aws
COMMUNITY DAY
WARSZAWA
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Building a Serverless Event Store

Store, distribute and discover events

Anurag Kale
anuraganil.kale@polestar.com
Cloud Software Architect
Architecture & Standards
Polestar Digital

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There is no sense in talking about the solution before we agree on the problem, and no sense talking about the implementation steps before we agree on the solution.

-Efrat Goldratt-Ashlog [The buy in process according to theory of constraints]

What’s in this session?

- Explore business use case
- Blueprint the business solution
- Evaluate different technical candidates for the problem
- Logical Solution Architecture
- Data Flow Diagram
- What’s next?

$whoami

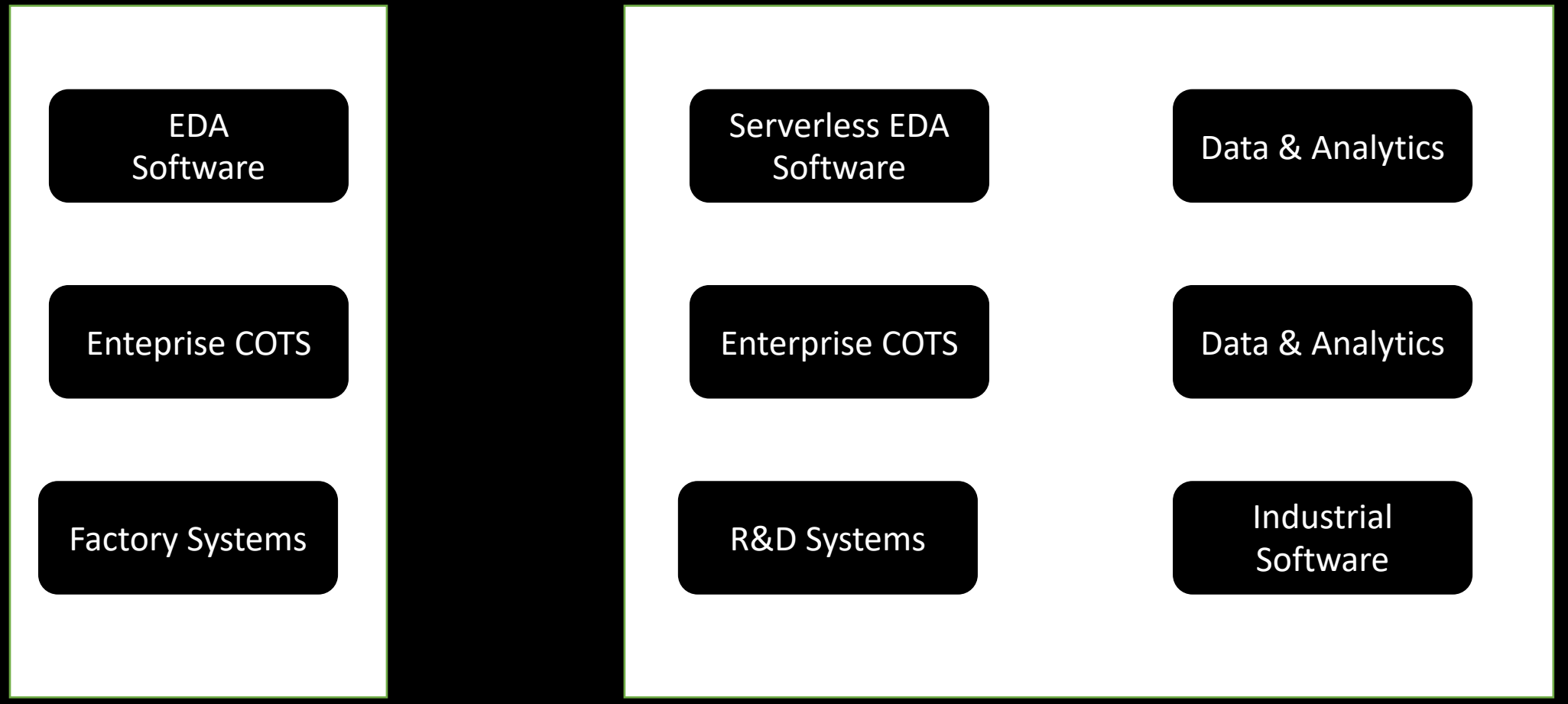
Anurag Kale

Cloud Software Architect at Polestar Digital

AWS Data Hero

@iAnuragKale

Current Landscape



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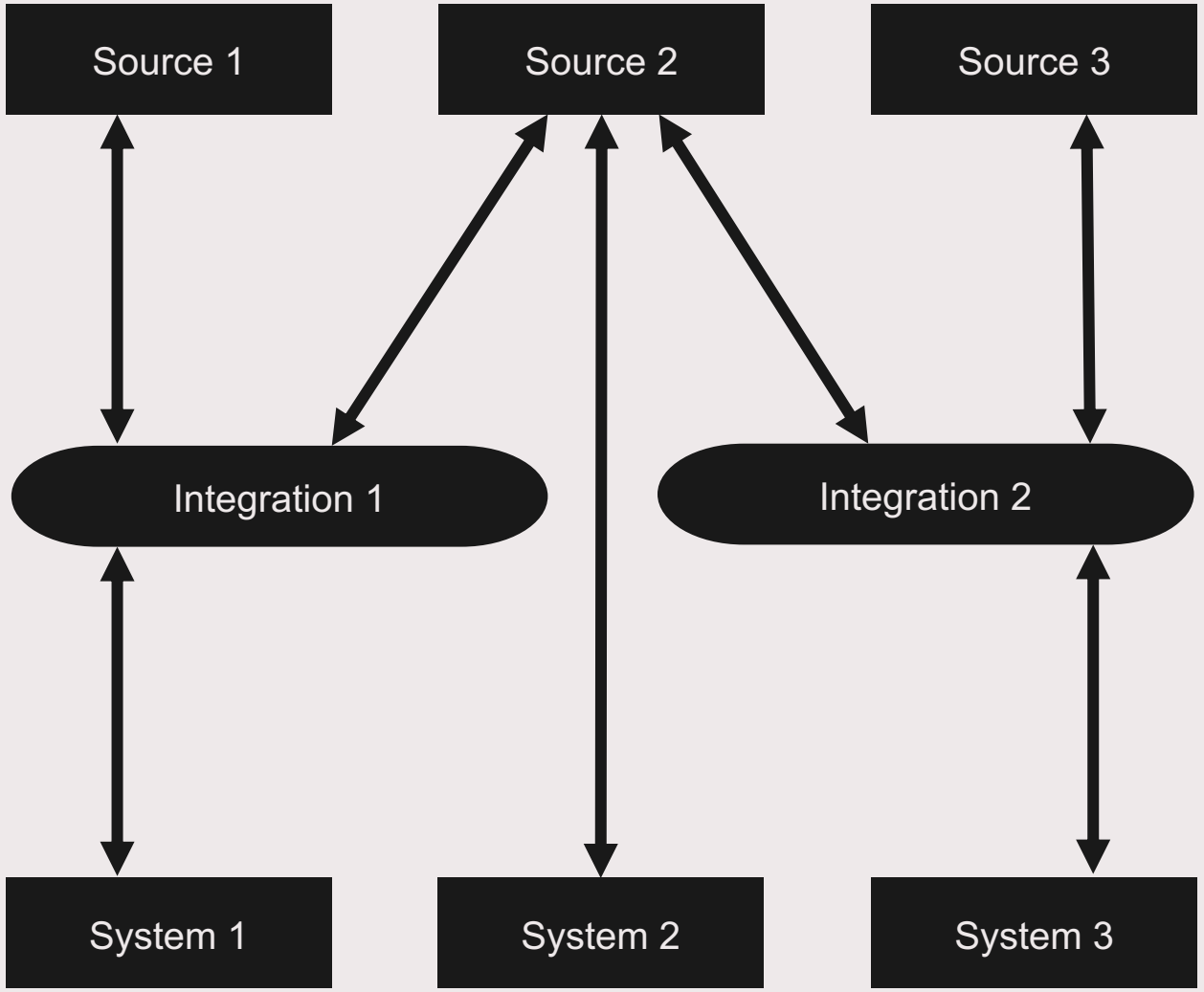
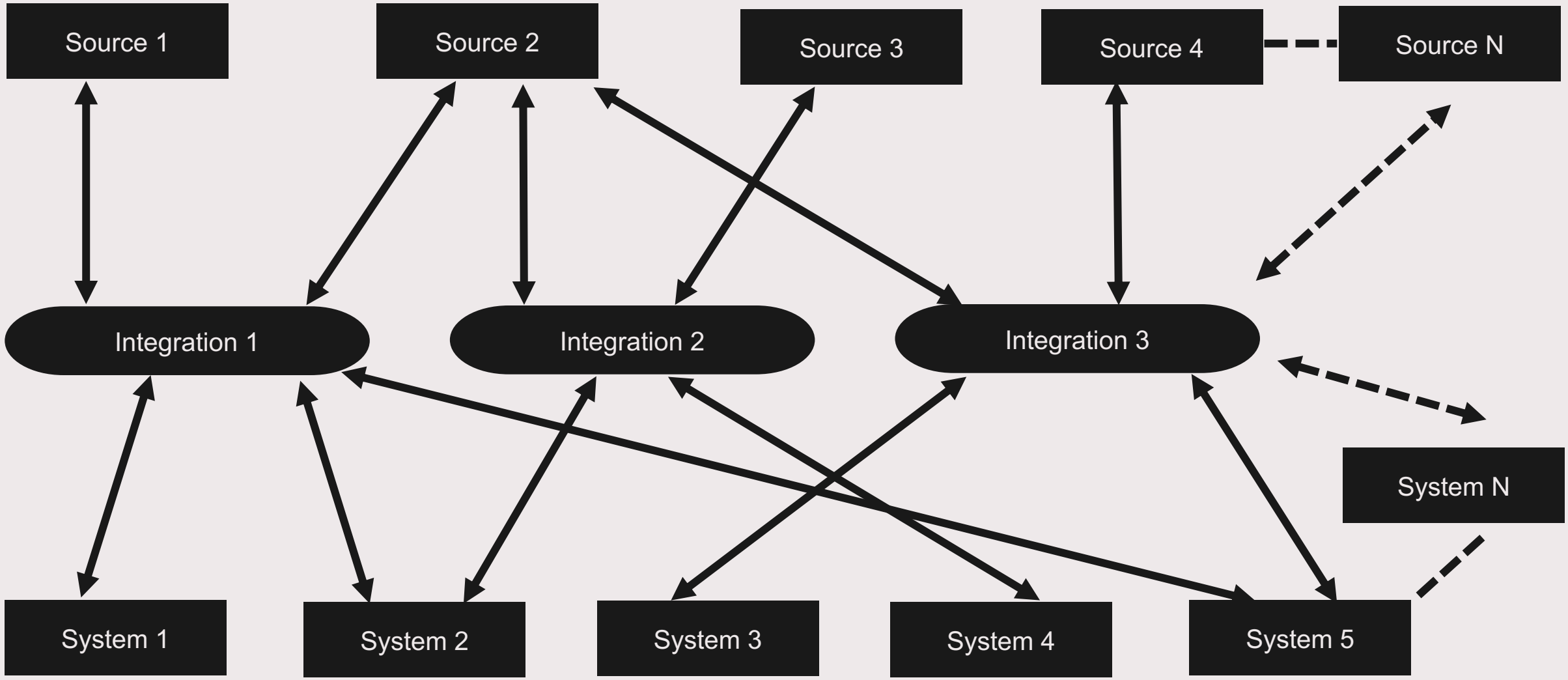
The Problem

The problem - starts from here….



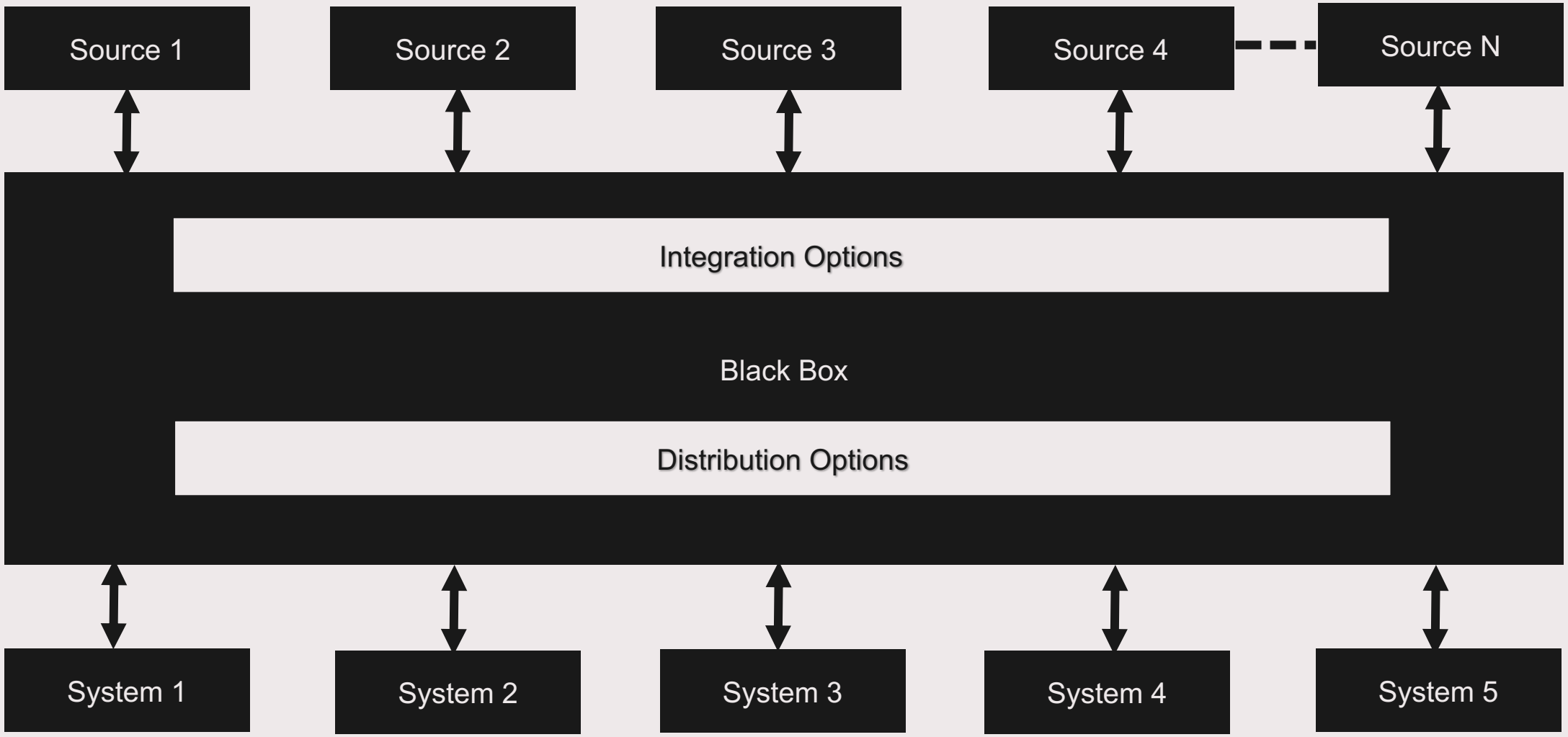
Soon this happens…..



What are we trying to address?

- Standardise collection of data from external sources
- Avoid point to point integrations
- Consolidate efforts for common used data sources
- Own Polestar data in unmutated format
- Enable current way of event driven architectures

Ideal Solution – Business Architecture



The proposed black box

Ideal properties

- Support multiple input methods
- Flexible and store multiple data formats
- Store data in original format i.e. unmutated data
- Store data for longer run in cost efficient way
- Good data discoverability
- Distibute data in events
- Adheres to IT Principles (Serverless / Cloud Native)
- Open to future expansions
- High sustanability impact (minimal CO2 emissions)

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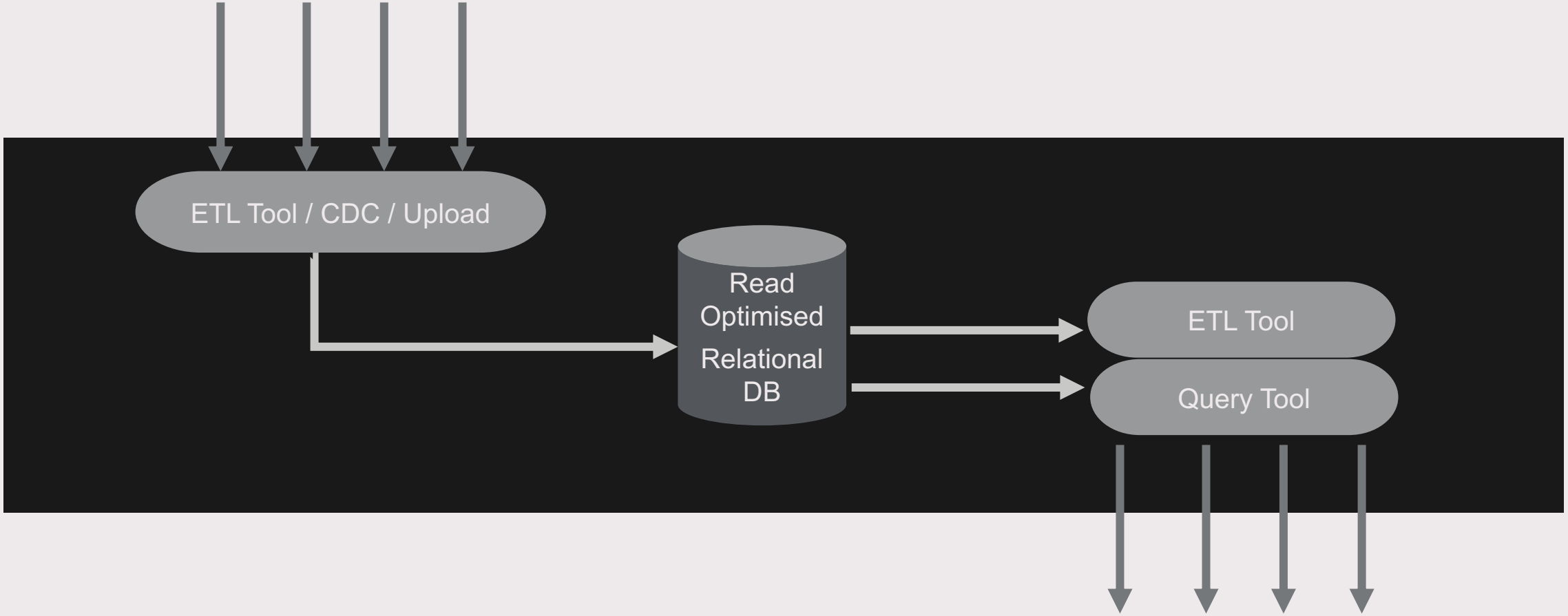
Candidates for Black Box

Data Architectures

- Enterprise Data Warehouse Approach
- Data Lake
- Data Lake House
- Delta Lakes
- Data Mesh / Data Fabric

The Usual Suspect

Enterprise Data Warehouse



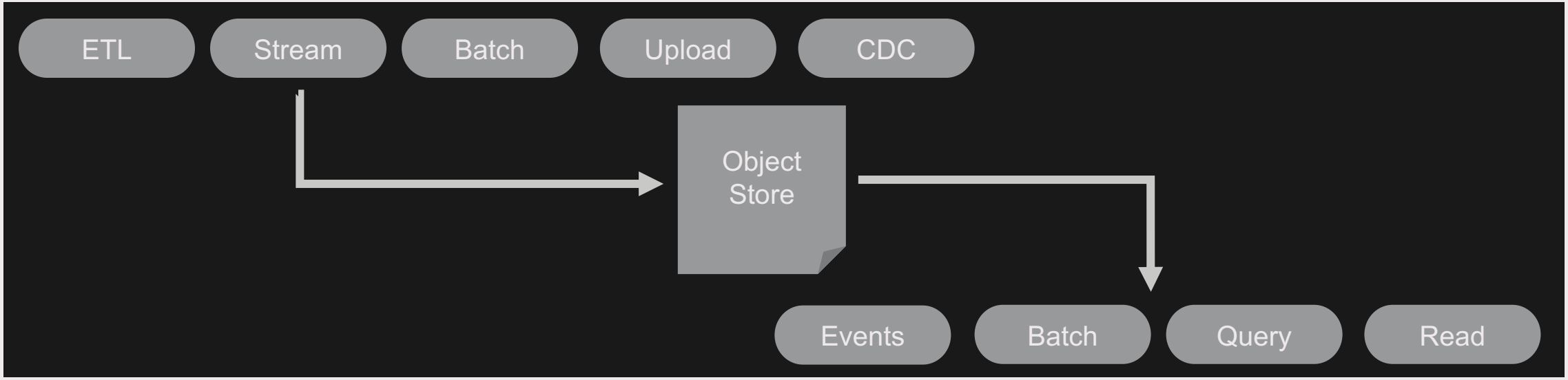
Evaluation of EDW Approach

- Proprietary tools, OS and expertise required
- Heavy licence costs
- Needs provisoned capacity for compute, network, storage
- Connection pooling issue (not suitable for AWS Lambda)
- Violates IT principles (requires down time, non-modular, does not work well with EDA etc)
- Long project effors for addition of every new data source
- 24x7 provisoning → Higher CO2 emissions

New kid on the block

—

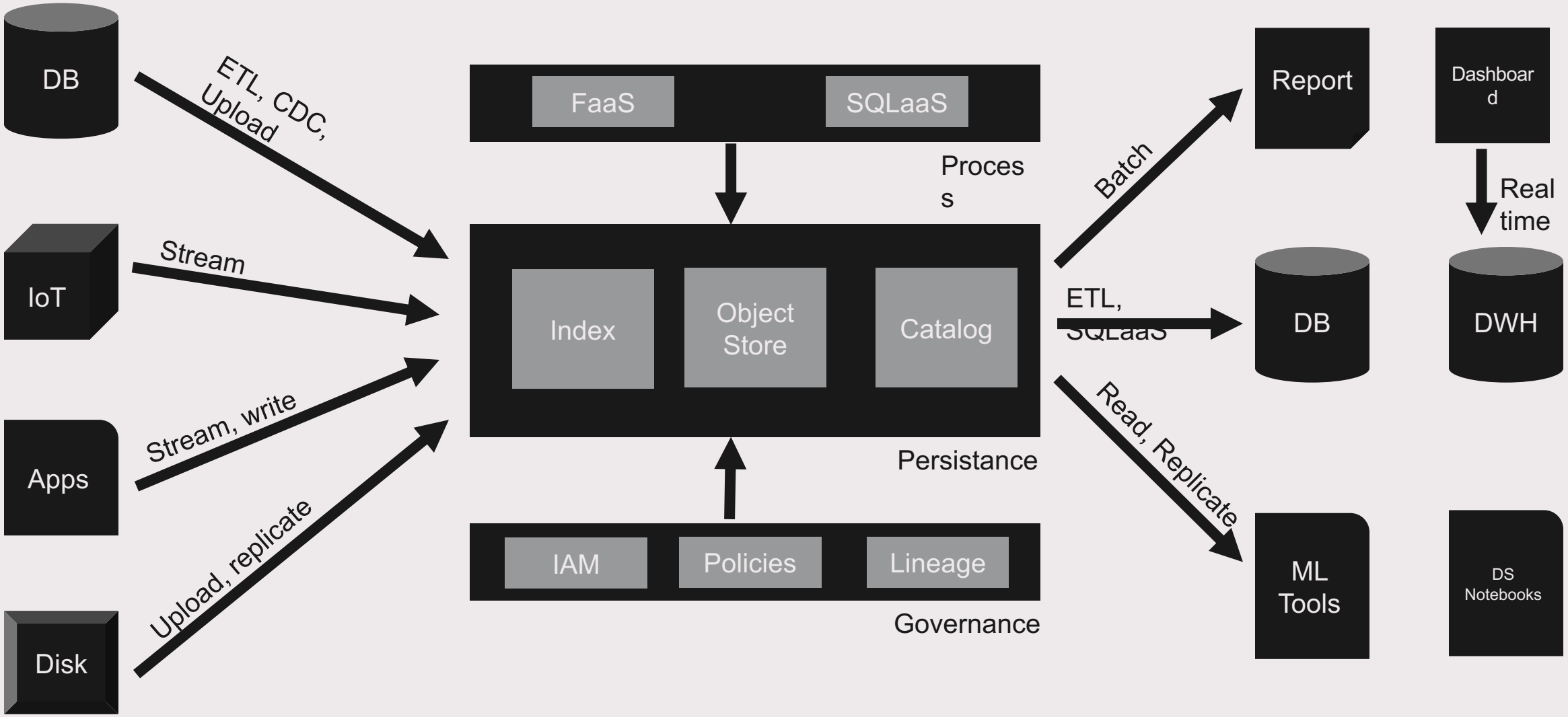
Data Lake in Cloud



Evaluation of Data Lake Approach

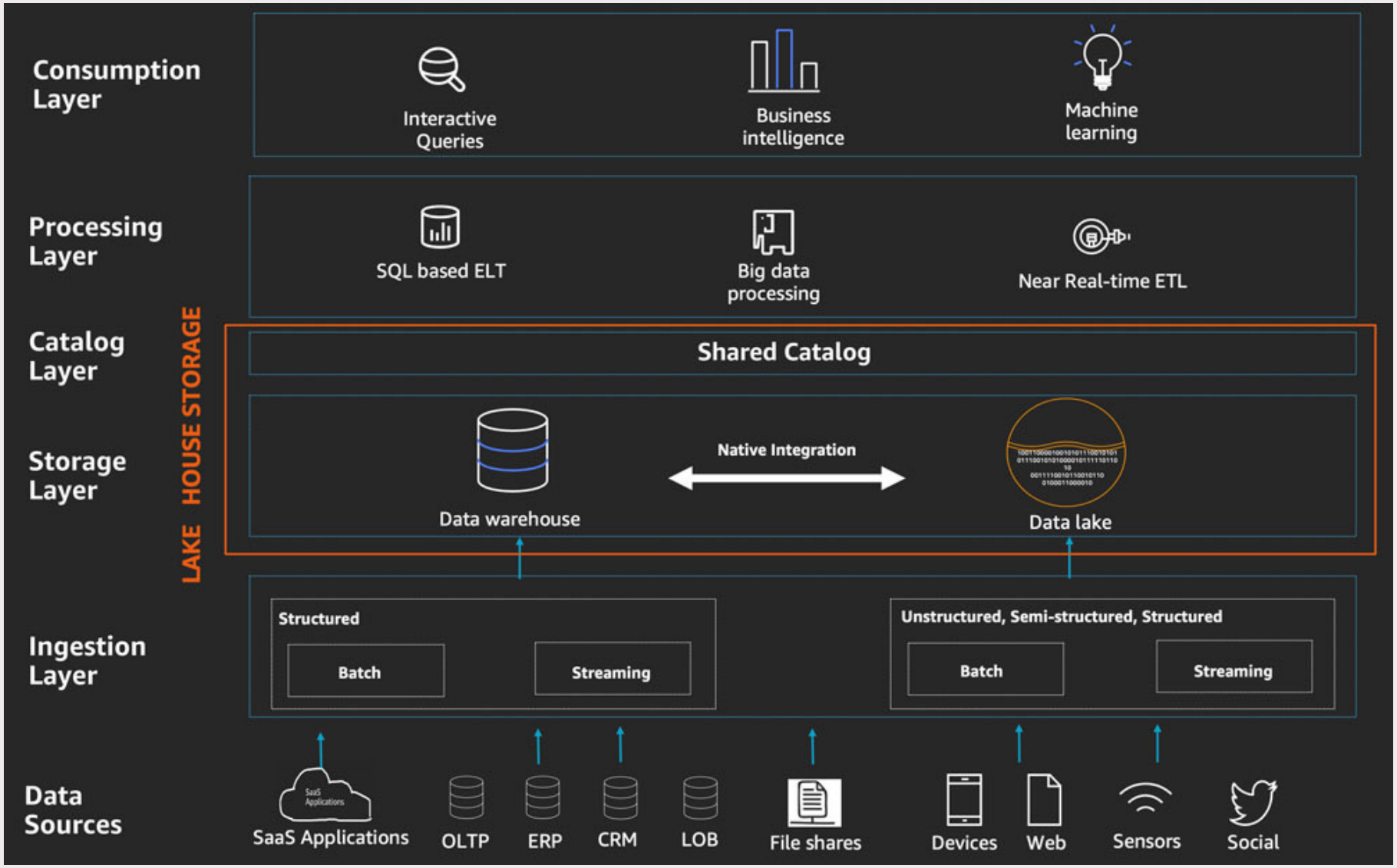
- Cloud Native, flat file storage
- No licence cost involved
- No provisioning of servers needed
- API based reads / writes
- Fits into all IT principles
- New source addition addition trivial task
- Significantly lower CO2 emissions
- Leaves room for expansion

Data Lake as Platfrom



Other Data Architectures

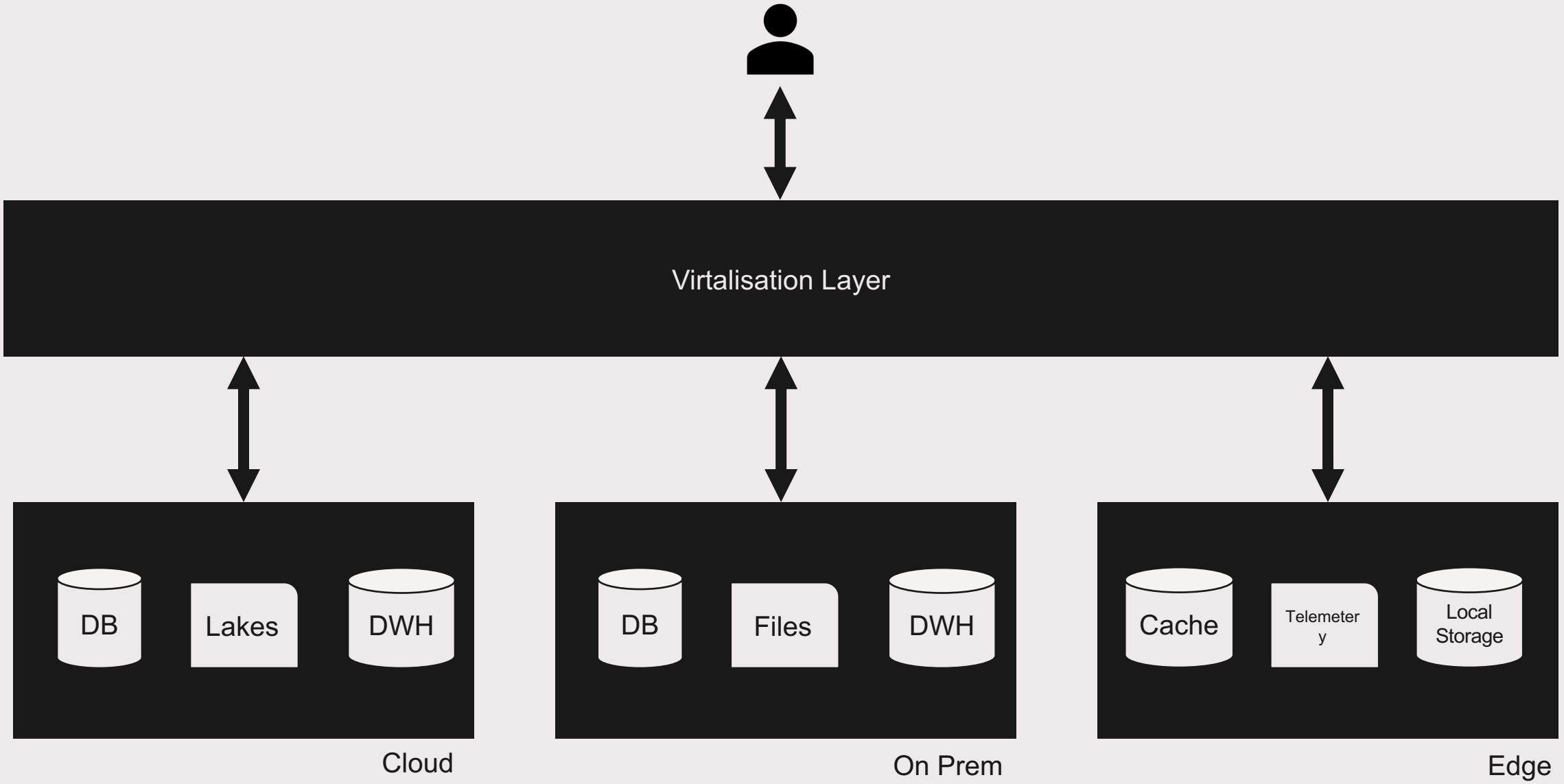
Data Lake House



Source - AWS

Other Data Architectures

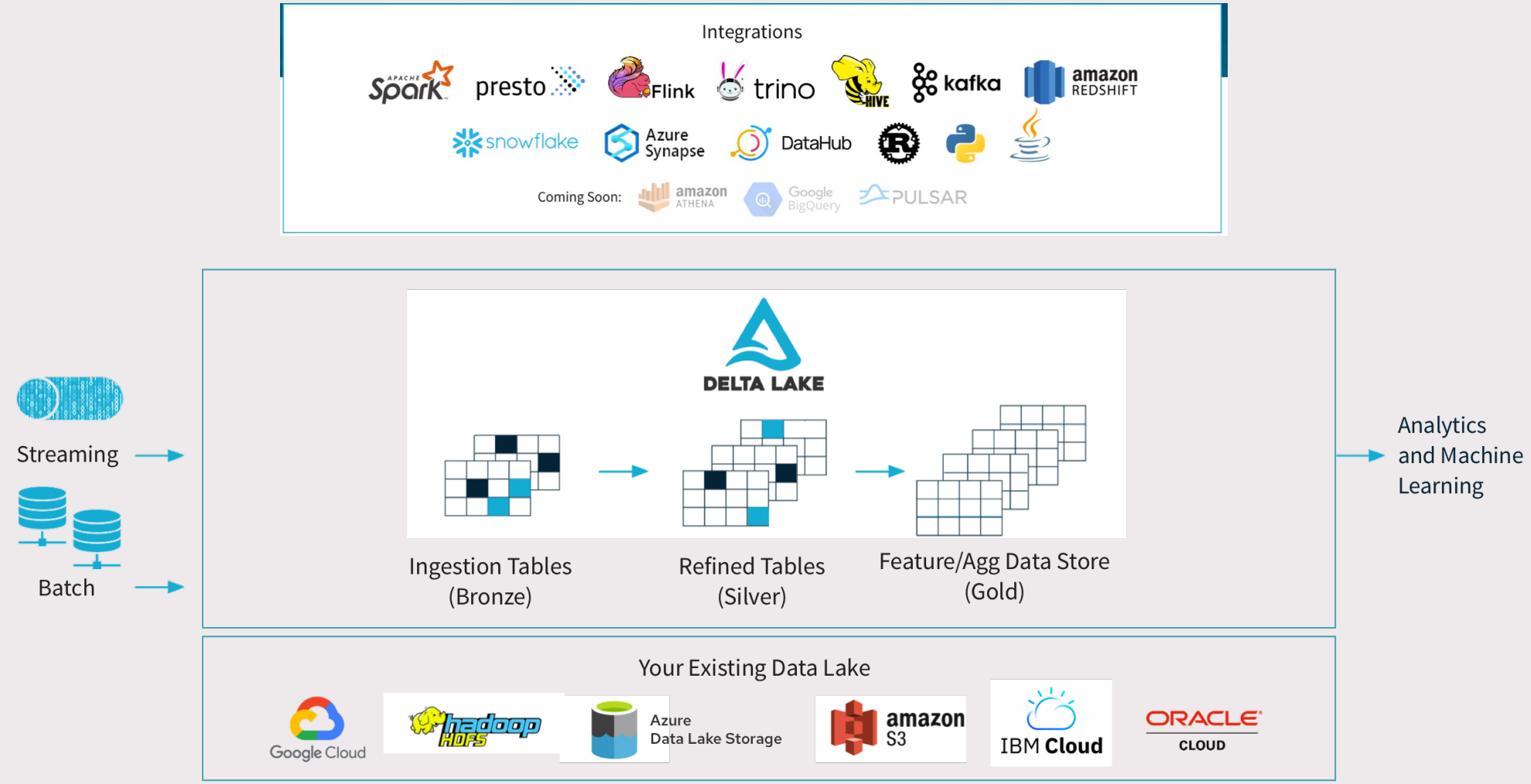
Data Mesh / Data Fabric



Source - AWS

Other Data Architectures

Delta Lakes



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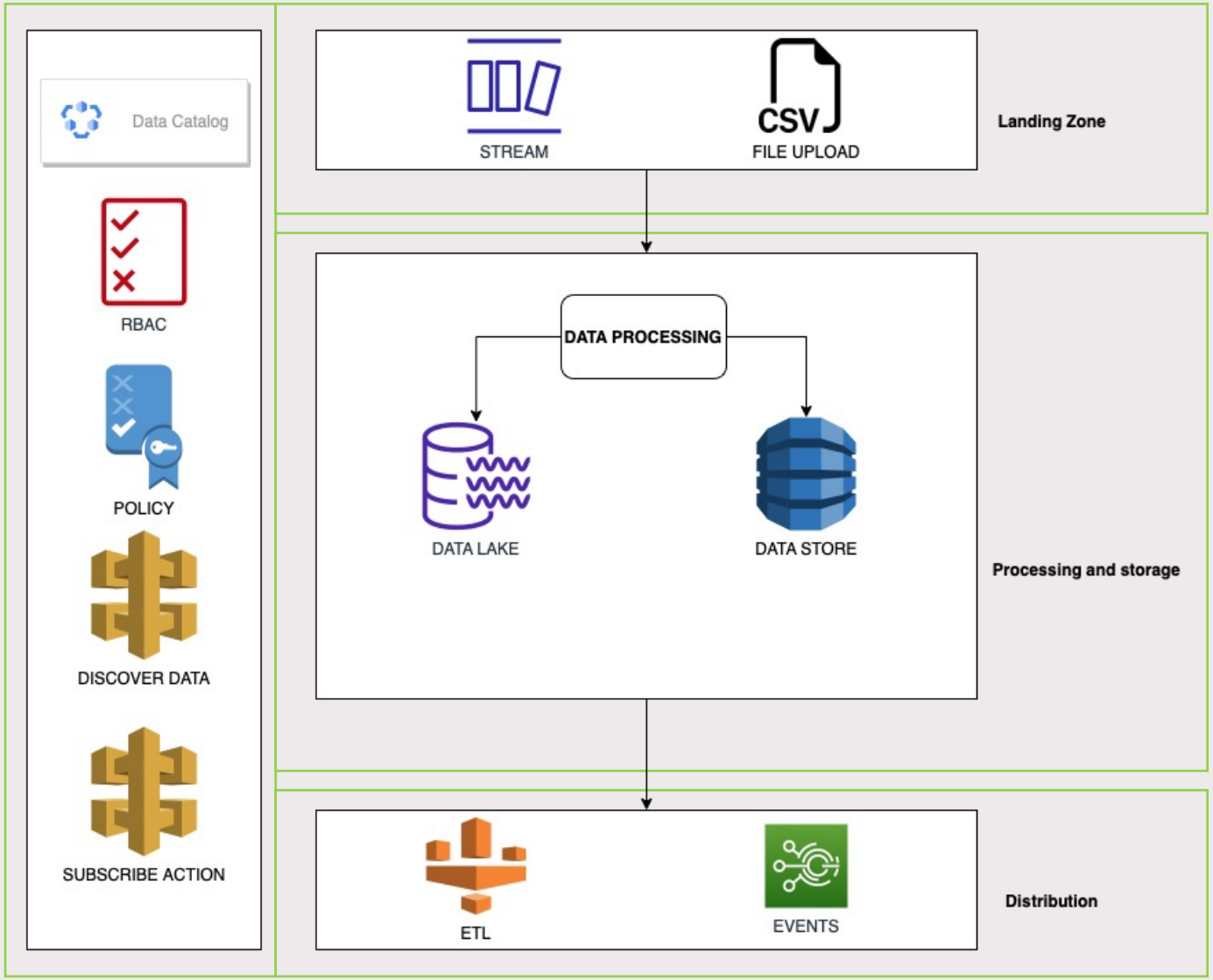
Our Solution

Polestar Data Platfrom

Logical componets

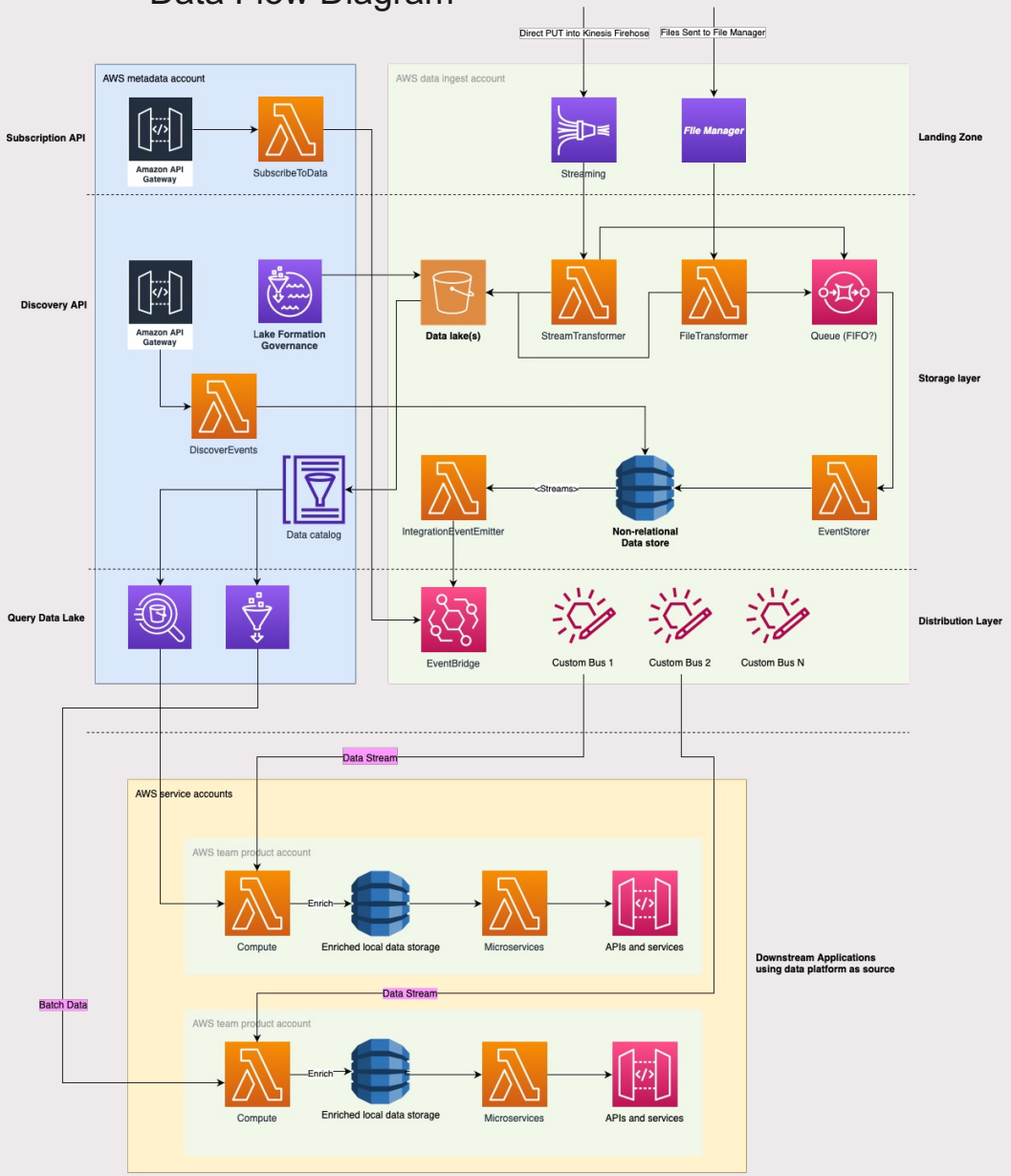


Envelope Format

```
{
  "metadata": {
    // Required
    "id": "abc123-f29f-278",
    "timestamp": "1566833470262",
    "timestampHuman": "2022-08-15T09:55:26Z",
    "requestTimeEpoch": "1566833470100",
    "user": "",
    "resource": "/createOrder",
    "source": "vista",
    "hostPlatform": "aws",
    "owner": "polestar",
    "eventType": "IntegrationEvent",
    // Optional
    "version": 1,
    "region": "eu-north-1",
    "jurisdiction": "eu",
    "tags": [""],
    "dataSensitivity": "public"
  },
  "data": {
    "YourData": "Goes here"
  }
}
```

Polestar Data Platform

Data Flow Diagram



What will we achieve?

- A staging area to store and operate variety of data
- Polestar will own the data in its landscape
- Highly suited platform for the current way of software design
- Highly decoupled, cloud native and modular software
- Light weight; minimal inertia to get off the ground
- Pay-as-you-go model
- No lock in and commitments
- Contains reusable pattens
- Self-service oriented and discoverable
- Sustainable solution

What more can be done?

- Standard support for multiple input sources
- Privacy module to scramble, encrypt or mask sensitive data
- Provide reusable patterns to consume data from the platfrom
- Enable data lineage capabilities
- Provide standard BI reports
- Standard access patterns for power users i.e. data scientists, data engineers etc.

Open source version- https://github.com/mikaelvesavuori/example-aws-stream-data-to-events

Thank You! Questions?

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