Think Like an Architect

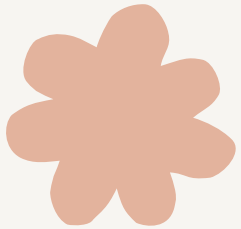
المعمارية ببساطة

Episode 5

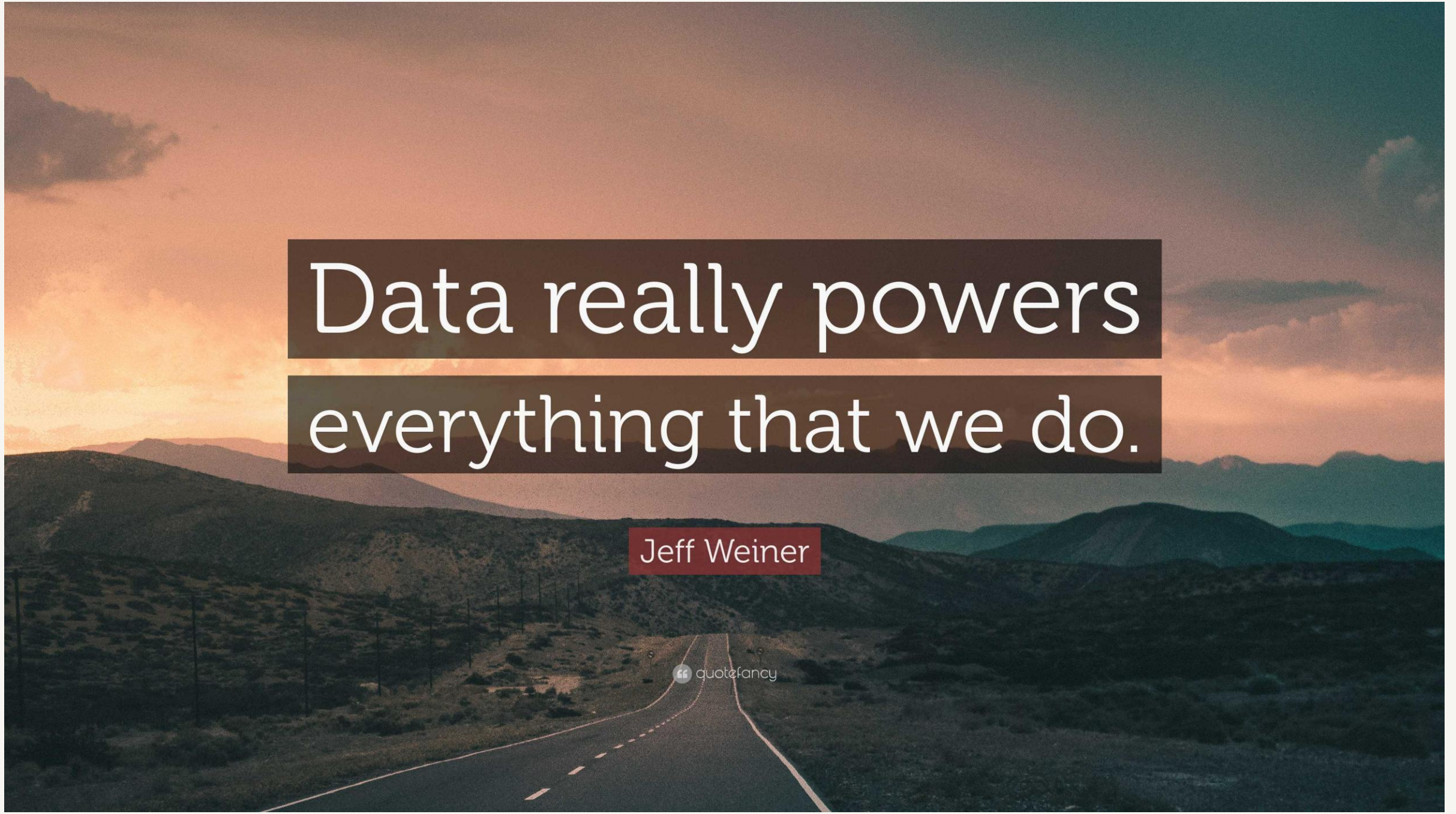
How Solutions Architects Think About Data

Agenda

How Solutions Architects Think About Data



1. Introduction – Why Data Matters
2. Data Design vs Data Architecture
3. Understanding Data Types
4. Data Storage Models & Patterns
5. Data Flow & Lifecycle
6. Security & Governance by Design
7. Common Data Architecture Mistakes
8. Key Takeaways & Next Episode


Data really powers
everything that we do.
Jeff Weiner
quotefancy

1 Why Data Matters

- Systems don’t fail because of code only
- Most large failures start with poor data decisions
- Data is the foundation of scalability, security, and performance

Bad data design = fragile architecture

2 Data Design vs Data Architecture

Data Design focuses on:

- Tables / collections
- Columns and attributes
- Relationships
- Schemas and constraints

Data Design answers: *How is data structured?*

Data Architecture focuses on:

- Where data lives
- How data flows
- Who can access it
- How it scales and is protected

Data Architecture answers: *Why here and why this way?*

3 Understanding Data Types

Transactional Data

Data generated from daily business transactions.

Examples: orders, invoices, payments.

Questions: How is transactional data captured, stored, and validated?

Recommended Storage Services :

Relational DB (ACID, structured)

Analytical Data

Data used for reporting, insights, and decision-making.

Examples: aggregated sales reports, KPIs, dashboards.

Questions: How is analytical data extracted, transformed, and updated?

Recommended Storage Services :

Data Warehouse (integrated, optimized for queries)

Operational Data

Data used to support day-to-day operations of the system.

Examples: inventory status, customer records, employee schedules.

Questions: How is operational data maintained, synchronized, and accessed in real-time?

Recommended Storage Services :

NoSQL Store , Cache

Event / Streaming Data

Data generated continuously from events, sensors, or user actions.

Examples: logs, IoT sensor readings, clickstreams.

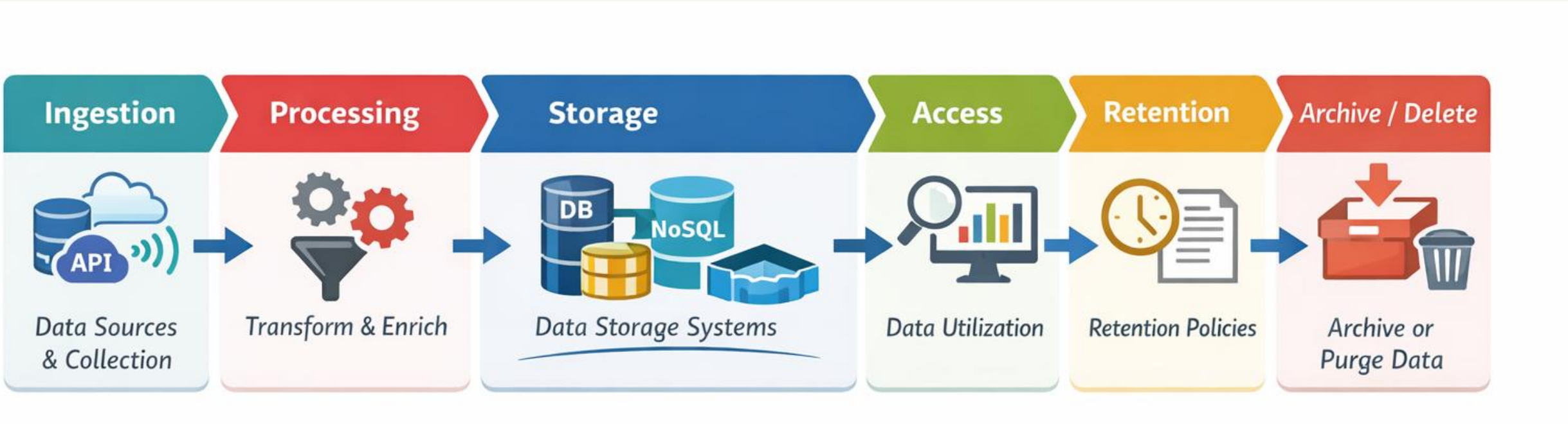
Questions: How is streaming data ingested, processed, and stored efficiently?

Recommended Storage Services :

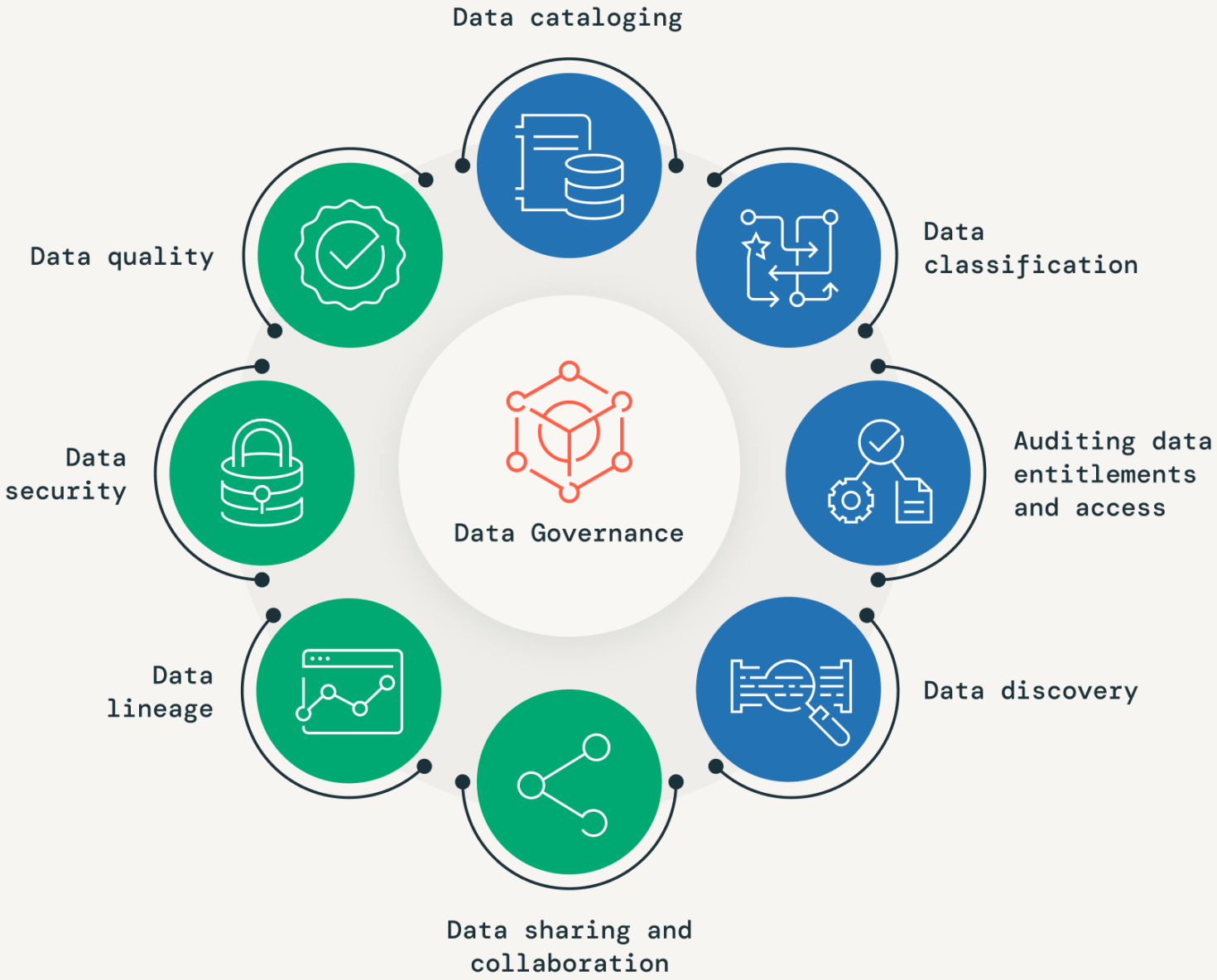
Data Lake , Cache

Types of Data Can be in One System

4 Data Flow & Lifecycle



6 Security & Governance by Design

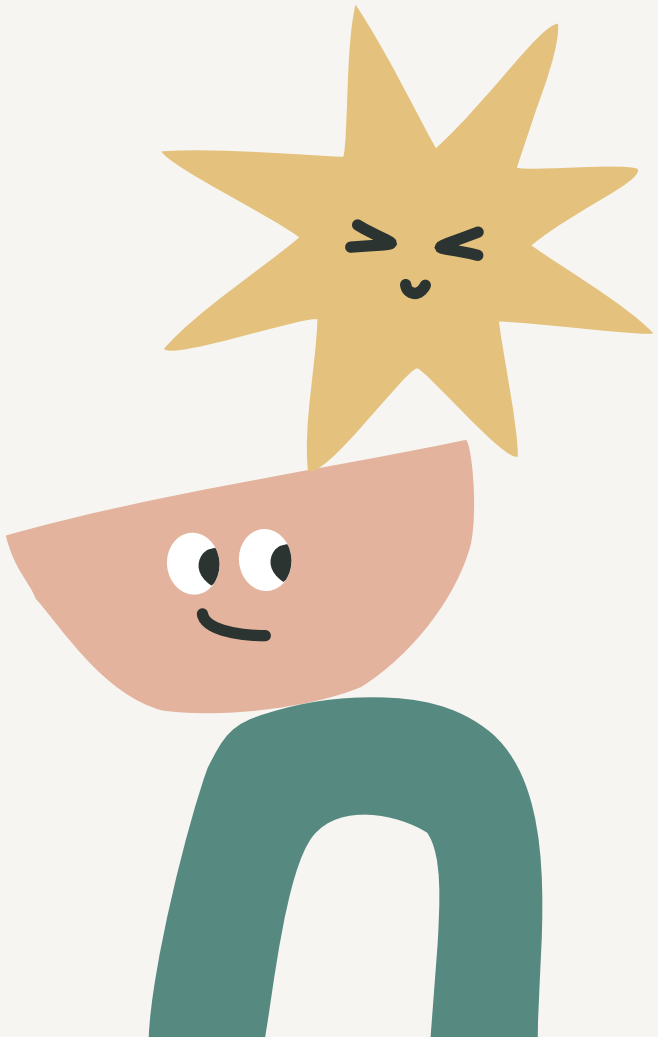


7 Common Data Architecture Mistakes

- One database for everything
- Ignoring data growth
- Mixing transactional and analytical workloads
- Choosing storage before understanding data

Is **Data Architecture** part of the **Cloud Solution Architect's** responsibility, or should it be owned by a separate **Data Architect role**?

What's Next?



Focus on Security Architecture

How to Building LLD (Low-Level Design)

Thank you!

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