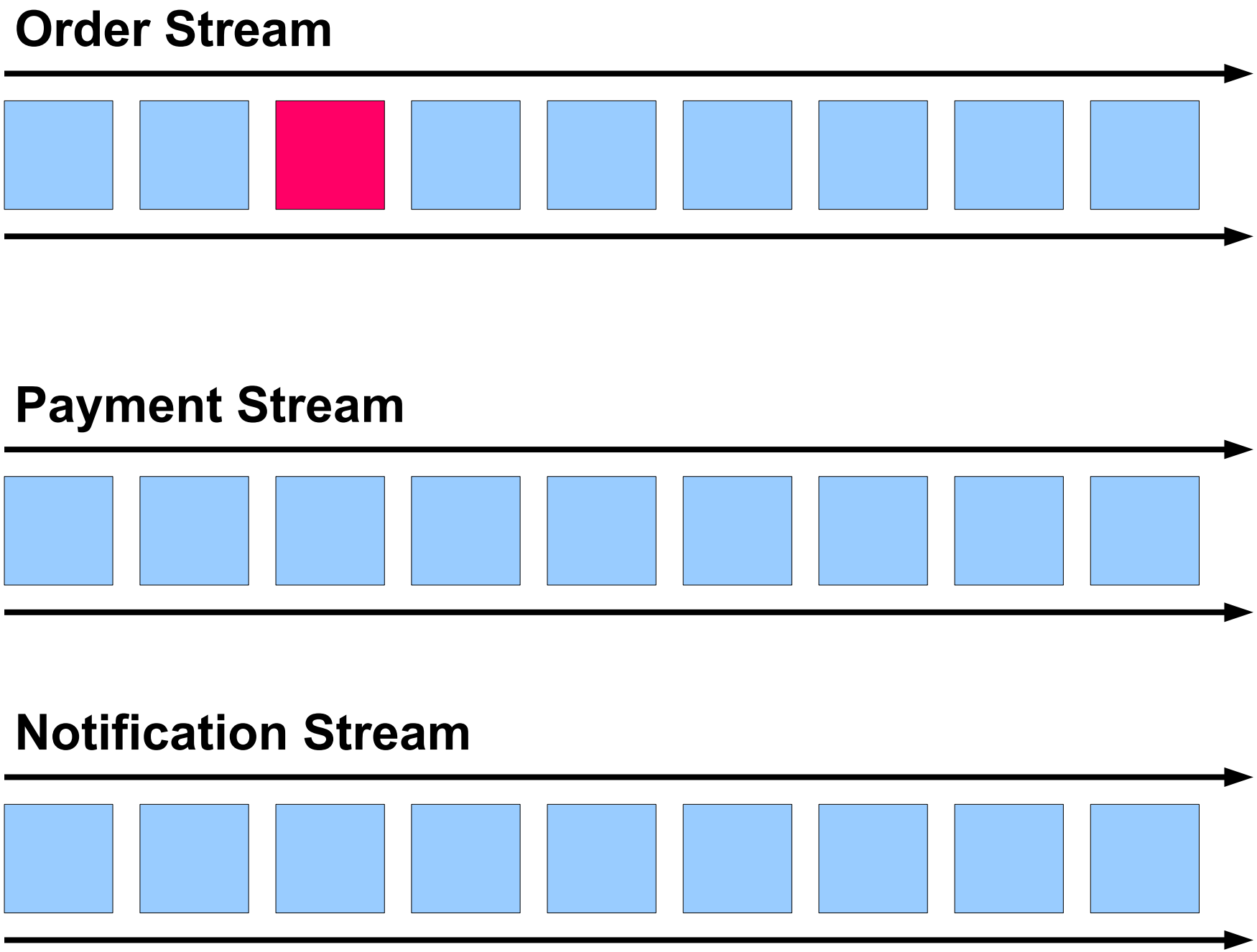

Order Stream
Events
Order
Service

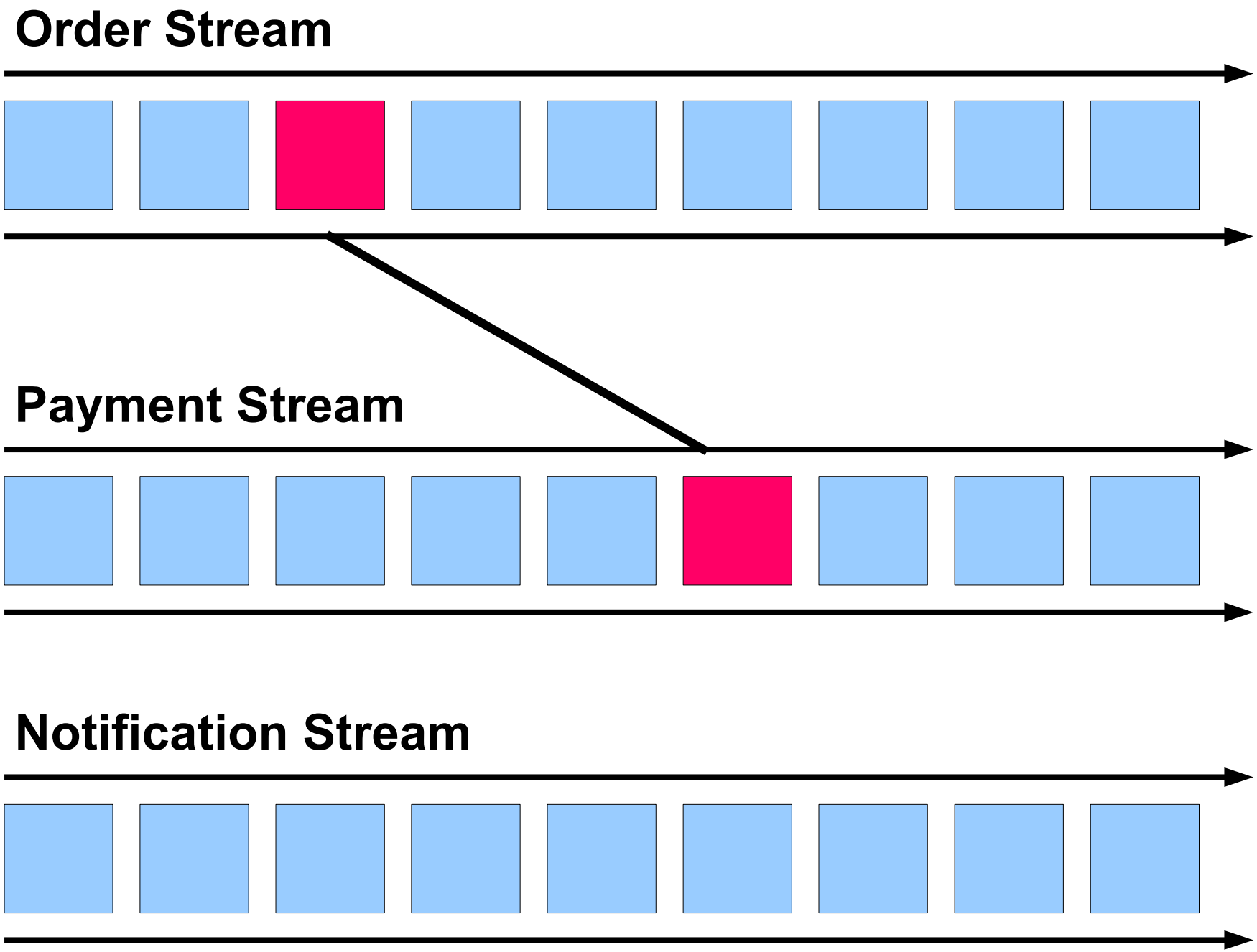

Events
Order Stream
Order Service
Fraud Service

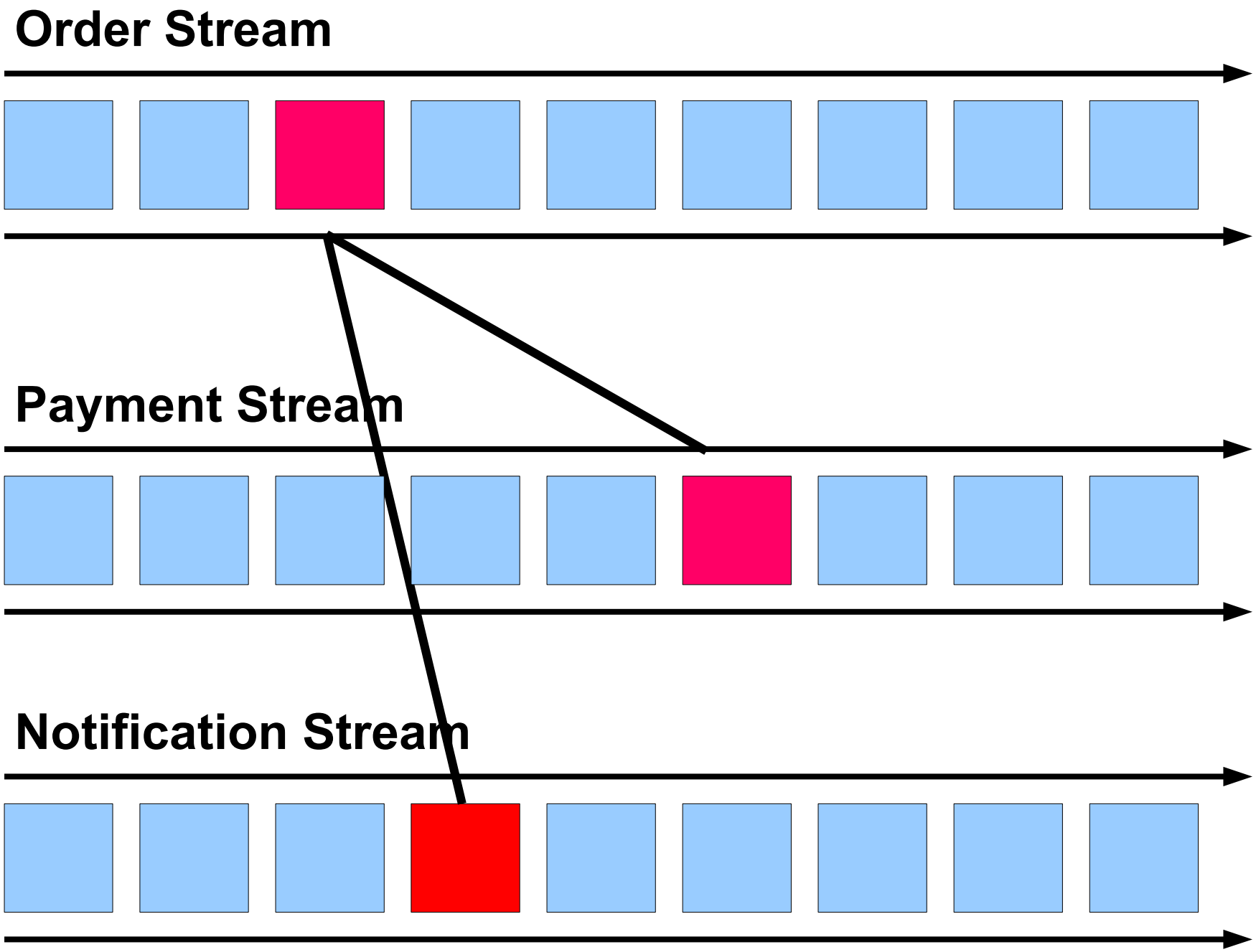

Events
Order Stream
Order Service
Fraud Service
Fulfillment

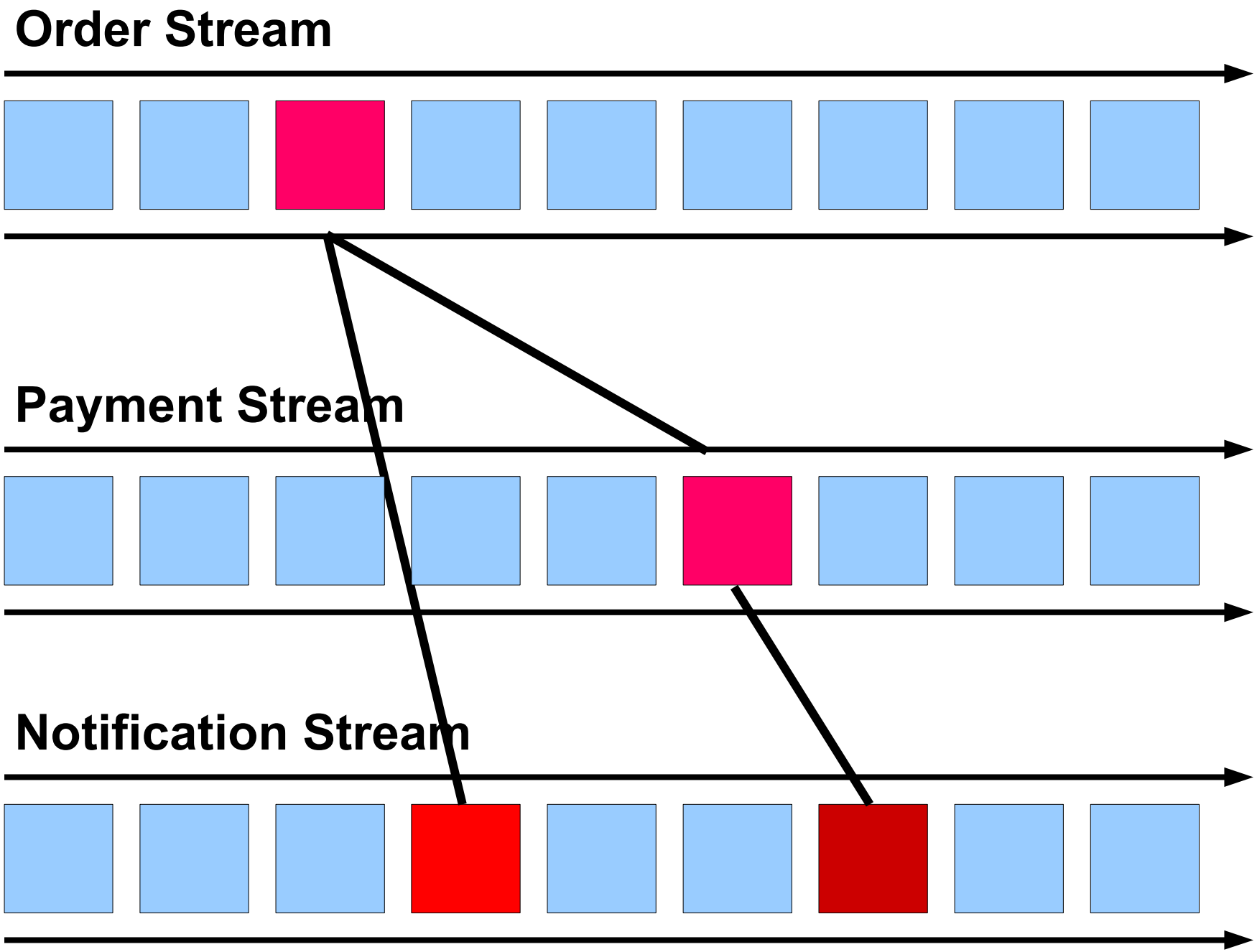
Events

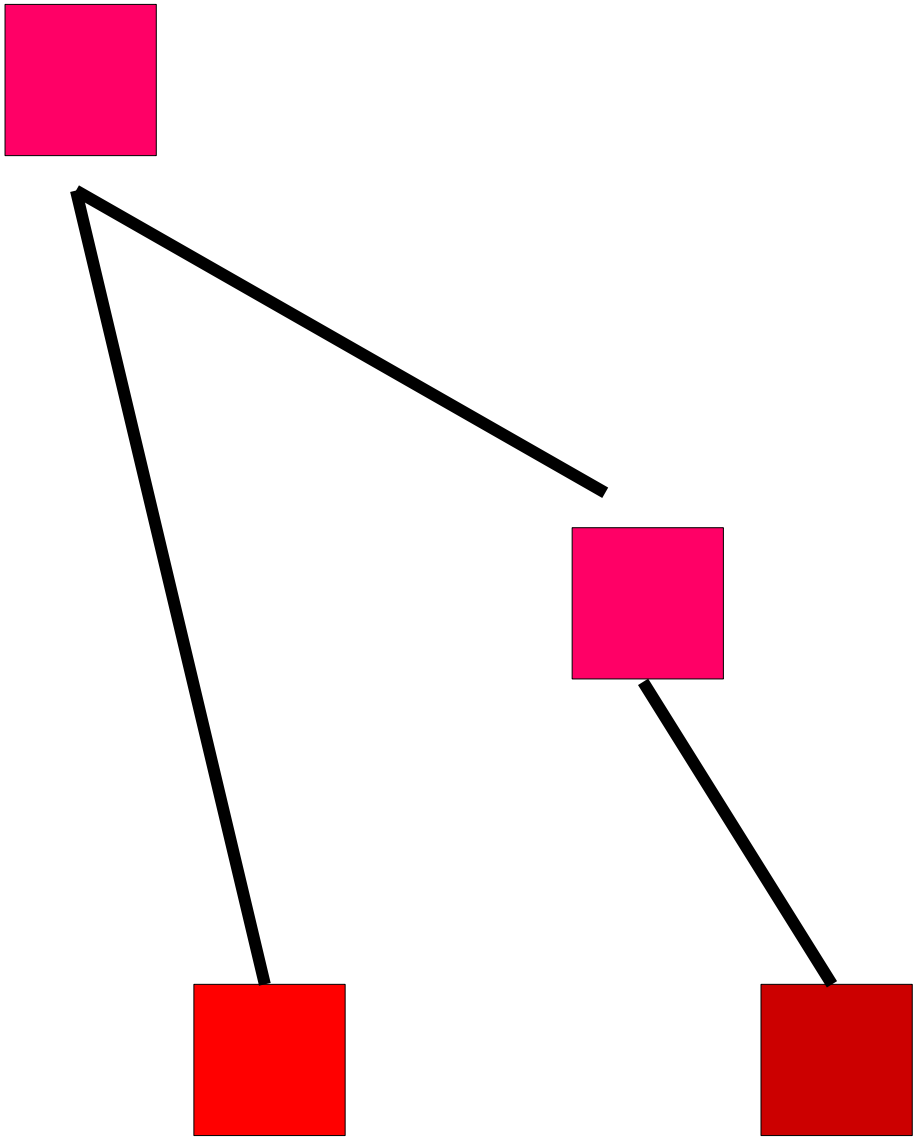



Order Stream
Payment Stream
Notification Stream

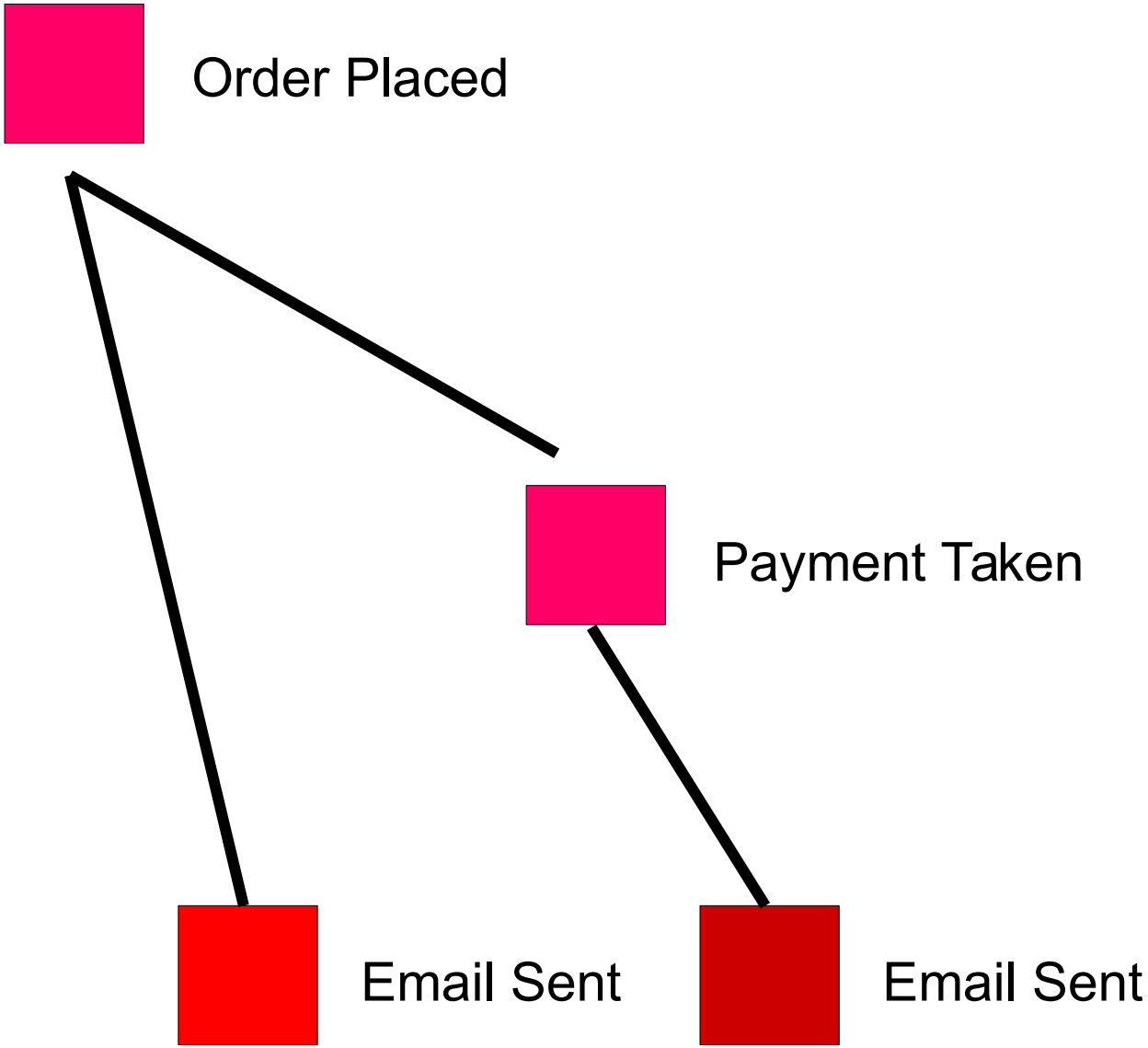

Order Stream
Payment Stream
Notification Stream


Order Stream
Payment Stream
Notification Stream

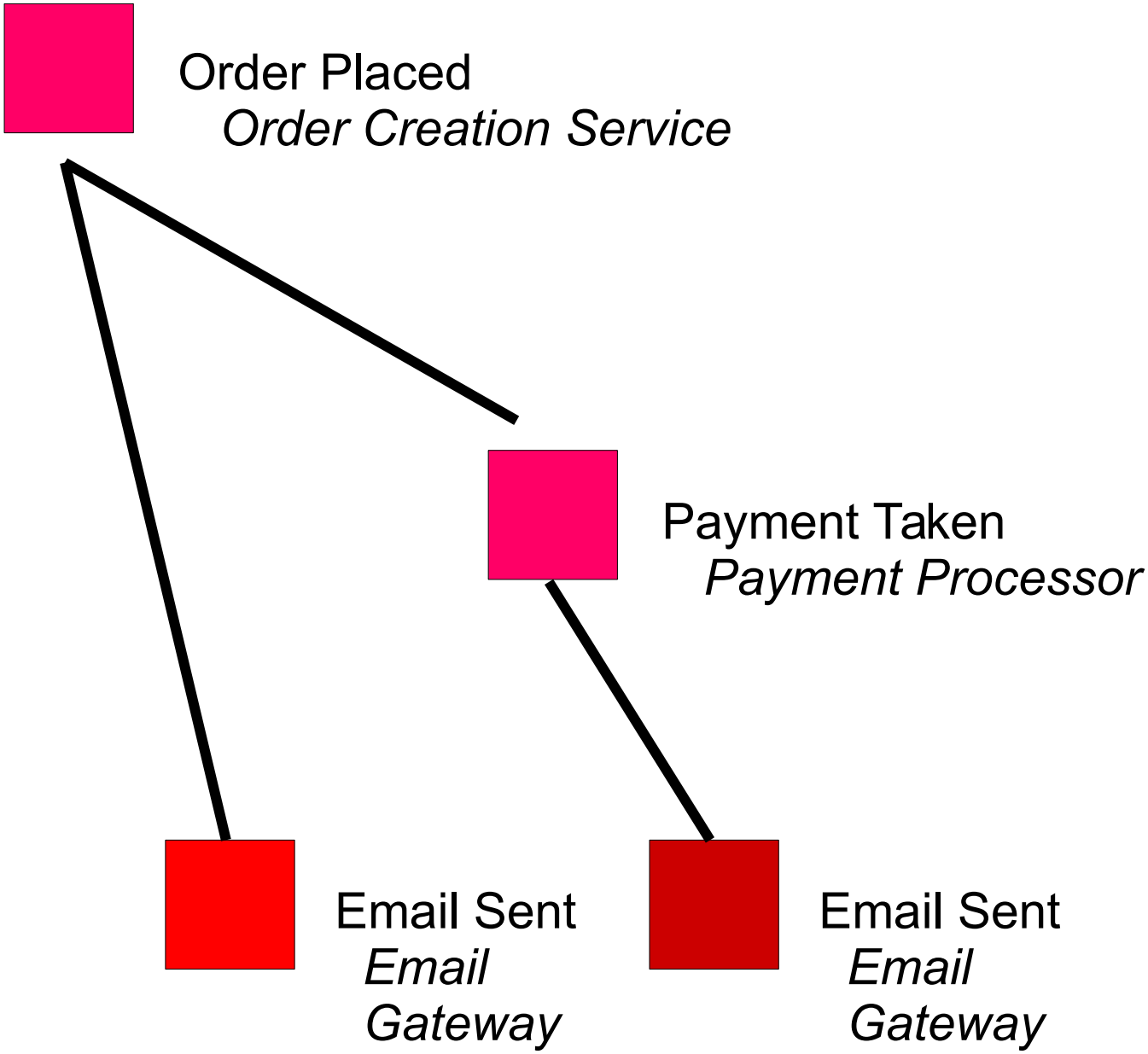

Order Stream
Payment Stream
Notification Stream



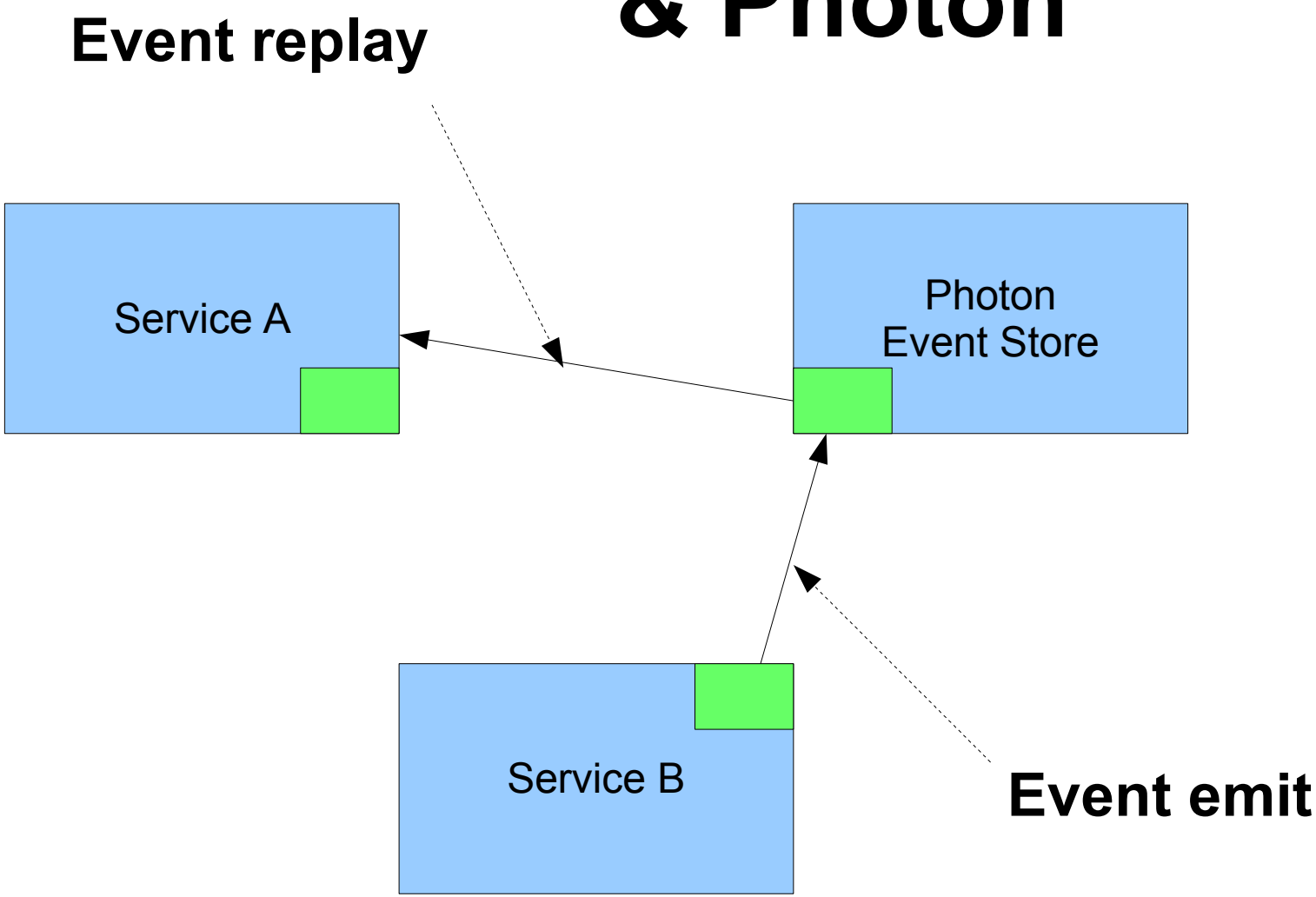
A Business Process



Dependencies



Event Protocols & Photon



Demo

3 – Photon/ Events

Newton

Application framework for Domain Driven Design

Muon Event Protocols

+

Photon

+

Language framework (currently Java)

Newton

Application framework for Domain Driven Design

Materialising View from Event Streams

Complex logic using Aggregate Roots

State mutation using Commands

Long running business process using Sagas/ Process Managers

Newton

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Demo

4 – Views in Newton

Demo

5 – Aggregate Roots

Demo

6 – Process Managers

Future plans

- Aeron low latency transport *[likely commercial]*
- Kafka transport
- Muon-Rust/ 'libMuon'. Leading to ...
  - Go, Python, Ruby ...
- Polyglot Newton
- CLI improvements
- Cloud Foundry integration *[likely commercial]*

Next steps

- Run a spike
  - Decompose within a single process?
  - eg JNDI Discovery/ current InMemTransport
- Tell me what you'd like to see
- I'm available to build/ advise
- Commercial options under development