Software Engineering Conference Russia 2018

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Business Intelligence in microservice architecture

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Yandex.Money


SUN ODYSSEY 440

From Greece to Moscow

- Boat to Athens

- Feet to Taxi

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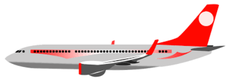
- Athens Taxi to Airport

- Flight



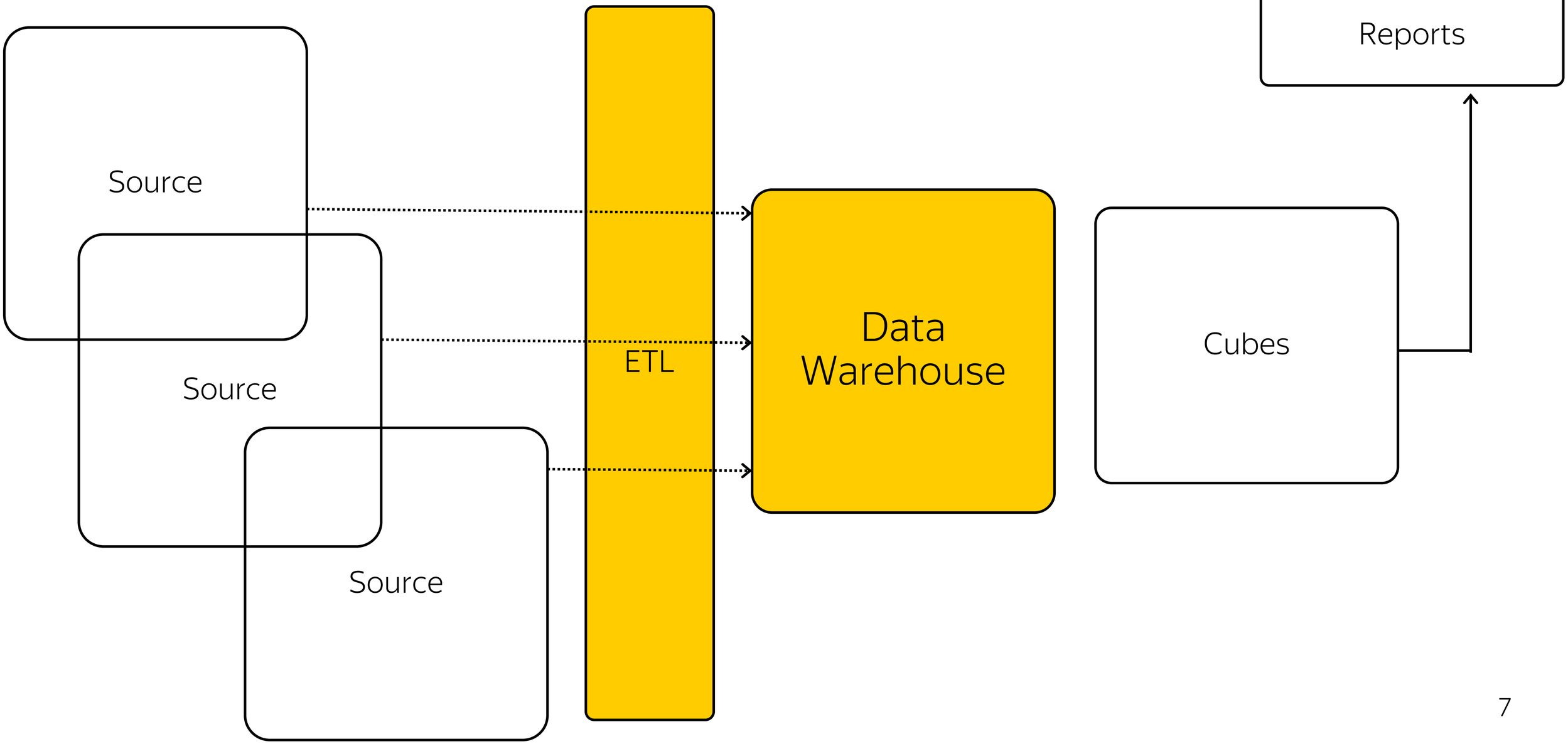
- Moscow Taxi to Digital October

- Profit!

How we built realtime BI

- High load
- Time to Show
- Request time
- Support architecture

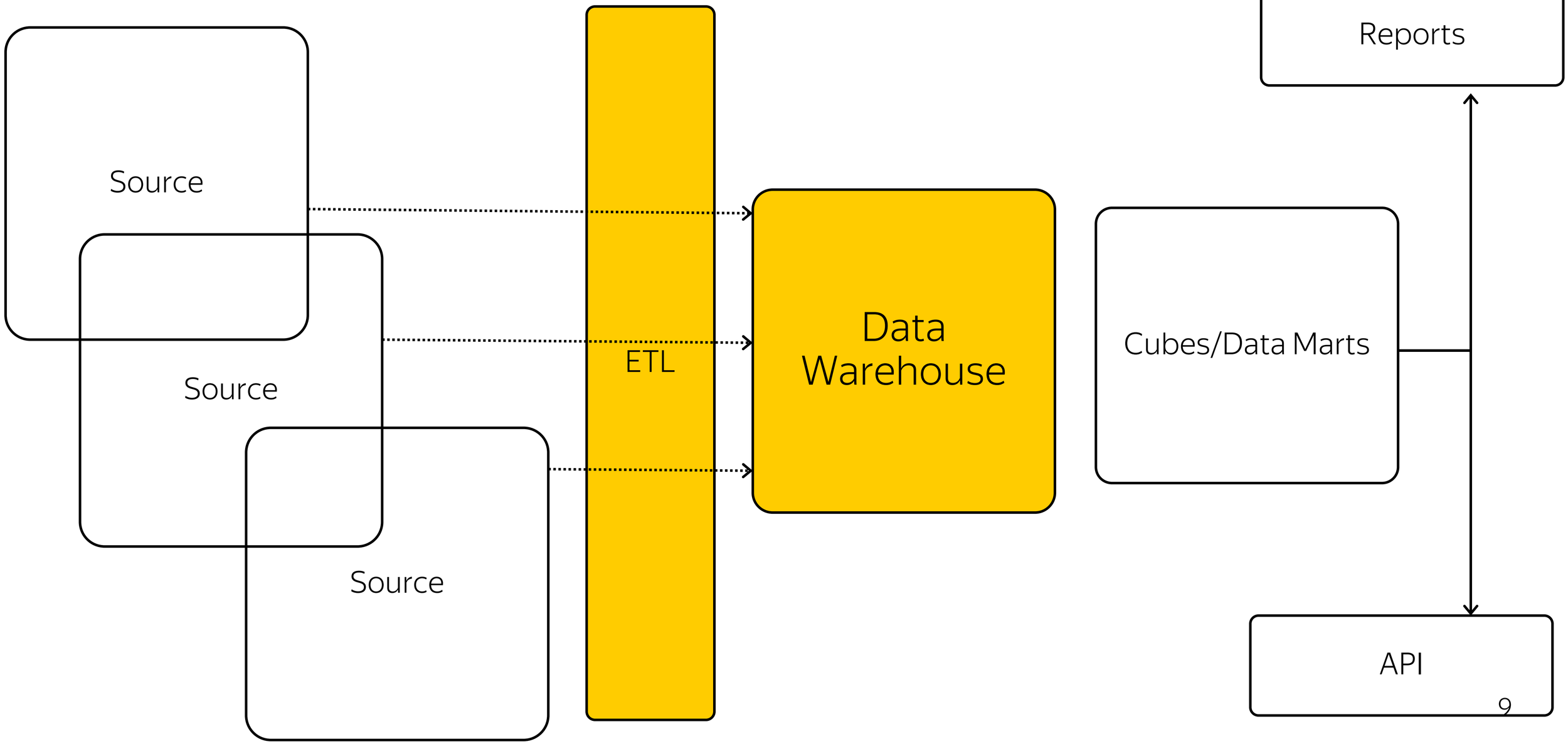
We start with ETL



We start with ETL

- Not so much sources
- Data is highly aggregated
- Gaps are rare and noticable

We start with ETL

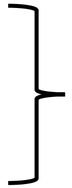


Then we add Backoffice interface

- More frequent ETL runs
- Source should be prepared

And SLA

- Data Update time
- Interface Update time
- Monitoring



Time To Show

Testing

- Load testing – sources
- Load testing – ETL/API
- Load Testing – Together
- ETL – just pause
- And it is not so hard to create
- (You can test ETL with just pause)

Then we start microservicing

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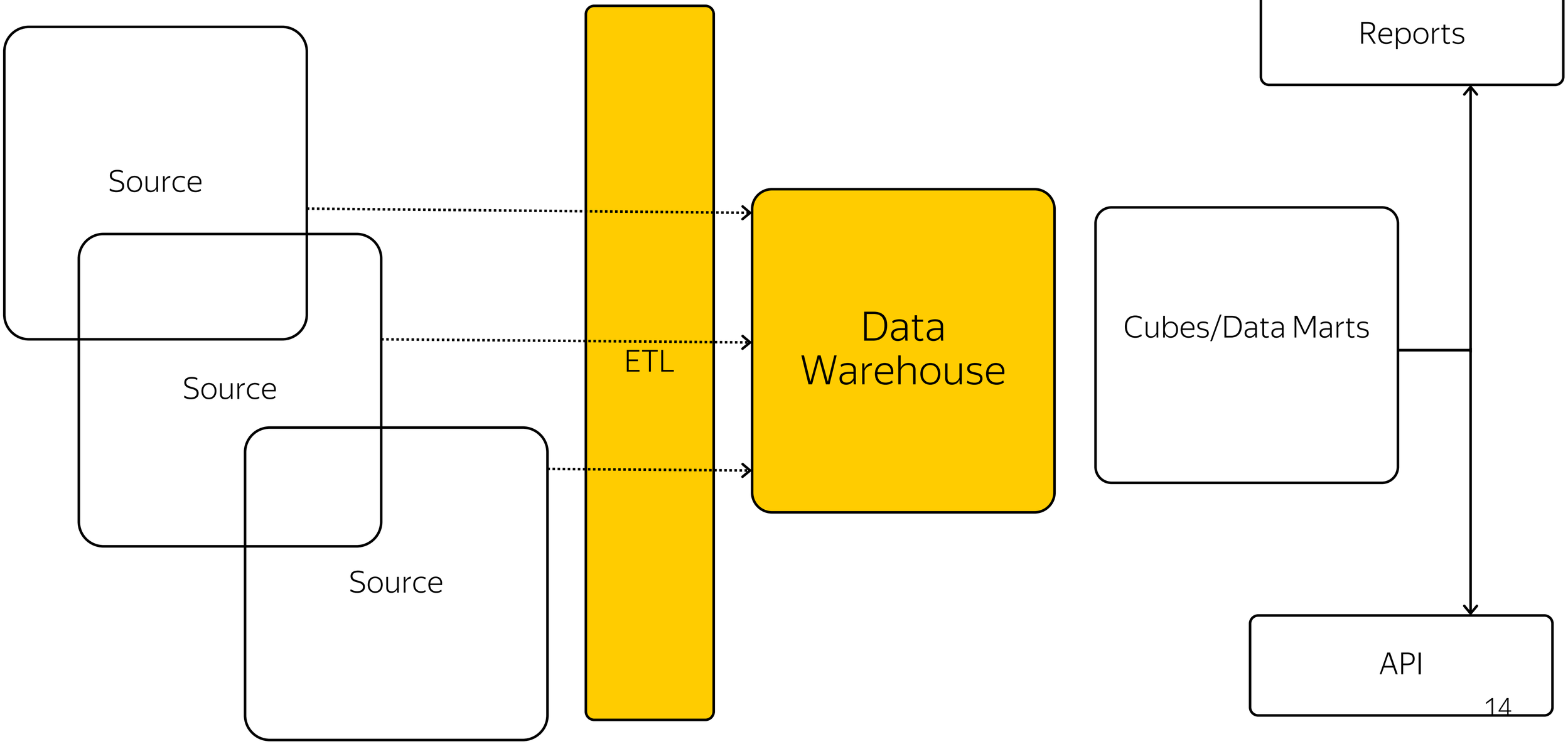
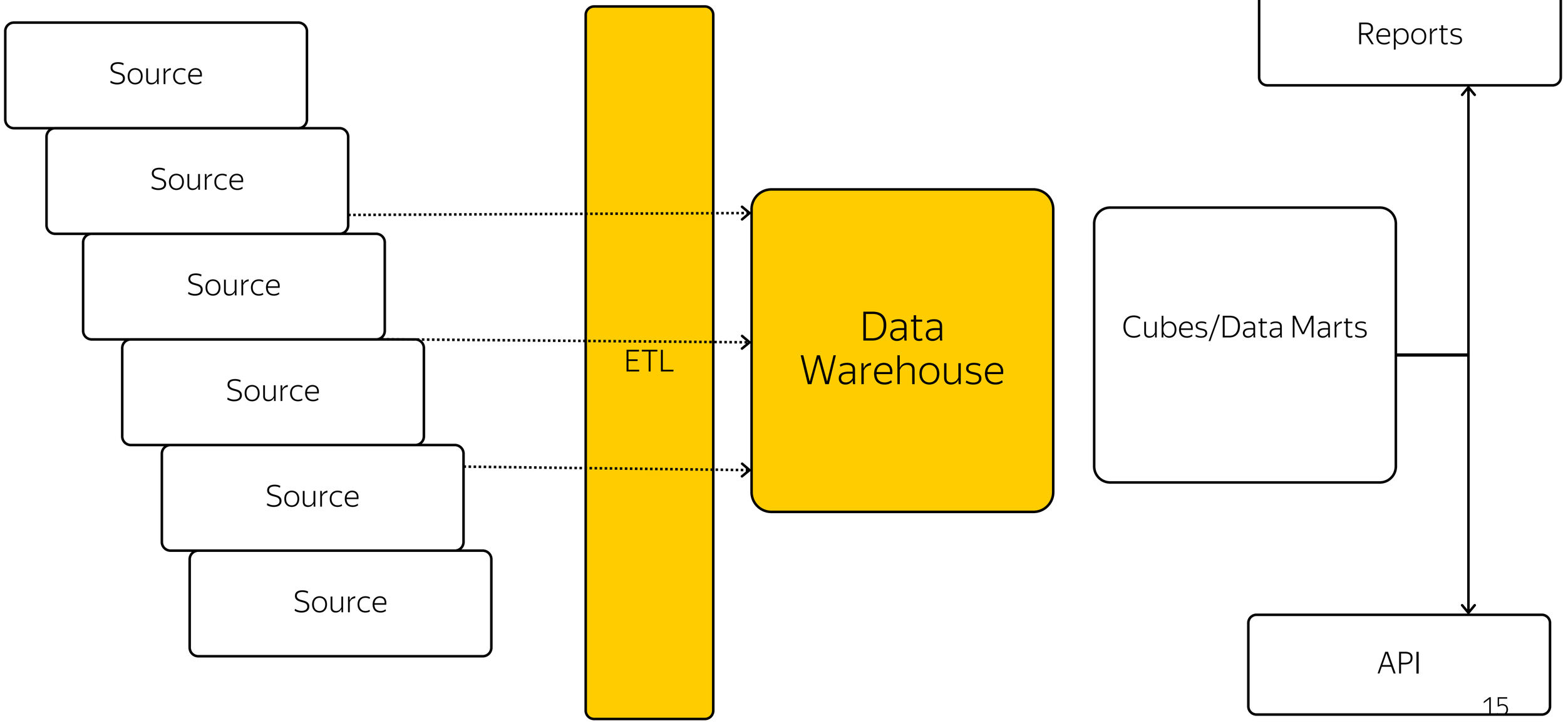


Then we start microservicing



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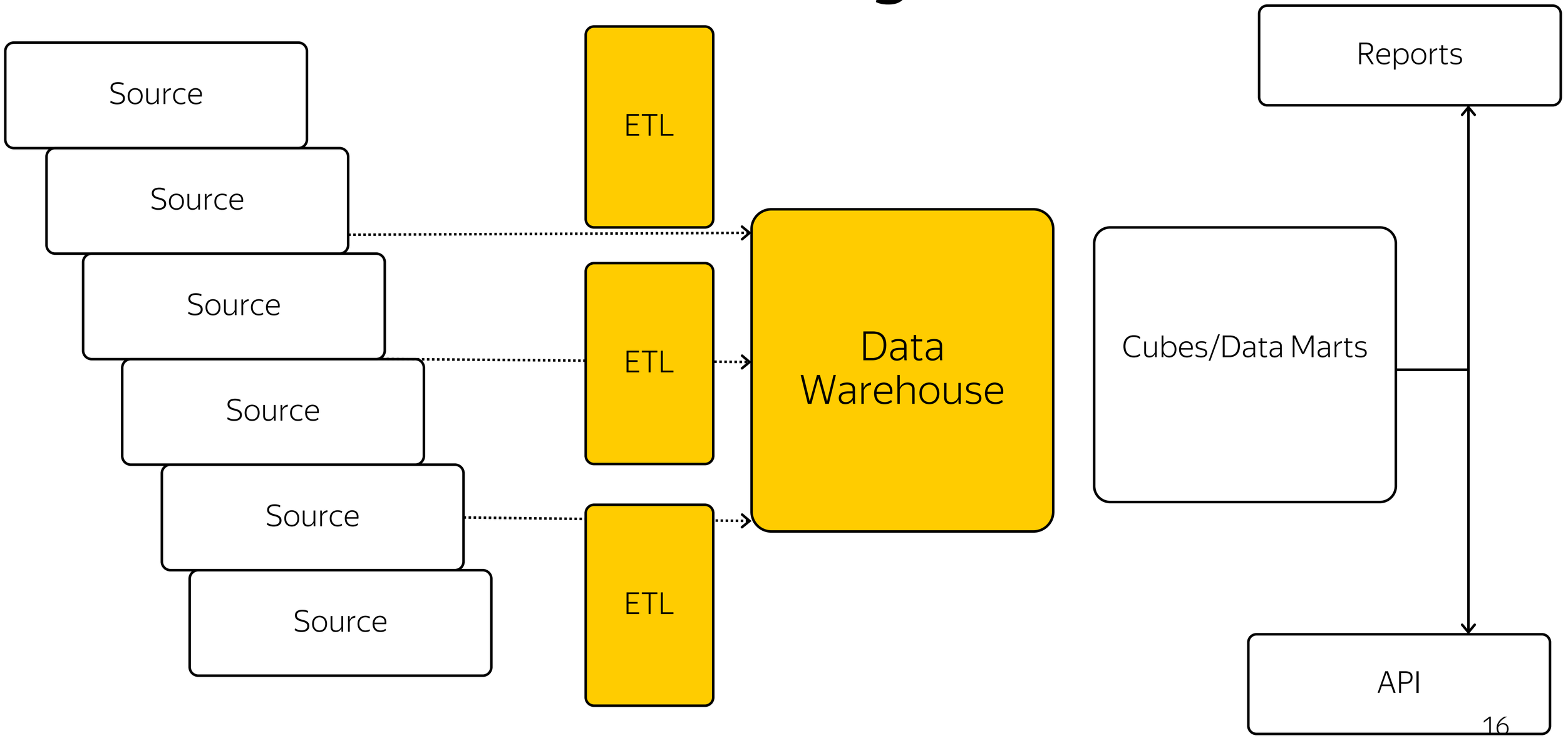
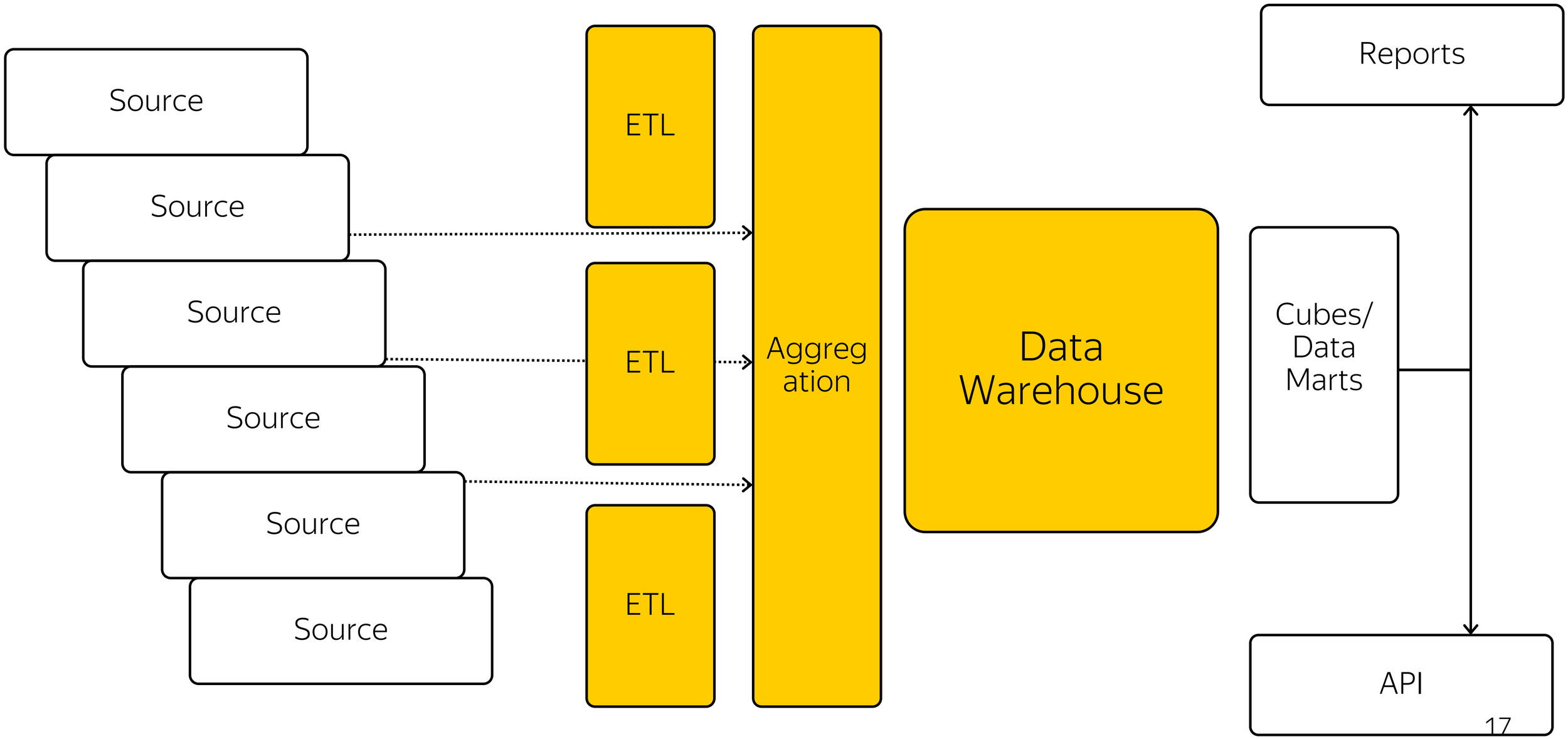


We start with ETL



Then we start microservicing

- A lot of sources give less aggregated and integrated data
- One (or more) aggregtation layer
- Data Update Time = [delay] * [sources per aggregation]

Then we start microservicing

- Unique Identifier Issue
- Aggregation rules sync
- ETL still is pretty good

Update strategies: trade request time for process time and load

- Load -> Store -> Show
- Load -> Aggregate -> Store -> Show
- Load -> Store -> Aggregate -> Show
- Load -> Aggregate -> Store - > Update -> Show
- Load -> Aggregate -> Store - > ~~Update~~ -> Show

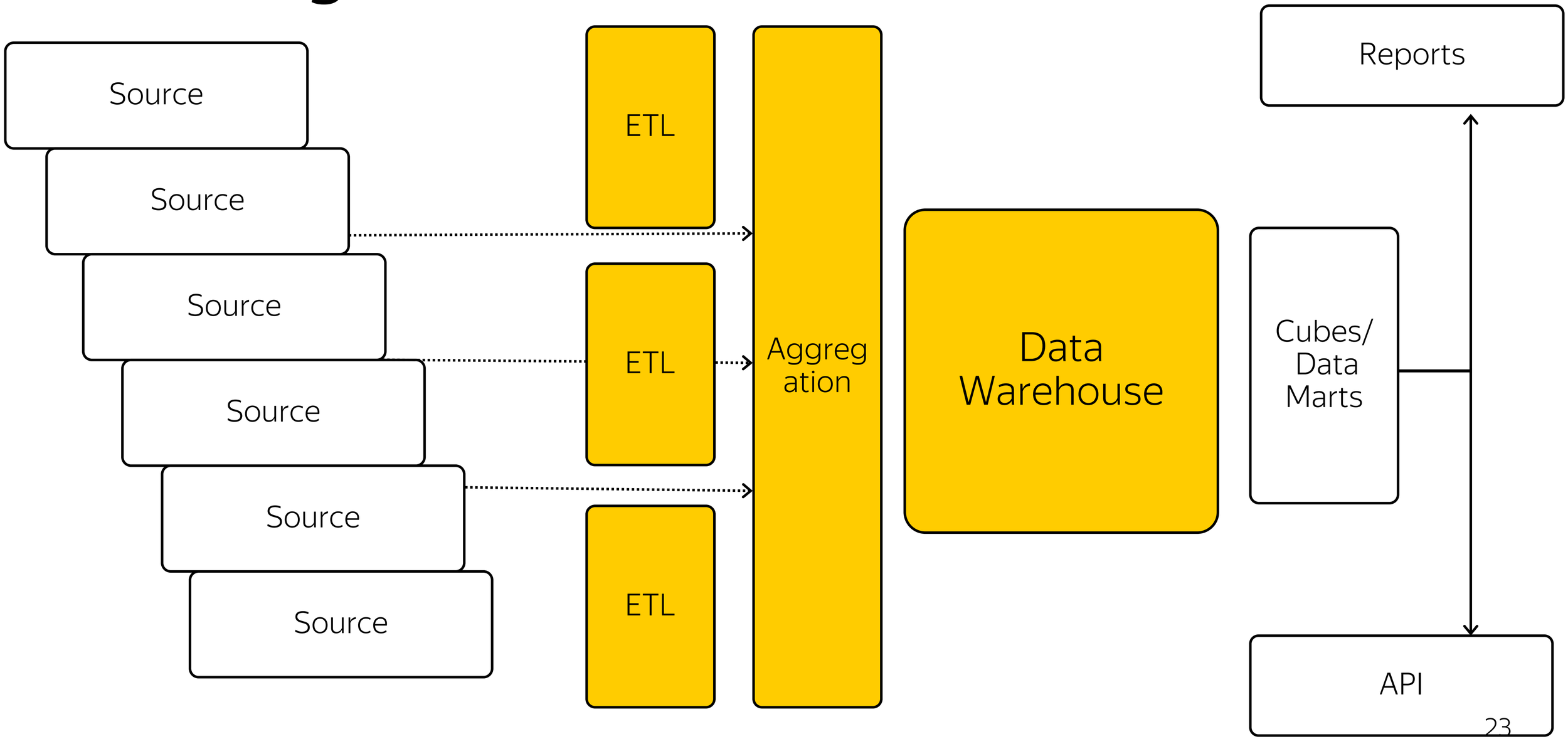
Update strategies: trade request time for process time and load

- Load -> Store -> Show
- **Load -> Aggregate -> Store -> Show**
- Load -> Store -> Aggregate -> Show
- Load -> Aggregate -> Store - > Update -> Show
- **Load -> Aggregate -> Store - > ~~Update~~ -> Show**

Drawbacks

- Sources still have to store a cache of data
- Sources have to preserve timelime (replication point)
- Request portion can be huge

Then we go to events



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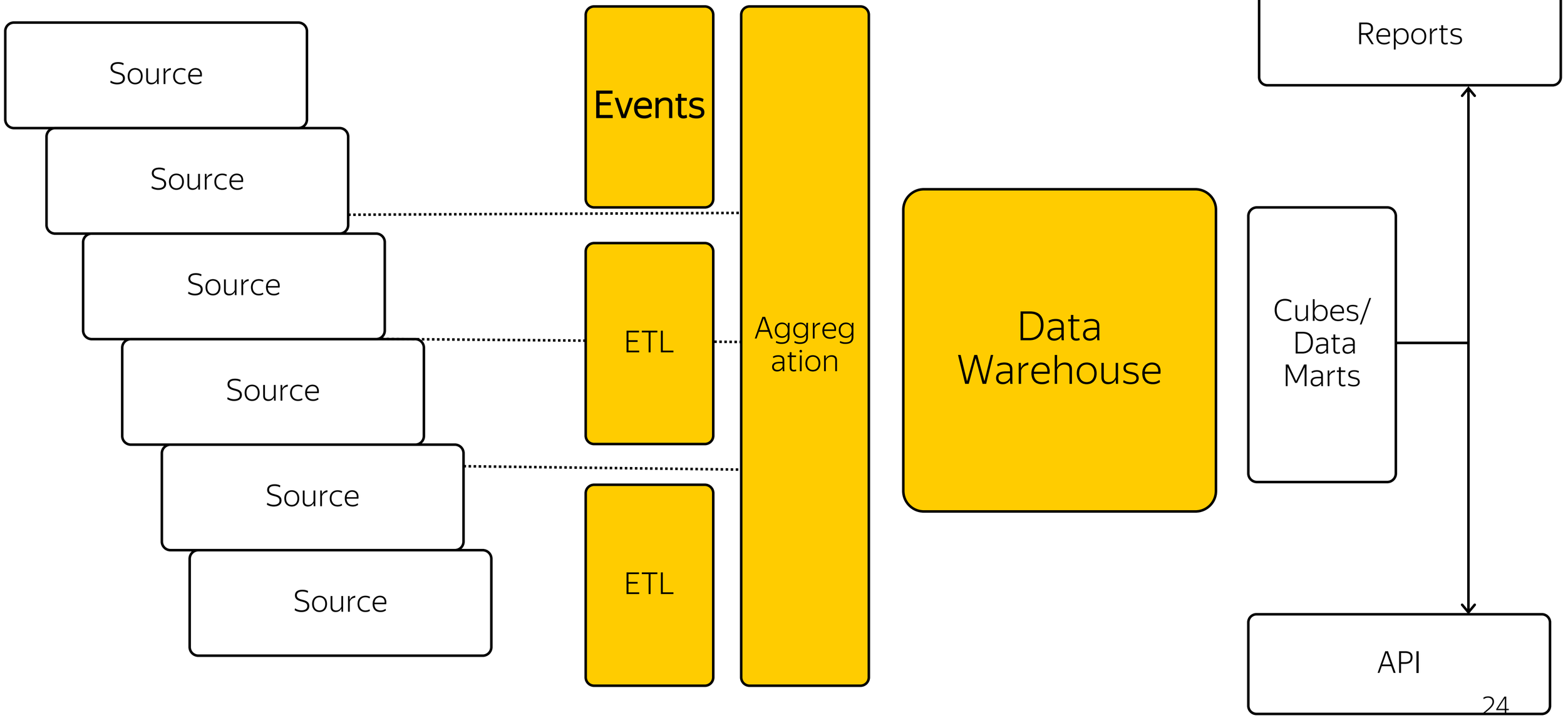

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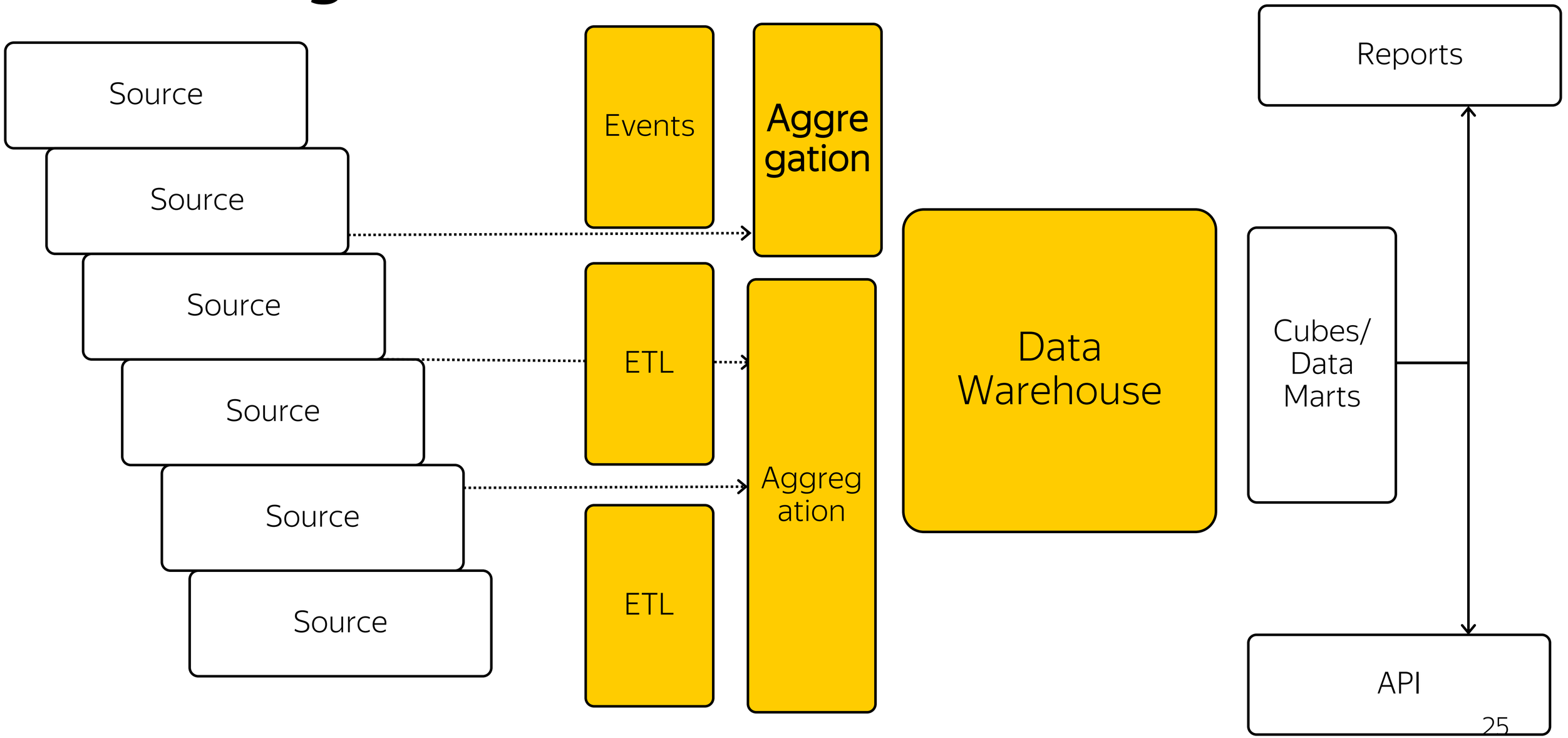

Update strategies: trade request time for process time and load

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- Load -> Construct -> Aggregate -> Store -> Show

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Now

- We still have ETL for aggregations
- Time To Show: 10 sec / source
- Source type count: close to 100

Starring

- Data Warehouse: MS SQL Server
- ETL: SSIS
- Events queue: Kafka
- Events reader: C#
- Other Sources: API/Java/etc
- Out of scope: sharding, downtime, processing, etc

Key takeaways

- ETL works fine with Events
- Find sufficient unique identifier among data sources
- Metrics: Time to Show and others

Questions?

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