# Allezon Analytics Platform

Practical Distributed Systems
Final Project

# The Principles

- We want to build something practical.
- We want to face real-life challenges.
- Optimally the solution should be built upon modern distributed systems components.

# Allezon

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- Ambitious plans:
  - on-line analytics
  - ad-hoc queries
  - high availability
  - anomaly detection
  - platform monitoring
  - automated deployment
  - machine learning?

# Data - Events - User Tags

- Simplified model
  - users identified by cookies
  - actions: only VIEWs and BUYs

```
{
  "time": int64,
  "cookie": string,
  "country": string,
  "device": PC | MOBILE | TV,
  "action": VIEW | BUY,
  "origin": string,
  "product info": {
    "product id": string,
    "brand id": string,
    "category id": string,
    "price": int32
  }
}
```

# Use Case 1: Collecting Events

- Building user profiles.
  - input for ML models (e.g. recommendations)

- On-line analytics.
  - trends, patterns
  - anomalies
  - monitoring
  - KPIs

- Queries on historical data.
- Data points for training Machine Learning models.

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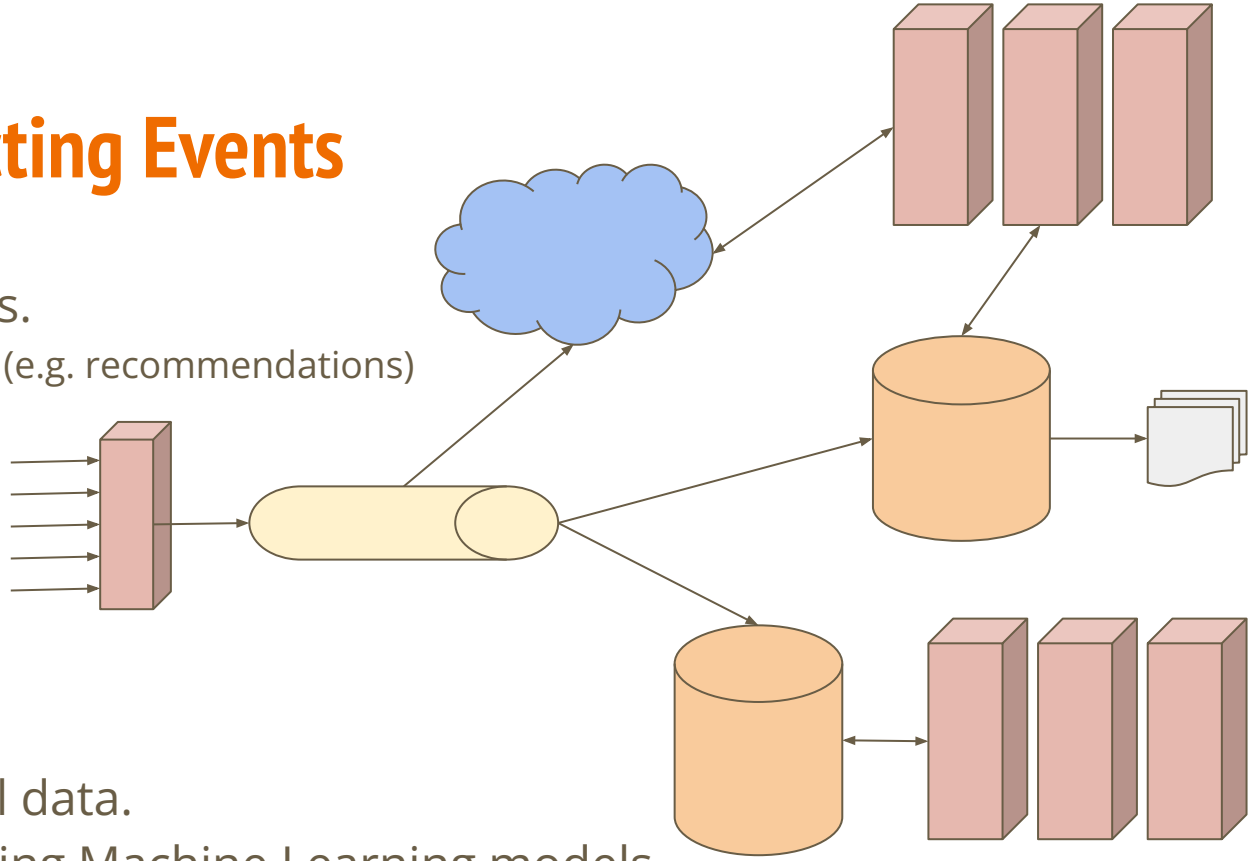

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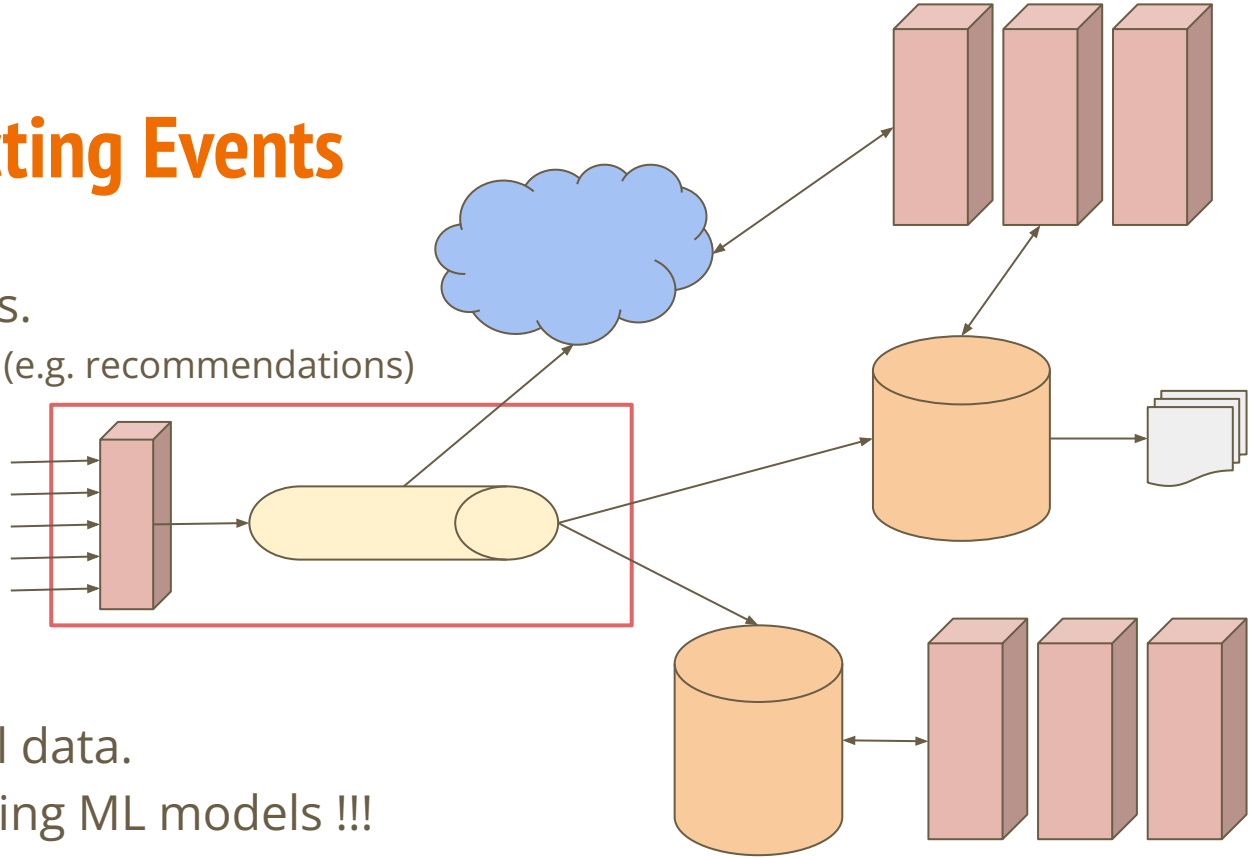

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- Requirements
  - max throughput: 1000 req/s
  - request timeout: 200 ms

# Use Case 3: Aggregates

| 1m_bucket | action | origin | count | sum(price) |
|---|---|---|---|---|
| 9:00:00 | BUY | NIKE_SHOES_CAMPAIGN | 24 | 2976 |
| 9:01:00 | BUY | NIKE_SHOES_CAMPAIGN | 36 | 4896 |
| ... | ... | ... | ... | ... |
| 9:08:00 | BUY | NIKE_SHOES_CAMPAIGN | 27 | 3429 |

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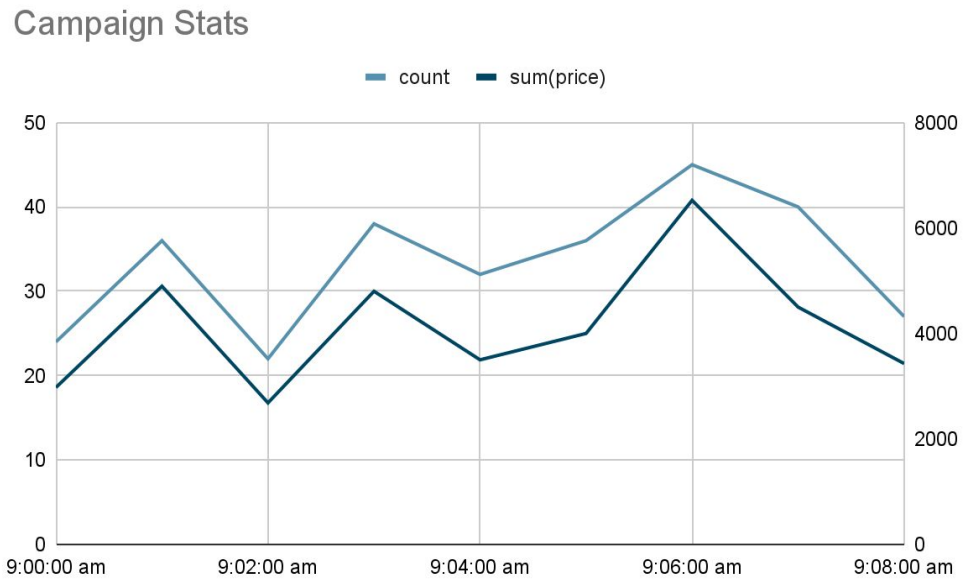

# Use Case 3: Aggregates

```
SELECT 1m_bucket(time), action, [origin, brand_id, category_id], count(*), sum(price)
    FROM events
    WHERE time >= ${time_range.begin} and time < ${time_range.end}
        AND action = ${action}
        [AND origin = ${origin}]
        [AND brand_id = ${brand_id}]
        [AND category_id = ${category_id}]
    GROUP BY 1m_bucket(time), action, [origin, brand_id, category_id]
    ORDER BY 1m_bucket(time)
```

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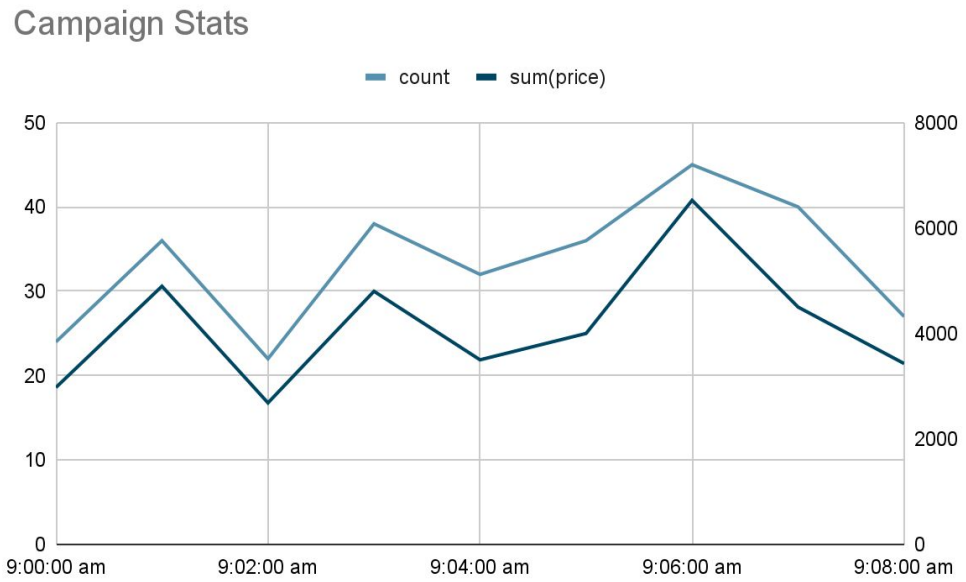

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- Actions on subscriptions
  - START / CLOSE
  - PAUSE / RESUME
- Debug mode