

Apache Flink® 1.7 and Beyond

公司: data Artisans

职位: Solutions Architect

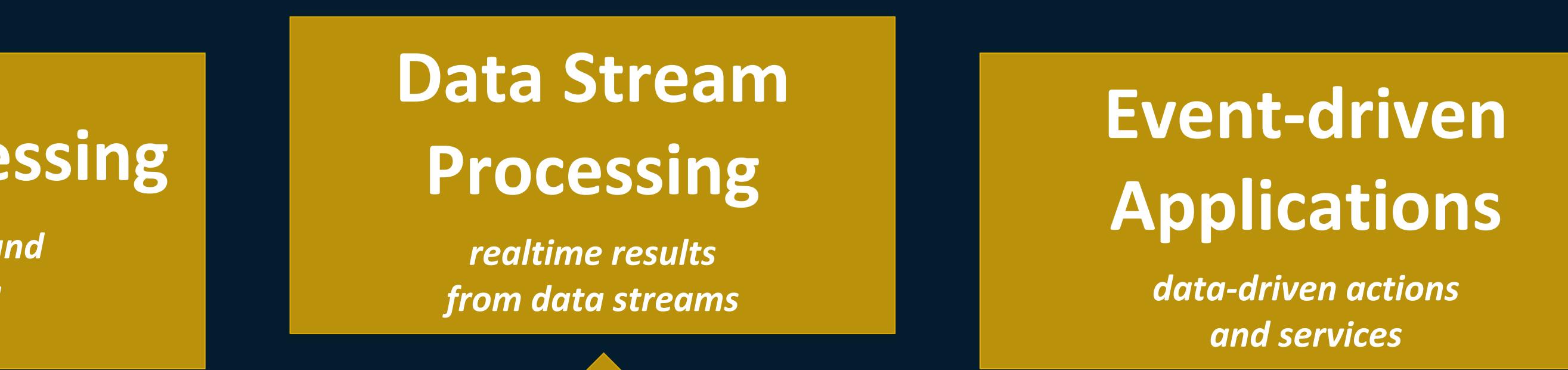
演讲者: Konstantin Knauf (Slides by Till Rohrmann)



@snntrable



What is Apache Flink?



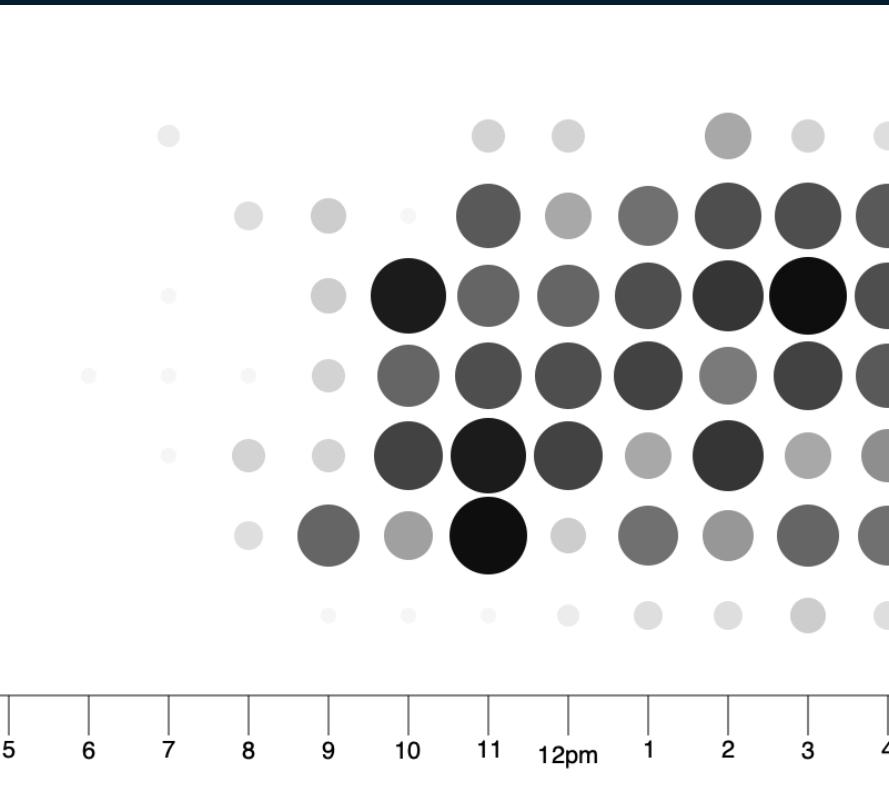
Stateful Computations Over
Data Streams



Flink 1.7: What happened so far?

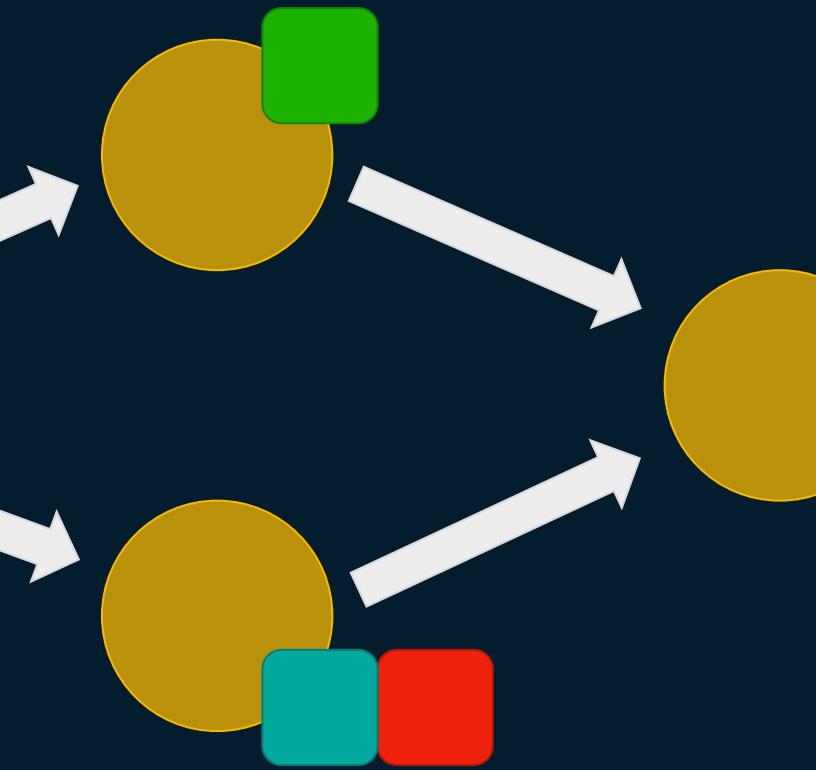
Flink 1.7.0 in Numbers

- Contributors: 112
- Resolved issues: 430
- Commits: 970
- Changes LOC: +103824/-63124



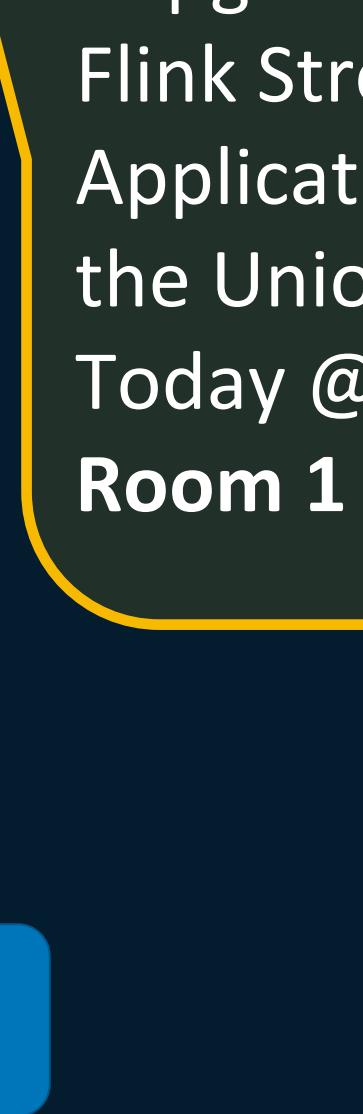
Flink Applications Need to Evolve

- E.g. changing requirements, new algorithms, better serializers, bug fixes, etc.
- Expensive to restart application from scratch (maintain state)



State Schema Evolution

- Support for changing state schema
 - Adding/Removing fields
 - Changing type of fields
 - Currently fully supported when using Avro types



"Upgrading Stateful Flink Streaming Applications: State of the Union" by Tzu-Li Tai

Today @ 5:20 pm

Room 1

Converting Currencies



7:12pm



9:37am



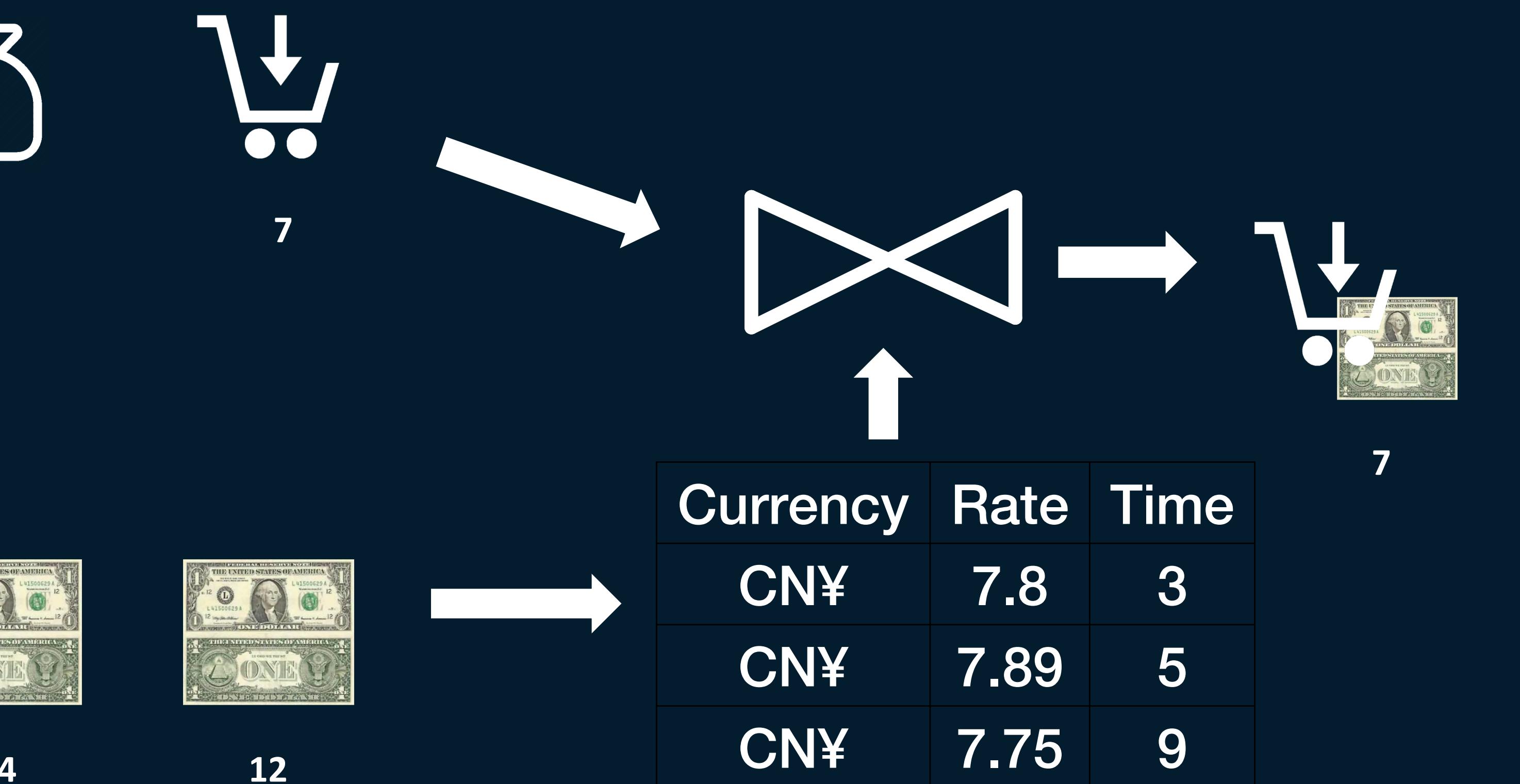
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Temporal Tables and Joins



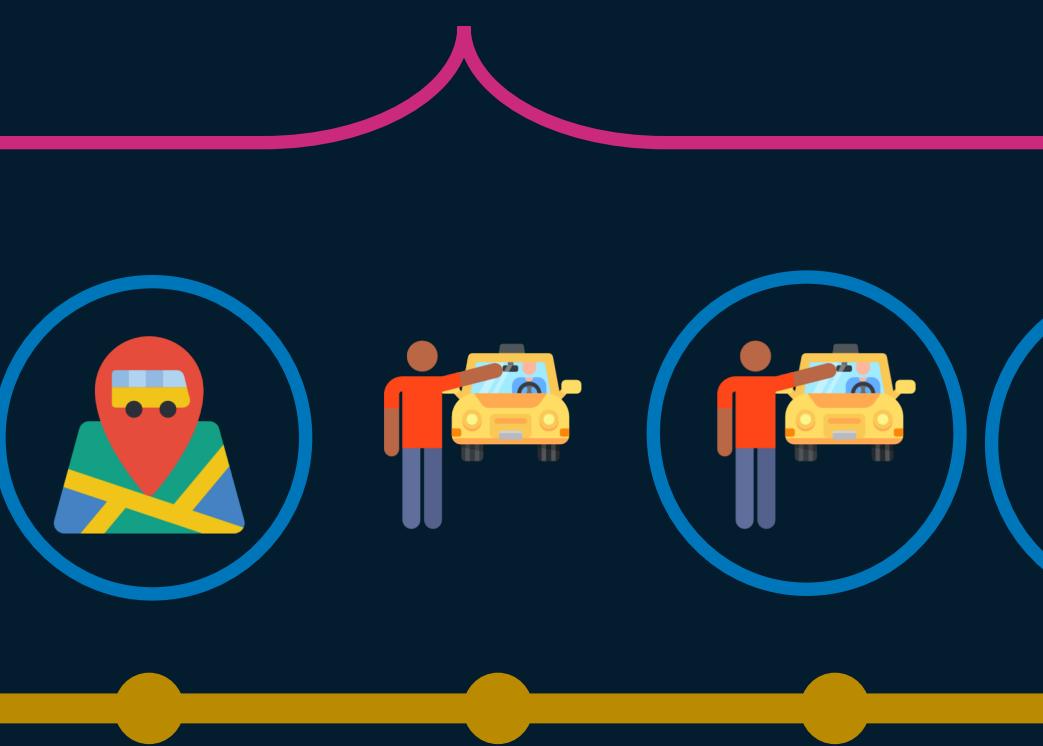
SQL for Pattern Analysis



SELECT * from ?

MATCH_RECOGNIZE

```
SELECT *
FROM TaxiRides
MATCH_RECOGNIZE (
    PARTITION BY driverId
    ORDER BY rideTime
    MEASURES
        S.rideId as sRideId
    AFTER MATCH SKIP PAST LAST ROW
    PATTERN (S M{2,} E)
    DEFINE
        S AS S.isStart = true,
        M AS M.rideId <> S.rideId,
        E AS E.isStart = false
            AND E.rideId = S.rideId
)
```



More SQL Improvements

- ElasticSearch 6 Table Sink
- Support for views in SQL Client
- More built-in functions: TO_BASE64, LOG2, REPLACE, COSH,...

“Flink Streaming SQL 2018”
by Piotr Nowojski Today @
4:00 pm Room 1

Other Notable Features

- Scala 2.12 Support
- Exactly-once S3 StreamingFileSink
- Kafka 2.0 connector
- Versioned REST API
- Removal of legacy mode

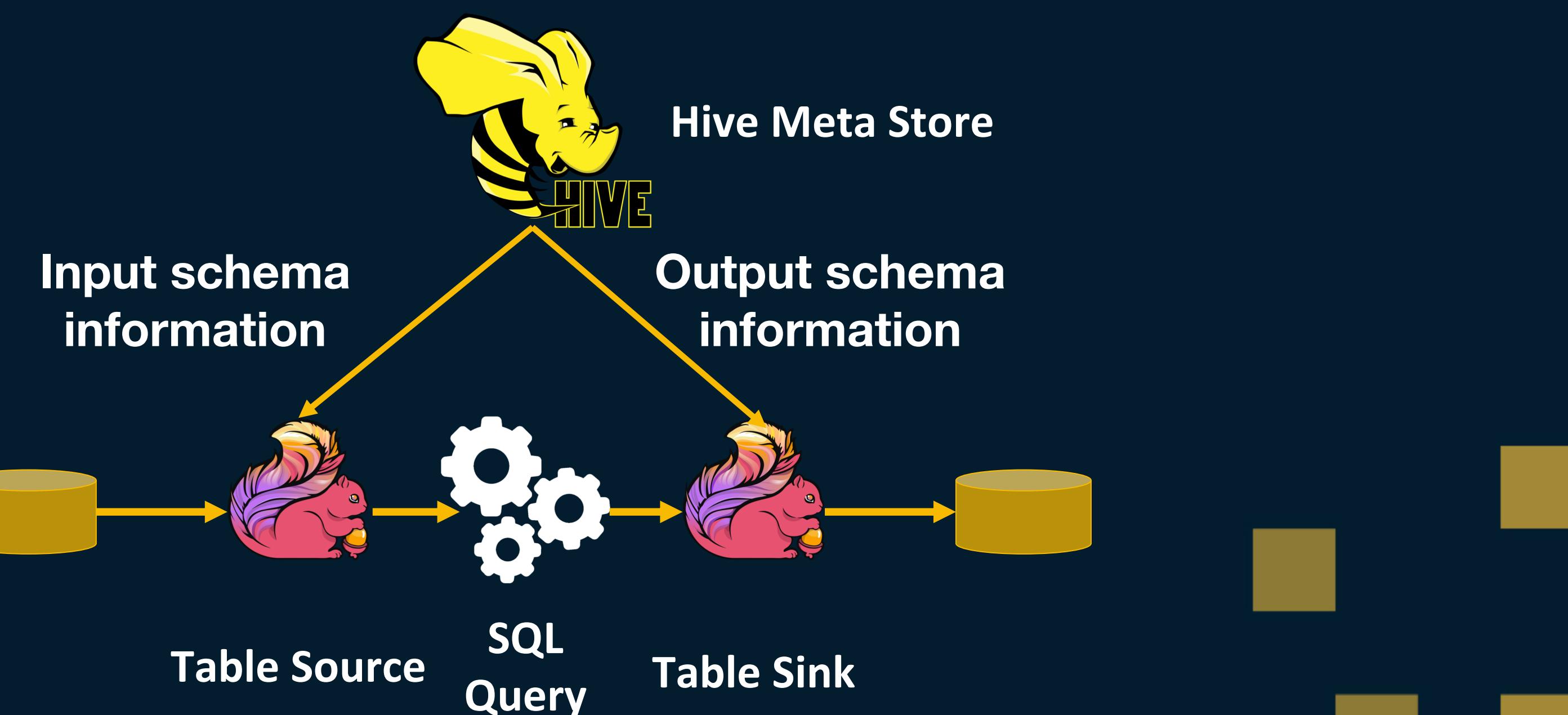




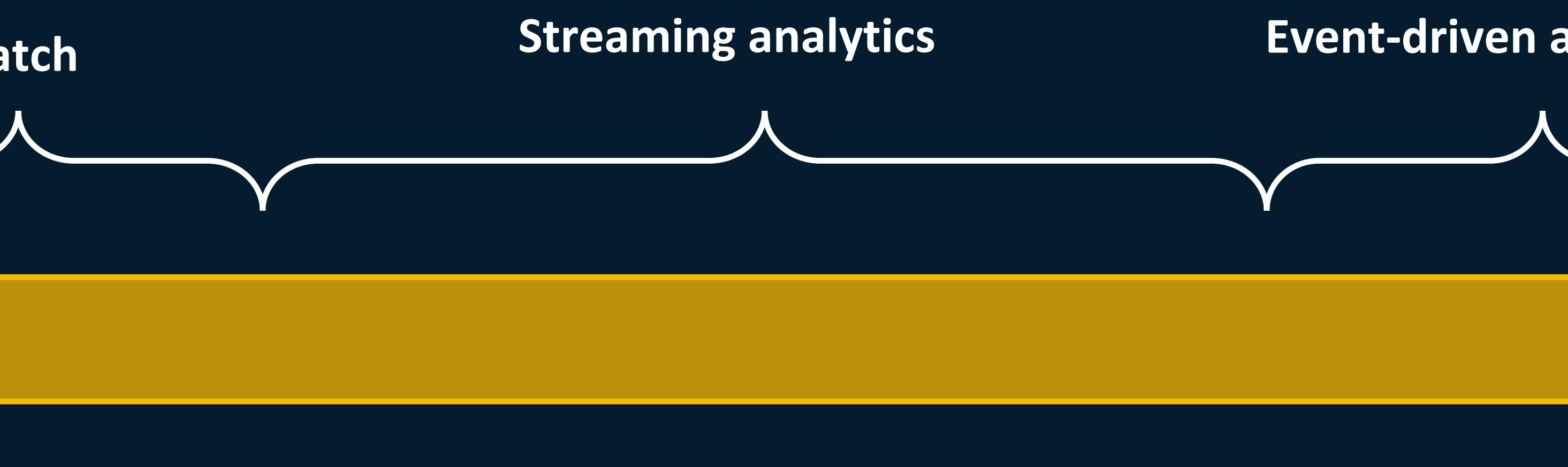
Flink 1.8+: What is happening next?

End-to-end SQL Only Pipelines

- Support for external catalogs (Confluent Schema Registry, Hive Meta Store)
- Data definition language (DDL)



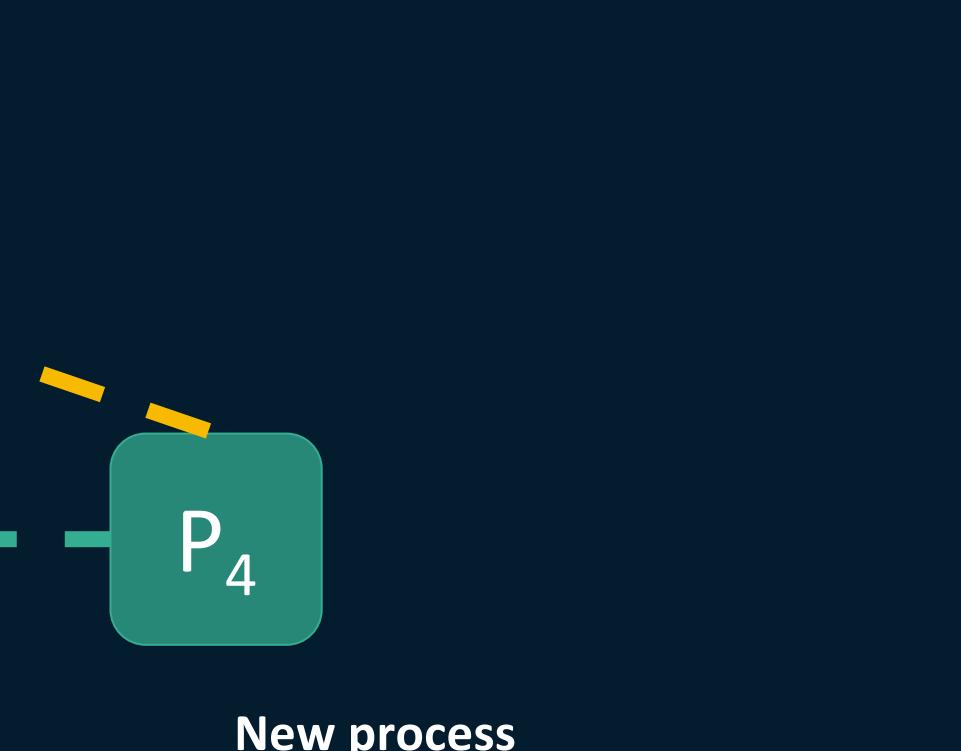
Capability Spectrum



Flink

Flink as a Library

- Deploying Flink applications should be as easy as starting a process
- Bundle application code and Flink into a single image
- Process connects to other application processes and figures out its role
- Expose Flink's managed state to the embedding application

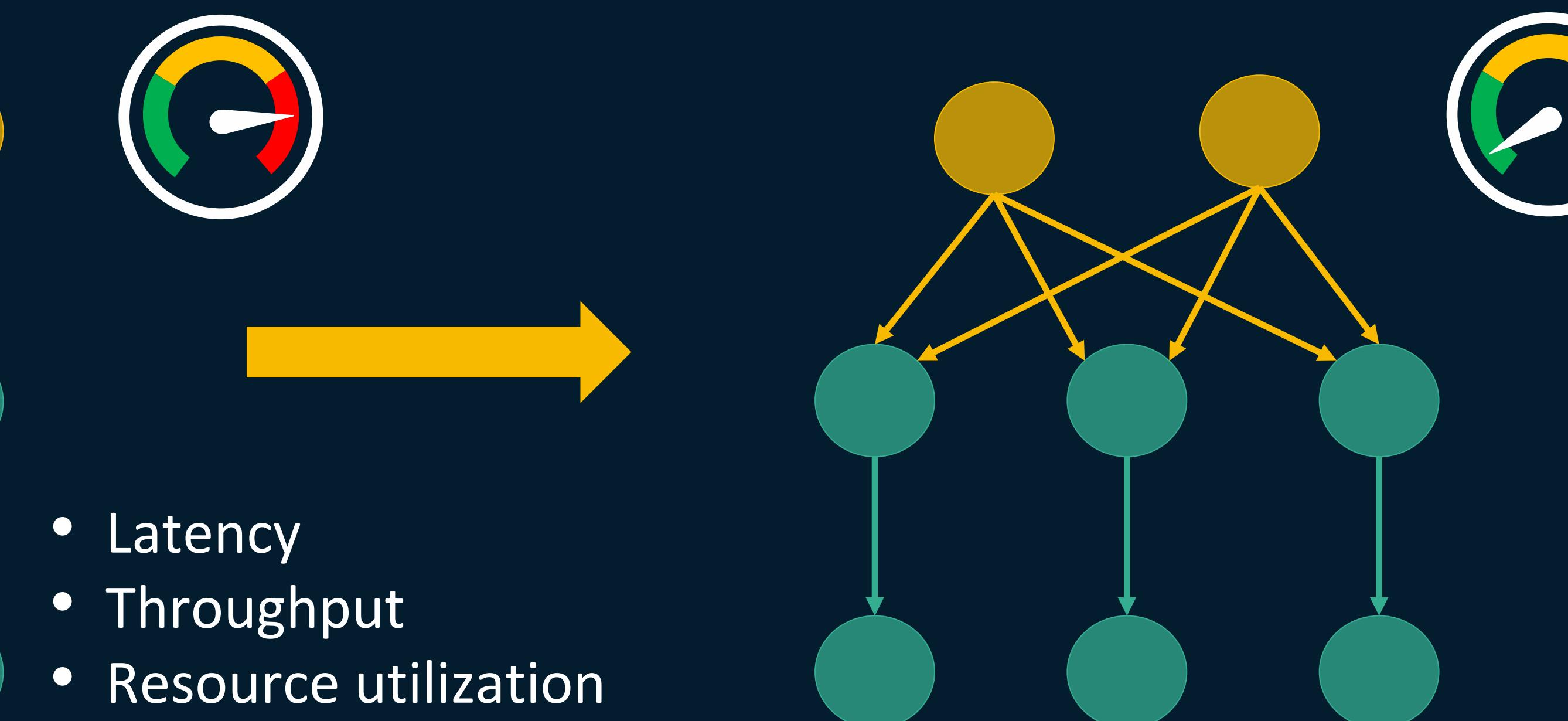


Reactive vs. Active

- Active mode
 - Flink is aware of underlying cluster framework
 - Flink allocate resources
 - E.g. existing YARN and Mesos integration
- Reactive mode
 - Flink is oblivious to its runtime environment
 - External system allocates and releases resources
 - Flink scales with respect to available resources
 - Relevant for environments: Kubernetes, Docker, as a library



Dynamic Scaling

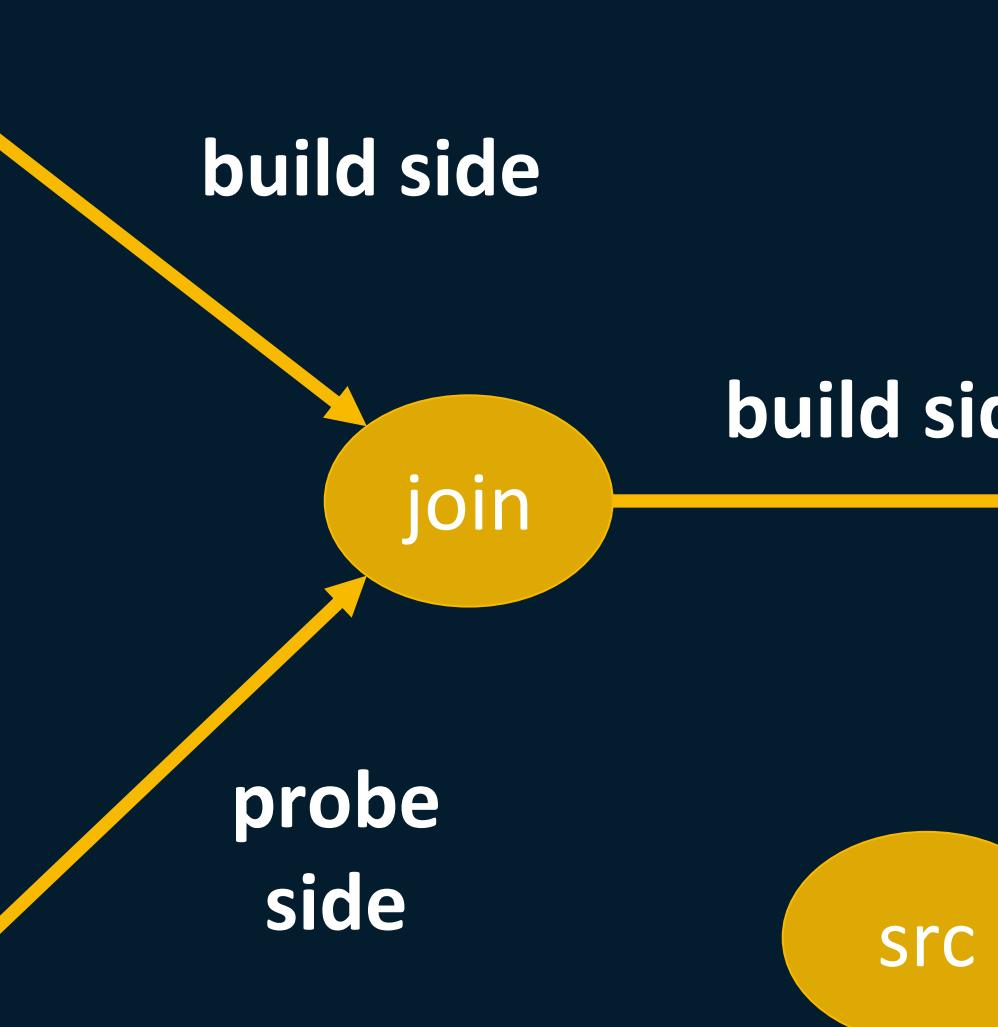


Batch-Streaming Unification

- No fundamental difference between batch and stream processing
- Batch allows optimizations because data is bounded and "complete"
- Batch and streaming still separately treated from task level upwards
- Working toward a single runtime for batch and streaming workloads

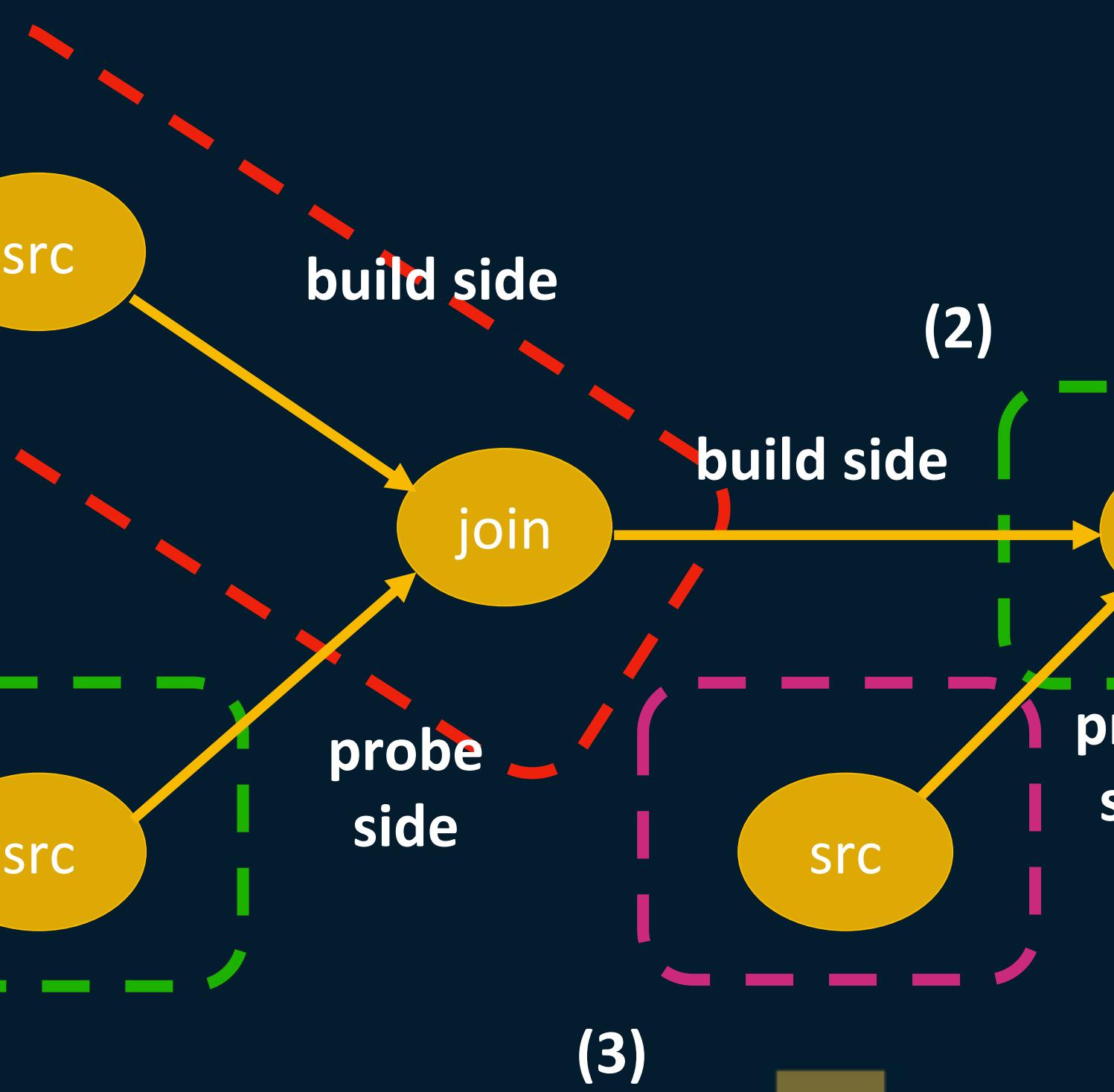
Flink Scheduler

- Lazy scheduling (batch case)
 - Deploy tasks starting from the sources
 - Whenever data is produced start consumers
 - Scheduling of idling tasks → resource under-utilization



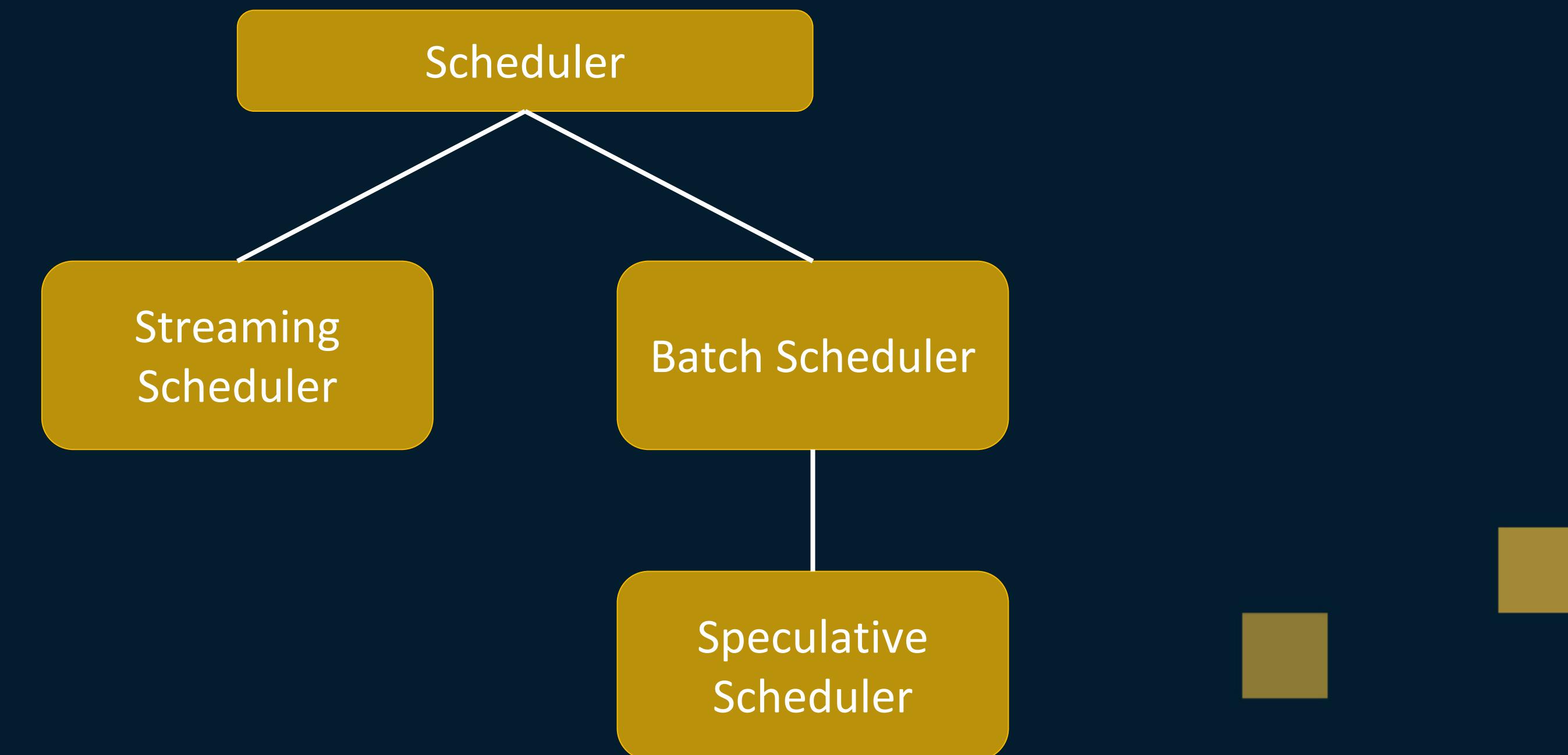
Batch Scheduler

- More efficient scheduling by taking dependencies into account
- E.g. probe side is only scheduled after build side has been processed



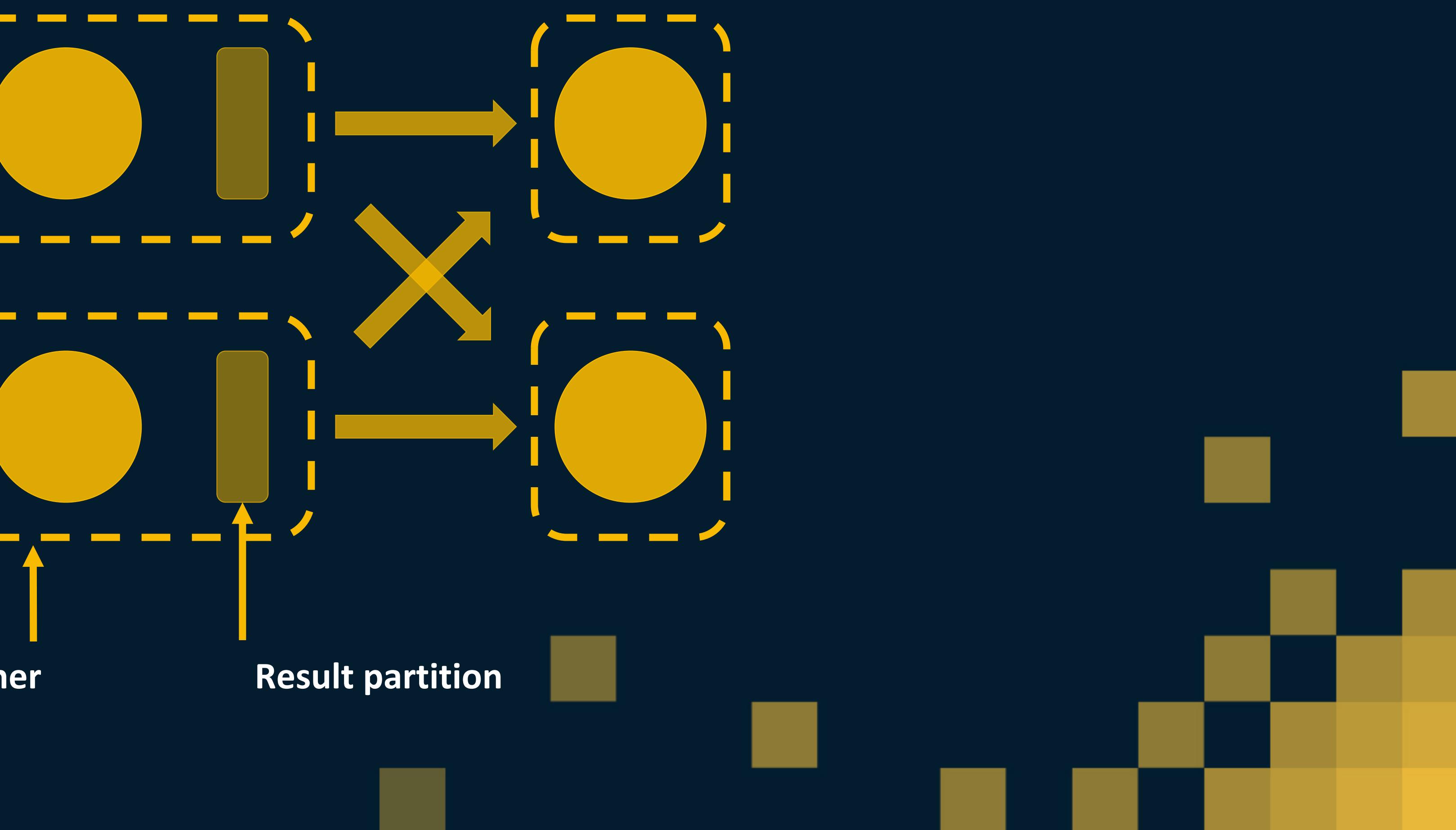
Extendable Scheduler

- Make Flink's scheduler extendable & pluggable
- Scheduler considers dependencies and reacts to signals from ExecutionGraph
- Specialized scheduler for different use cases



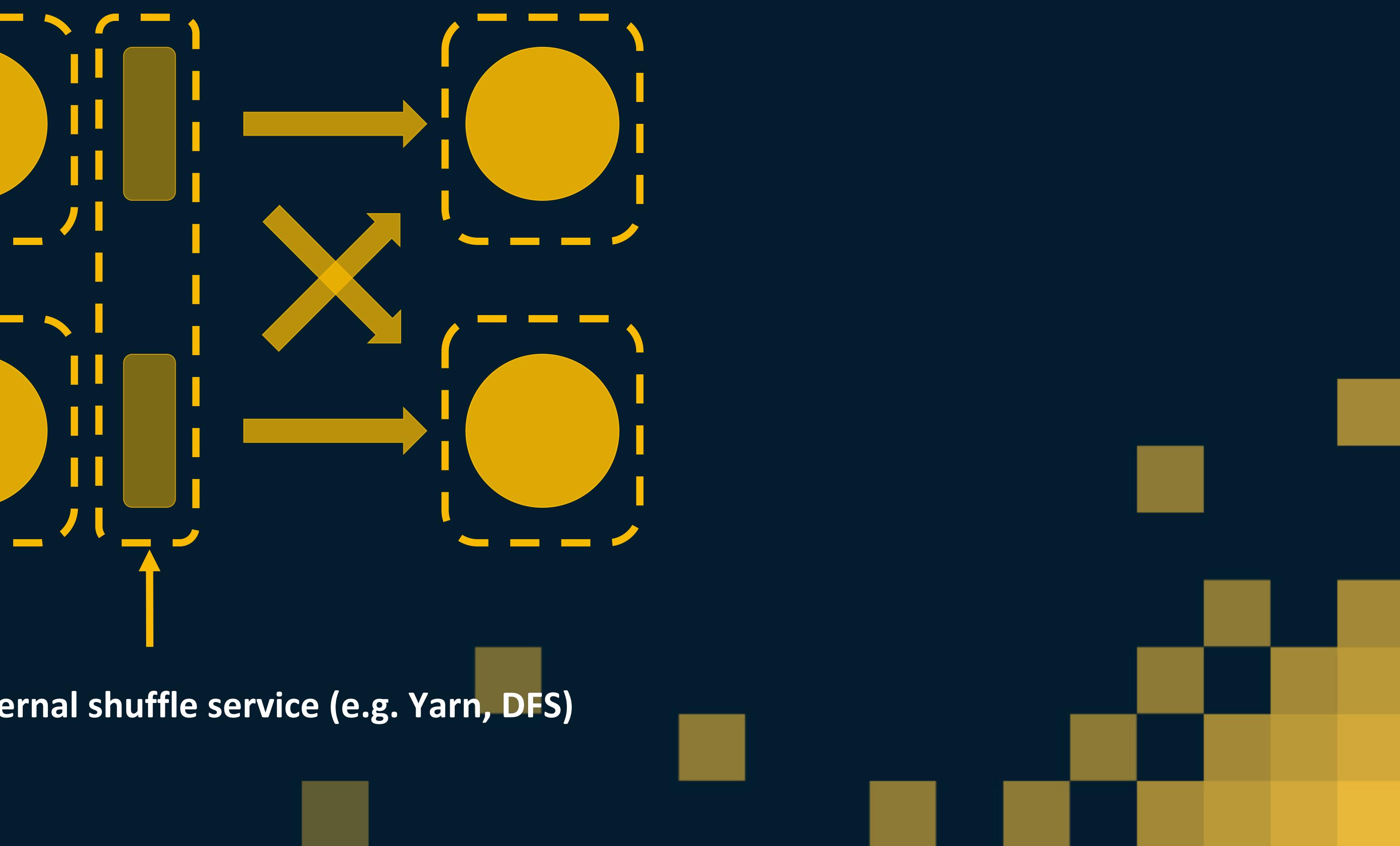
Flink's Shuffle Service

- Tasks own produced result partitions
- Containers cannot be freed until result is consumed
- One implementation for streaming and batch loads



External & Persistent Shuffle Service

- Result partitions are written to an external shuffle service
- Containers can be freed early
- Different implementations based on use case



TL;DL

- Flink 1.7.0 added many new features around SQL, connectors and state evolution
- A lot of new features in the pipeline
- Join the community!
 - Subscribe to mailing lists
 - Participate in Flink development
 - Become active



THANKS





Flink Forward San Francisco 2019

The Apache Flink® Conference

Stream Processing | Event Driven | Real Time

San Francisco | April 1-2, 2019

Register



Organized by dataArtisans

#flinkforward

<https://sf-2019.flink-forward.org/register>