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APACHE KAFKA EVENT STREAMING PLATFORM

MARCH, 2019 / BOSTON, MA

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APACHE kafka

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RAFFLE, YEAH 🚀

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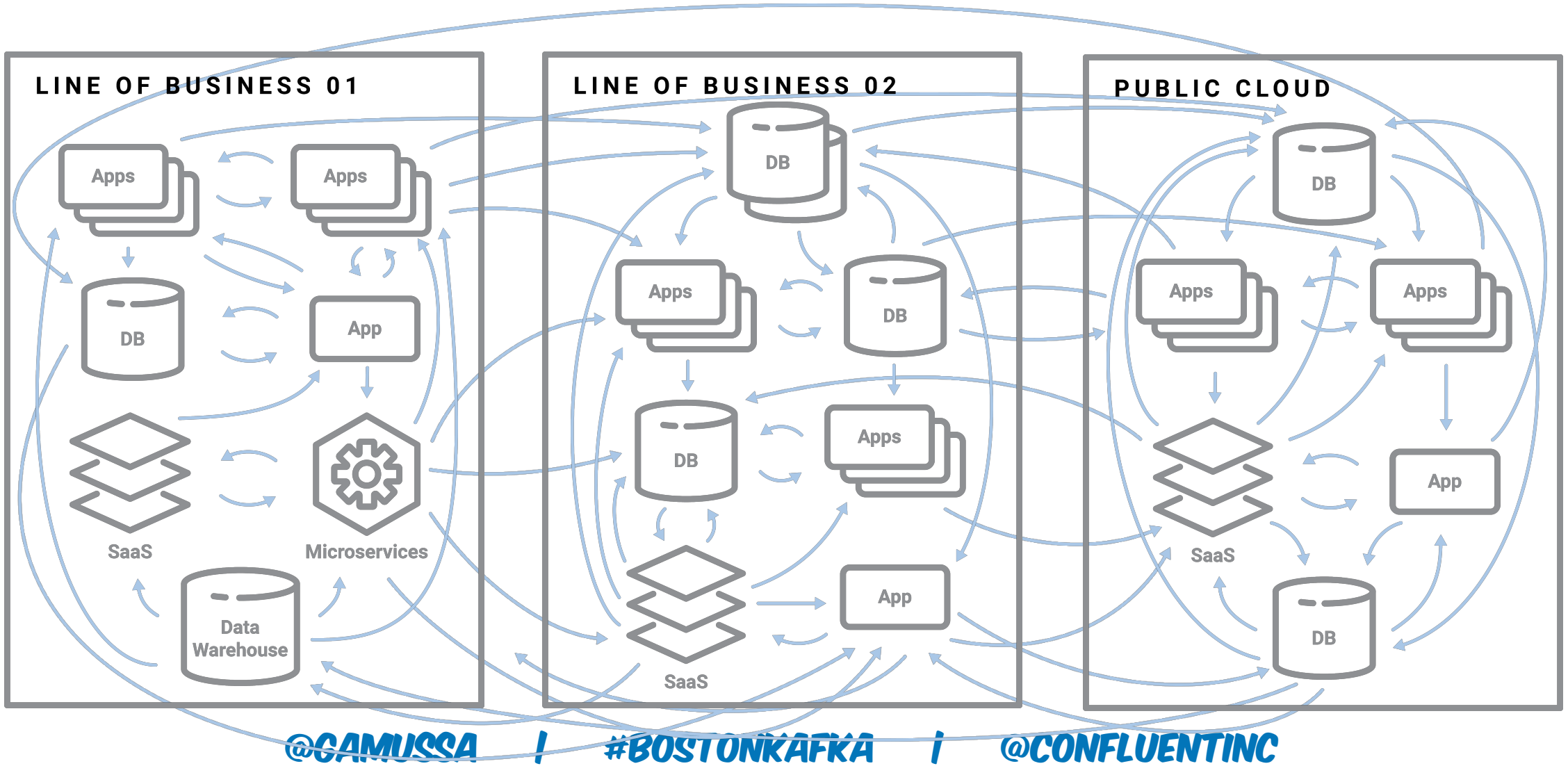
- With #BostonKafka

A COMPANY IS BUILD ON DATA FLOWS BUT ALL WE HAVE IS DATA STORES

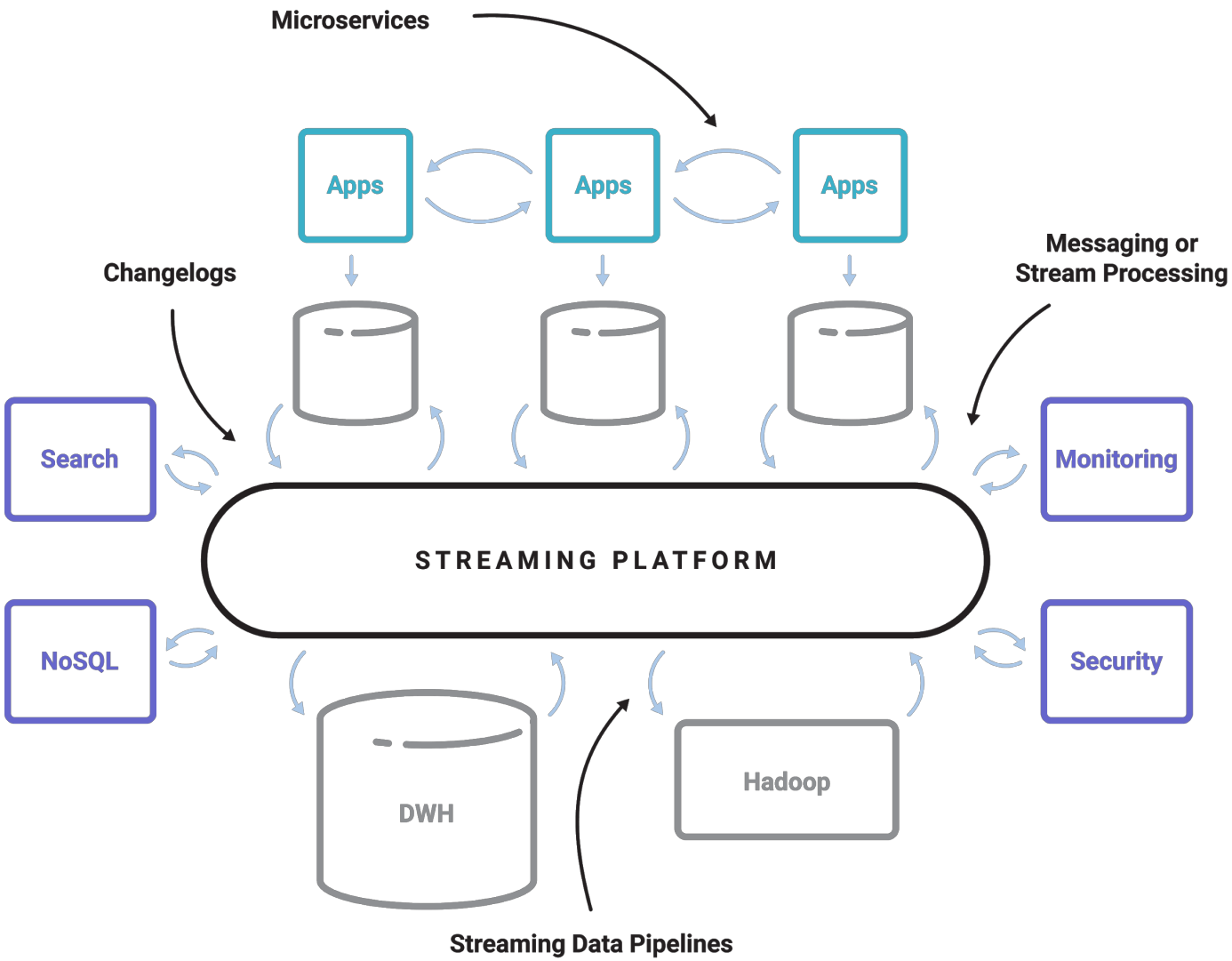
PRE-STREAMING



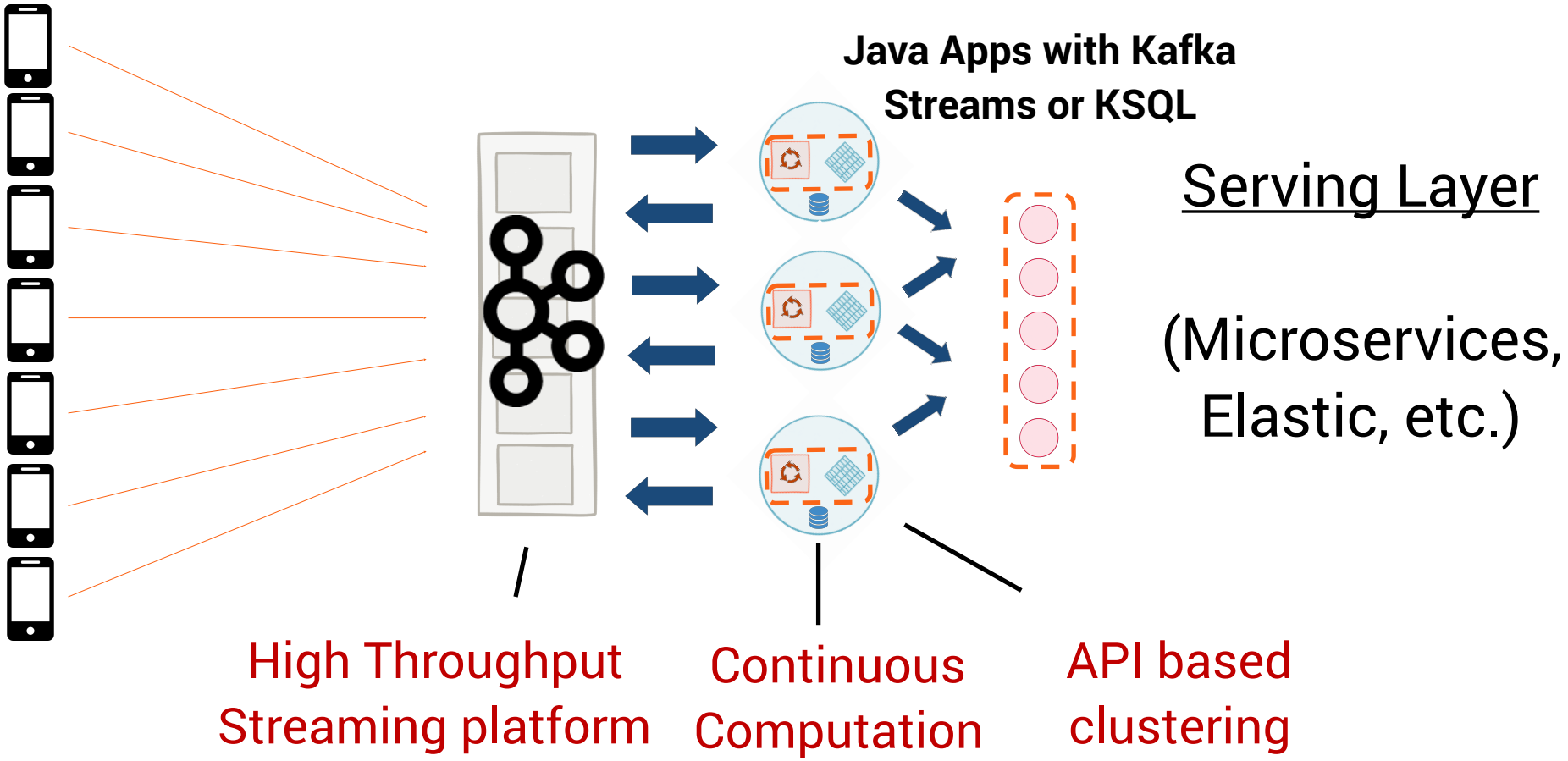
HIVE
PE PE SILVIA
hadoop
Map Reduce
APACHE
Spark
STORM
kafka

NEW WORLD
STREAMING FIRST

- DB/DWH + Many more distributed data systems
- Monolith -> Microservices
- Batch -> Real-time

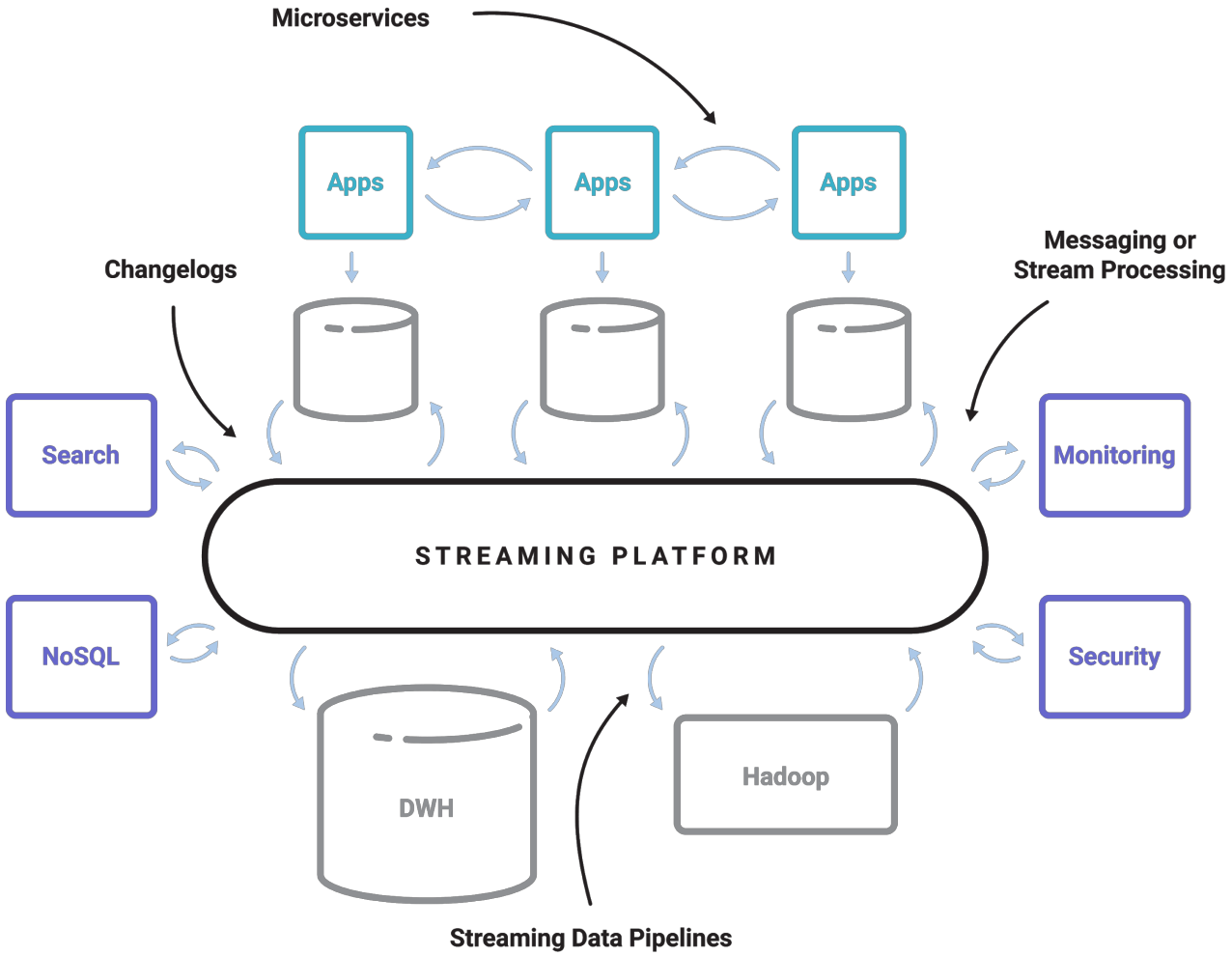


ORIGINS IN STREAM PROCESSING



- STORAGE
- PUB / SUB
- PROCESSING

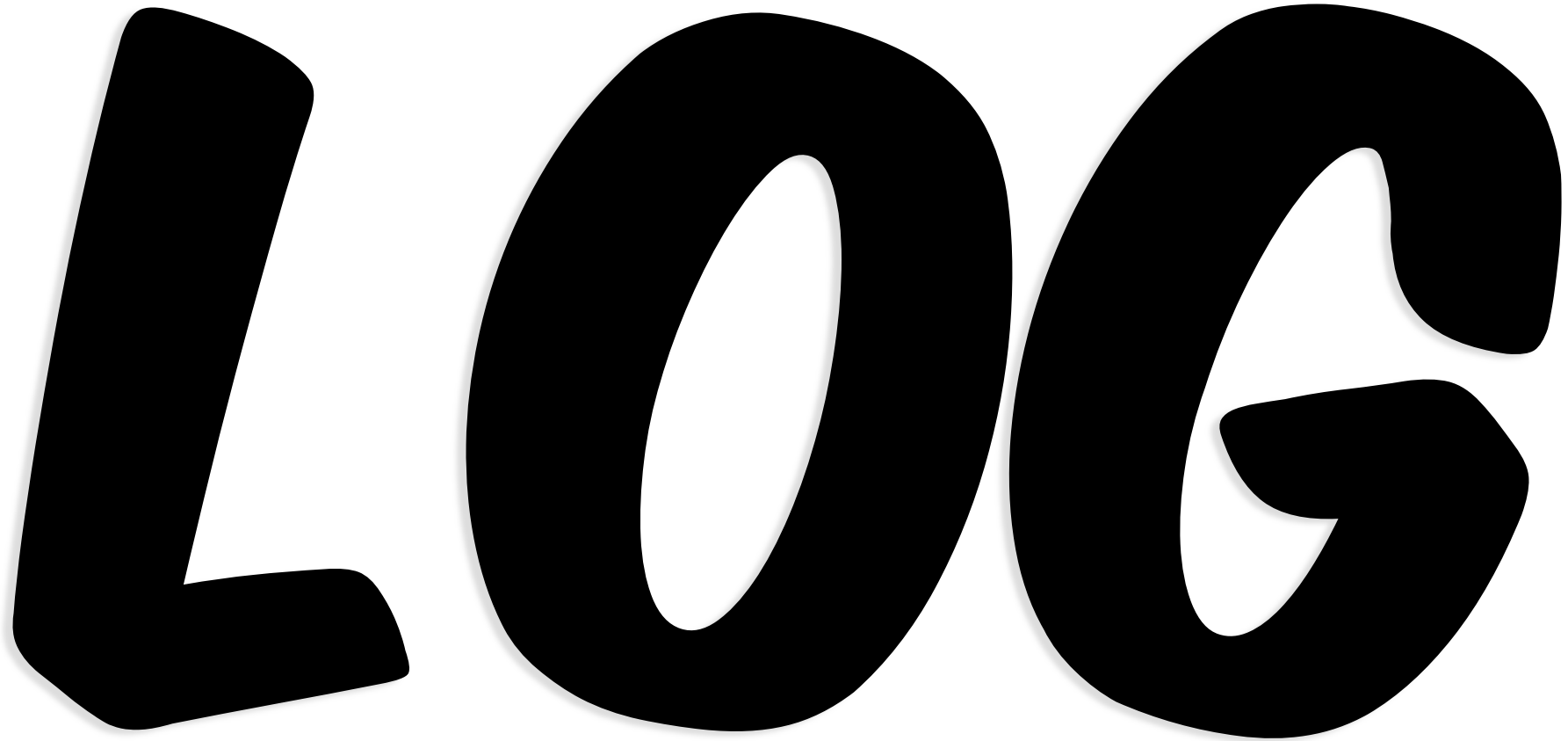
STREAMING PLATFORM



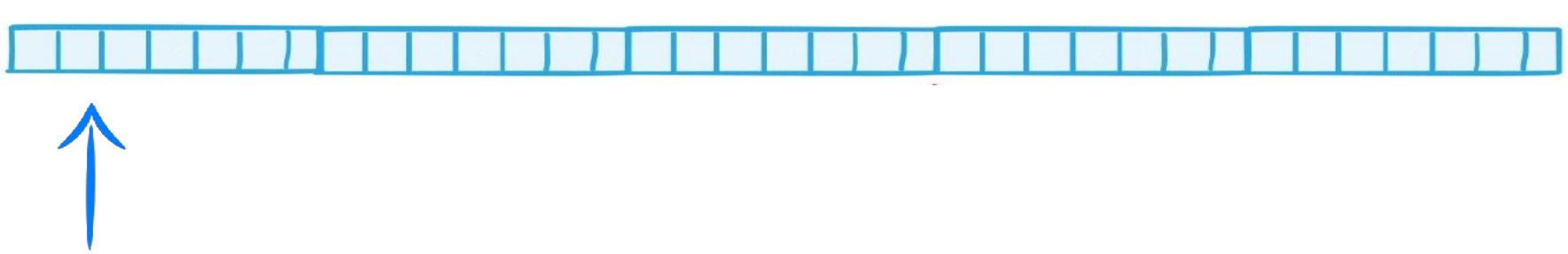
STORAGE

CORE ABSTRACTION

- DB - table
- Hadoop - file
- Kafka - ?


LOG

THE LOG IS A SIMPLE IDEA

Old  New

Messages are added at the end of the log

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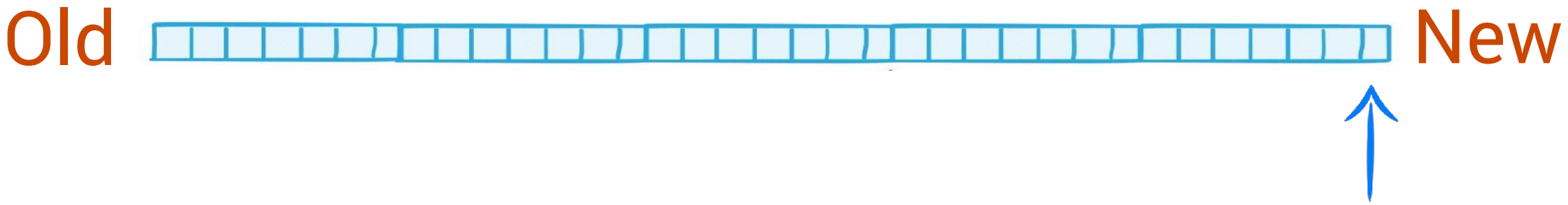
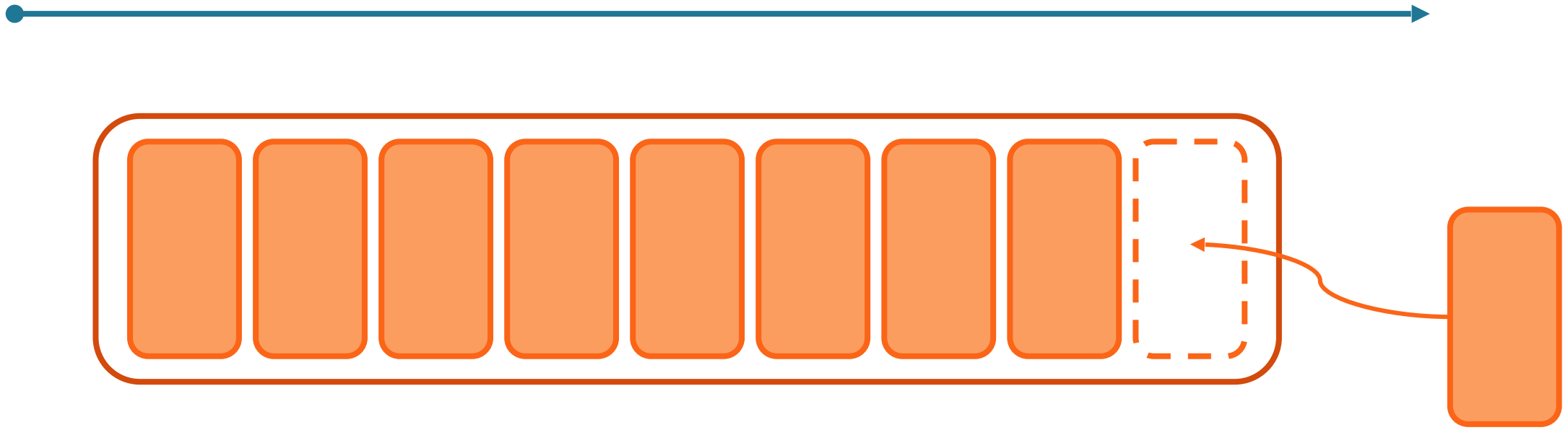
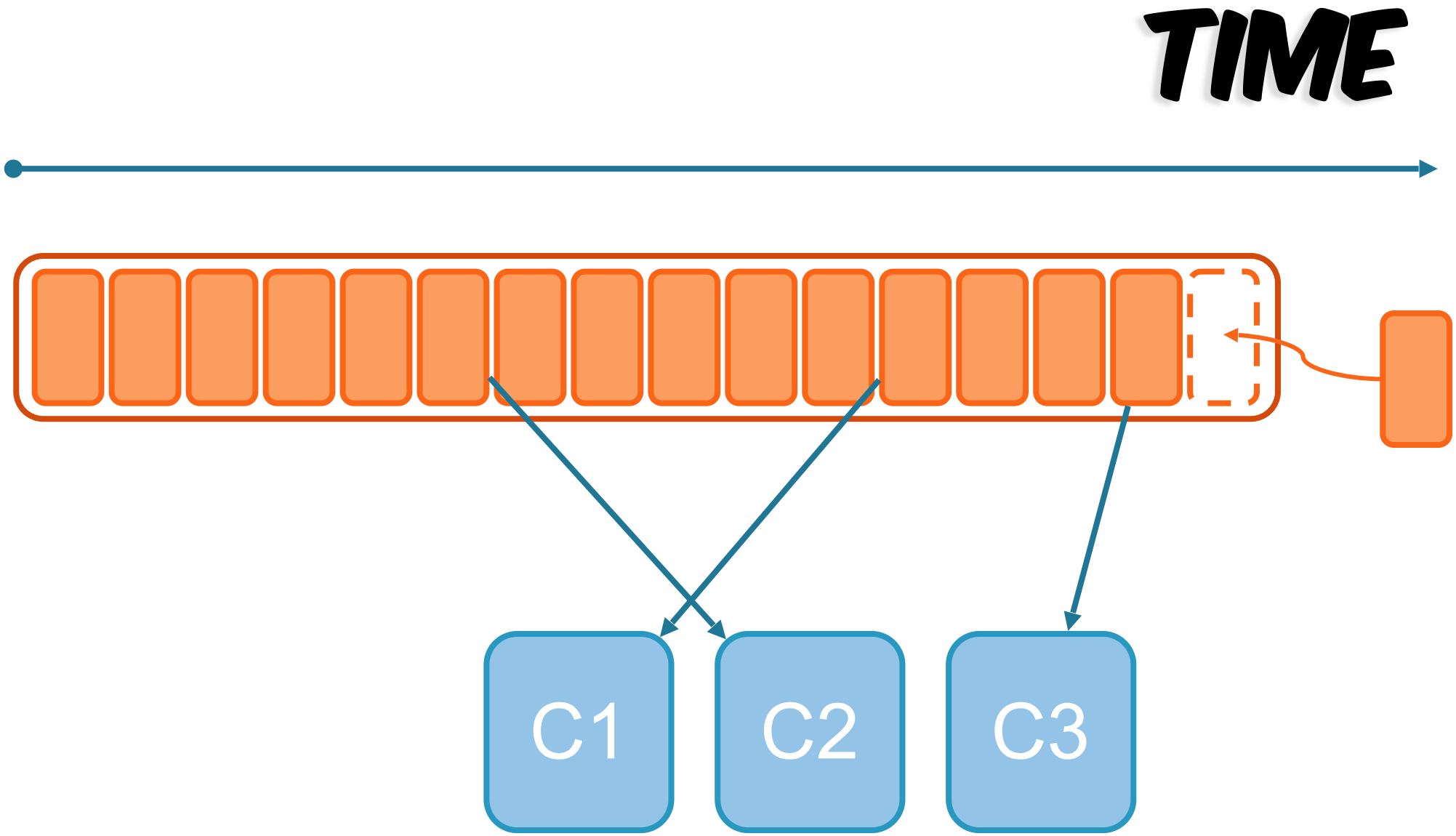


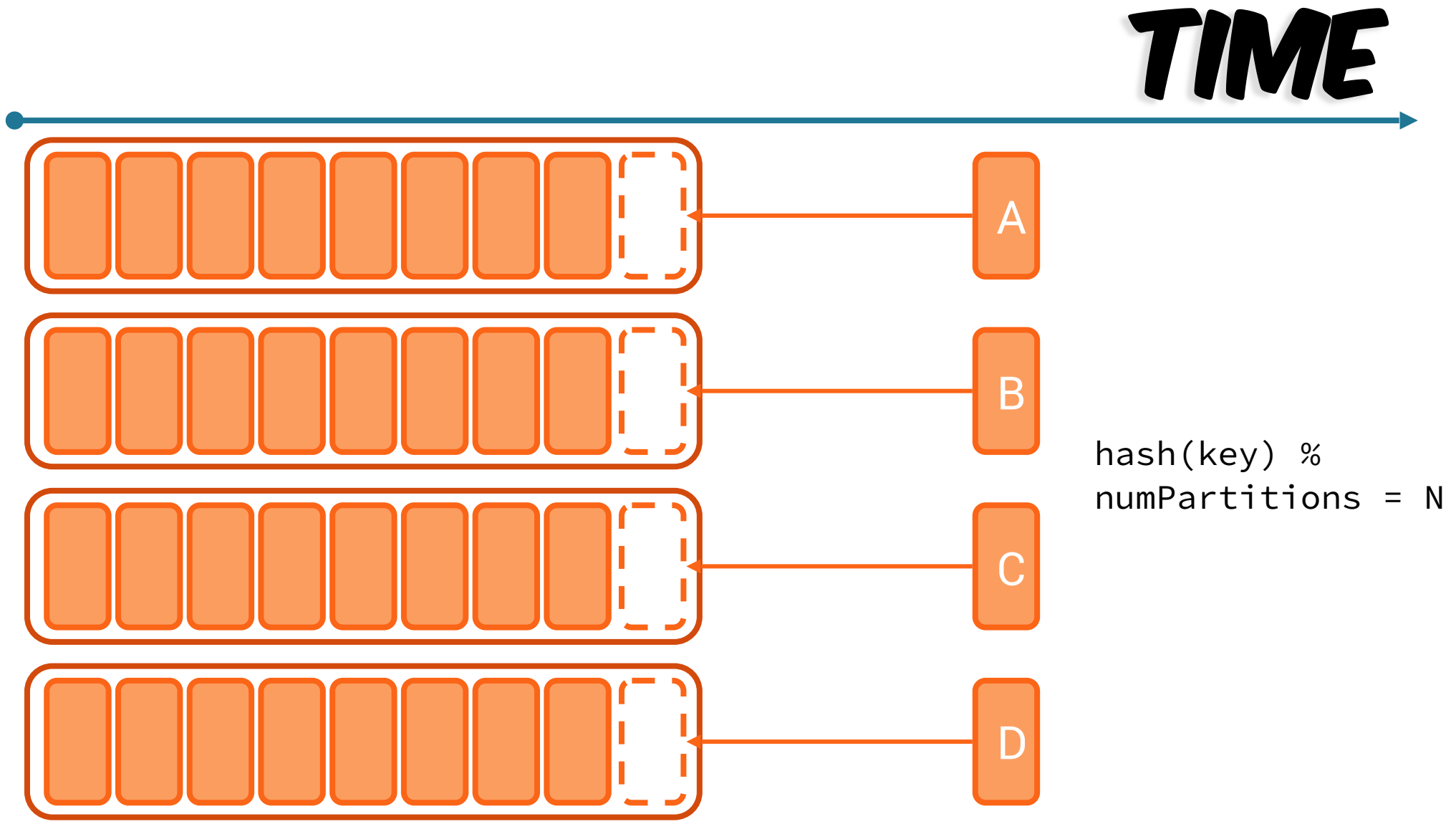
Messages are added at the end of the log

PUB / SUB

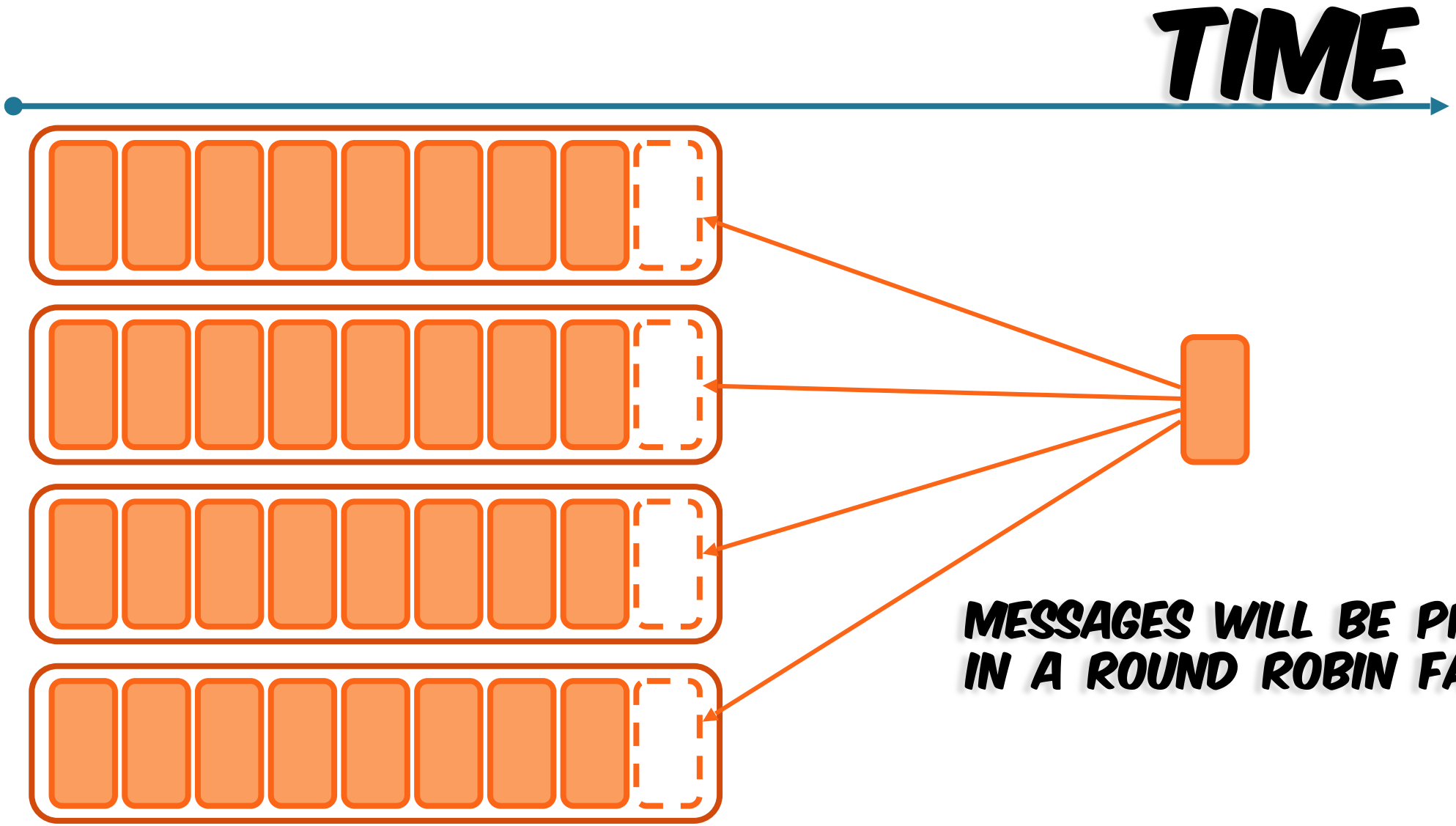
TIME




TIME
C1
C2
C3

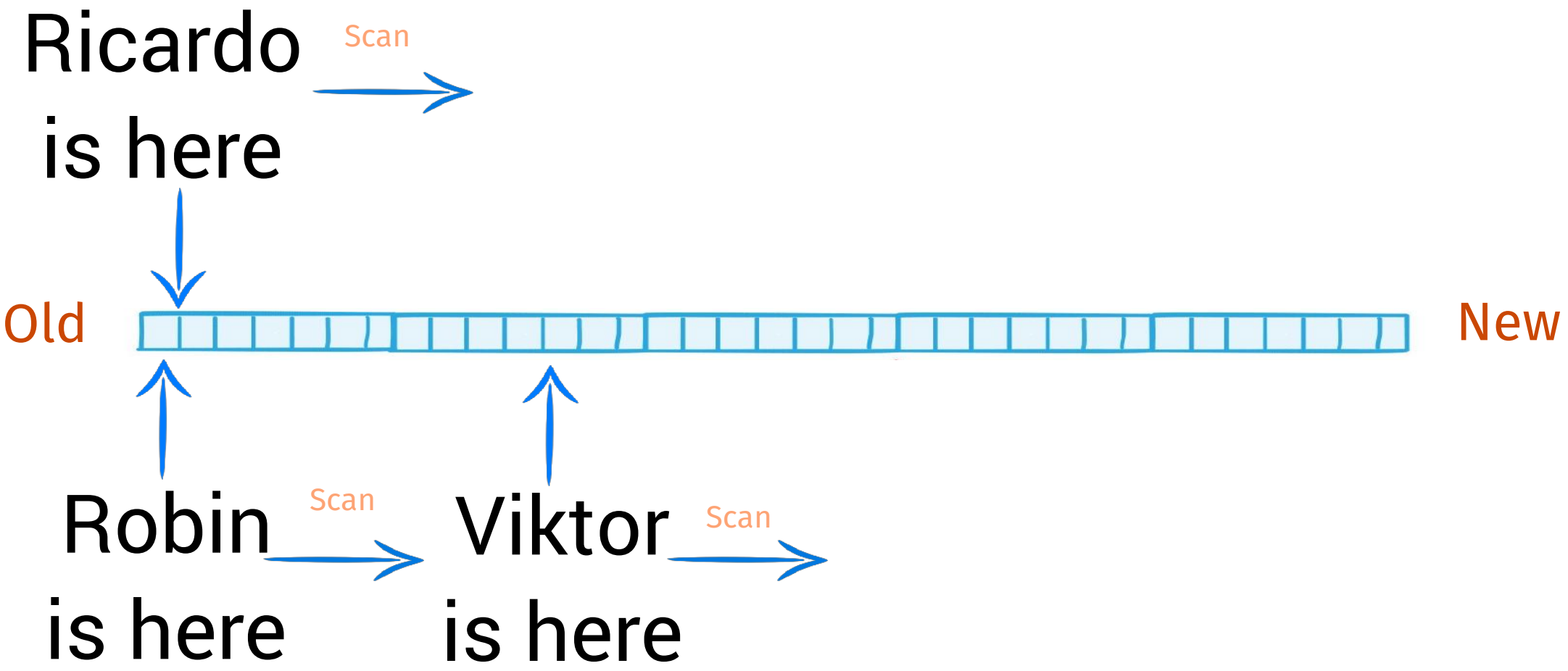



```
hash(key) %
numPartitions = N
```



MESSAGES WILL BE PRODUCED IN A ROUND ROBIN FASHION

CONSUMERS HAVE A POSITION ALL OF THEIR OWN



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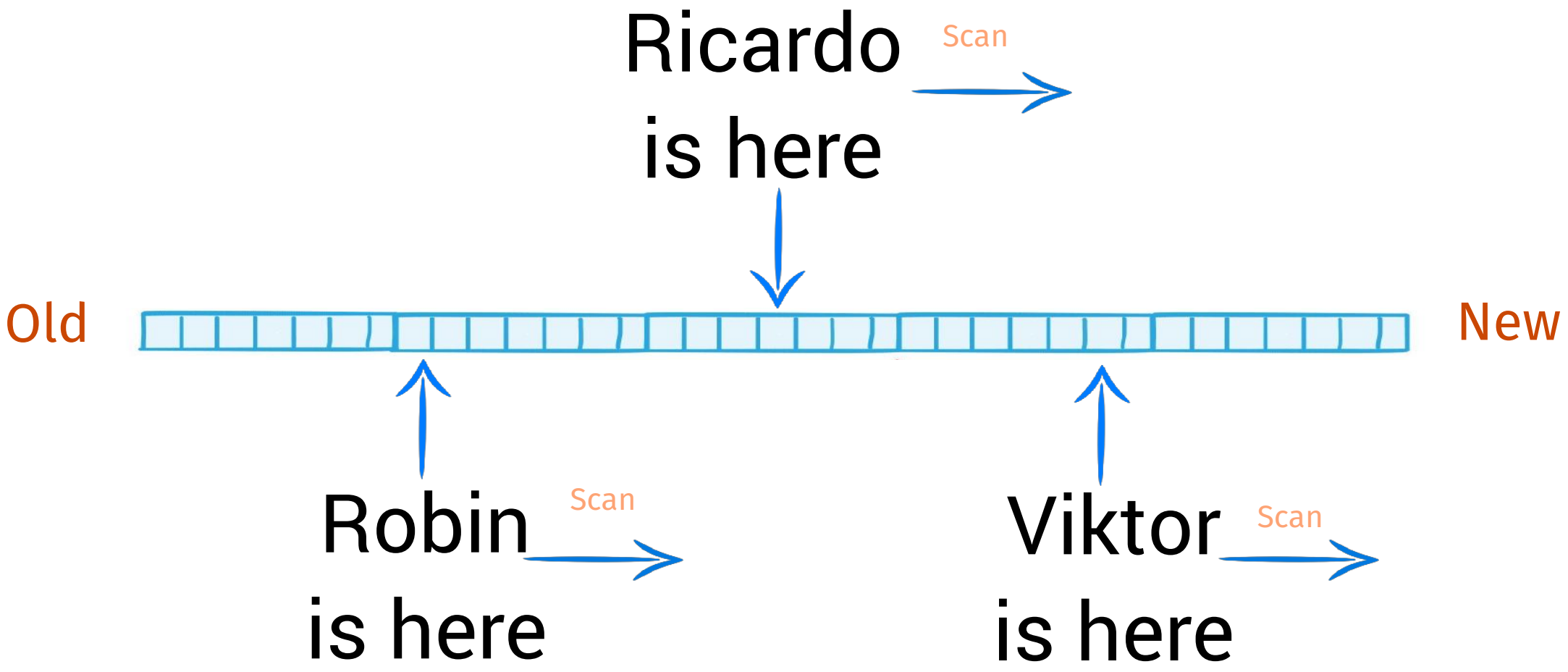

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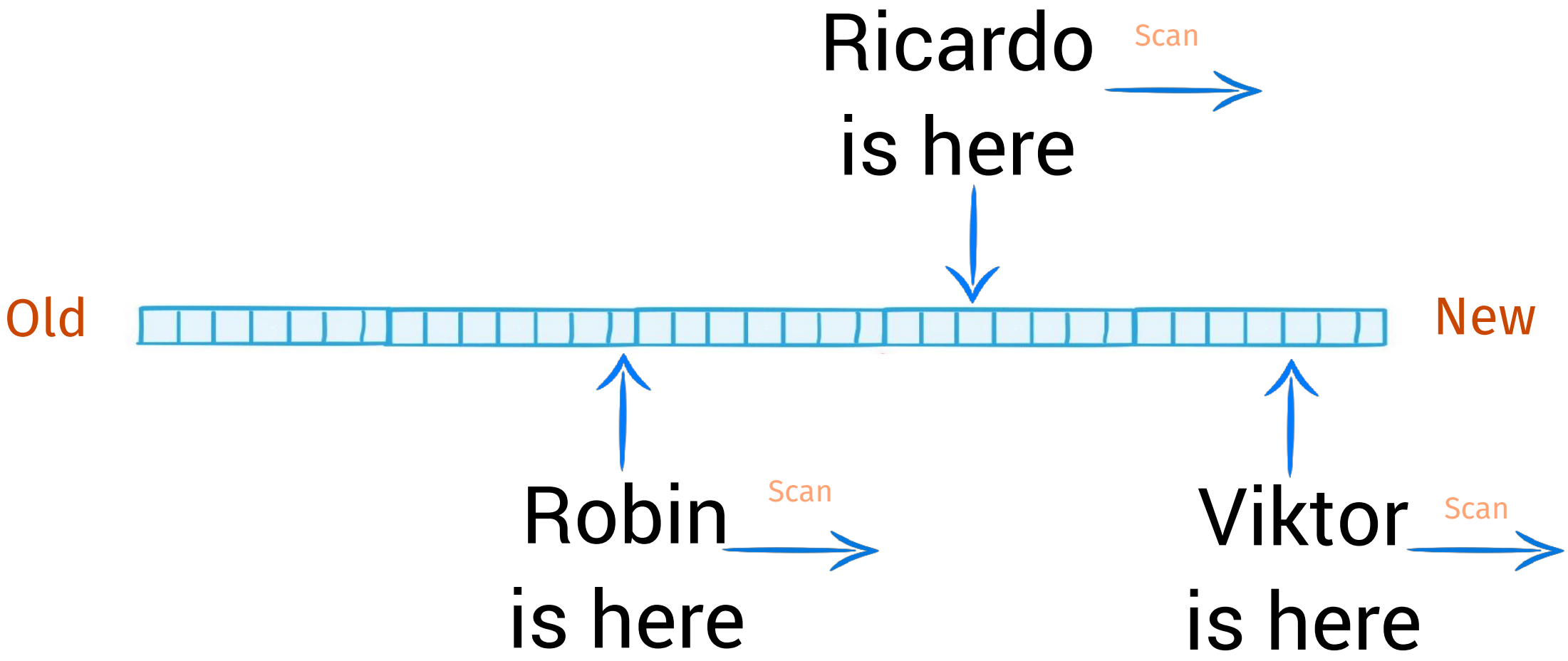
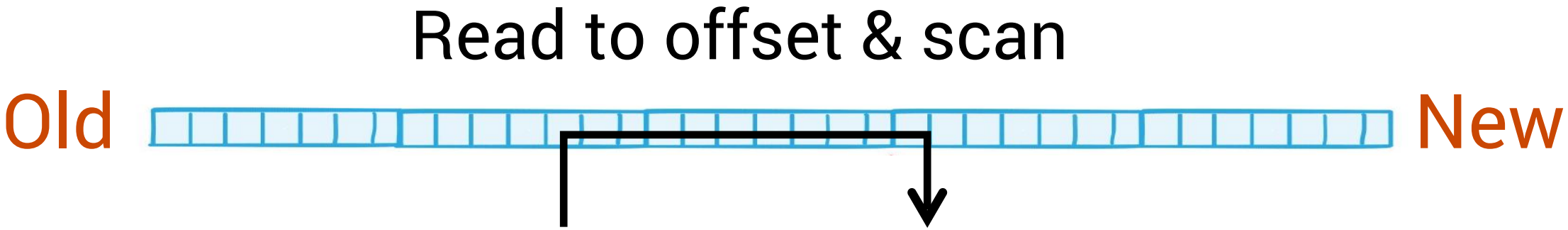
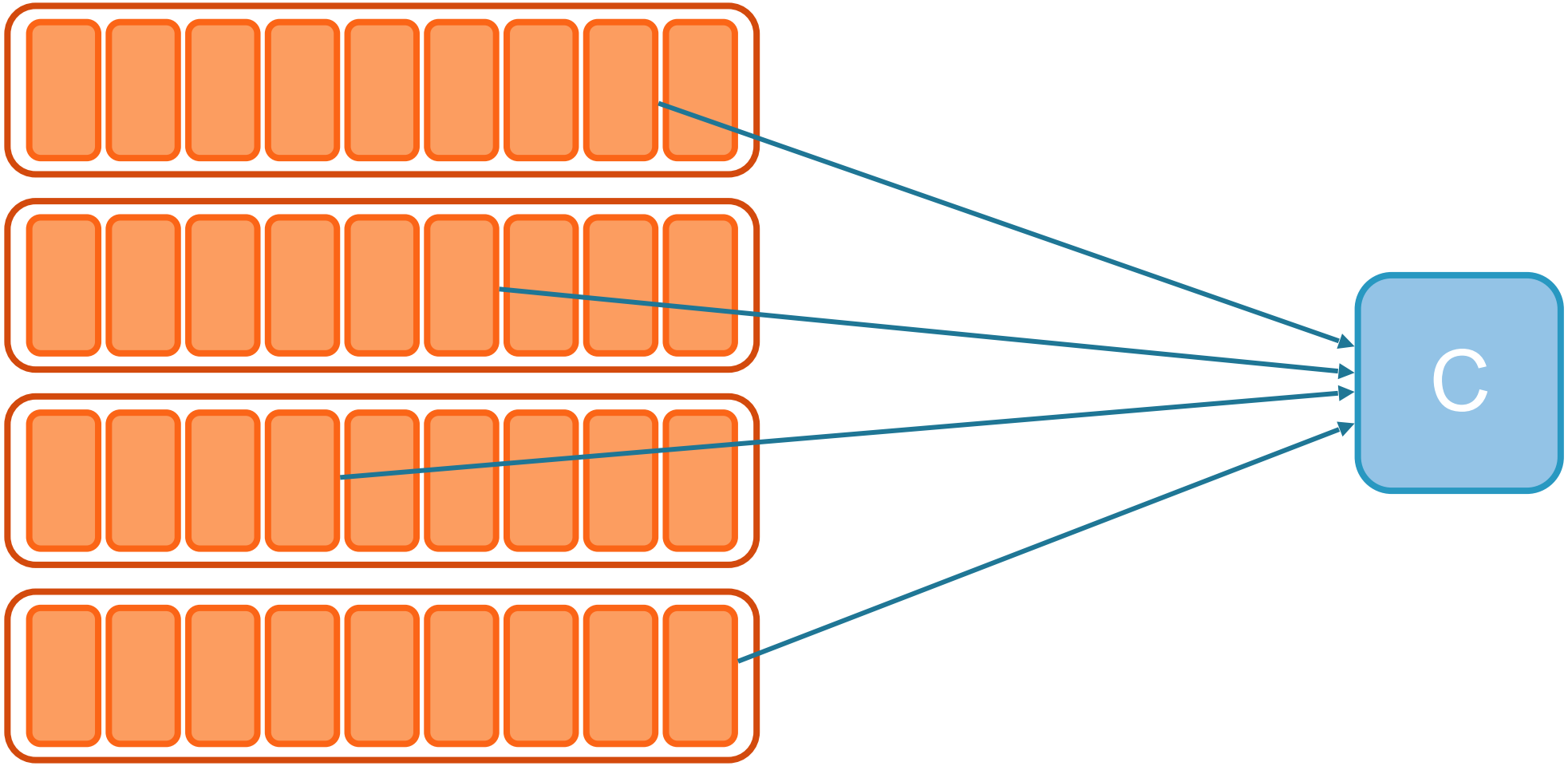
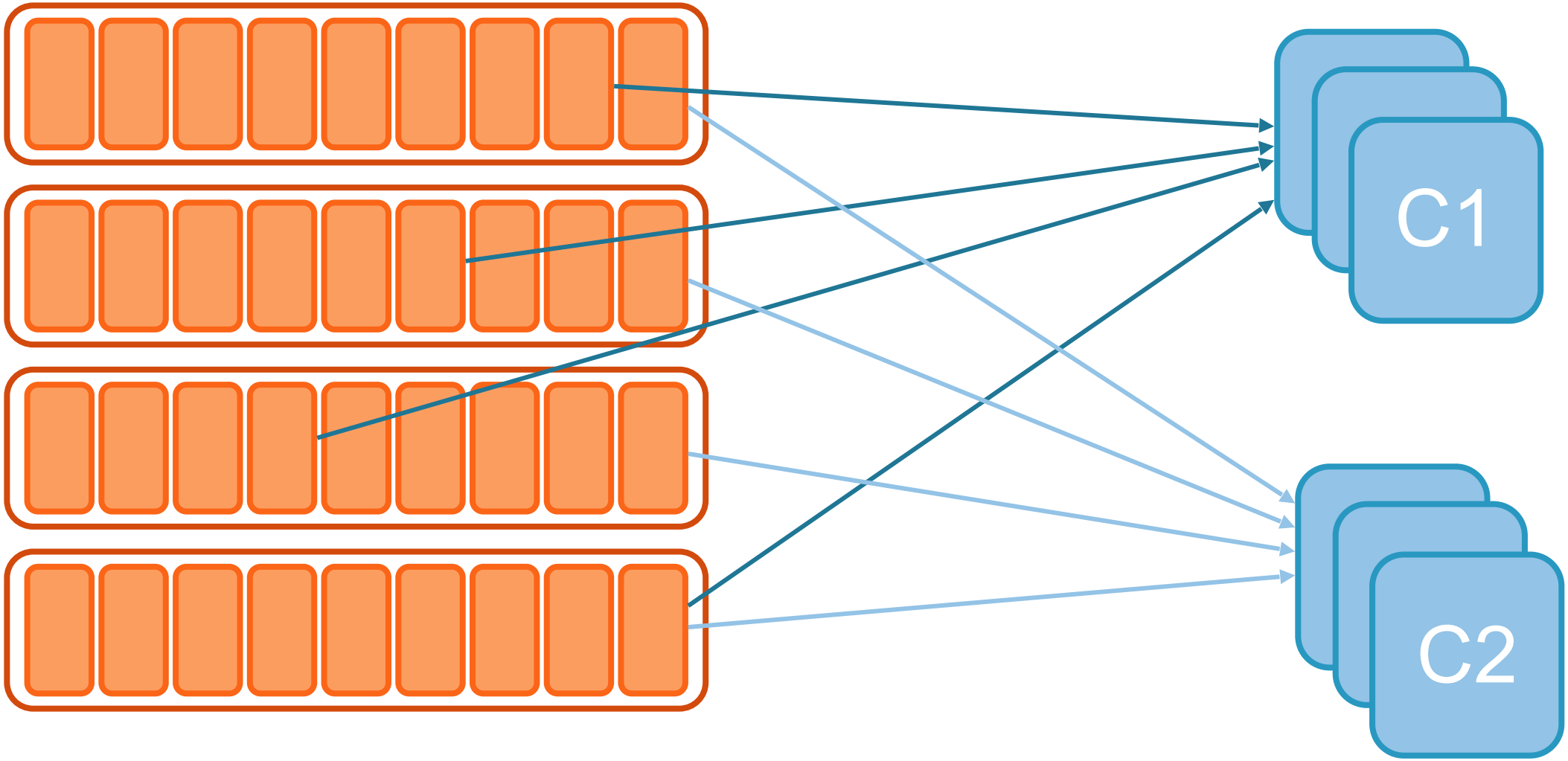


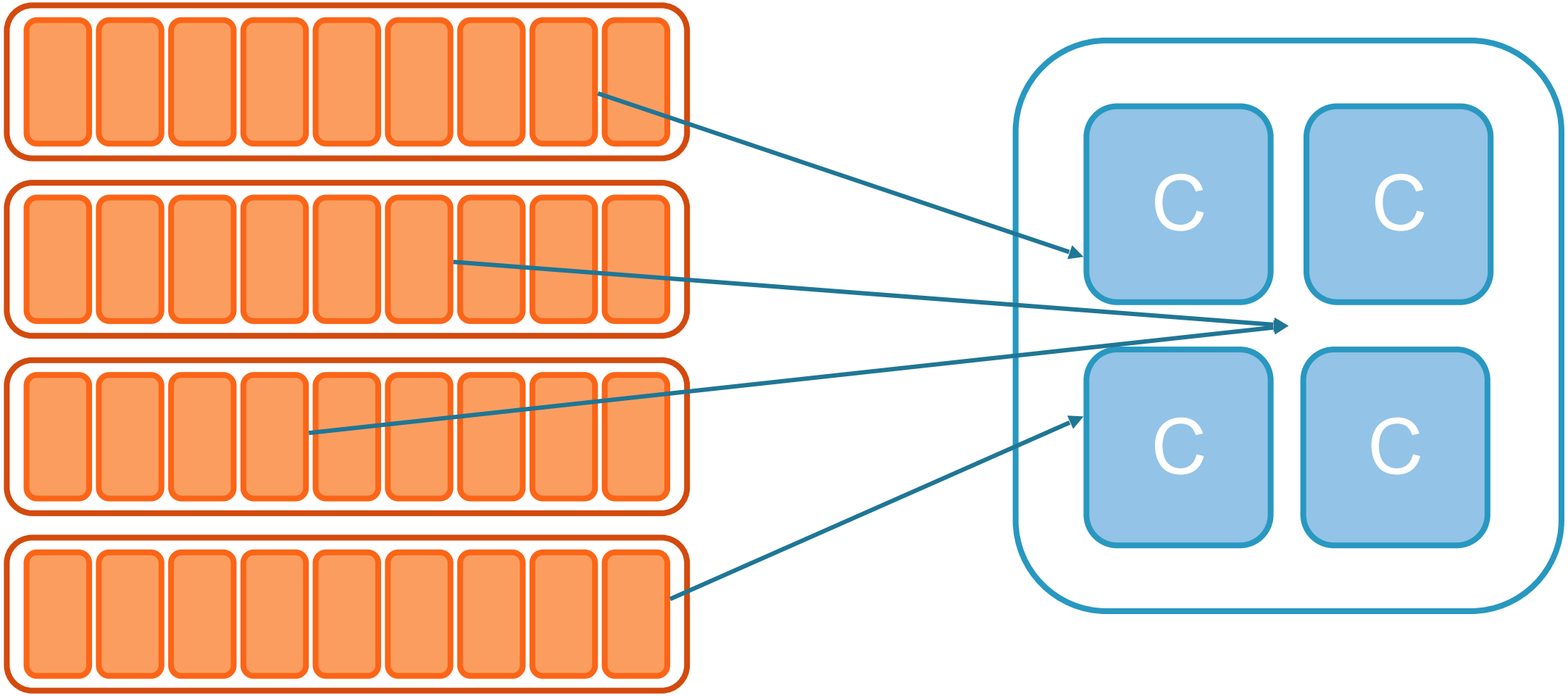
ONLY SEQUENTIAL ACCESS



CONSUMERS
CONSUMER GROUP COORDINATOR
CONSUMER GROUP


C


C1
C2


C
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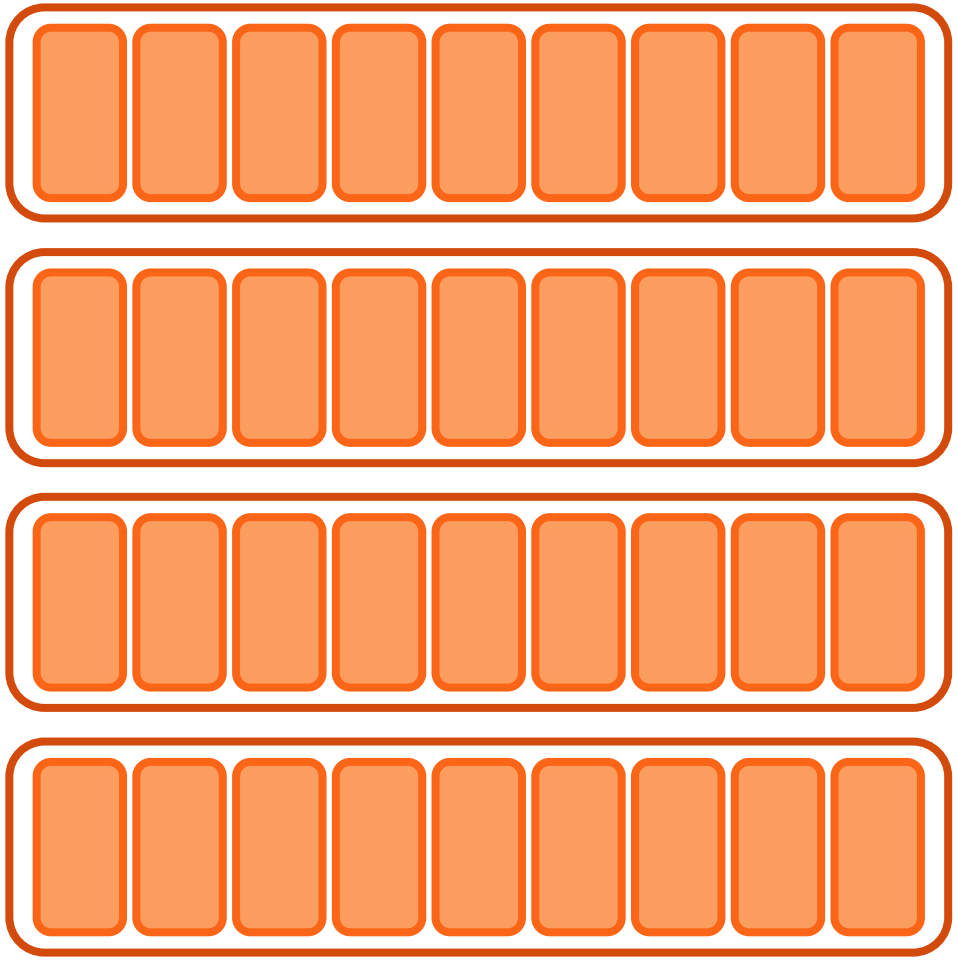
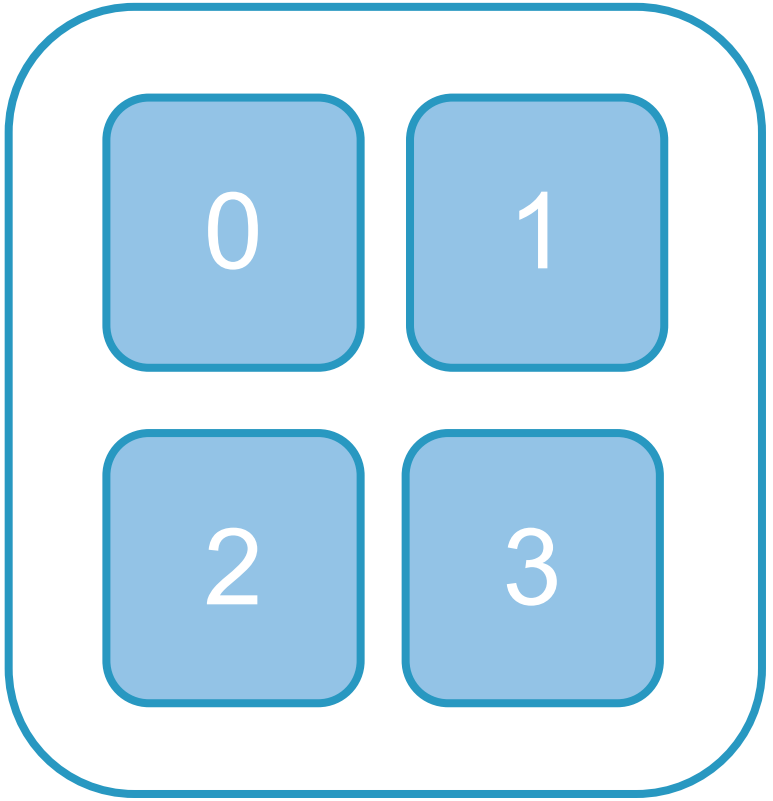
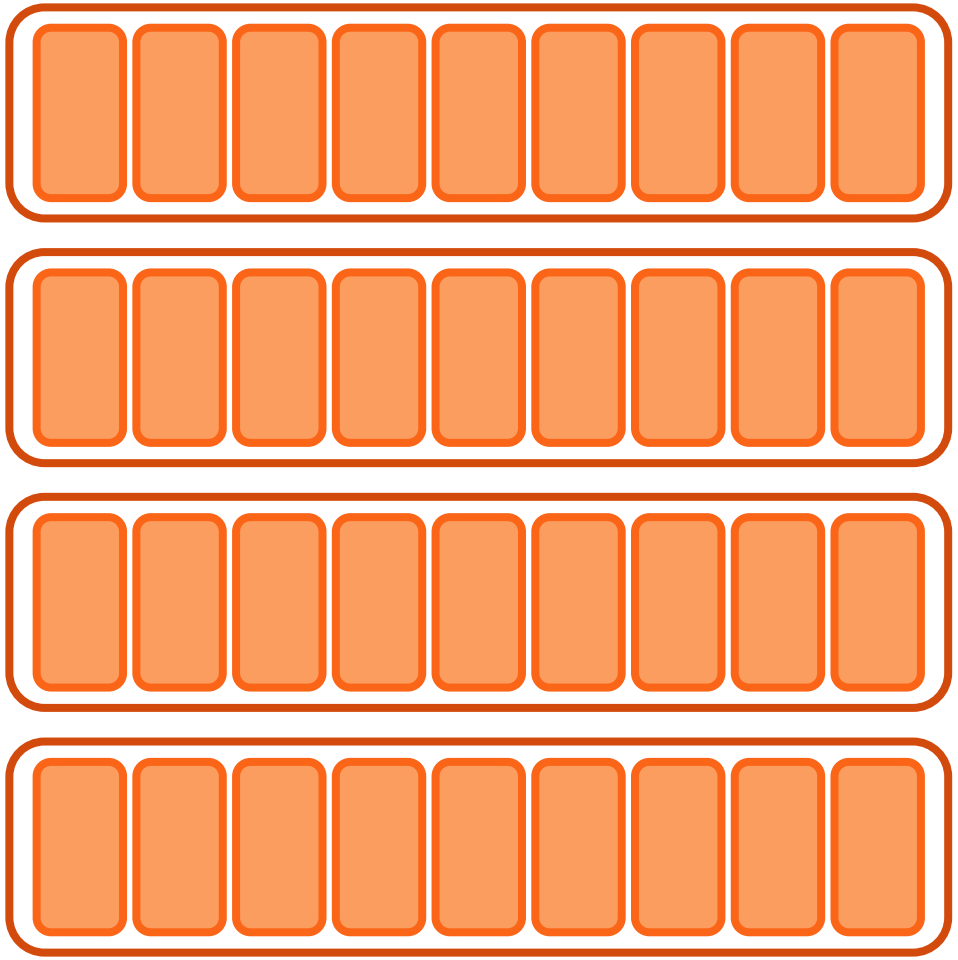
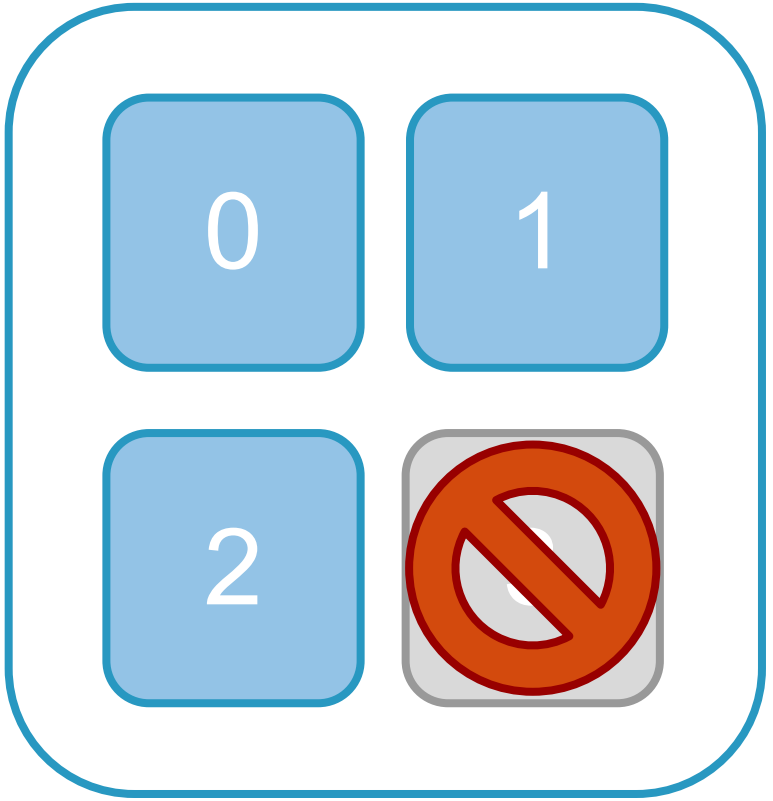
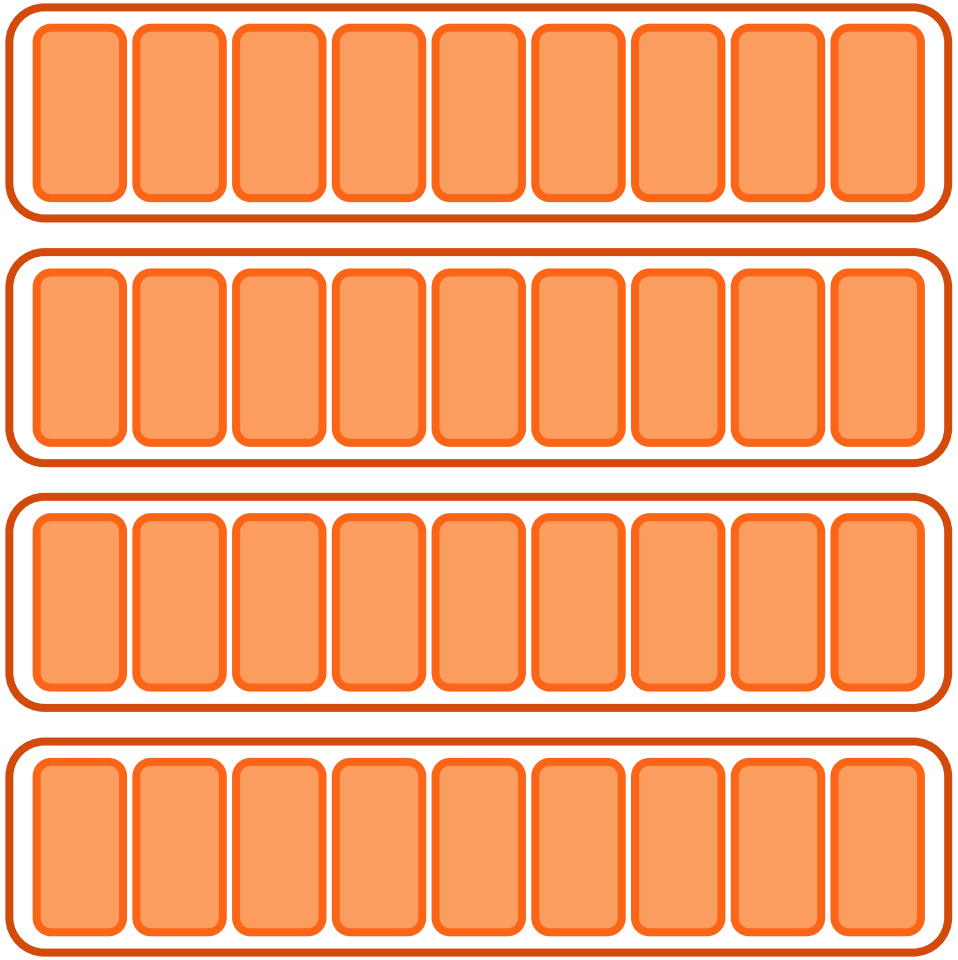
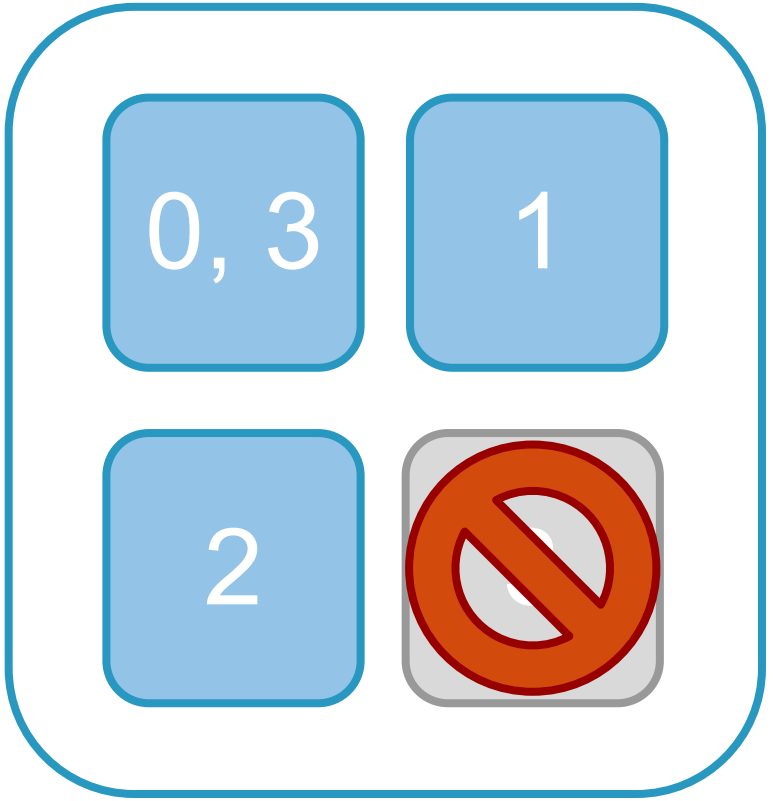



0
1
2
3



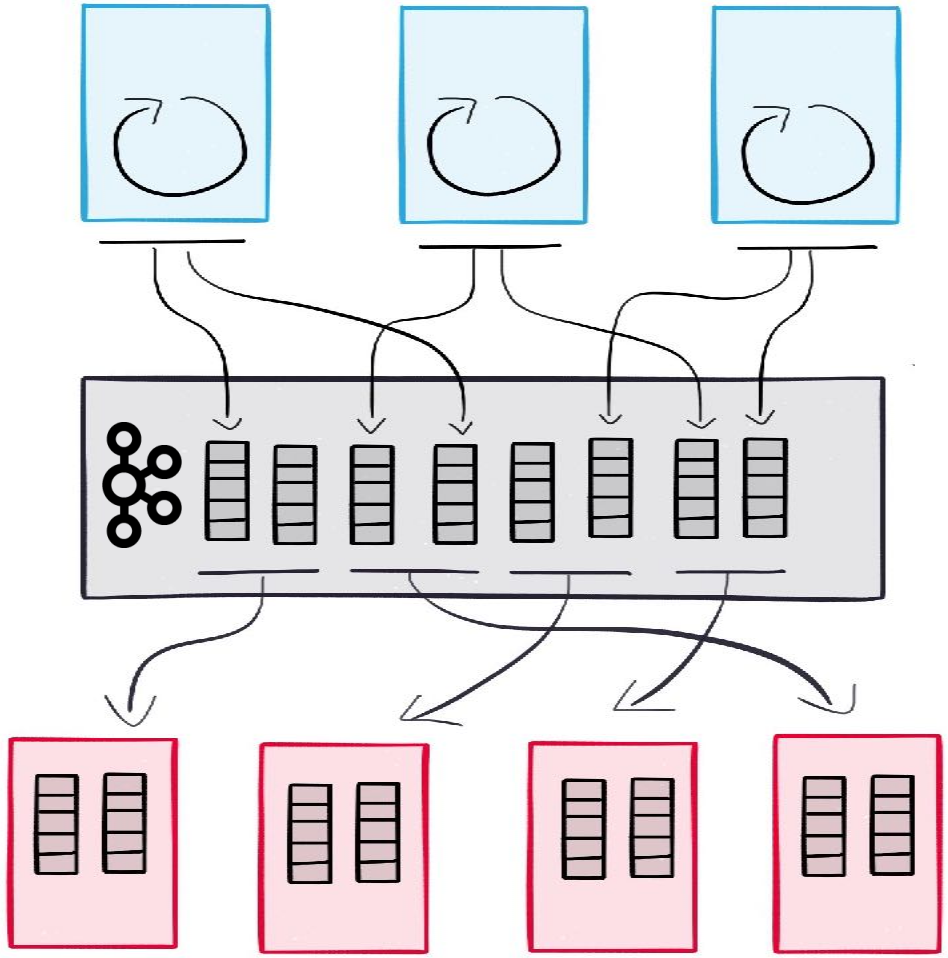

0
1
2




0, 3
1
2

LINEARLY SCALABLE ARCHITECTURE

Producers



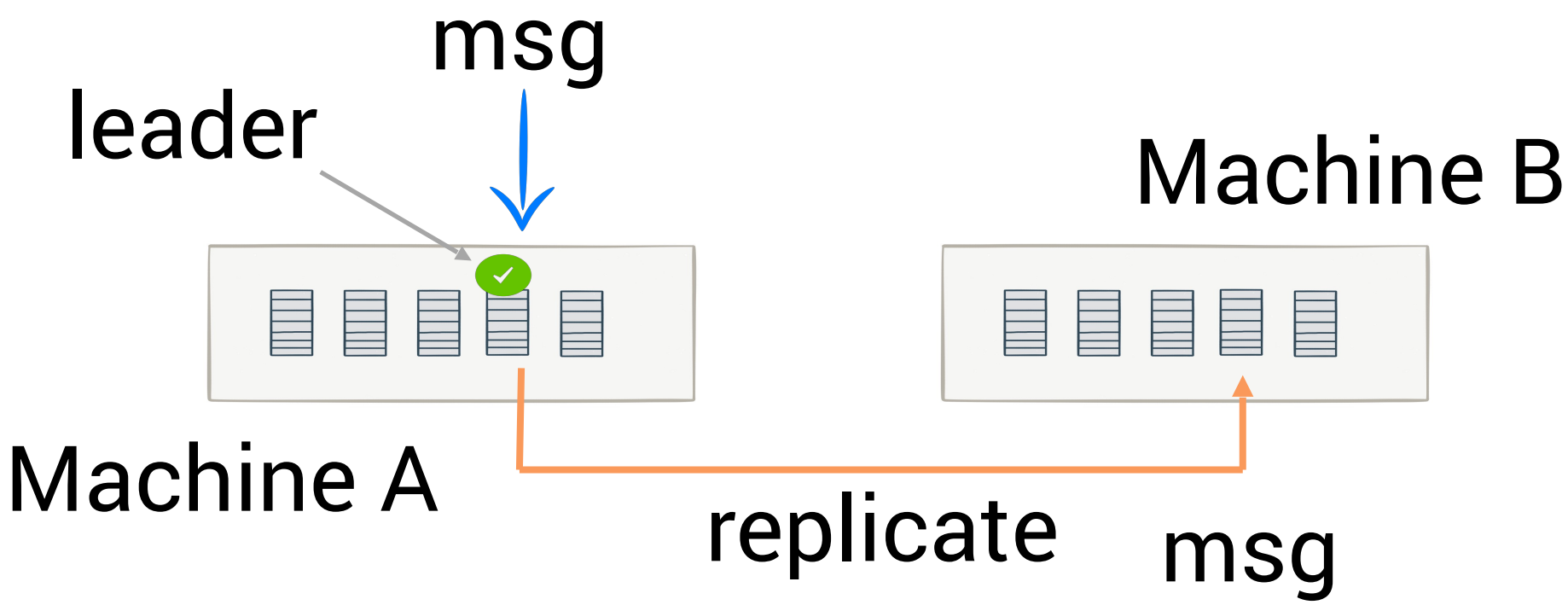
Consumers

Single topic:

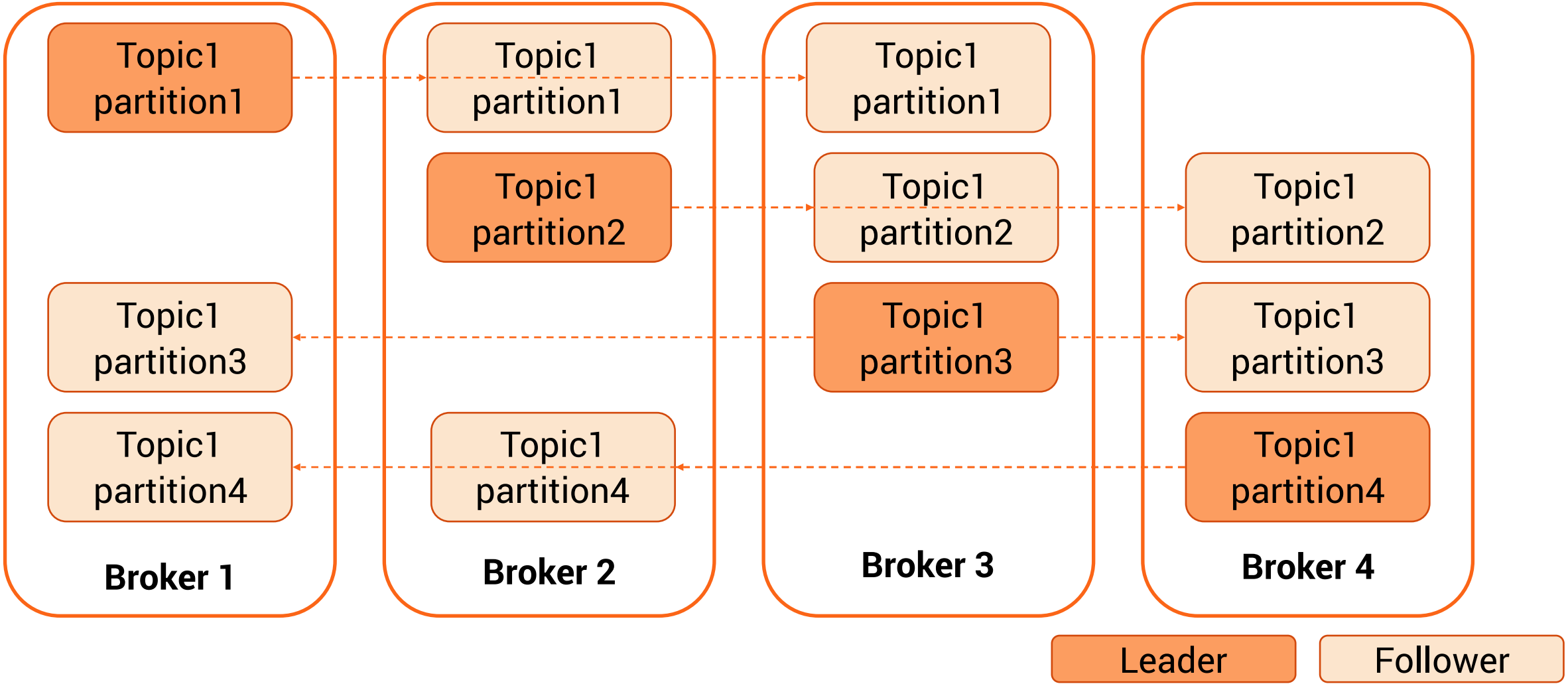
- Many producers machines
- Many consumer machines
- Many Broker machines

No Bottleneck!!

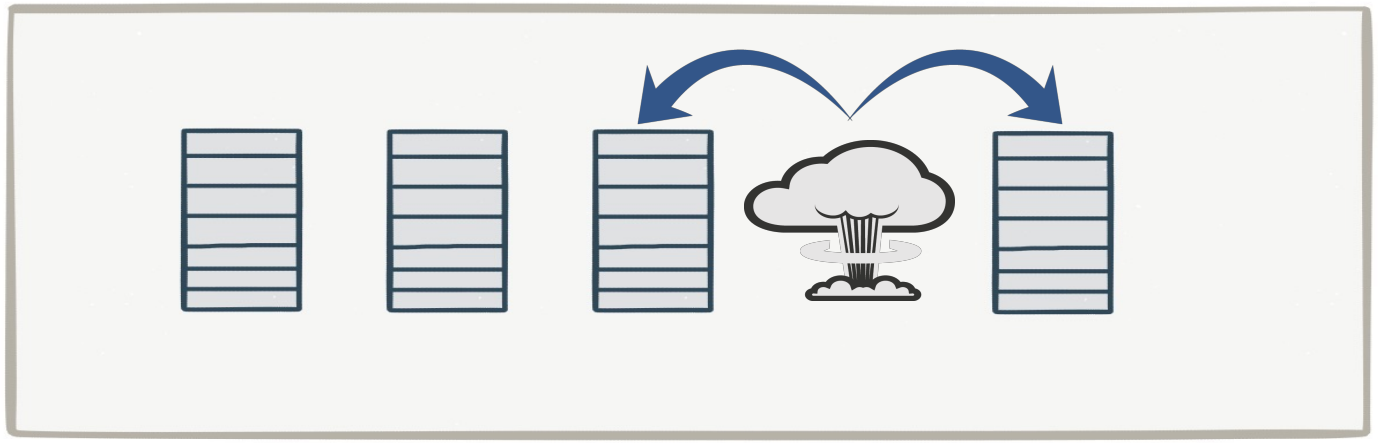
REPLICATE TO GET FAULT



PARTITION LEADERSHIP AND REPLICATION

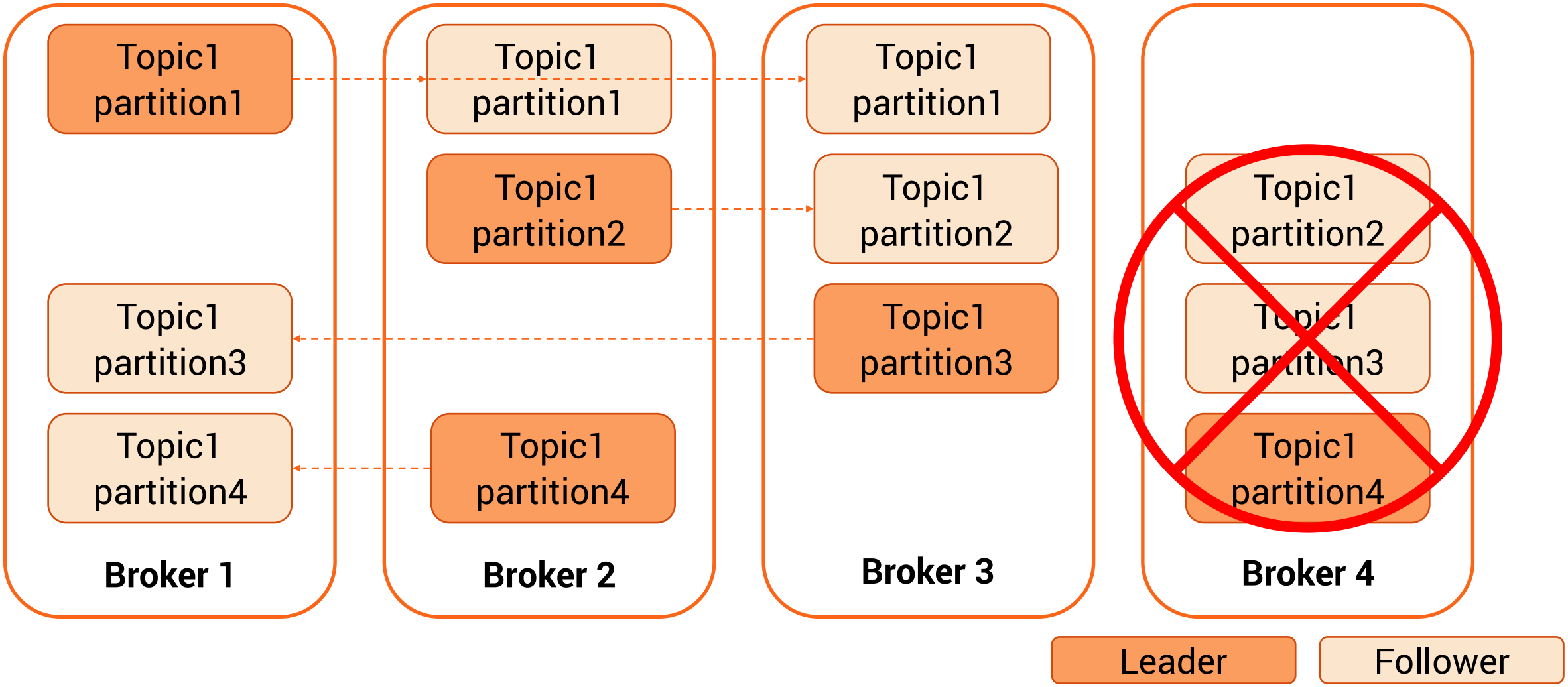


REPLICATION PROVIDES RESILIENCY



A replica takes over on machine failure

PARTITION LEADERSHIP AND REPLICATION - NODE FAILURE



THE LOG IS A TYPE OF DURABLE MESSAGING SYSTEM

Similar to a traditional messaging system (ActiveMQ, Rabbit etc) but with:

(a) Far better scalability

(b) Built in fault tolerance / HA

(c) Storage

STOP!
DEMO TIME!

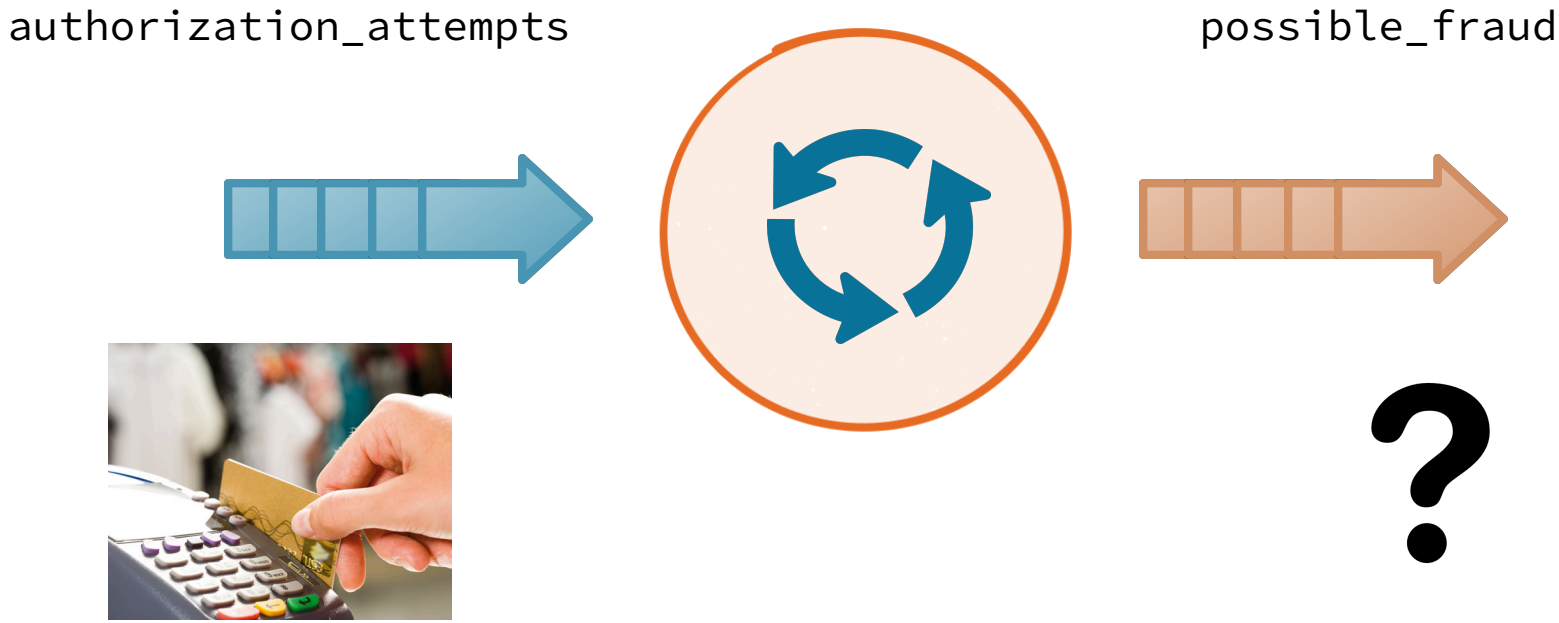
PROCESSING

Streaming

is the **toolset** for dealing with **events**

as **they move!**

WHAT EXACTLY IS STREAM PROCESSING?



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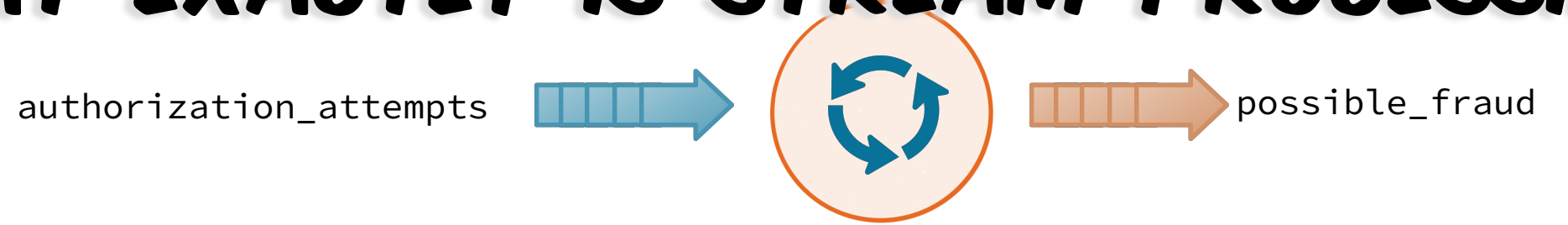


```
CREATE STREAM possible_fraud AS
SELECT card_number, count(*)
FROM authorization_attempts
WINDOW TUMBLING (SIZE 5 MINUTE)
GROUP BY card_number
HAVING count(*) > 3;
```

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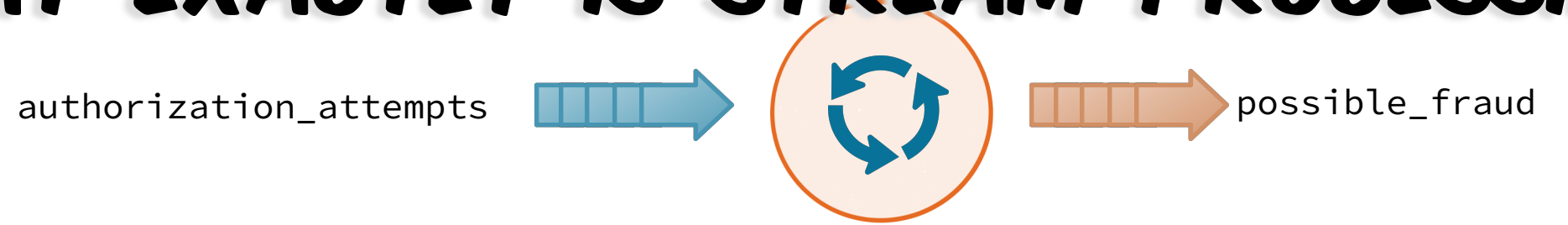


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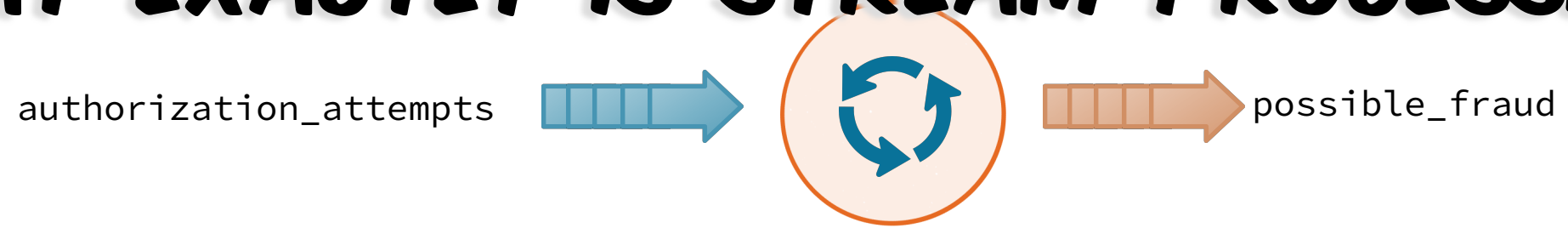


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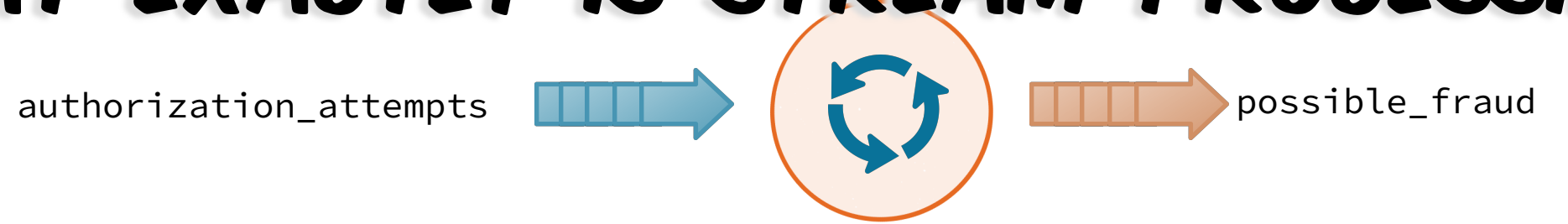


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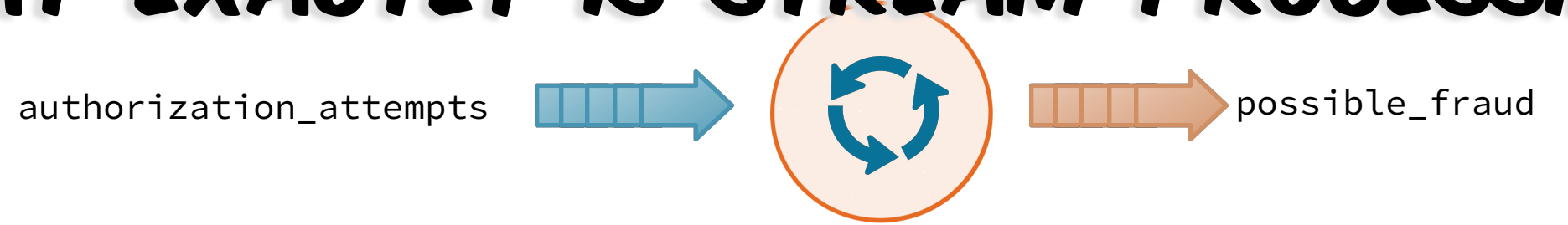


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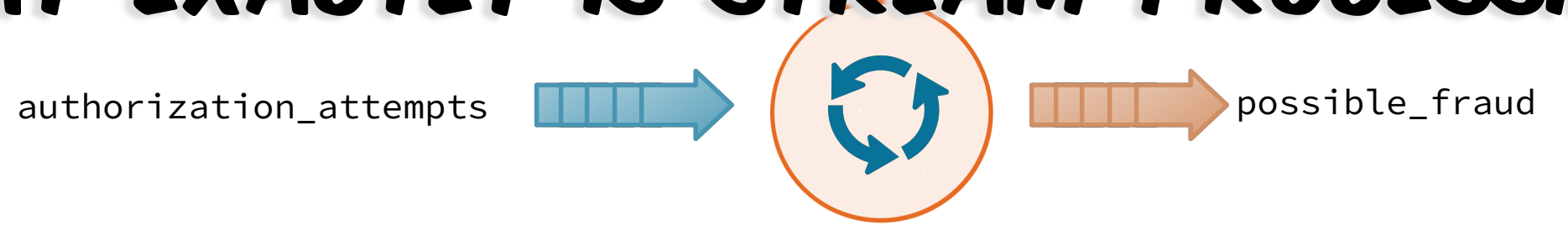


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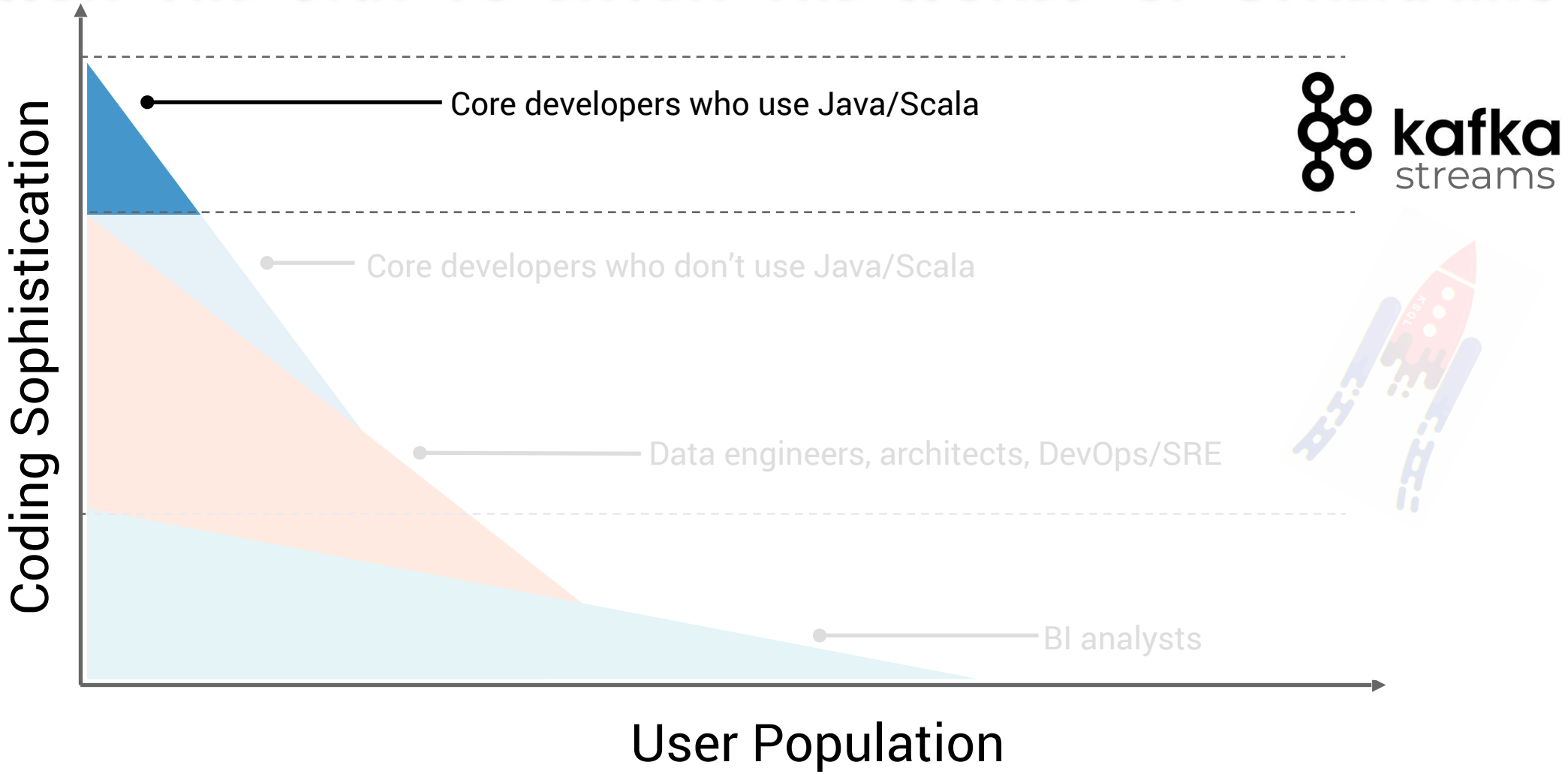
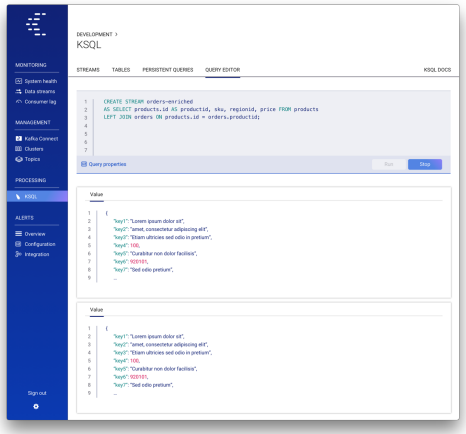
```

LOWER THE BAR TO ENTER THE WORLD OF STREAMING



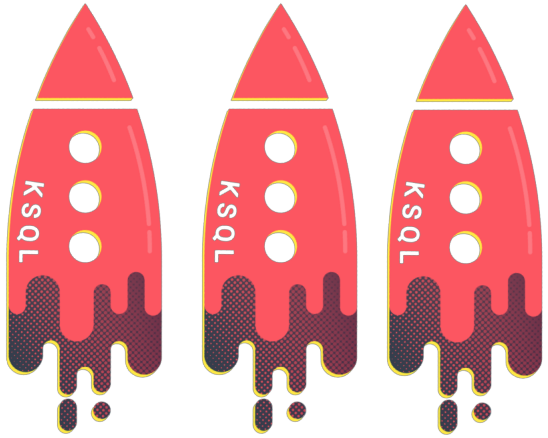
KSQL #FTW



1. UI
2. CLI
3. REST
4. Headless

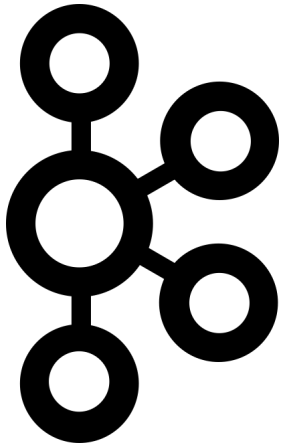
INTERACTION WITH KAFKA

KSQL
(processing)



read, write
network

Kafka
(data)



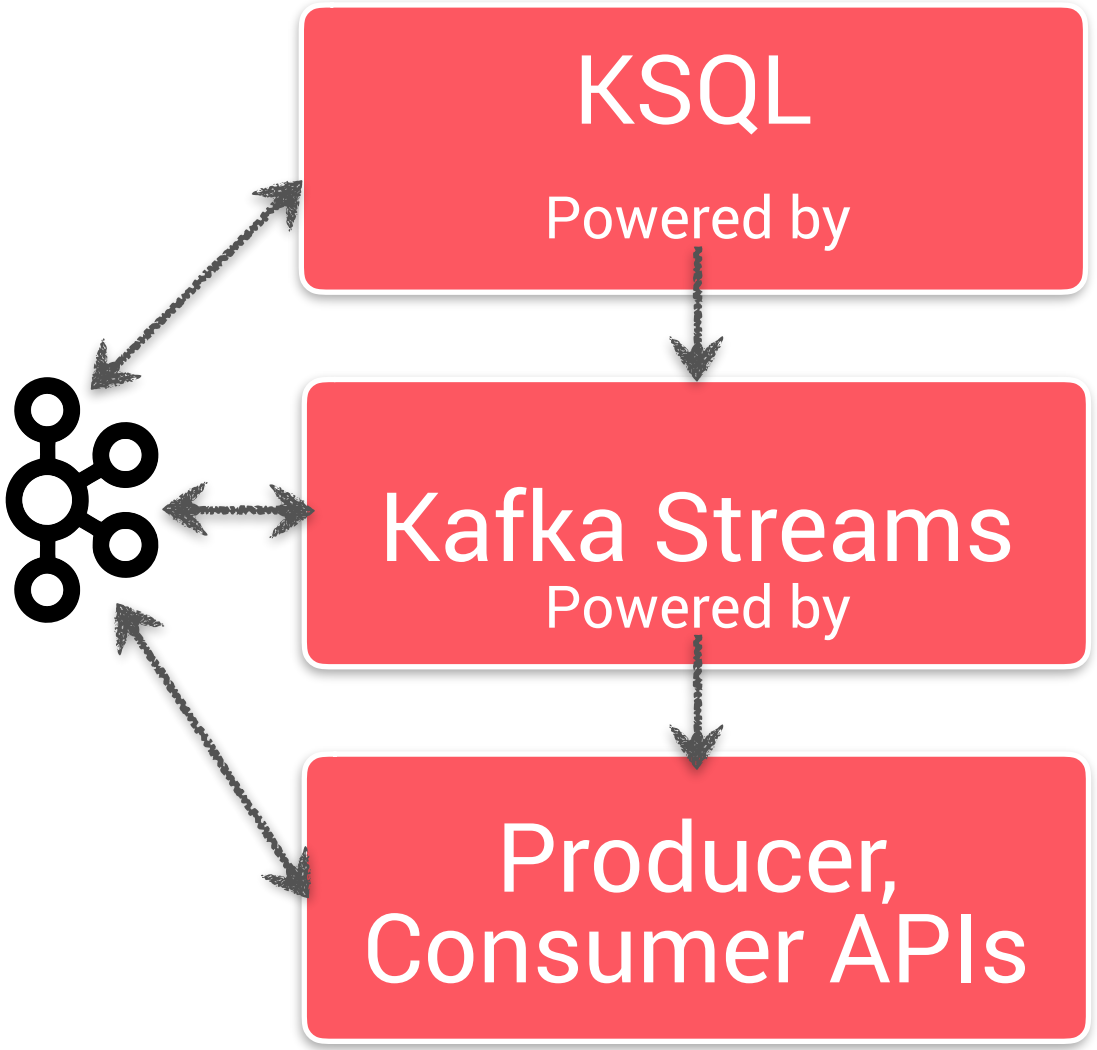
read, write
network

JVM application
with Kafka Streams (processing)

Does not run on Kafka brokers

Does not run on Kafka brokers

STANDING ON THE SHOULDERS OF STREAMING GIANTS



Ease of use

Flexibility

```
CREATE STREAM,
CREATE TABLE, SELECT, JOIN,
GROUP BY, SUM, …
```

KSQL UDFs

```
KStream<>, KTable<>, filter(), map(),
flatMap(), join(), aggregate(),
transform(), …
```

```
subscribe(), poll(), send(),
flush(), beginTransaction(), …
```

Find your local Meetup Group

https://cnfl.io/kafka-meetups

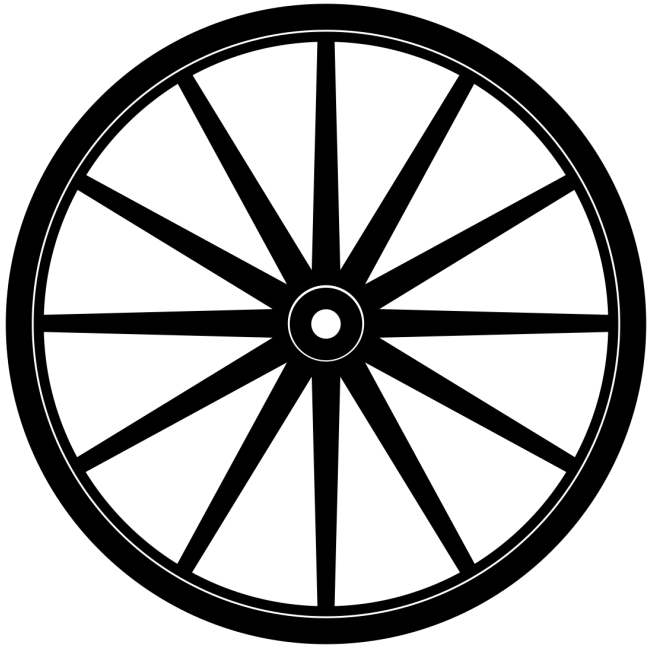
Grab Stream Processing books

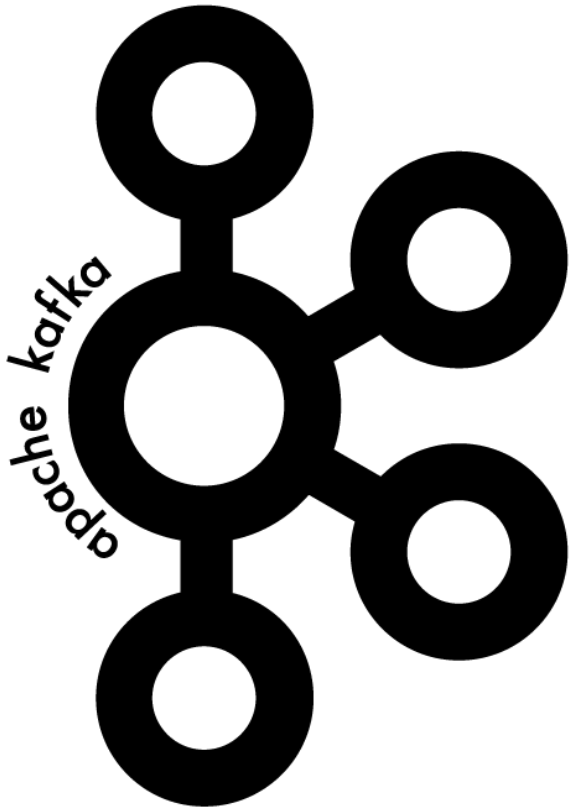
https://cnfl.io/book-bundle

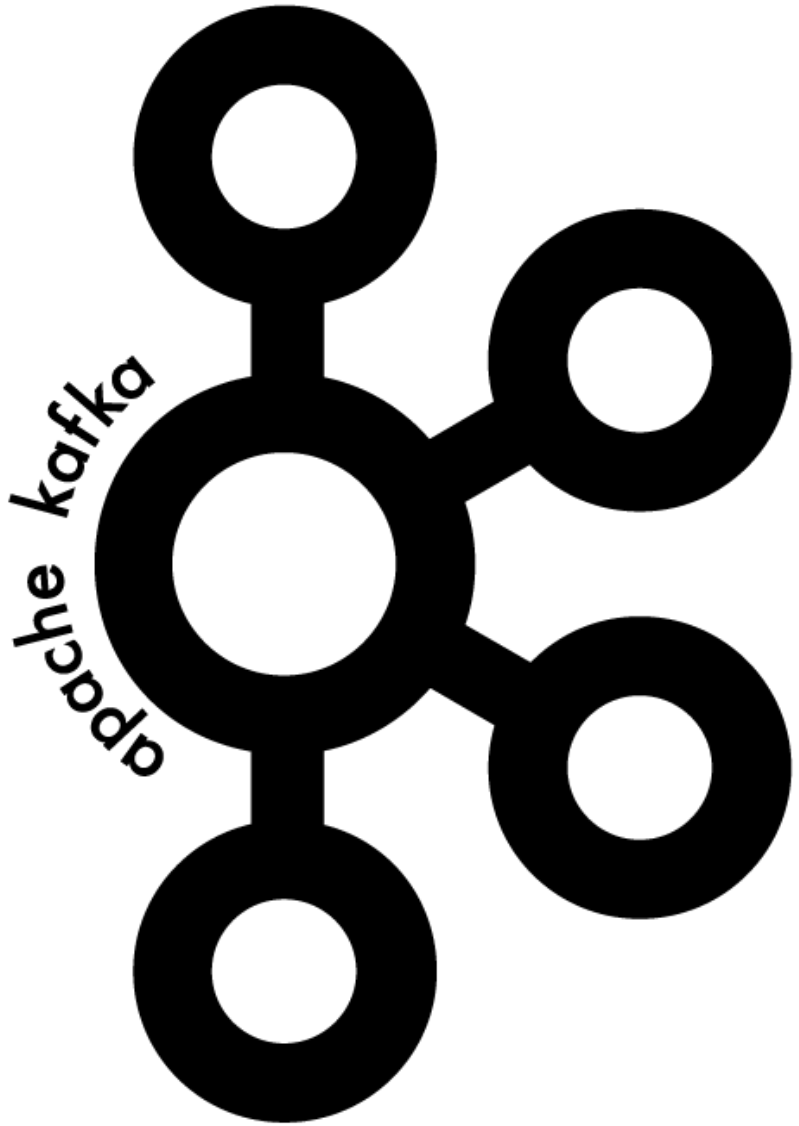
Join us in Slack

http://cnfl.io/slack

ONE MORE THING...




apache kafka



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https://kafka-summit.org
Gamov30
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viktor@confluent.io

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