

# Kafka intern: Das Kafka-Wire-Protokoll

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## ABOUT ME


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Cloud Architect @ Thinkport

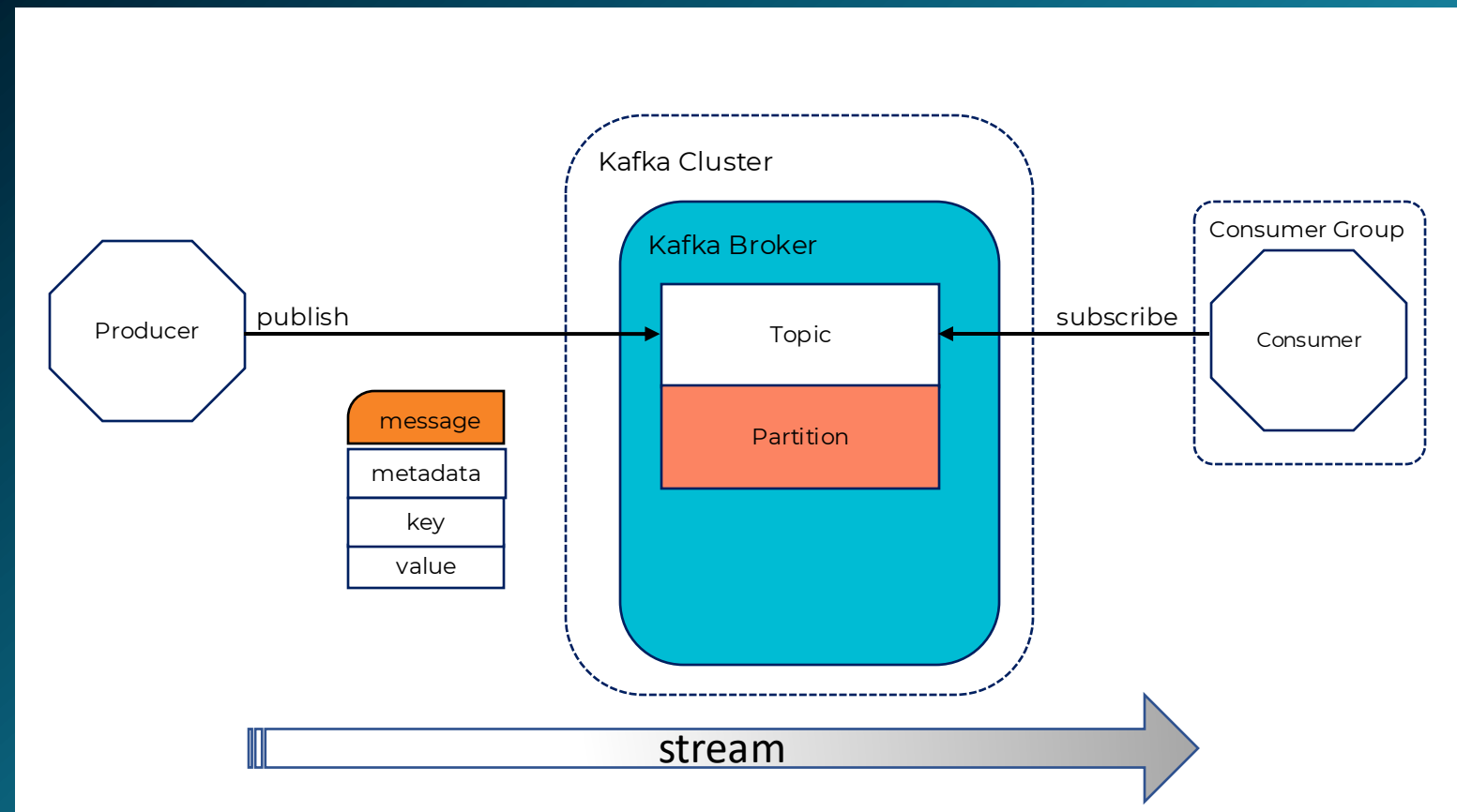
Alles rund um Event-Streaming

Workshops, Meetups, Konferenzen

✉ tiffland@thinkport.digital

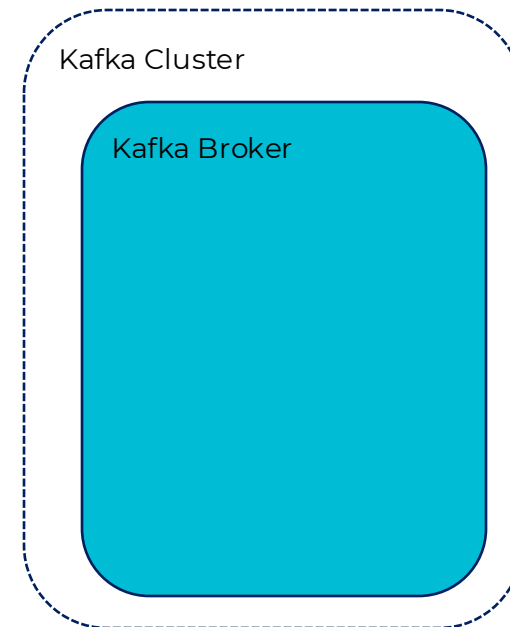
 <https://www.linkedin.com/in/thomas-iffland/>

# Was ist Apache Kafka?

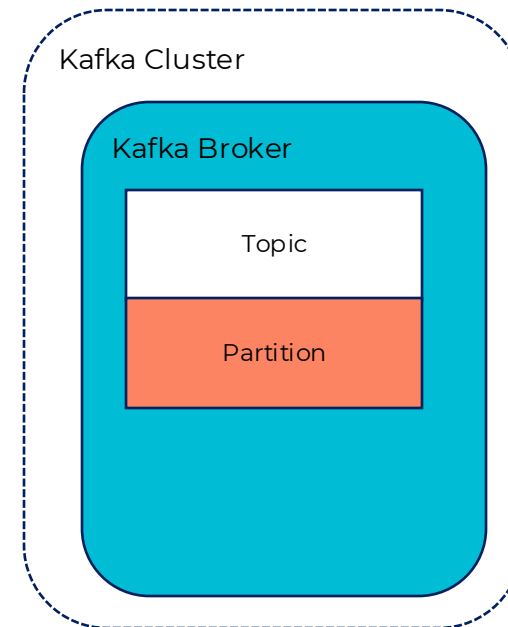


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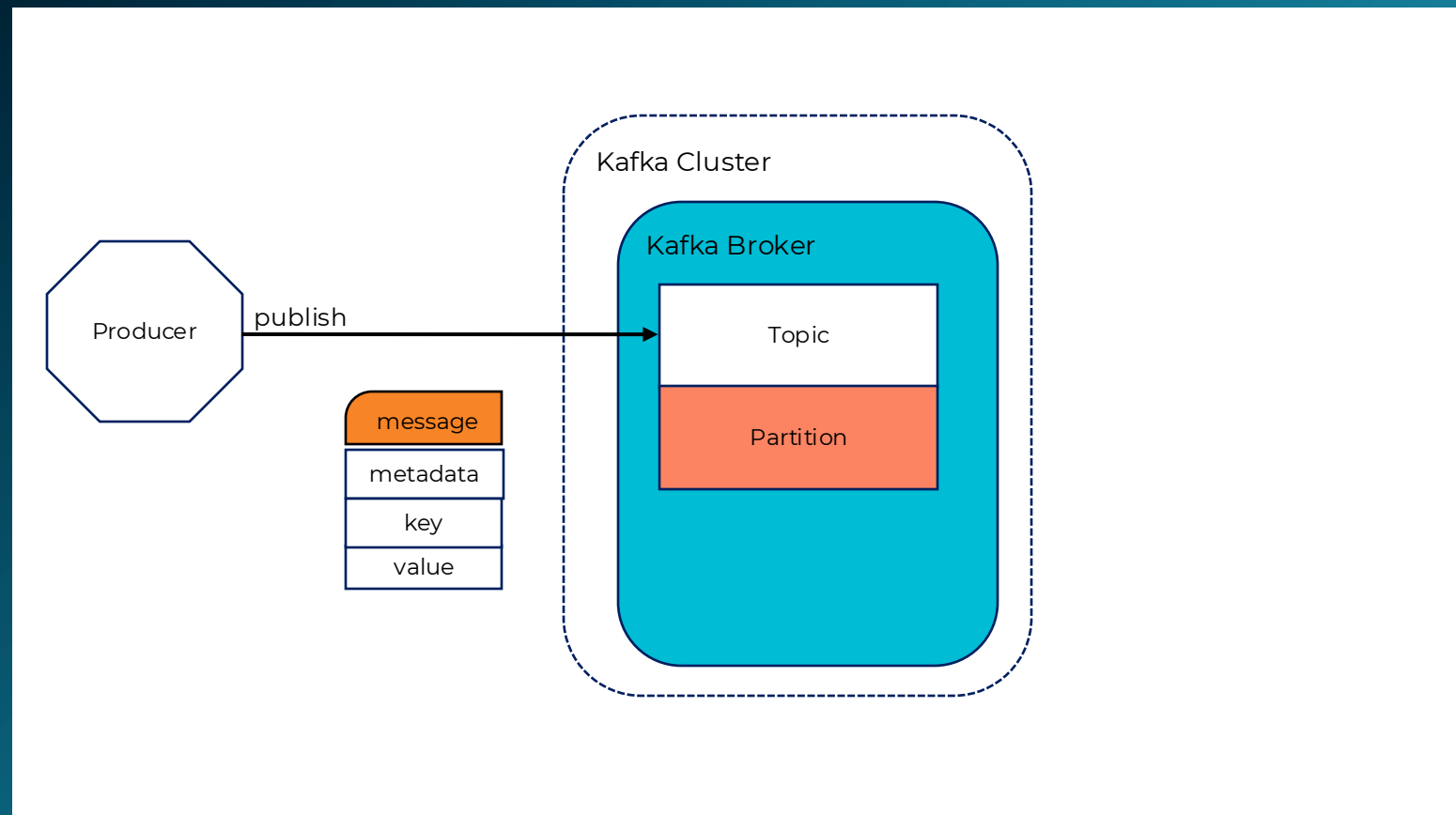
# Cluster & Broker



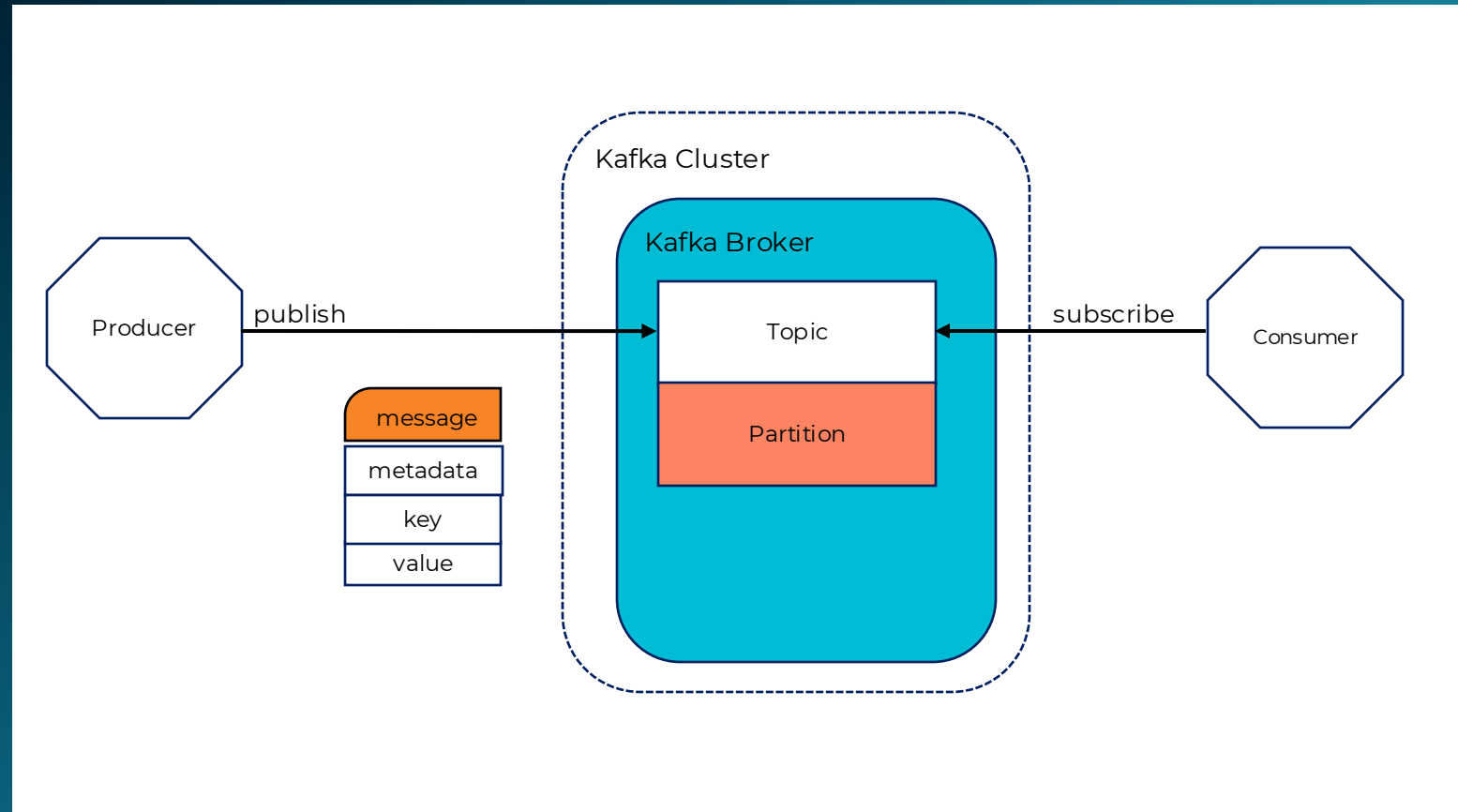
# Topic & Partition



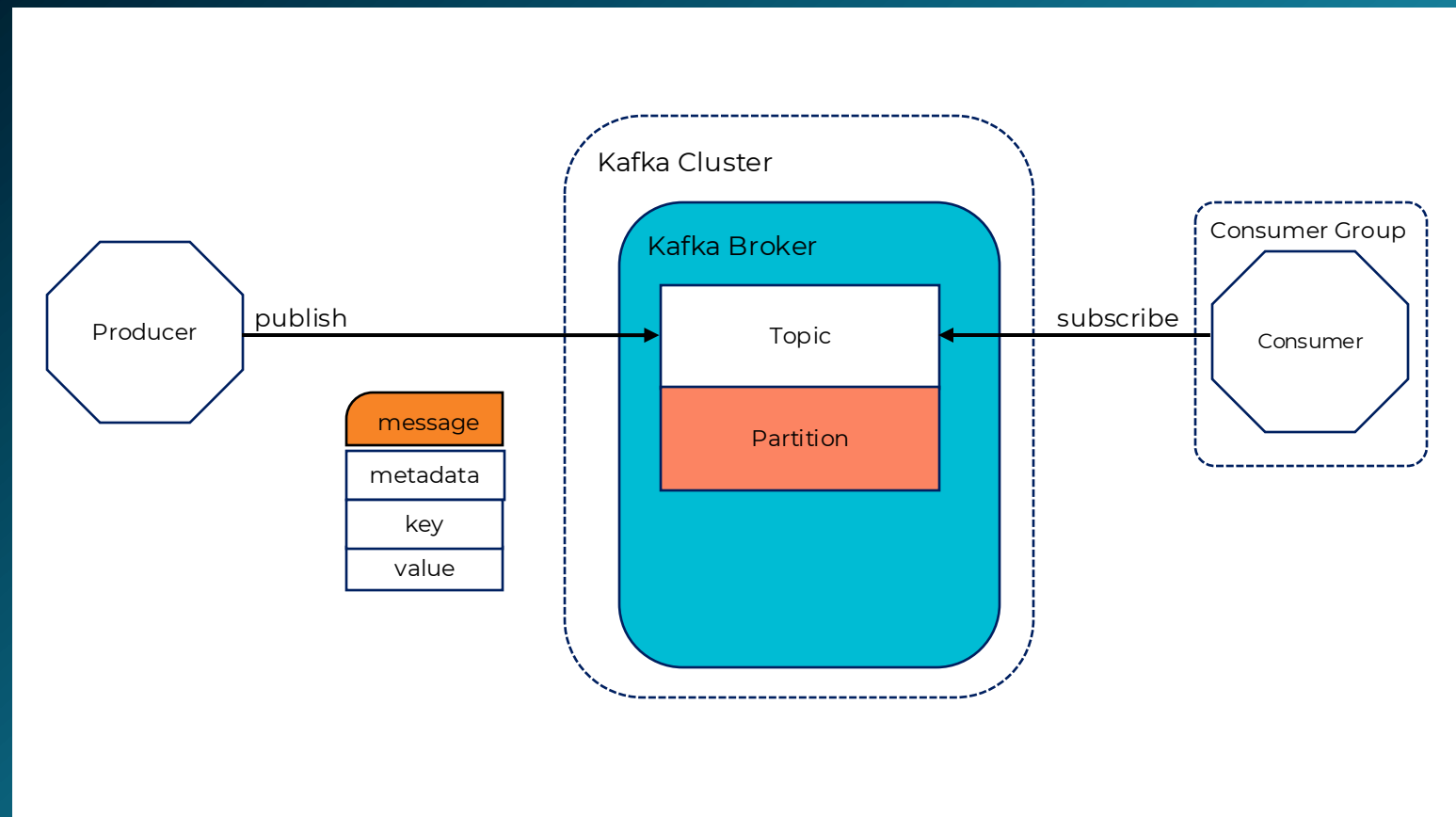
# Producer & Message



# Consumer

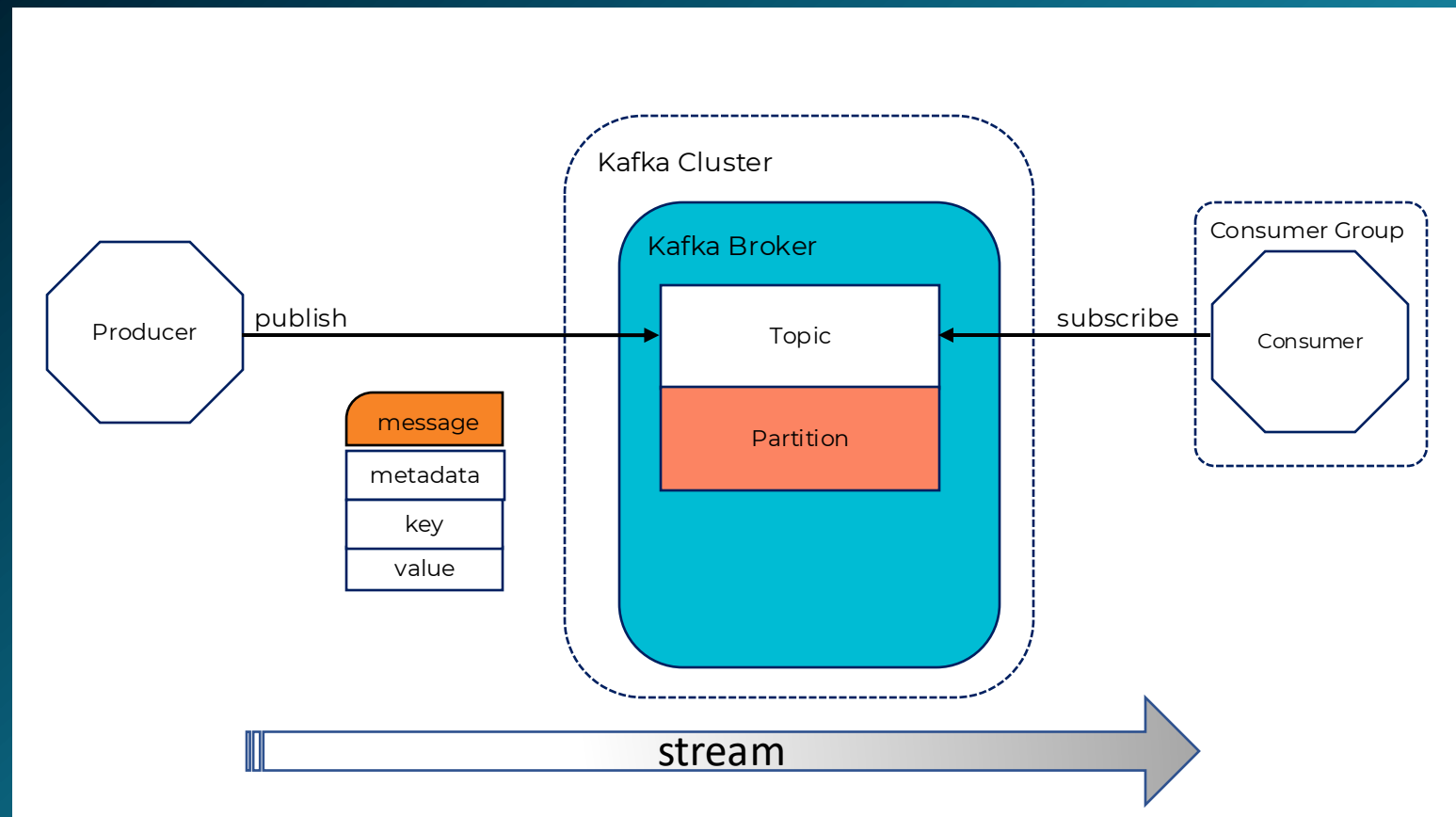


# Consumer Group

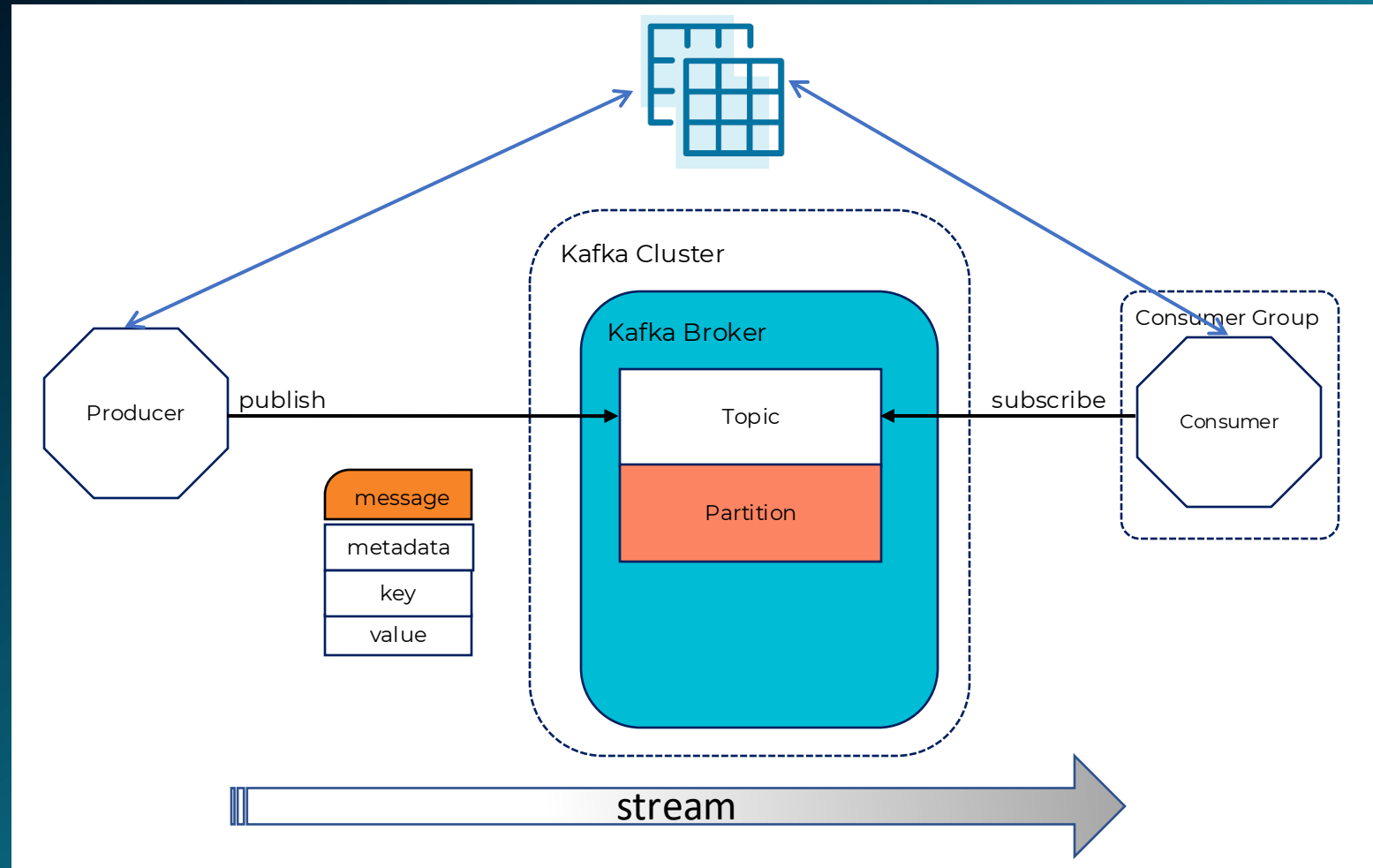




# Stream



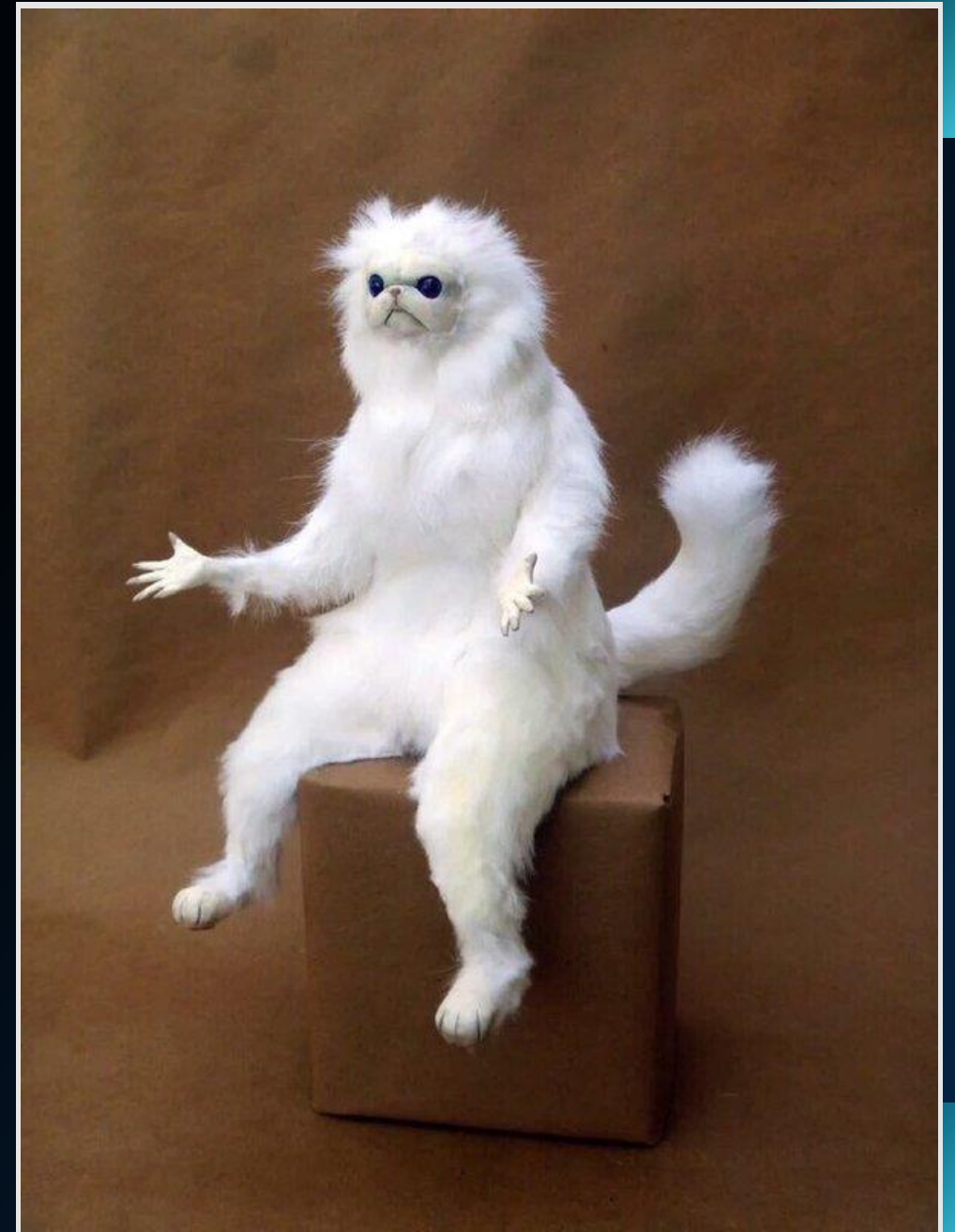
# Schema Registry





# Warum?

- Tieferes Verständnis
- „Kafka is dead, long live Kafka“:
  - Kora
  - RedPanda
  - Warpstream
  - AutoMQ
  - ...



# Grundlegendes

- Kommunikation über binäres Protokoll per TCP
- Request/Response-Paare
- Bidirektionale Kompatibilität
- Unterstützt Batching
- Reihenfolge der Verarbeitung wird garantiert



# Datentypen

## Datentyp

## Wertebereich

INT32

Vorzeichenbehafteter Integer-Wert  
zwischen  $-2^{31}$  und  $2^{31}-1$ .

VARINT

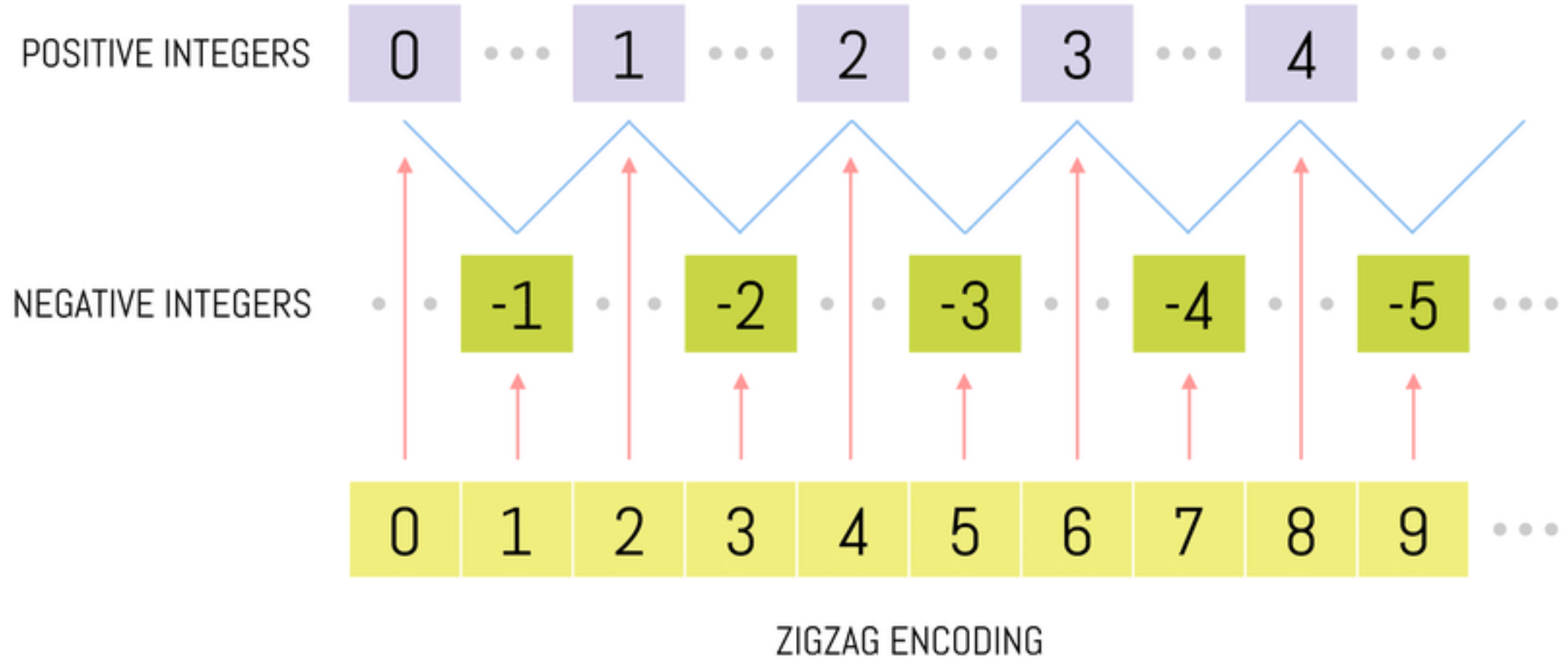
Vorzeichenbehafteter Integer-Wert  
zwischen  $-2^{31}$  und  $2^{31}-1$  im Zig-Zag-  
Encoding enkodiert.

COMPACT\_STRING

Zuerst Länge N+1 als VARINT. Danach N  
Bytes UTF-8 kodierte Zeichenkette.

COMPACT\_ARRAY

Zuerst Länge N+1 als VARINT. Danach N  
Objekte.



# Request-Header

```
1 Request Header v2 => request_api_key request_api_version correlation_id  
   client_id _tagged_fields  
2   request_api_key => INT16  
3   request_api_version => INT16  
4   correlation_id => INT32  
5   client_id => NULLABLE_STRING
```

# CreateTopics-Request

```
1 CreateTopics Request (Version: 7) => [topics] timeout_ms validate_only
   _tagged_fields
2   topics => name num_partitions replication_factor [assignments] [configs]
   _tagged_fields
3     name => COMPACT_STRING
4     num_partitions => INT32
5     replication_factor => INT16
6     assignments => partition_index [broker_ids] _tagged_fields
7       partition_index => INT32
8       broker_ids => INT32
9     configs => name value _tagged_fields
10      name => COMPACT_STRING
11      value => COMPACT_NULLABLE_STRING
12 timeout_ms => INT32
13 validate_only => BOOLEAN
```



**ENOUGH TALK**



**LET'S CODE**

# Links & Weiteres

- Kafka Protocol Guide: <https://kafka.apache.org/protocol.html>
- Repo:
- Artikel in Mai Ausgabe der JavaAktuell

# Q&A