

TiDB 101

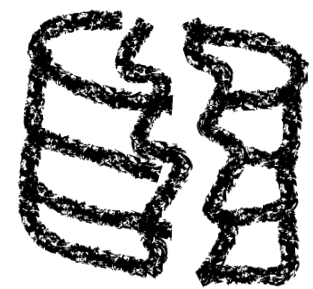


fipar - Percona University MVD
2026

About me

DBRE @ @Life360

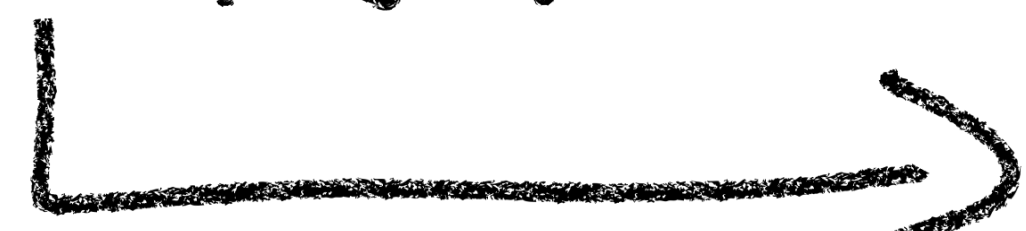
First broke a prod DB in 2001



TiDB Overview

- Distributed DBMS

- HTAP  OLAP

 OLTP

- MySQL protocol-compatible

T: DB?

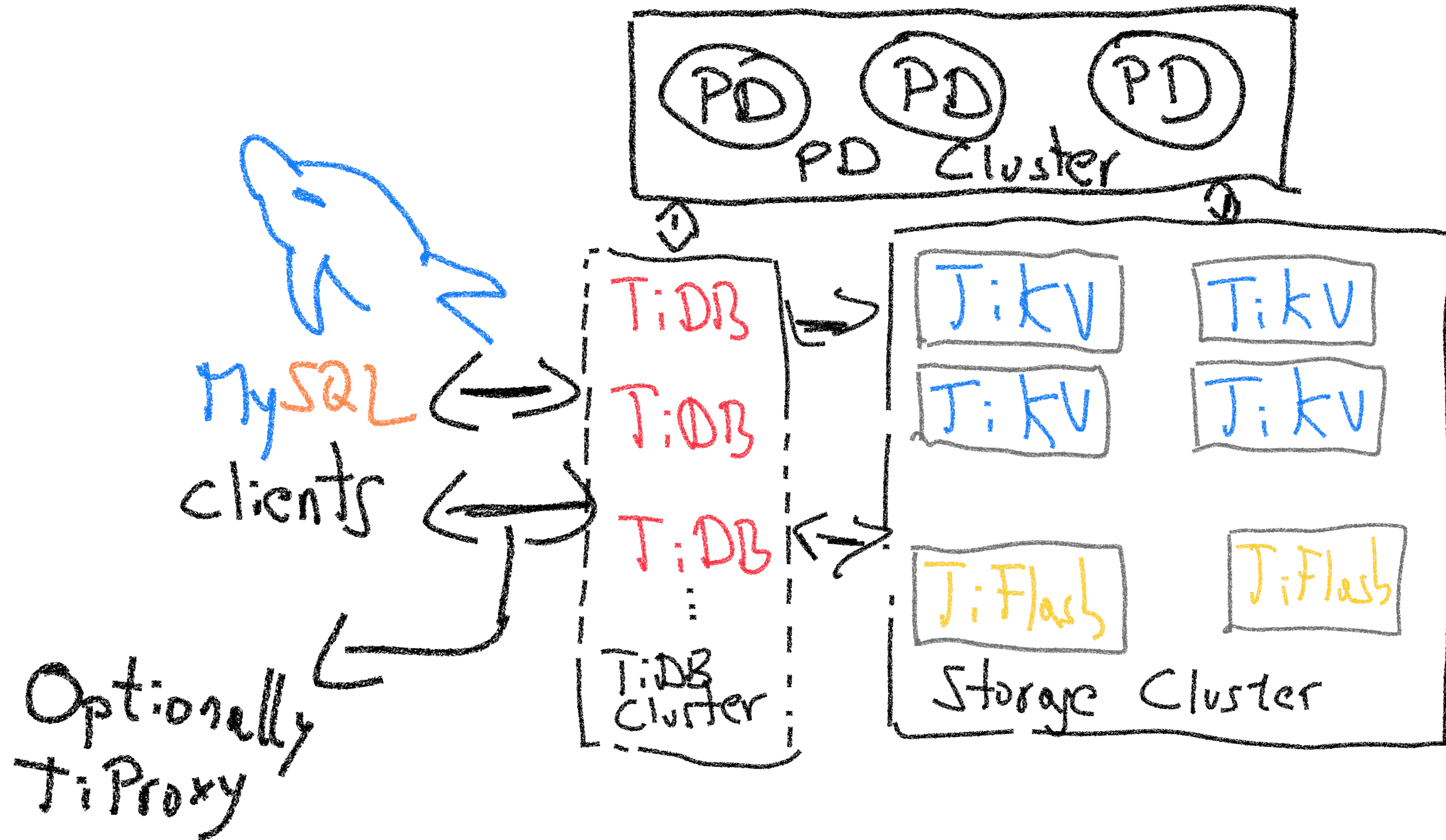
Yes

- VLDB
- Strong Consistency

No

- Small DBs
($< 10M$ rows)
- Relaxed Consistency

Architecture



Date organization: MySQL

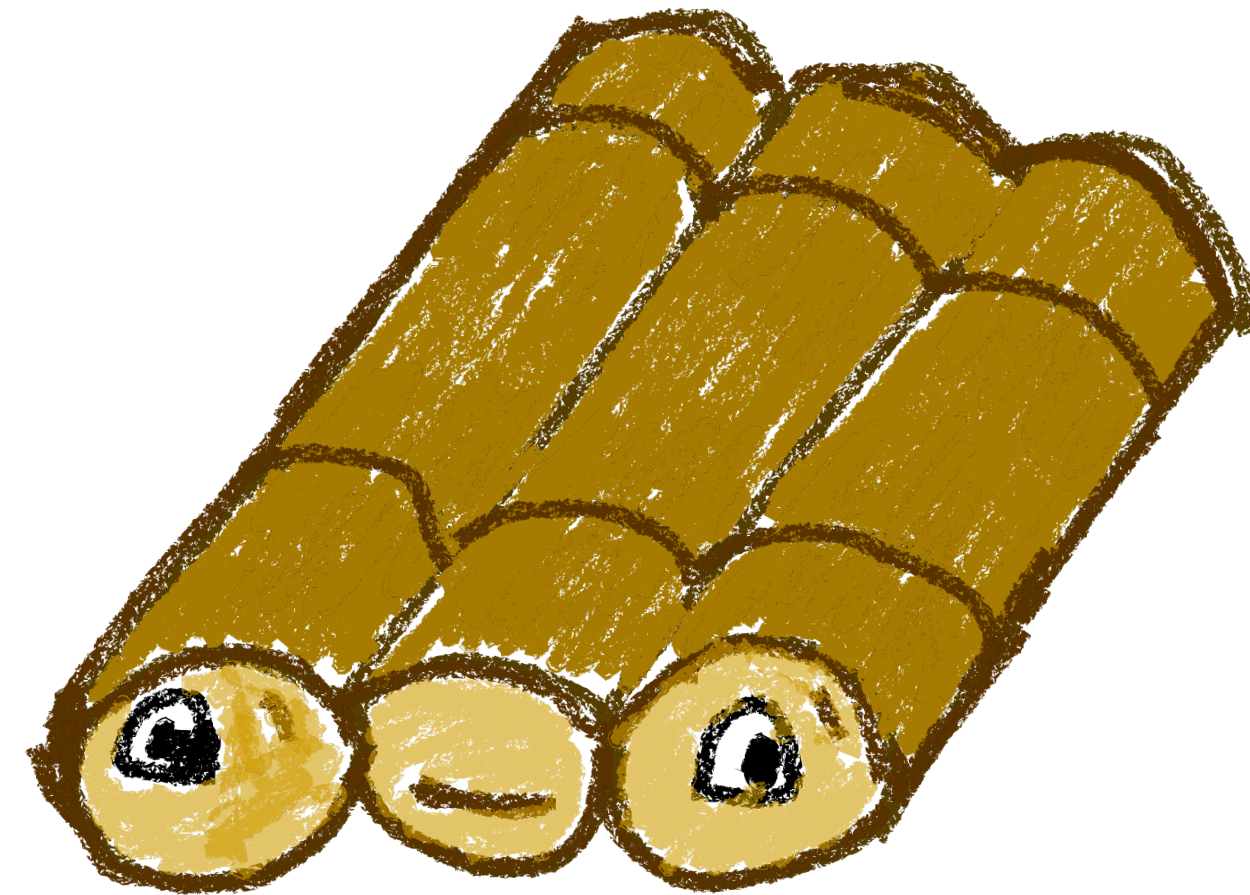
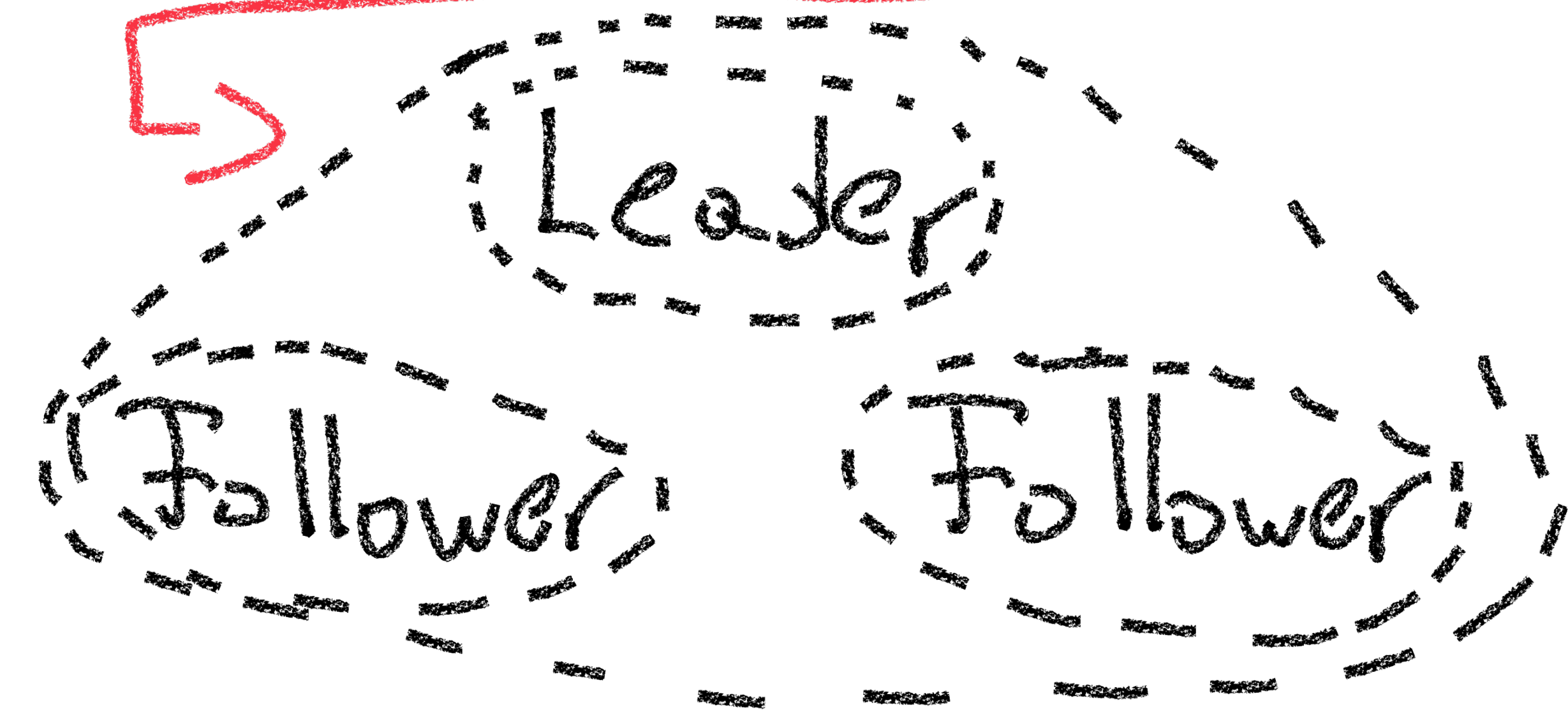
Albert King	TABLE
Alice in Chains	Maybe Partition
Amanda Palmer	
Anton Webern	
Apex Twin	

Date Organization : TiDB

REGIONS	
TABLE =	
Albert King	Region 1
Alice in Chains	Region 2
Amanda Palmer	⋮
Anton Webern	Region N
Apbex Twin	
⋮	
Sonic Youth	
Sondgerden	
Squarepusher	
⋮	

A Region is a Raft Group responsible for a range of keys

→ CONSENSUS



Raft in TiDB

Role	Responsibilities
Leader	• writes <u>and</u> reads
Follower	• Ack writes • vote • can take reads (follower reads)
Learner	• Apply writes • don't vote or Ack

Raft in TiDB

The DB is a Replicated State Machine

1. Client sends (proposes) write
2. Leader appends to its log
3. Leader replicates log
4. Followers ACK (or not ...)
5. Majority ACK? $\Rightarrow$ commit
6. Apply to State Machine
7. Followers do the same

Writes in T:DB

- Always wait for majority Ack
- No majority? No write

T:DB is CAP

- During P only a majority can continue
- The DB will always be C
- $\therefore$ it won't always be A

Placement Driver

- Control Plane
- Brain of the Cluster
- Stores metadata
- PLACES data
- Rebalancing, etc.
- No PD? No DB



Cluster

TiKV TiKV

TiKV TiKV

TiFlash

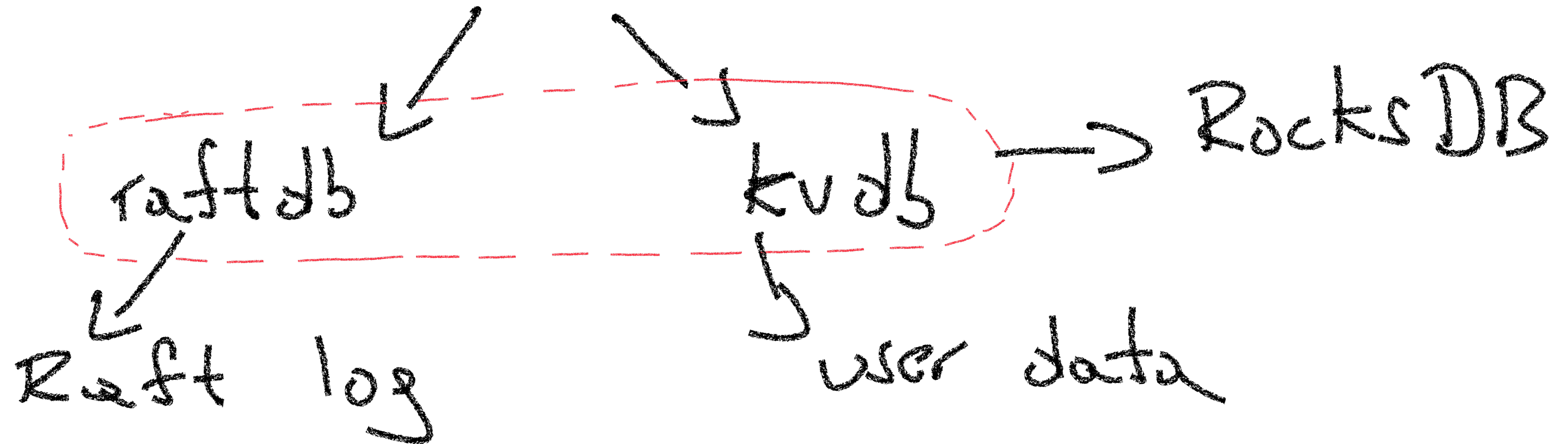
TiFlash

TiDB Cluster

- Stateless SQL layer
- Easy to scale out/in
- MySQL protocol

Storage Cluster (row store)

T_i KV Node



$k_1 v_1 T_1$

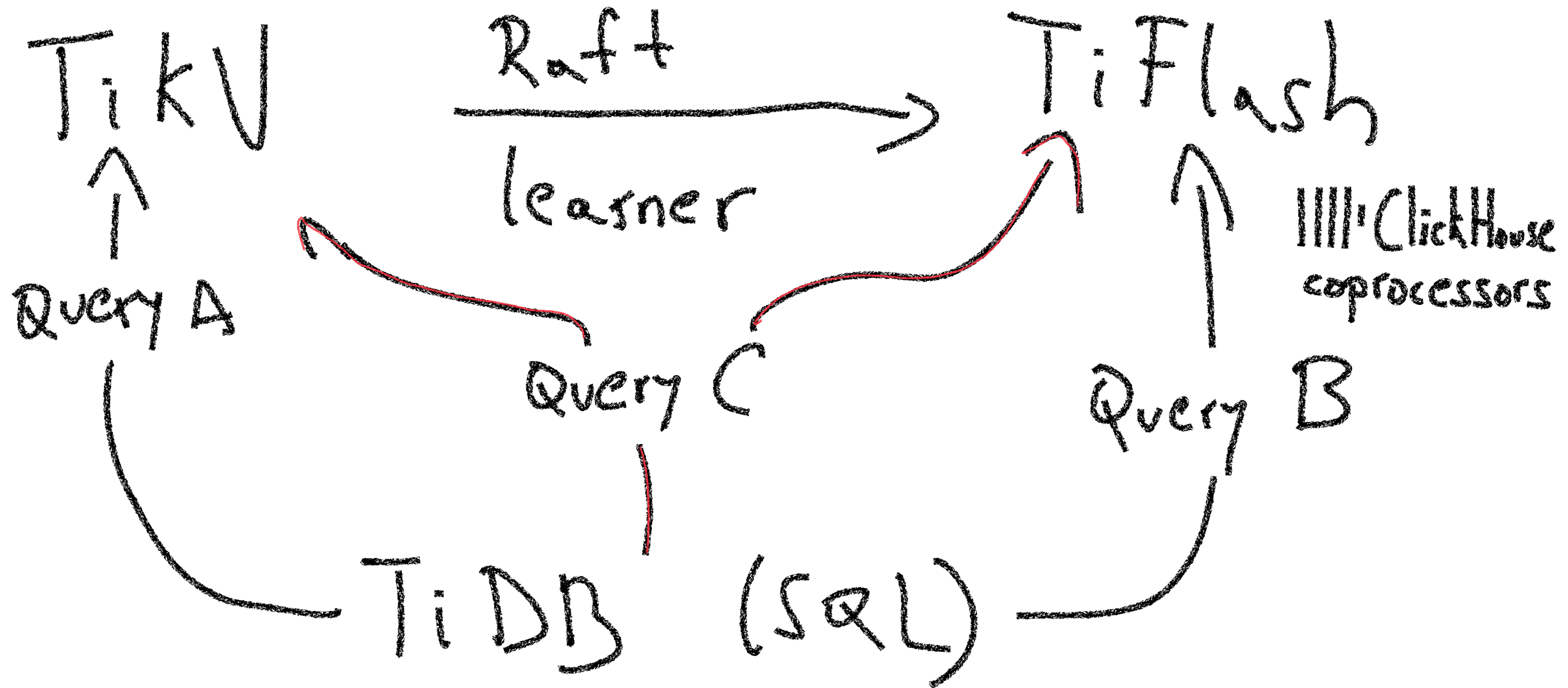
$k_2 v_1 T_1$

$k_1 v_2 T_2$



$k_3 v_1 T_5$

Storage Cluster (column store)



Migrating





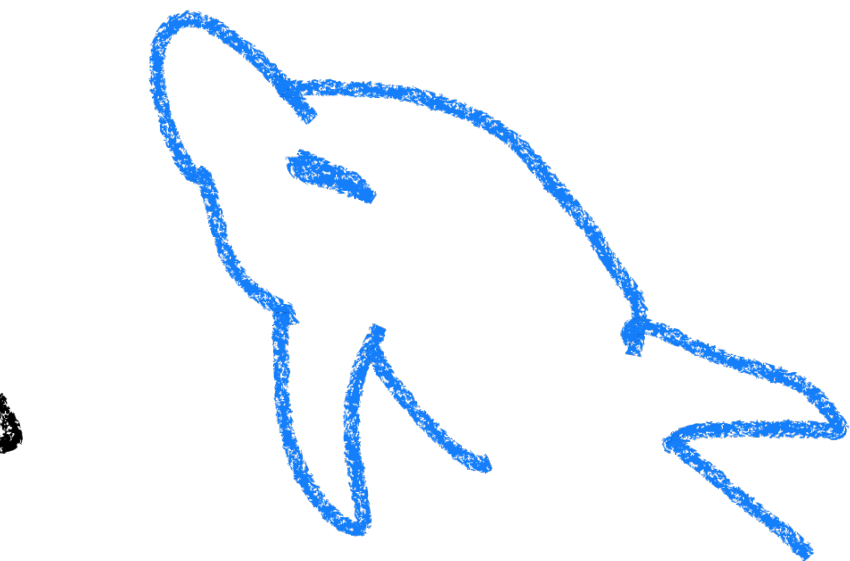
✓ Dumping
✓ DM



DESTINATION

sync-diff-inspector

✓ T: CDC



MySQL

ROLLBACK

Migrating

- AUTO INCREMENT → AUTO RANDOM
- WATCH KEY DATA TYPE OVERFLOW
- BINDINGS (DB-side index hints)
- Proxy SQL query rewrite rules

Questions?

Answers here or over 

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