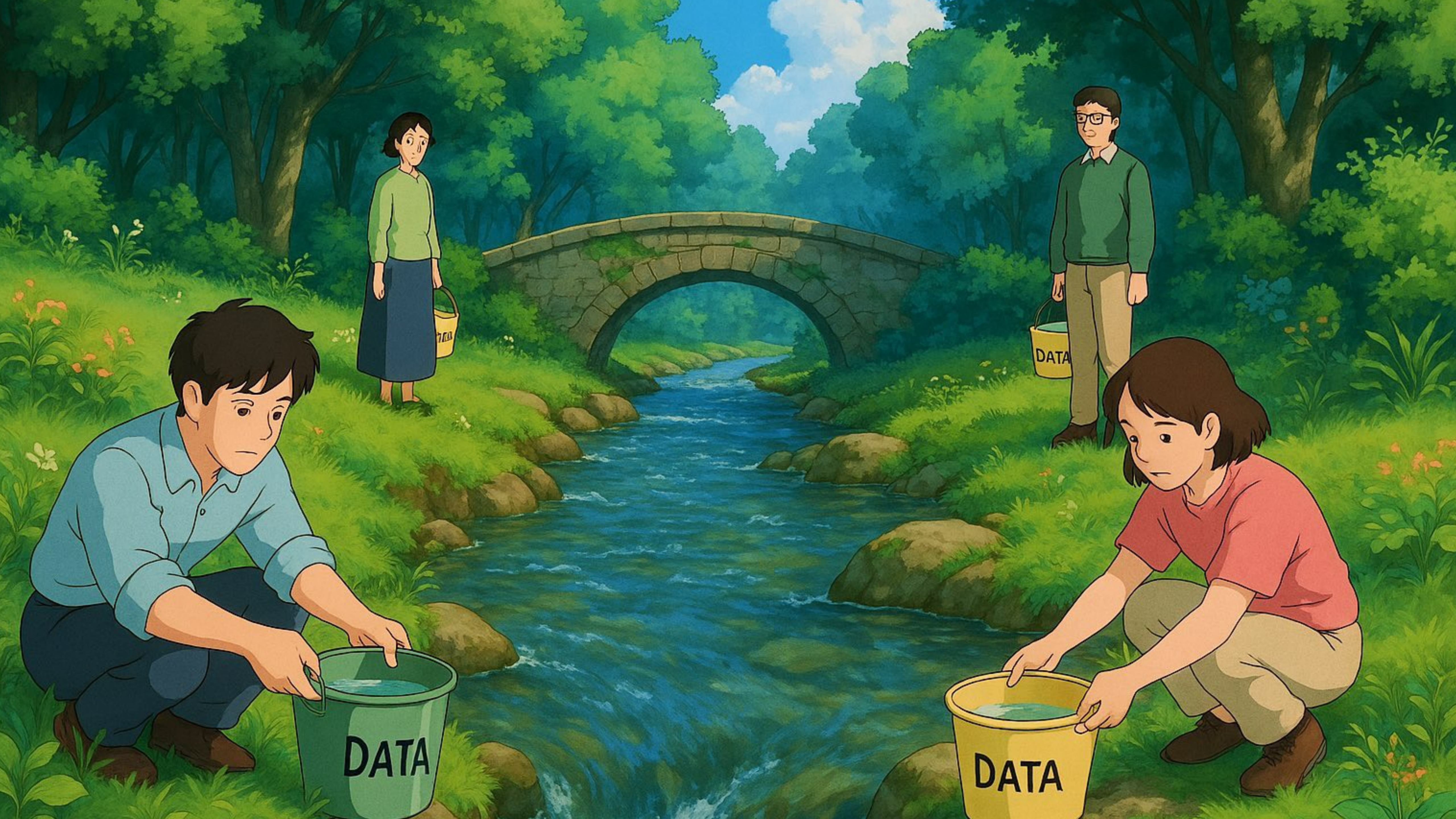


A wide-angle photograph of the New York City skyline, viewed from across the water. The One World Trade Center stands prominently in the center, its spire reaching towards the sky. Other skyscrapers of varying heights and architectural styles fill the background. The sky is a clear, pale blue with a few wispy white clouds. The water in the foreground is a calm, dark blue.

One Does Not Simply Query a Stream!

**Viktor Gamov, Confluent
@gamussa**

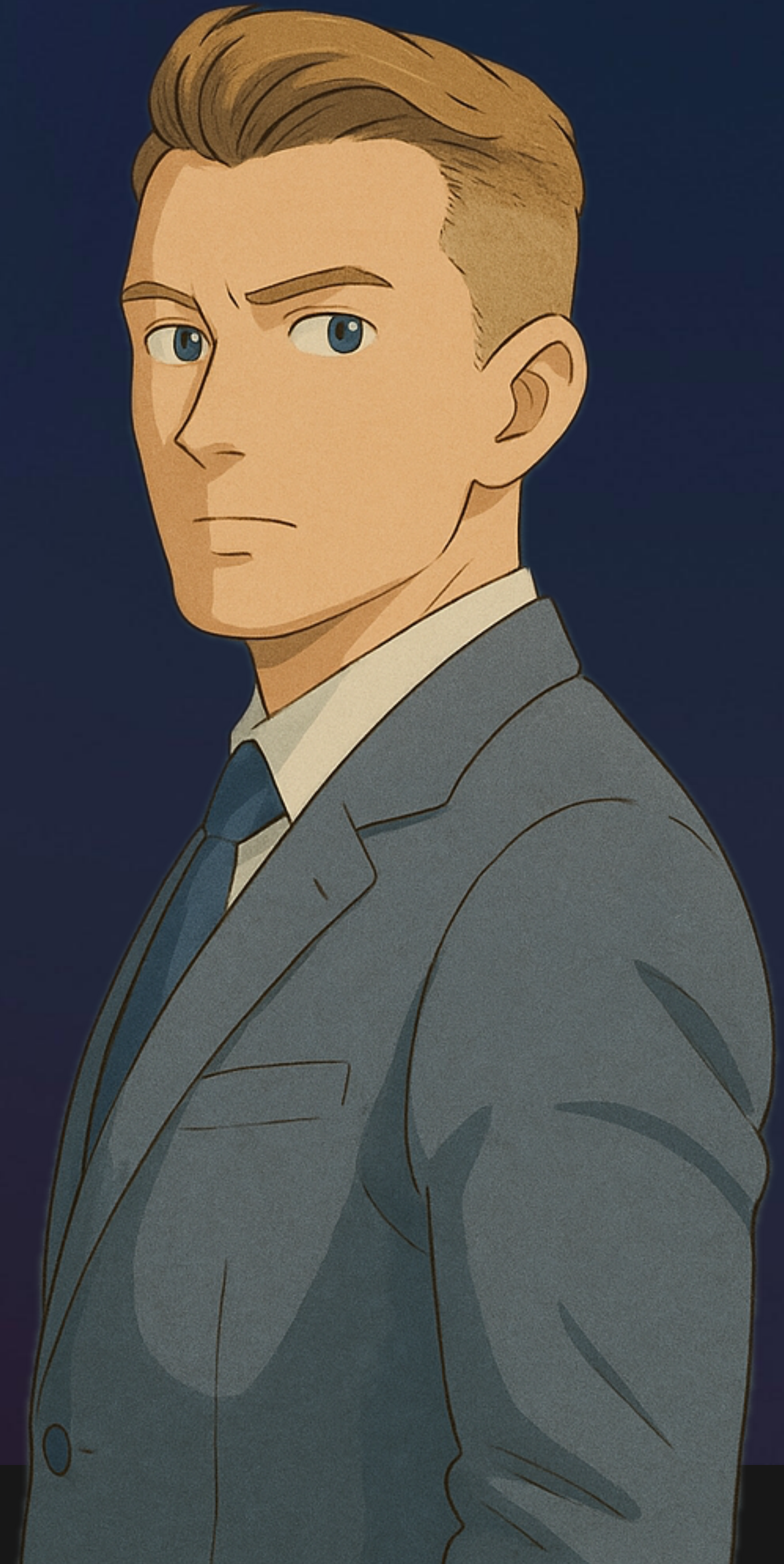
**NYC Iceberg Meetup
July 10, 2025**



Viktor

GAMOV

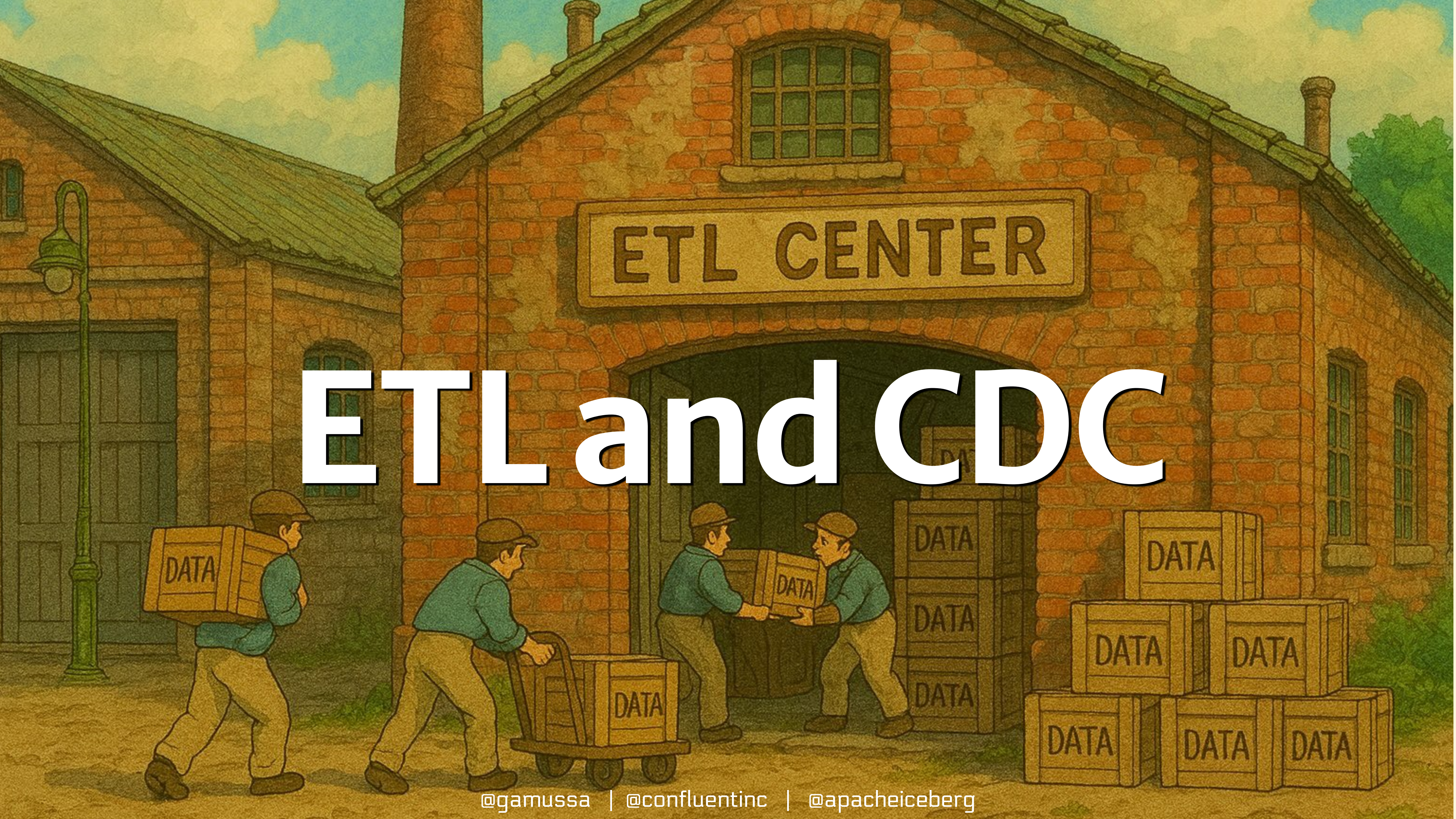
Principal Developer Advocate | Confluent
Kafka in Action | Co-Author
Java Champion

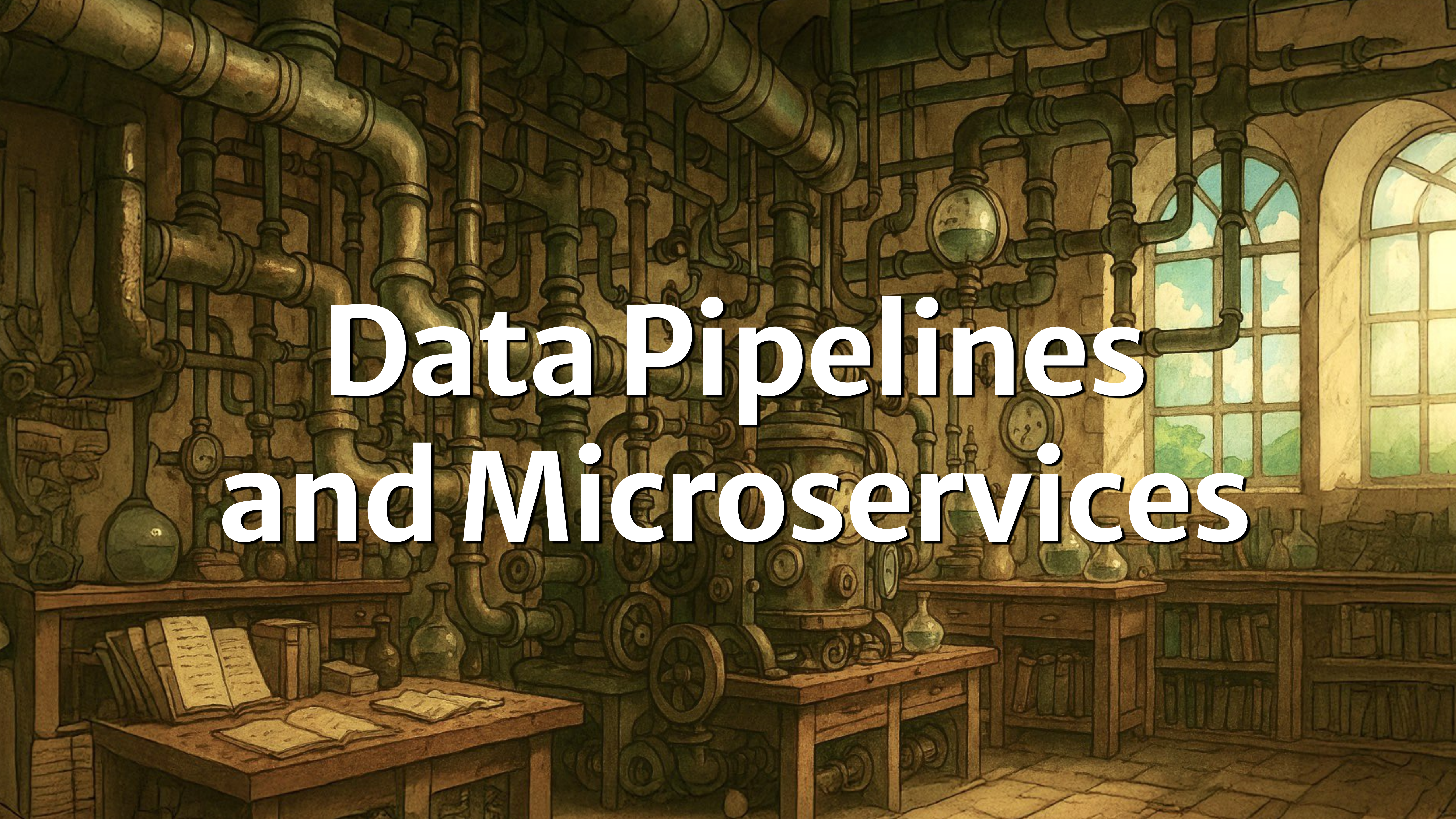


Monolith



ETL and CDC



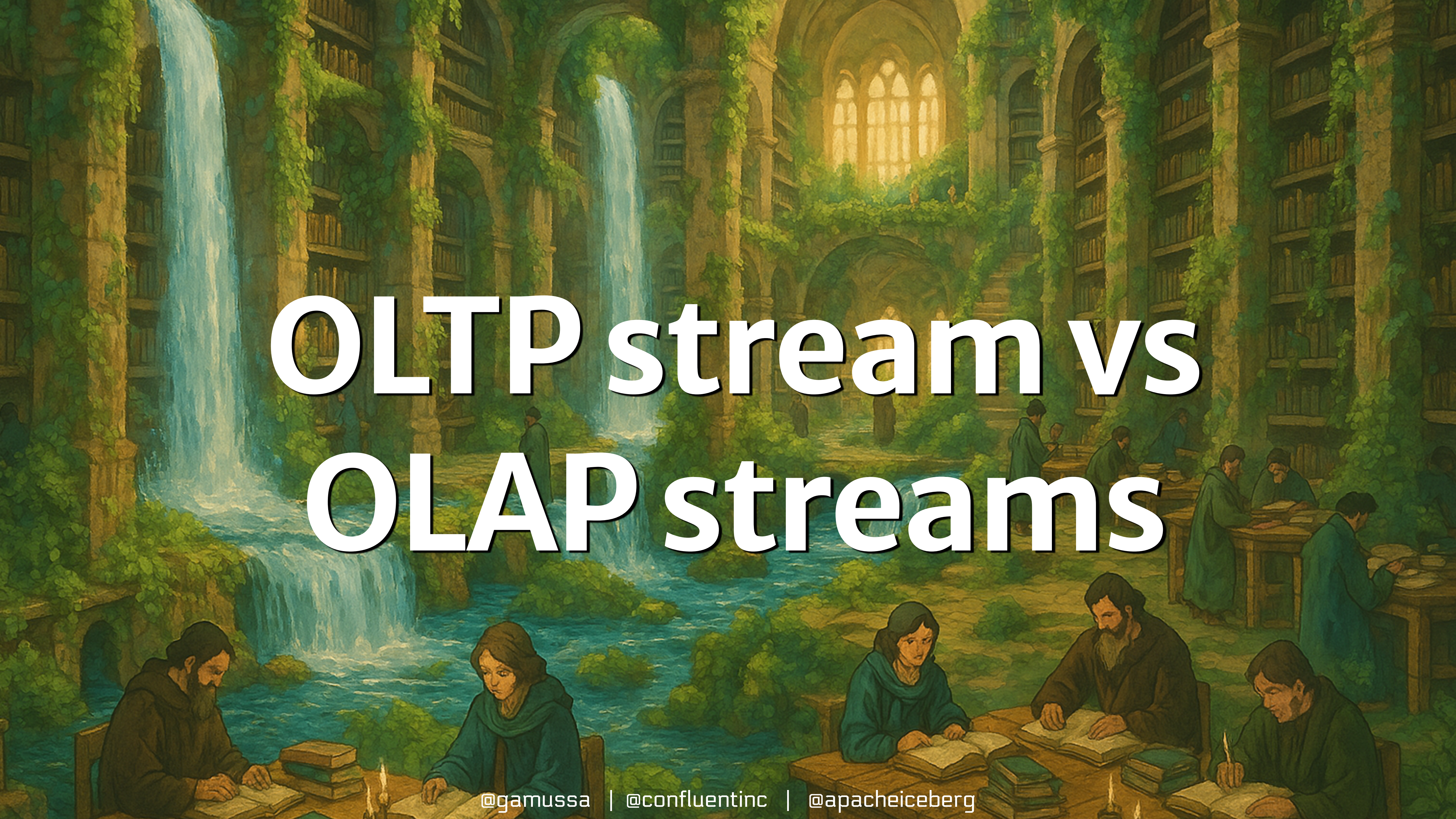


Data Pipelines and Microservices

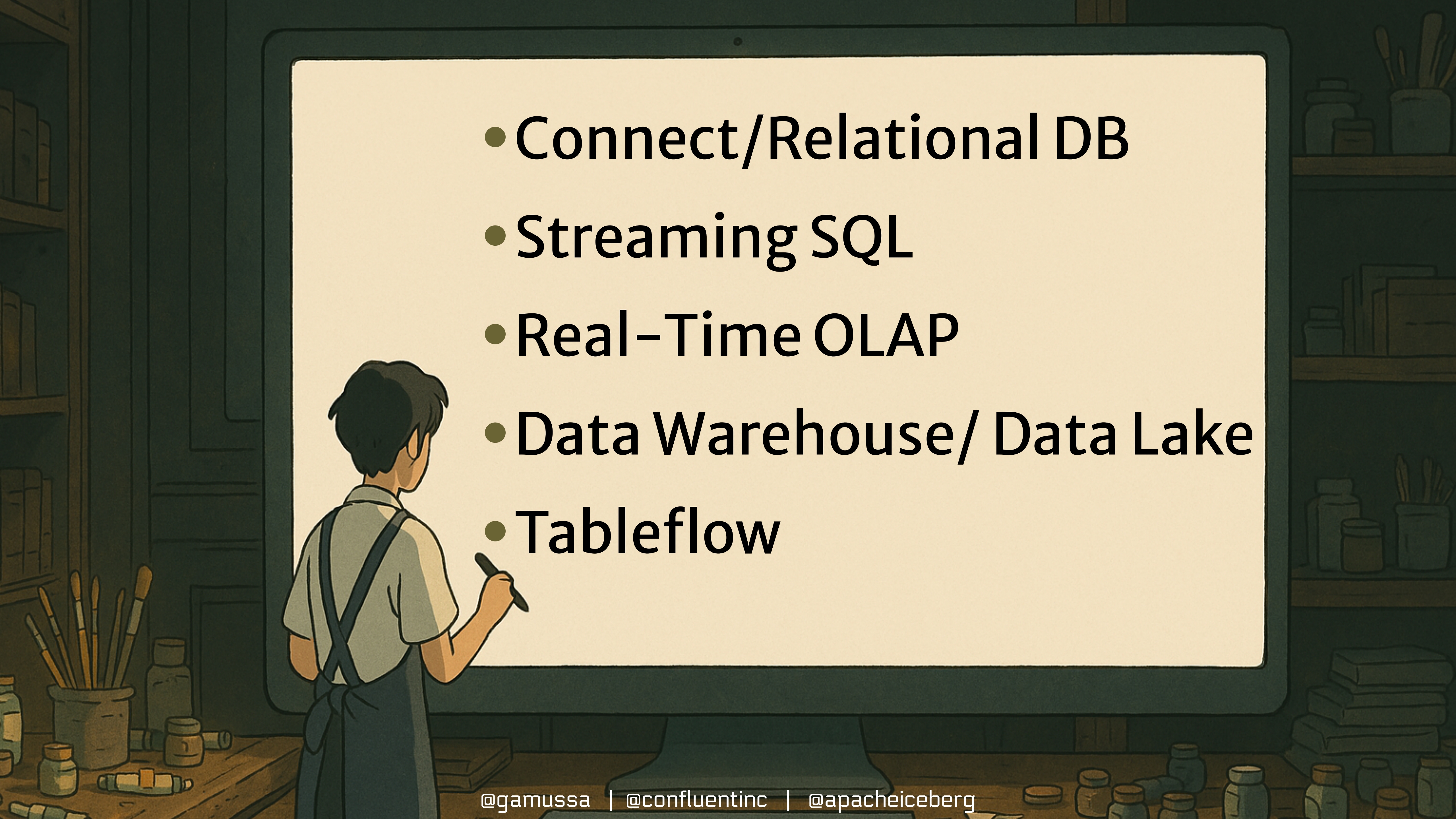


LOG

APPEND-ONLY
NO EXIT

The background is a rich, painterly illustration of a medieval library or monastery. Two large, cascading waterfalls flow through the space, surrounded by lush greenery and ivy-covered stone walls. Tall, arched bookshelves filled with books line the walls. In the foreground and middle ground, several scholars in medieval attire are seated at wooden desks, focused on reading or writing. The scene is lit with warm, golden light from a large window in the background, creating a serene and scholarly atmosphere.

OLTP stream vs OLAP streams

- 
- The illustration shows a person from behind, wearing a light-colored shirt and a dark apron, standing in a workshop-like environment. They are pointing with a marker at a large, bright screen that displays a list of data technologies. The workshop is filled with various tools, jars, and containers on shelves and a workbench. The lighting is warm and focused on the screen.
- Connect/Relational DB
 - Streaming SQL
 - Real-Time OLAP
 - Data Warehouse/ Data Lake
 - Tableflow

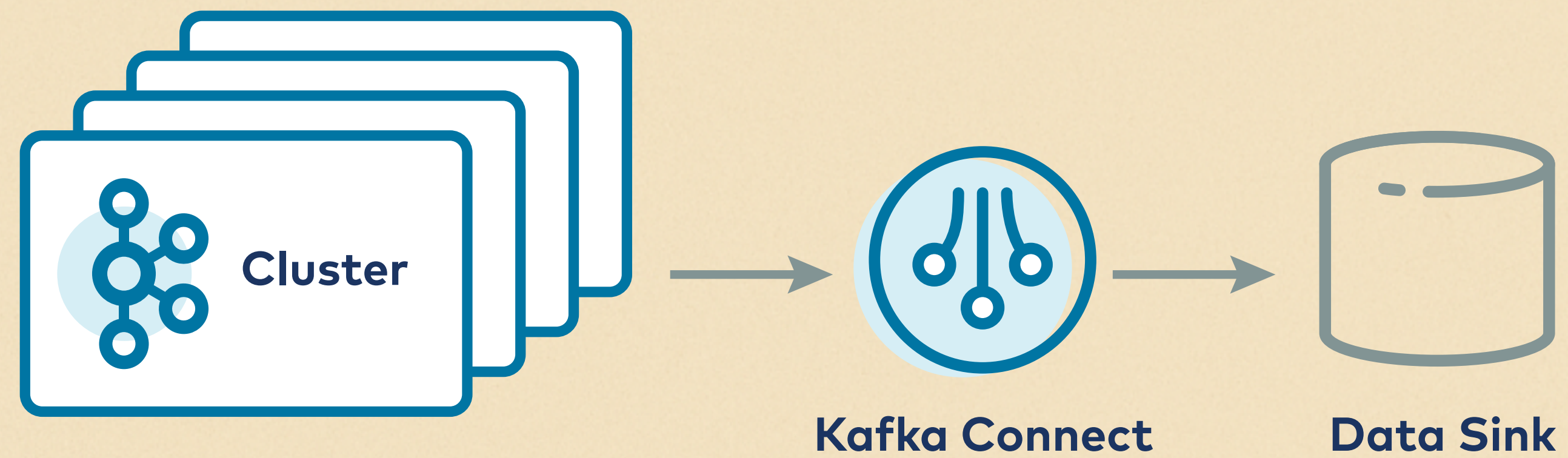
A detailed illustration of a medieval manuscript room. In the center, a large, complex mechanical device with a massive wheel and gears is unrolling a long, continuous scroll of parchment. The scroll is covered in dense, handwritten text. Several monks, dressed in traditional robes and caps, are seated at desks, focused on writing or reading their own scrolls. The room is characterized by high, arched windows with intricate tracery, allowing light to filter in. The architecture features stone columns and a vaulted ceiling. In the background, there are bookshelves filled with books and a statue on a pedestal. The overall atmosphere is one of quiet, industrious scholarship.

Kafka Connect

Connect/RDBMS

- Suitable for smaller data
- Transactional
- Familiar to users

Connect/RDBMS







Streaming SQLs

Streaming Database

- SQL for Queries
- Streaming Source is 1st class citizen
- Persistence / Storage

Streaming SQL

- ksqlDB
- Materialize
- RisingWave
- TimePlus



But Viktor, Flink
has SQL



What is Apache Flink® SQL?



ksqlDB

- «*Streaming Database*»
- Provides persistent TABLE abstraction
- Pull and Push queries
- Like **Kafka Streams**, but in **SQL**

Materialize

- Replacement data warehouse
- Integrates with Kafka, Postgres, dbt
- The **Materialized View** is the central abstraction
- Views are **persistent and queryable**
- Postgres wire-compatible
- Positioned as an analytics solution

Rising Wave

- Distributed SQL Streaming database
- Cloud and OSS versions
- Implementation of **Flink in Rust**
- **Kafka, Pulsar, Kinesis** integrations
- Flink+persistent views
- Postgres wire-compatible

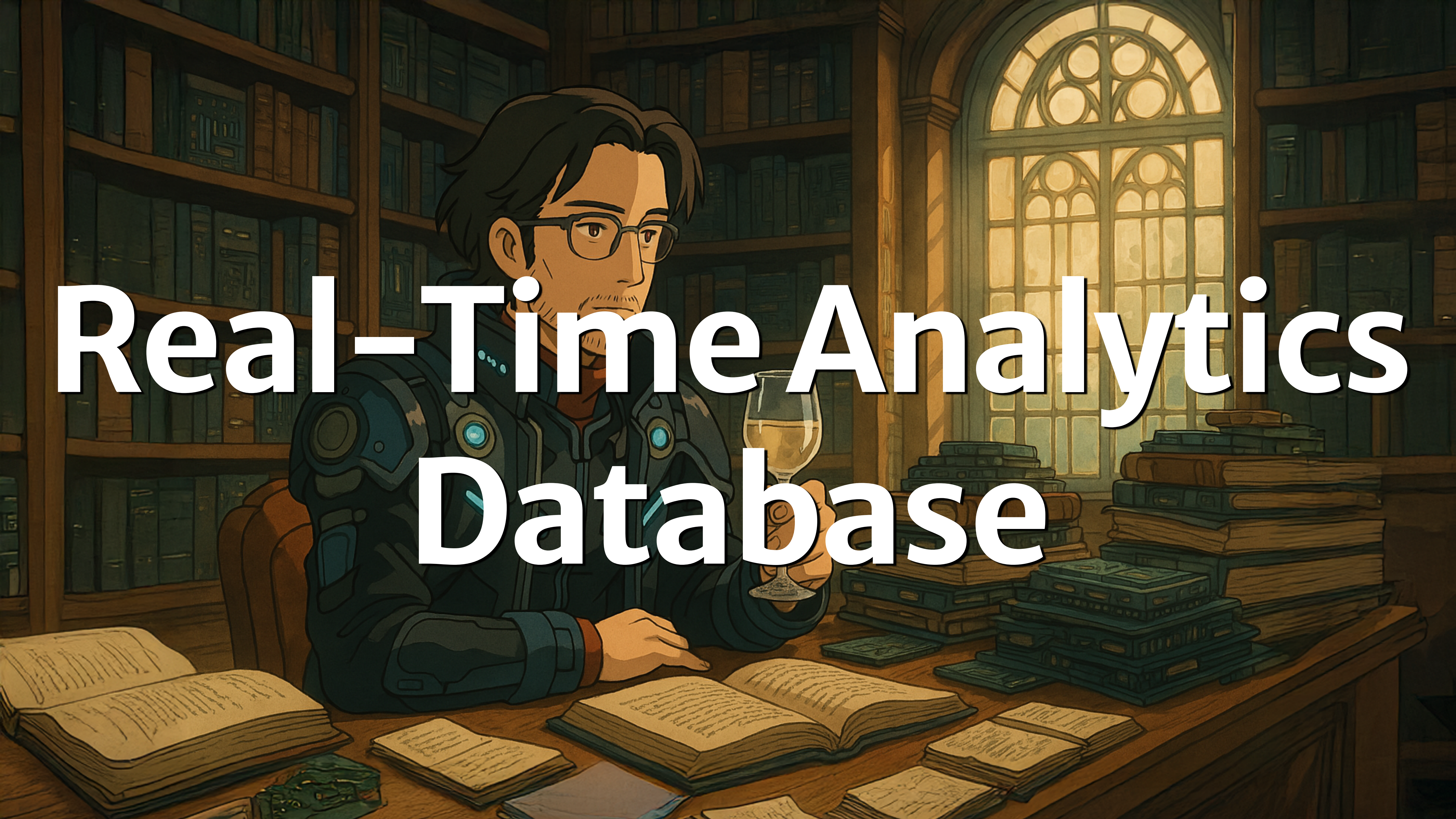


```
SELECT  
product_id.  
Av6irating)  
FROM reviews  
GROUP BY
```

```
SELECT  
room revting  
GROUP BY .....  
product_id
```

```
SELECT  
FROM orders  
WHERE status =  
'shipped'
```

```
SELECT ★  
FROM orders  
WHERE status =  
'shipped'
```

Real-Time Analytics Database

Real-Time OLAP

- Designed for **high concurrency, low latency queries**
- Ingests from **streaming and batch sources**
- Intimate integration with **Kafka**
- Conventional **tables and SQL**

Real-Time OLAP

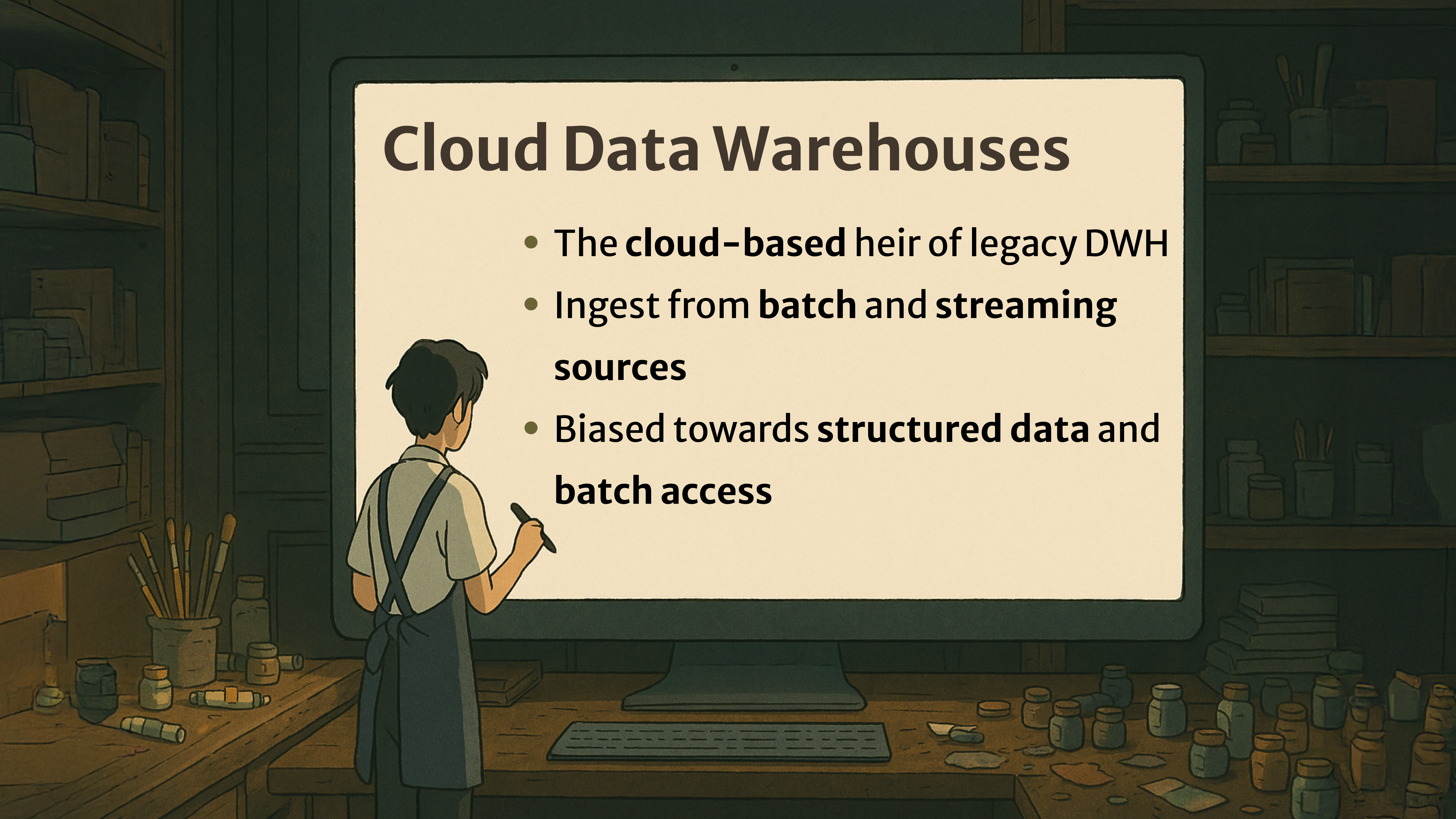
- Analytics shaped like **real-time data**
- Analytics when **users are decision makers**

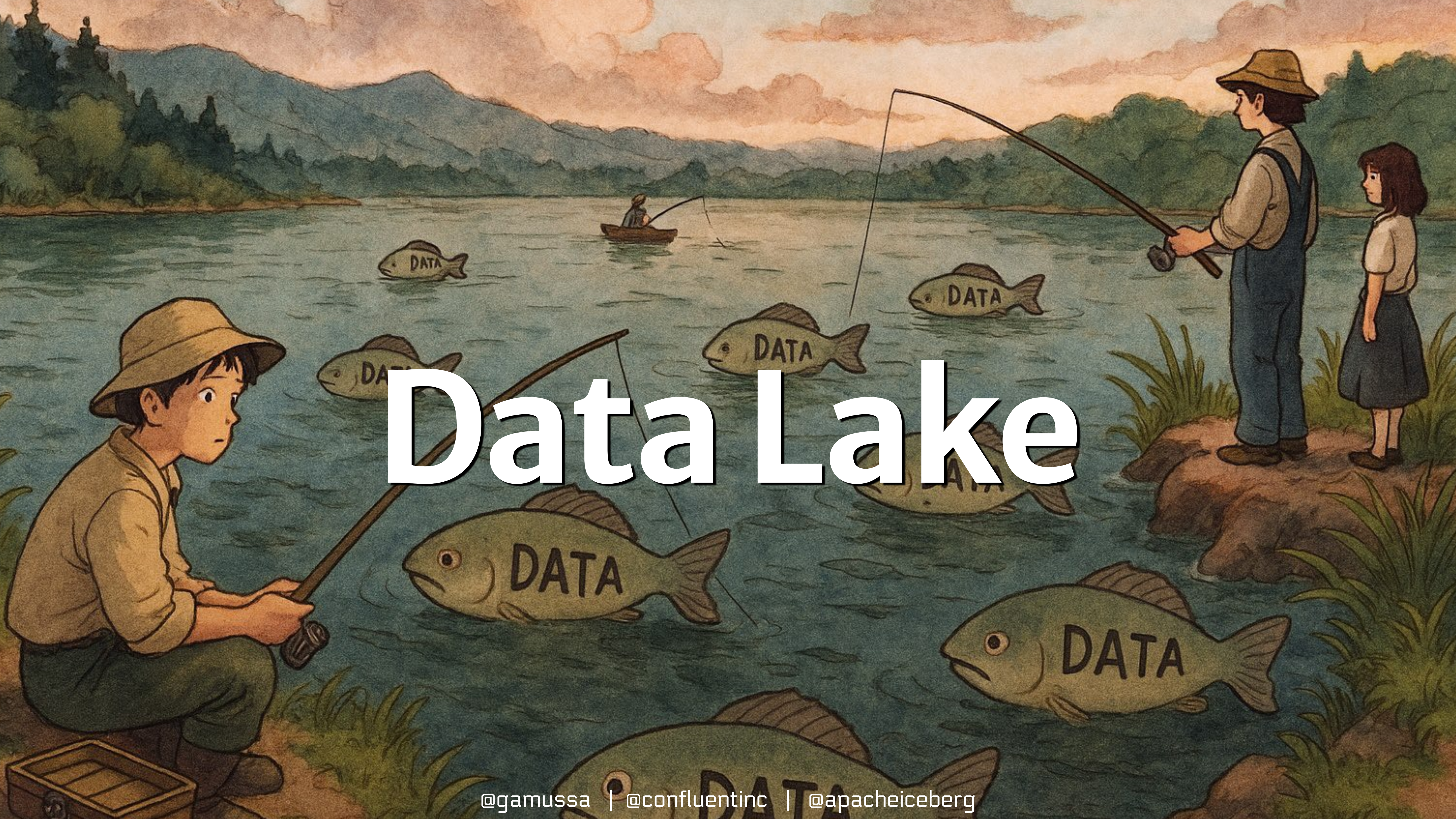
A surreal illustration of a vast library. The room is filled with tall, wooden bookshelves that stretch into the distance, creating a sense of immense scale. The architecture is reminiscent of a cathedral, with high, arched ceilings and large, ornate windows. A bright, golden light emanates from a large, arched window at the far end of the hall, casting a warm glow throughout the space. In the center of the room, a small figure of a person stands on a large, fluffy cloud. Other smaller clouds are scattered around the base of the bookshelves, giving the impression of a dreamlike or ethereal environment. The overall color palette is dominated by warm, golden-yellow and brown tones, contributing to a magical and timeless atmosphere.

Cloud Data Warehouses

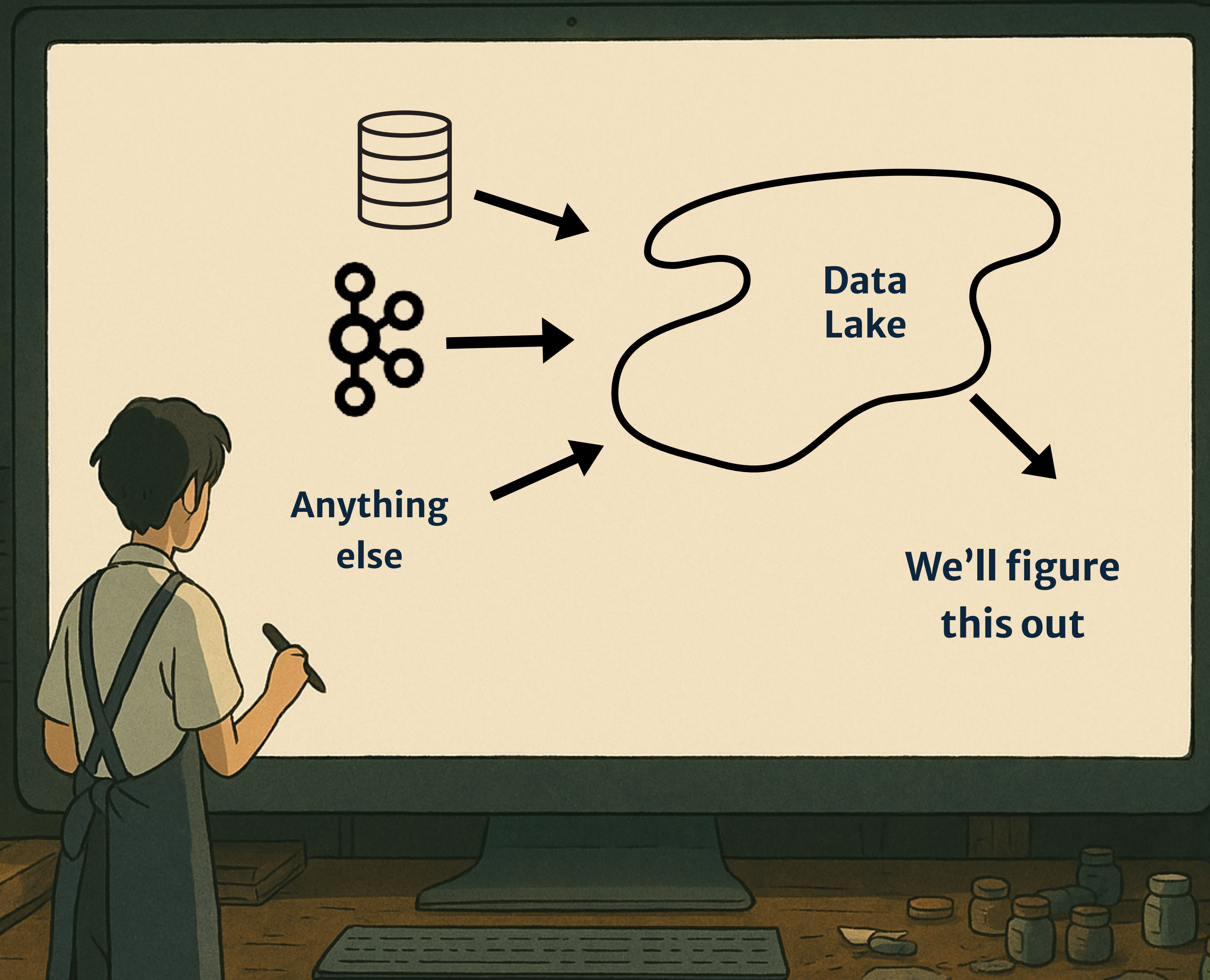
Cloud Data Warehouses

- The **cloud-based heir** of legacy DWH
- Ingest from **batch and streaming sources**
- Biased towards **structured data and batch access**



A watercolor illustration of a serene lake scene at sunset. In the foreground, a young boy in a tan shirt and hat sits on the grassy bank, holding a fishing rod. To his right, a man in a hat and overalls stands on a rock, also fishing, with a young girl in a white shirt and dark skirt standing beside him. Several fish are visible in the water, each with the word 'DATA' written on its side. In the background, a small boat with another person is on the water, and distant mountains are visible under a cloudy, orange-hued sky.

Data Lake



Data Lakes

- Storage and compute are radically decoupled
- Structure is relatively less important
- Reads are slow
- Streaming is historically difficult

Data Lakes

- Started as the HDFS cluster
- Became S3
- That didn't help...
- ELT vs. ETL
- Iceberg/Hudi/DeltaLake

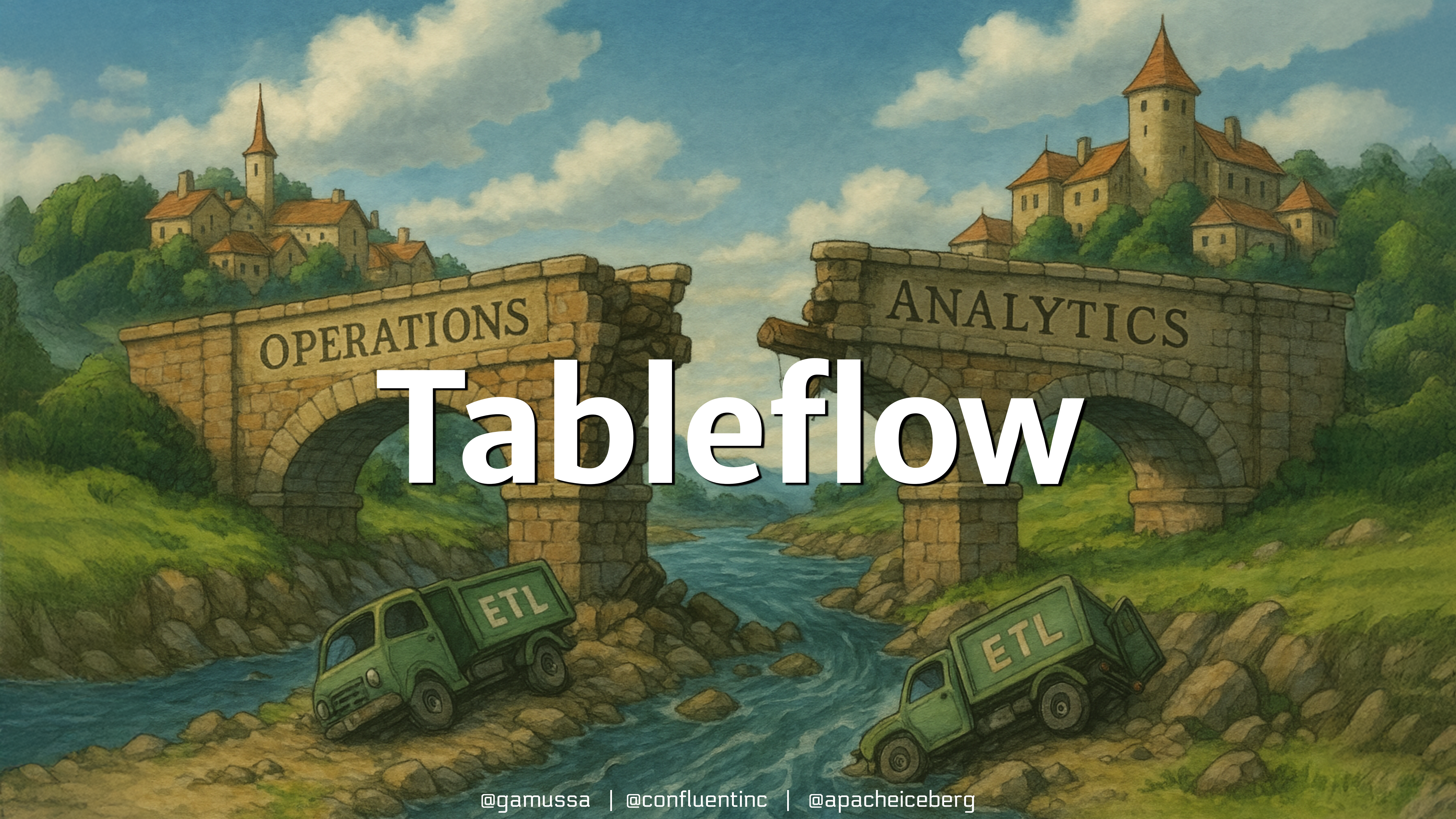
An illustration of a large blue iceberg floating in a body of water. The iceberg has a white, snow-covered peak. The background shows a sunset or sunrise sky with orange and yellow clouds, and dark green hills on the far shore. The word 'Iceberg' is written in large white letters across the middle of the iceberg. Below the word, there are three circular icons: a clock with a circular arrow for 'TIME-TRAVEL', a network diagram for 'SCHEMA', and a table icon for 'TABLE'.

Iceberg

TIME-TRAVEL

SCHEMA

TABLE



Tableflow

Kafka



TABLE



user@host ~/streaming-github-events

```
SELECT * FROM github.default.event_stream LIMIT 5;
```

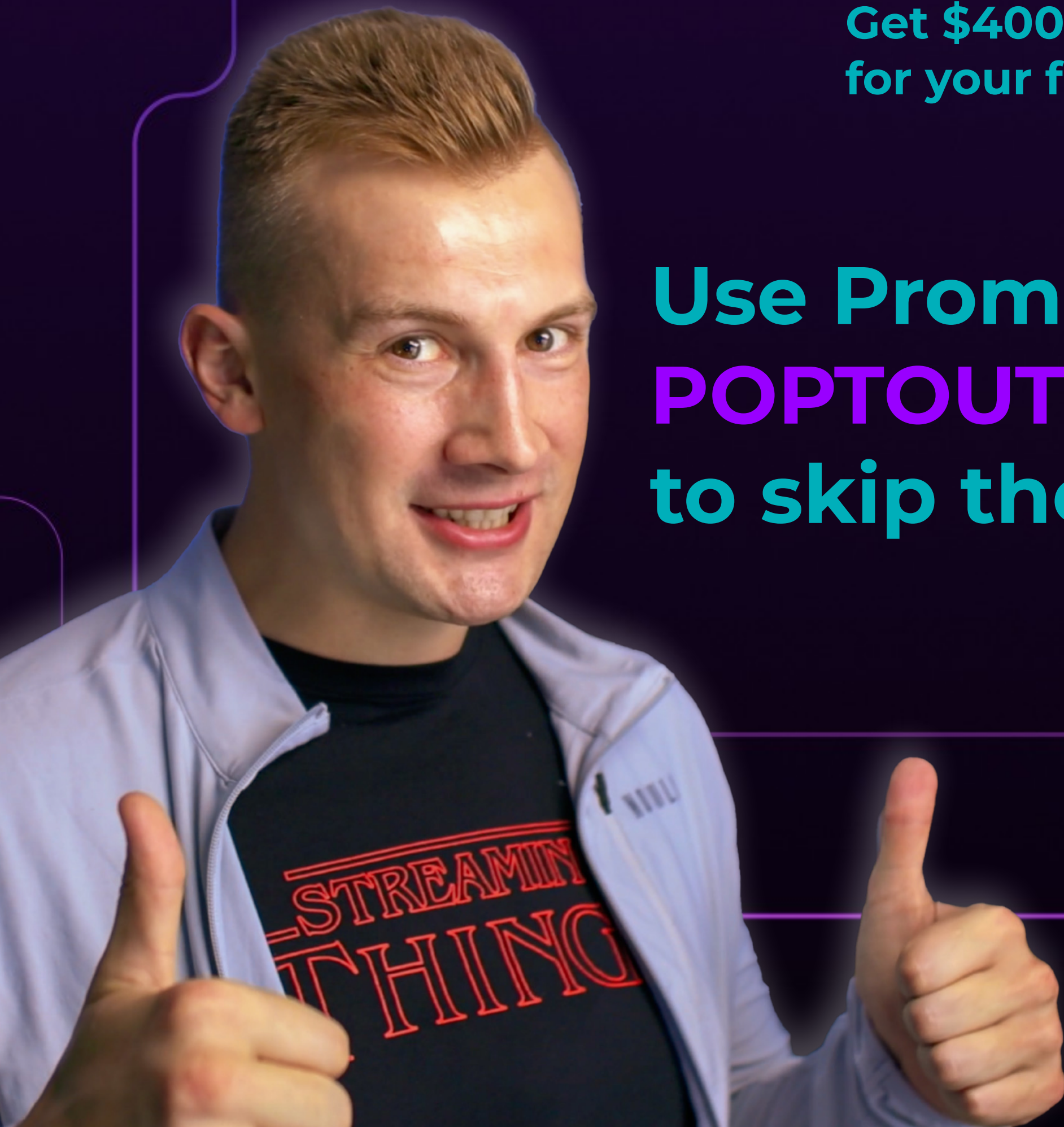
repository_name	eventtype	creationstamp
apache/pinot	WatchEvent	2024-04-24 15:31:54
open-telemetry/opentelemetry-		2024-04-24 15:31:54
python-contrib	python-contrib	
cornerstone.js/cornerstone	WatchEvent	2024-04-24 15:31:54
aws-gates/ec2-instance-connect-cli		2024-04-24 15:31:54
rancher/rancher	WatchEvent	2024-04-24 15:31:54

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Get \$400 worth free credits
for your first 30 Days

Use Promo Code -
POPTOUT000MZG62
to skip the paywall!





No Solutions only Trade Offs



Sometimes you go
with what you know

A cartoon illustration of a man with a beard and a grey cap, smiling as he reads a children's book. He is sitting in a wooden armchair in a room filled with bookshelves. The book he is holding shows a bright sun, a rabbit, and two children playing. The text "This is not bad!" is overlaid in large white letters. The scene is warmly lit, suggesting a cozy atmosphere.

This is not bad!



Performance

A detailed illustration in a medieval or Renaissance style. A man with a dark beard and a blue robe stands in the center, operating a large, complex mechanical device that resembles a clockwork or astronomical instrument. He has his right hand raised in a gesture of explanation or awe. He is surrounded by a large crowd of people, mostly men and women in period clothing, who are looking at him with expressions of wonder and curiosity. The setting is a grand, vaulted interior, possibly a church or a large hall, with high arched windows and stone columns. The lighting is warm and golden, coming from the windows. The word "Community" is overlaid in a large, white, sans-serif font across the center of the image.

Community



This is not bad!

Slides and Video

<https://speaking.gamov.io/>



X/Bluesky: @gamussa