



DATA WITH BARAA

# SQL DATA WARHOUSE

## Project

Baraa Khatib Salkini  
YouTube | **DATA WITH BARAA**  
SQL Course | Data Warehouse Project







# SQL Projects



~Organize, Structure, Prepare~

- ETL/ELT Processing
- Data Architecture
- Data Integration
- Data Cleansing
- Data Load
- Data Modeling



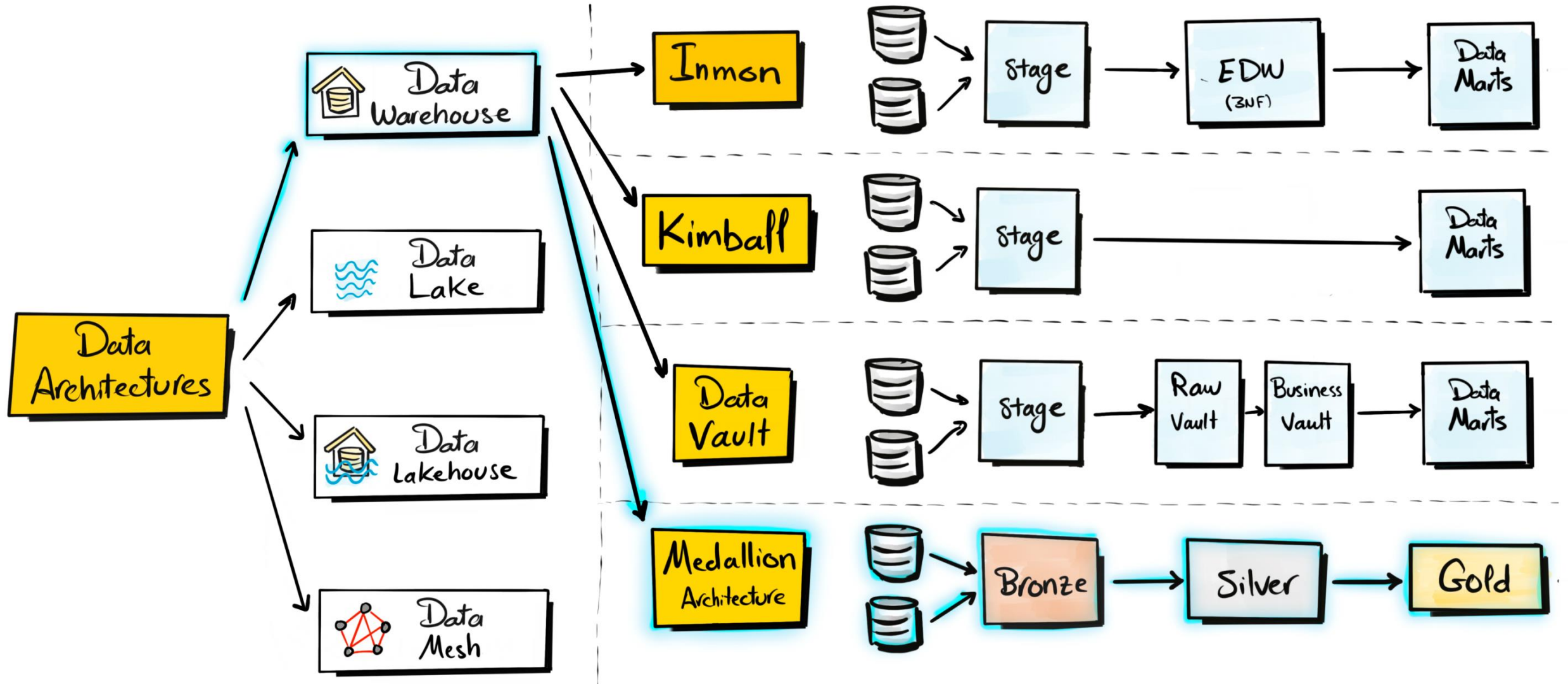
~Understand Data~

- Basic Queries
- Data Profiling
- Simple Aggregations
- Subquery



~Answer Business Questions~

- Complex Queries
- Window Functions
- CTE
- Subqueries
- Reports





## Bronze Layer



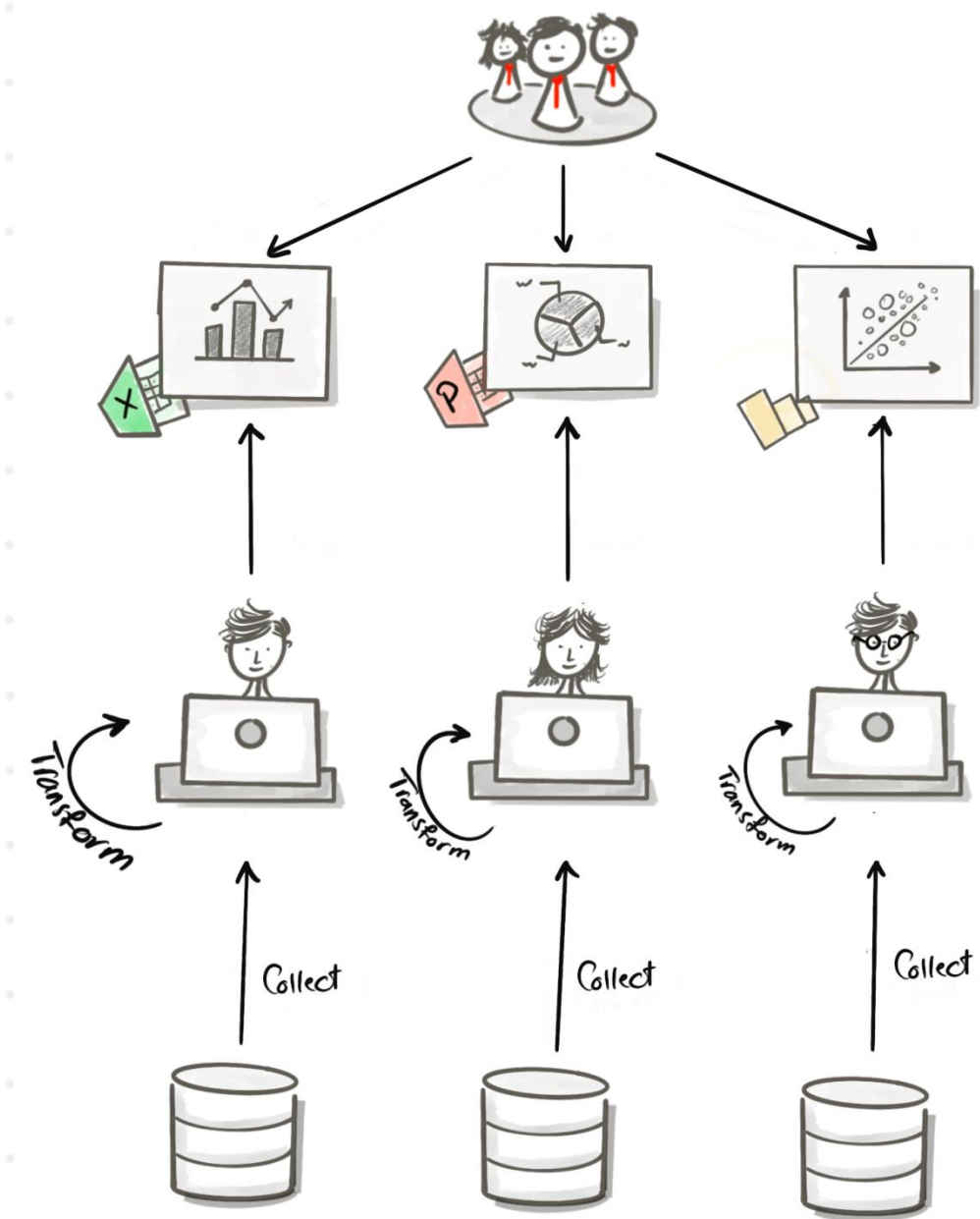
## Silver Layer



## Gold Layer

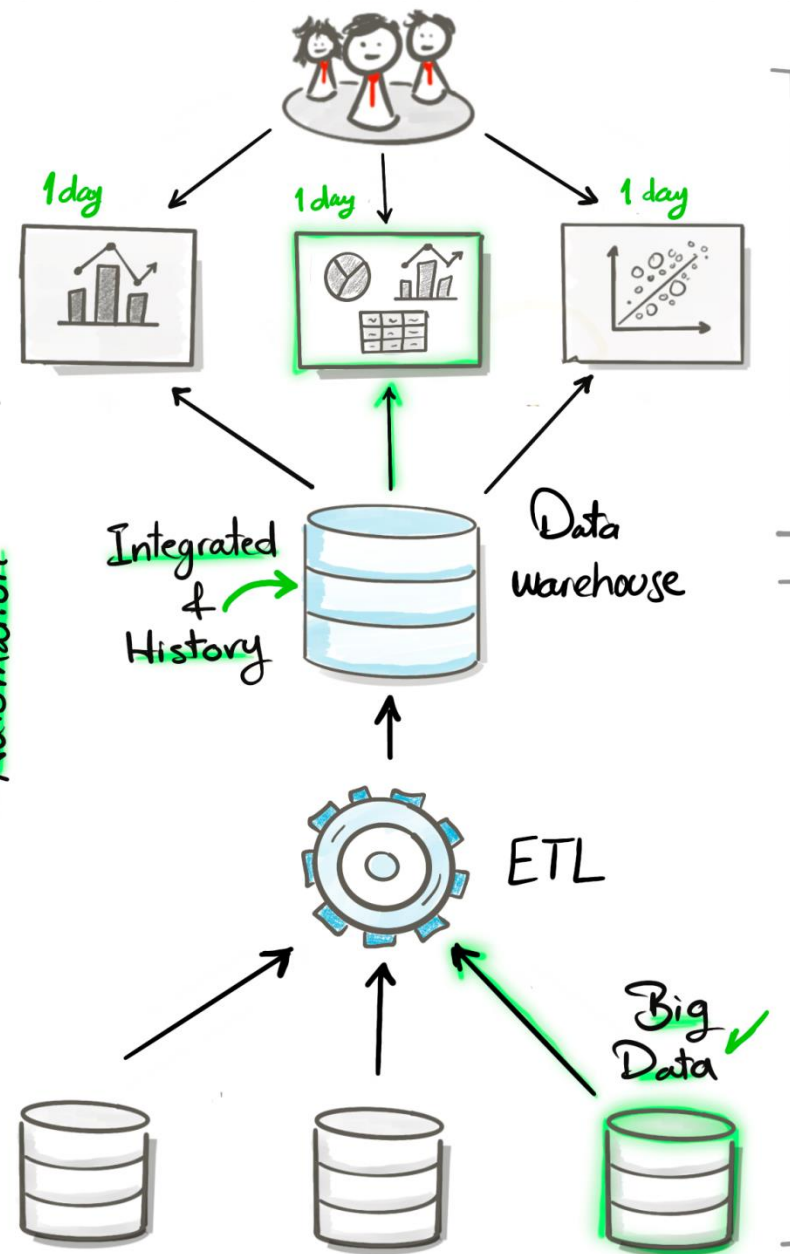
Definition	Raw, unprocessed data as-is from sources	Clean & standardized data	Business-Ready data
Objective	Traceability & Debugging	(Intermediate Layer) Prepare Data for Analysis	Provide data to be consumed for reporting & Analytics
Object Type	Tables	Tables	Views
Load Method	Full Load (Truncate & Insert)	Full Load (Truncate & Insert)	None
Data Transformation	None (as-is)	<ul style="list-style-type: none"> <li>- Data <b>Cleaning</b></li> <li>- Data <b>Standardization</b></li> <li>- Data <b>Normalization</b></li> <li>- <b>Derived Columns</b></li> <li>- Data <b>Enrichment</b></li> </ul>	<ul style="list-style-type: none"> <li>- Data <b>Integration</b></li> <li>- Data <b>Aggregation</b></li> <li>- <b>Business Logic &amp; Rules</b></li> </ul>
Data Modeling	None (as-is)	None (as-is)	<ul style="list-style-type: none"> <li>- <b>Star Schema</b></li> <li>- <b>Aggregated Objects</b></li> <li>- <b>Flat Tables</b></li> </ul>
Target Audience	- Data Engineers	<ul style="list-style-type: none"> <li>- Data Analysts</li> <li>- Data Engineers</li> </ul>	<ul style="list-style-type: none"> <li>- Data Analysts</li> <li>- Business Users</li> </ul>






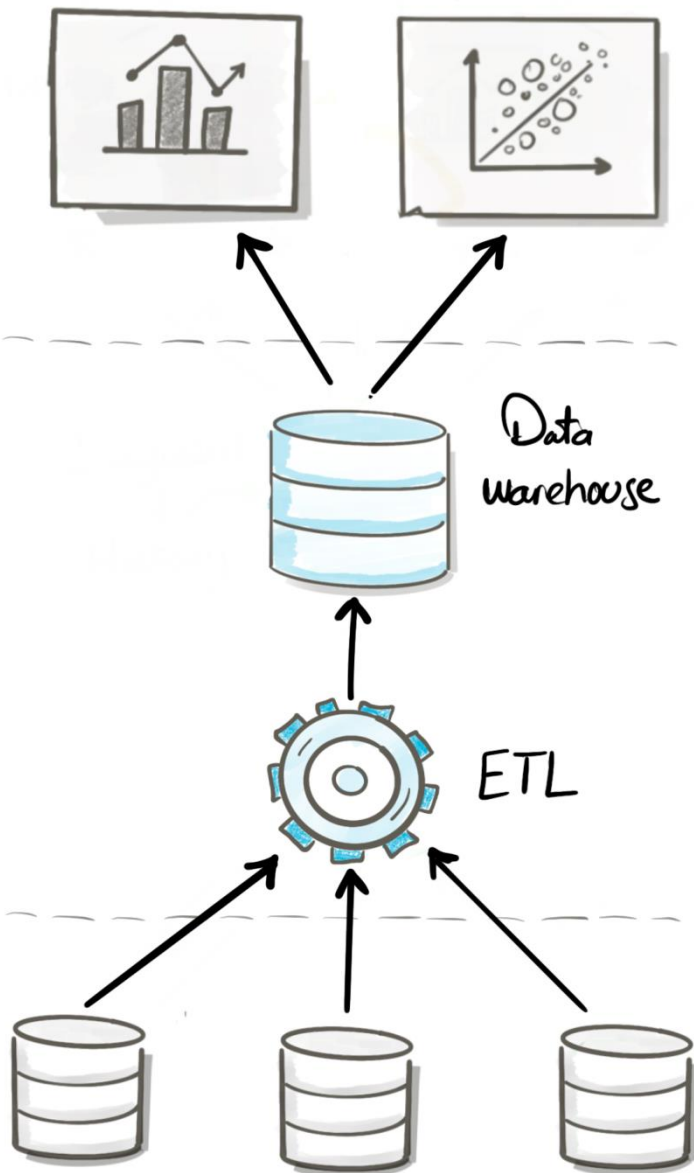
Fast (~Hours)

Automation

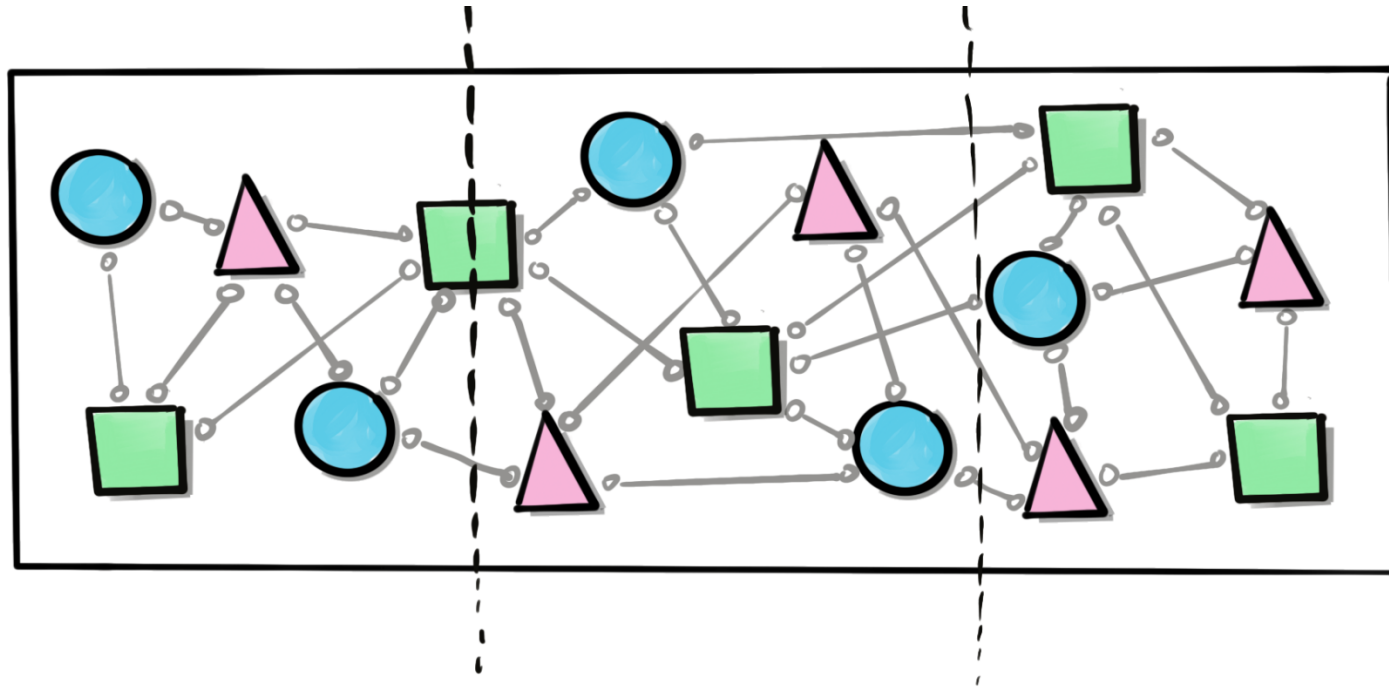


  
Data Analyst

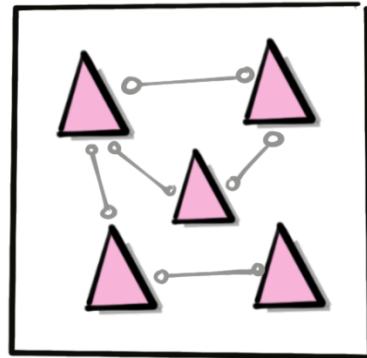
  
Data Engineer



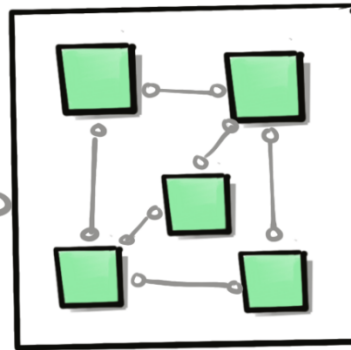
without  
SOC



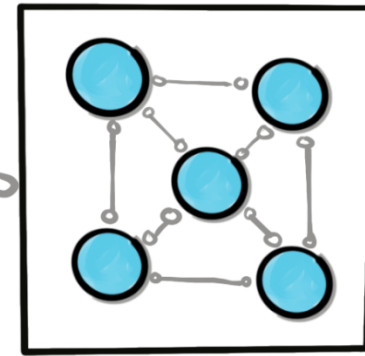
with  
SOC



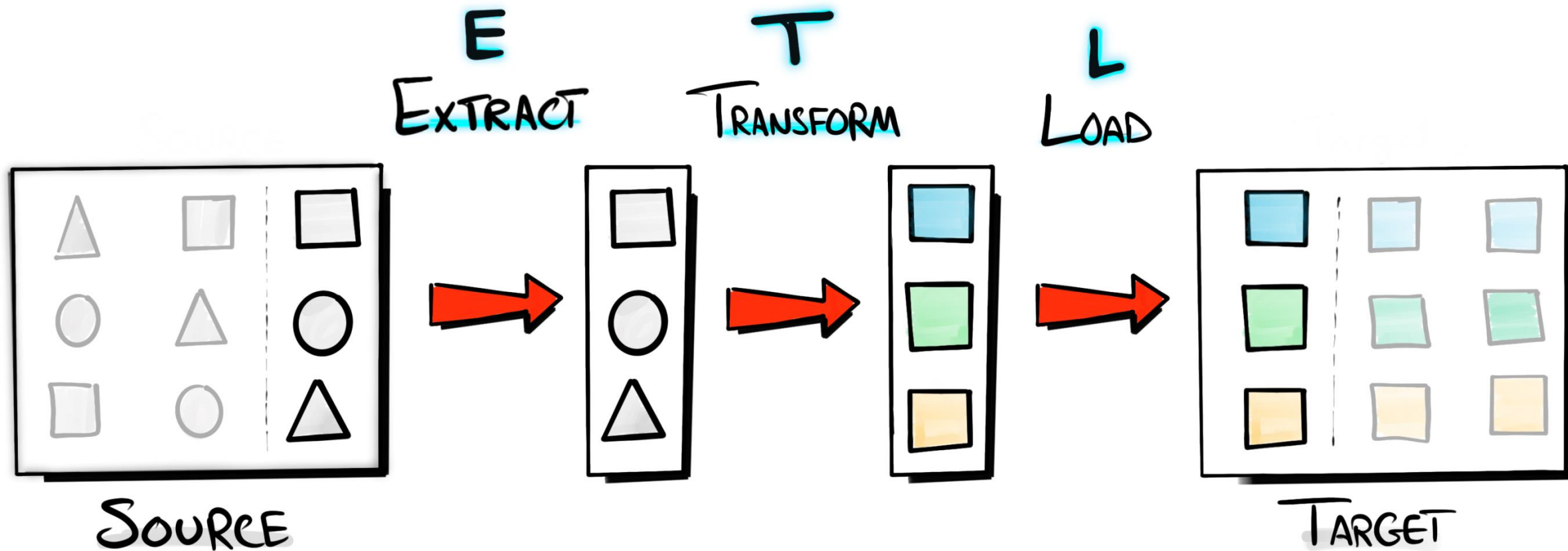
Module A



Module B

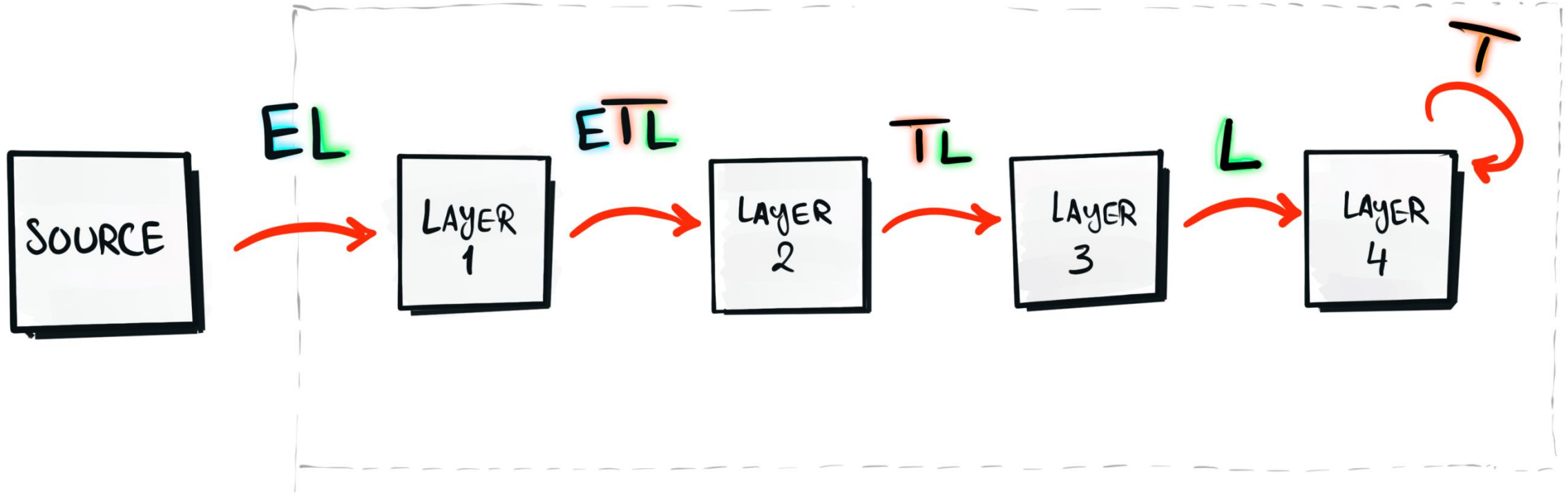


Module C

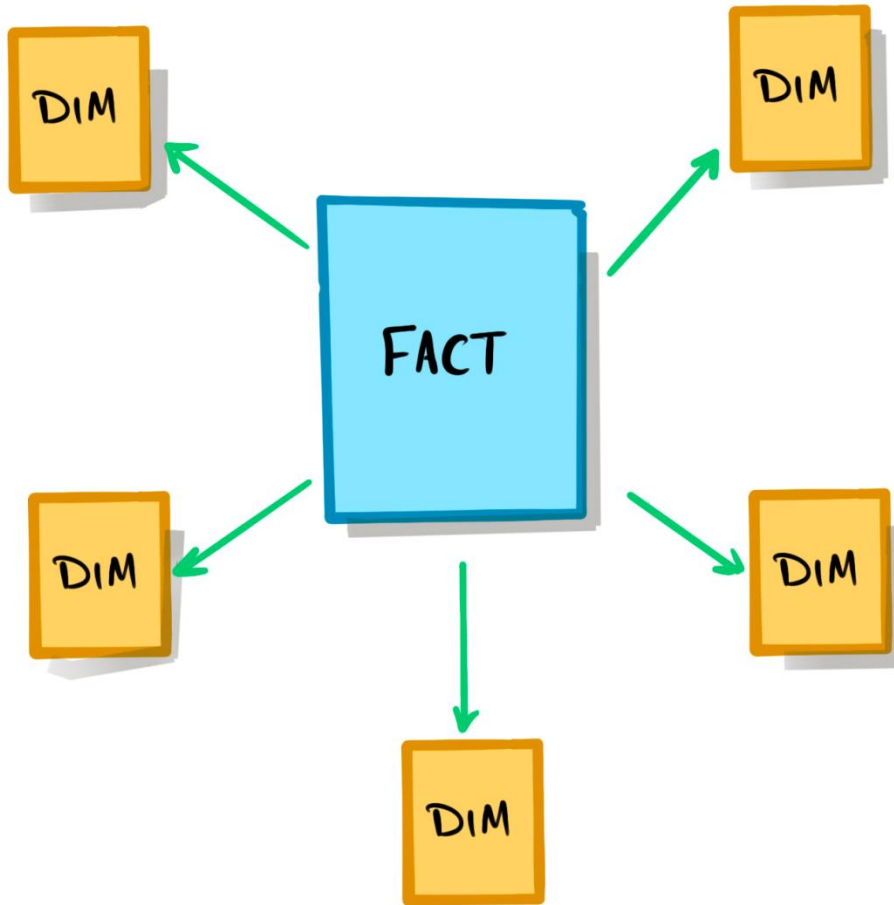




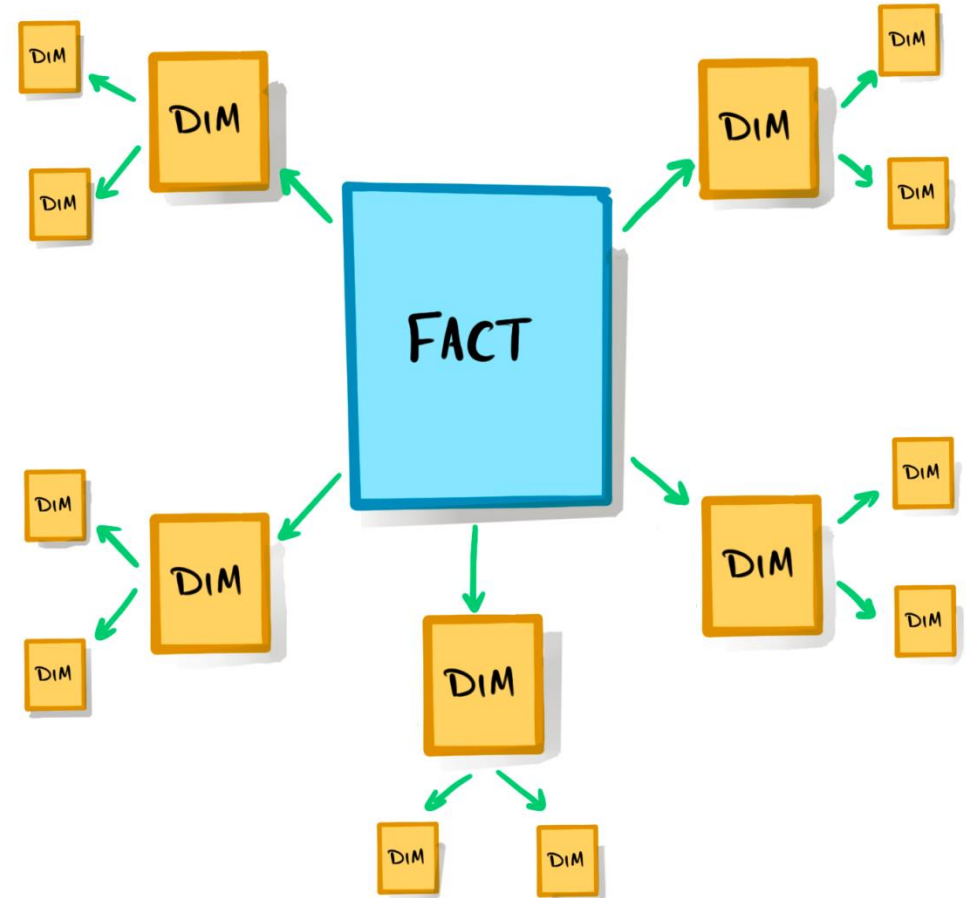
## Data Architecture

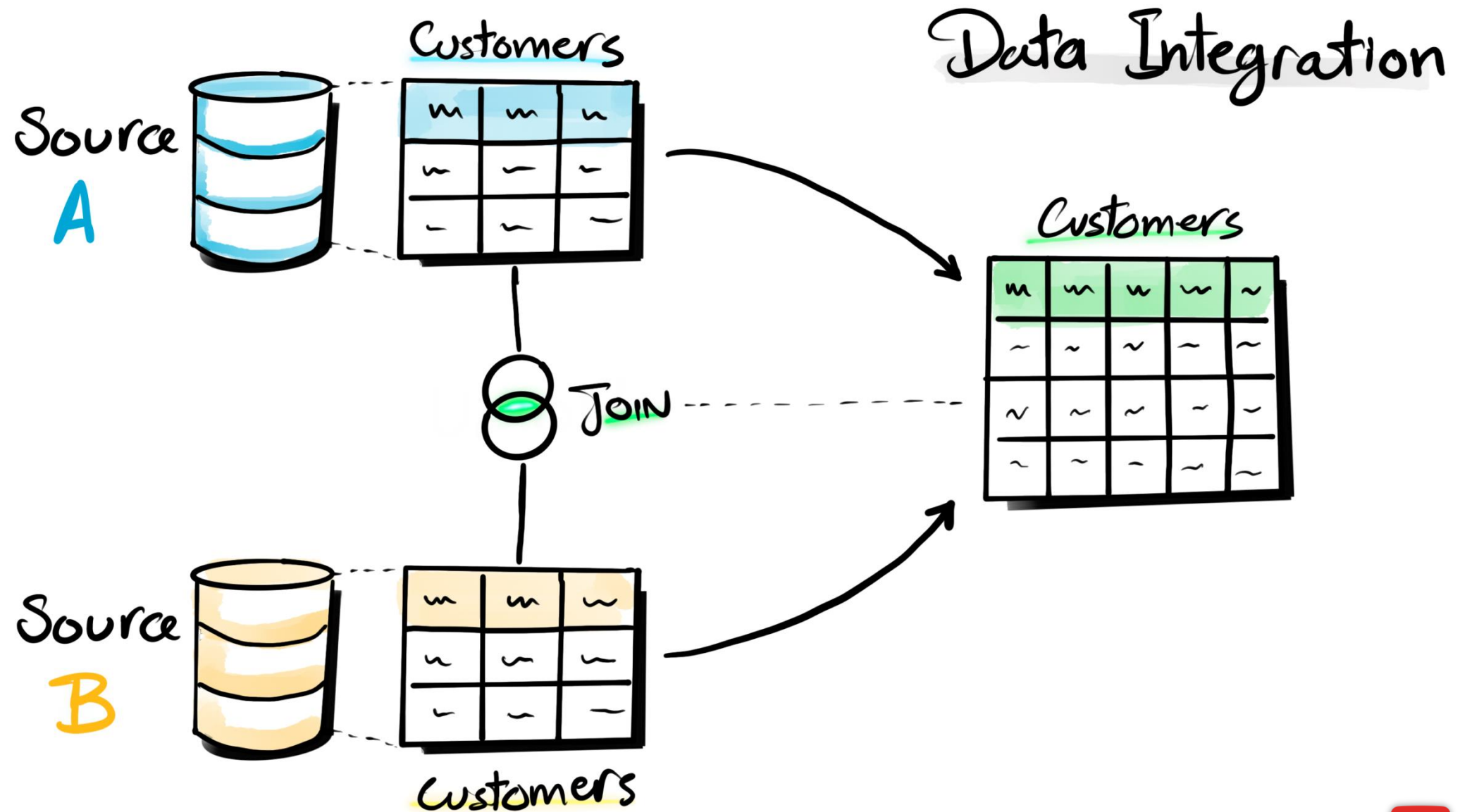


# STAR SCHEMA

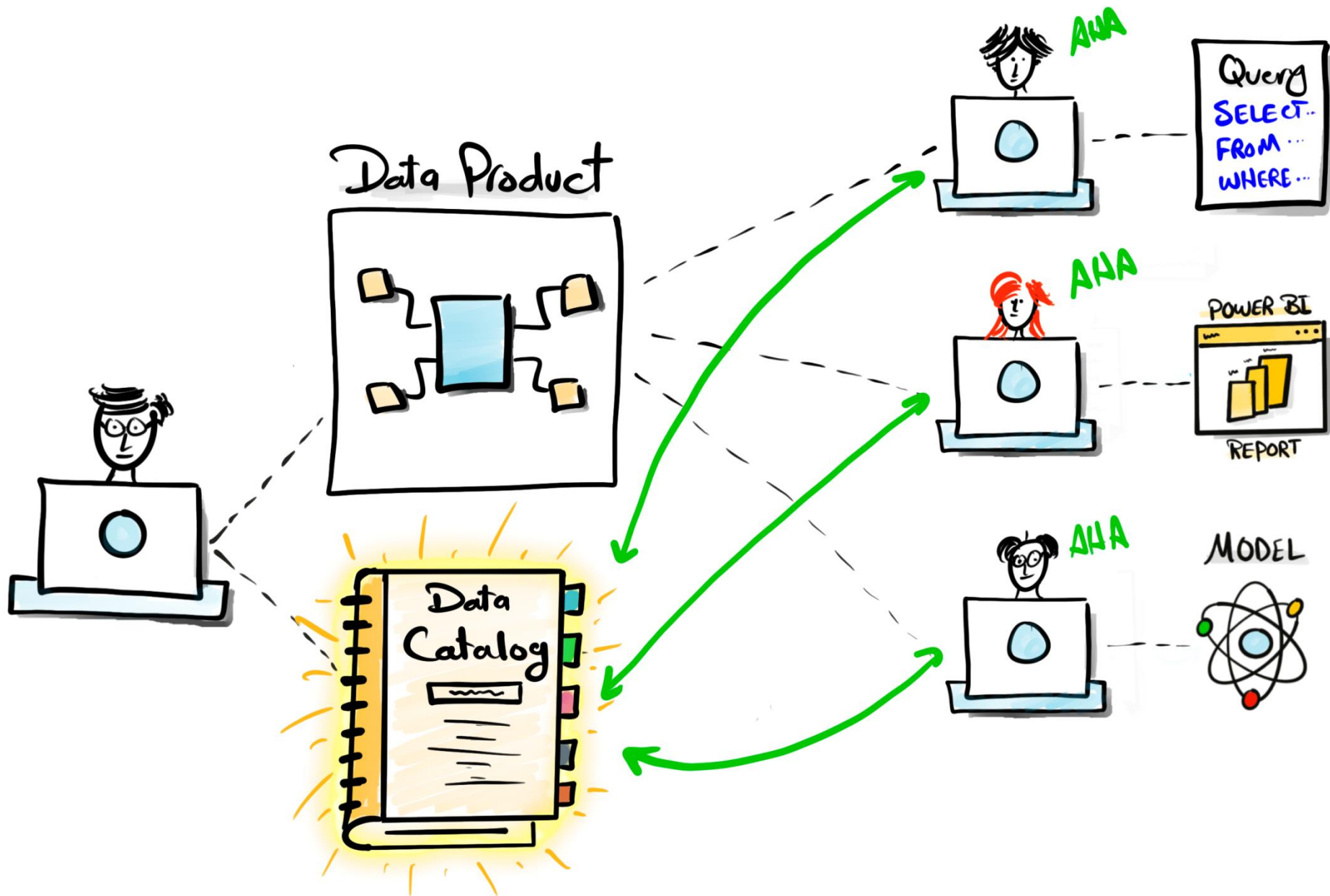


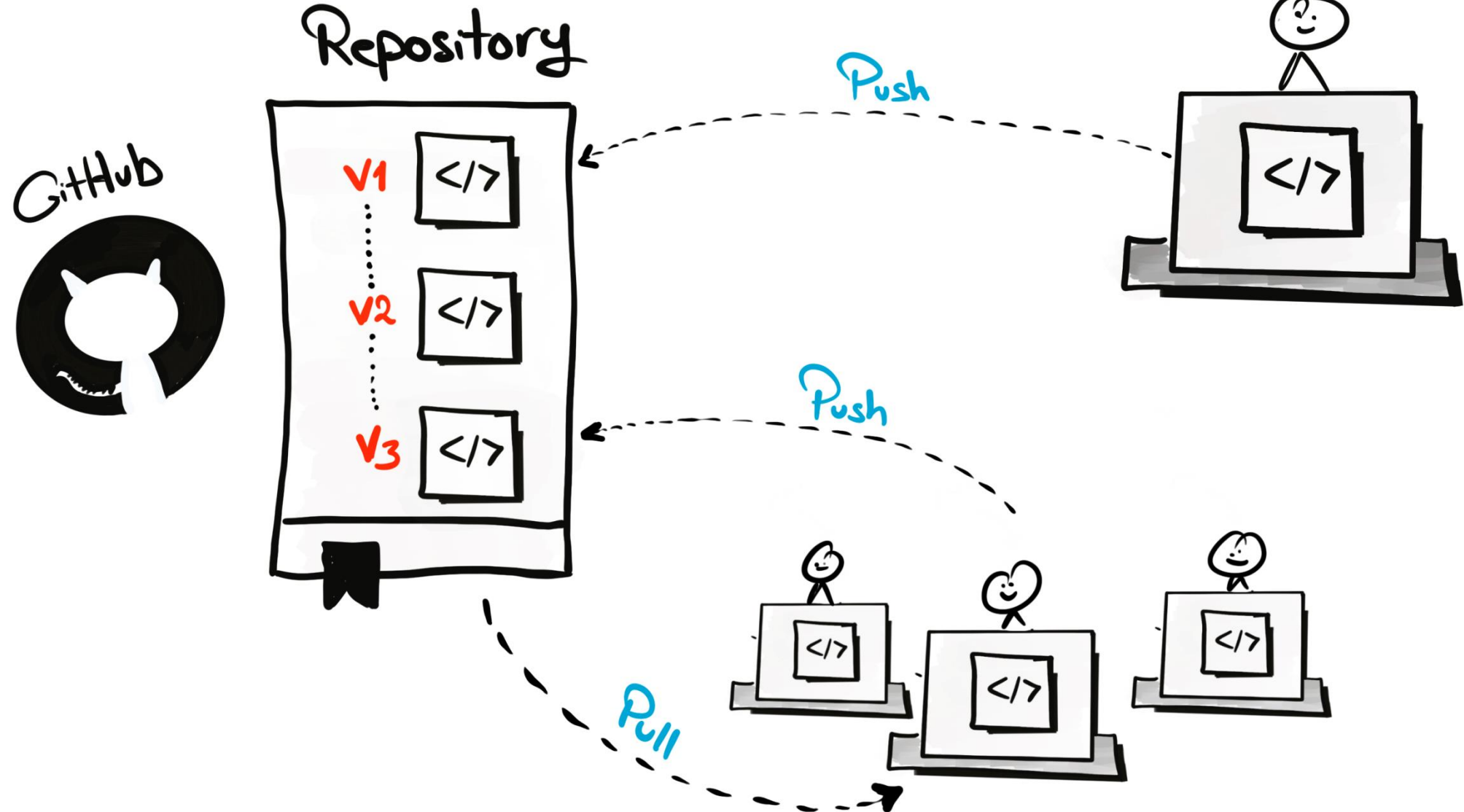
# SNOWFLAKE SCHEMA

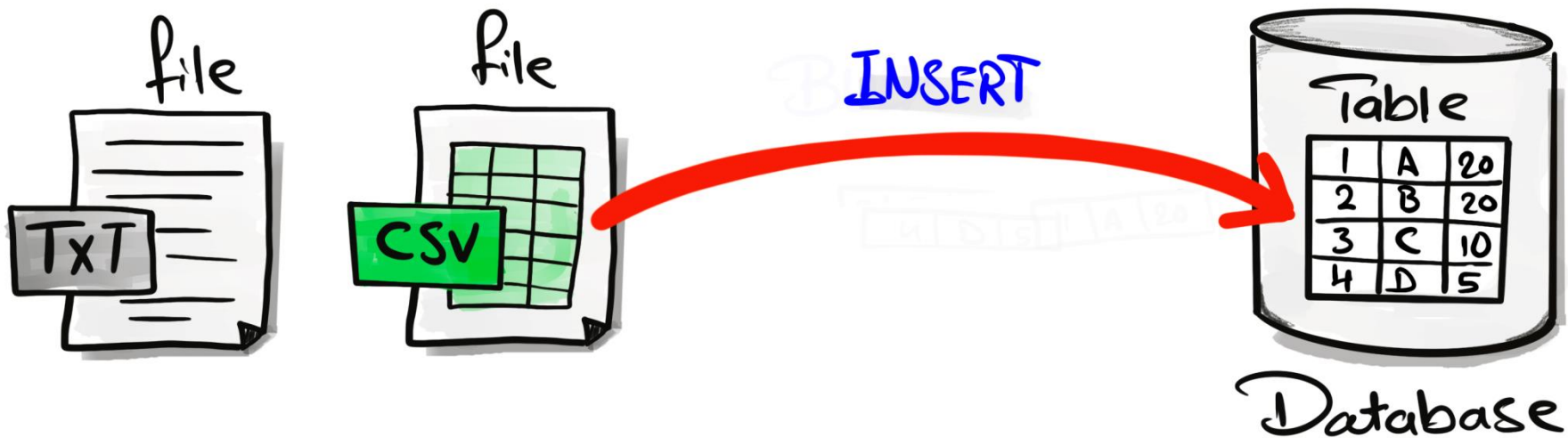
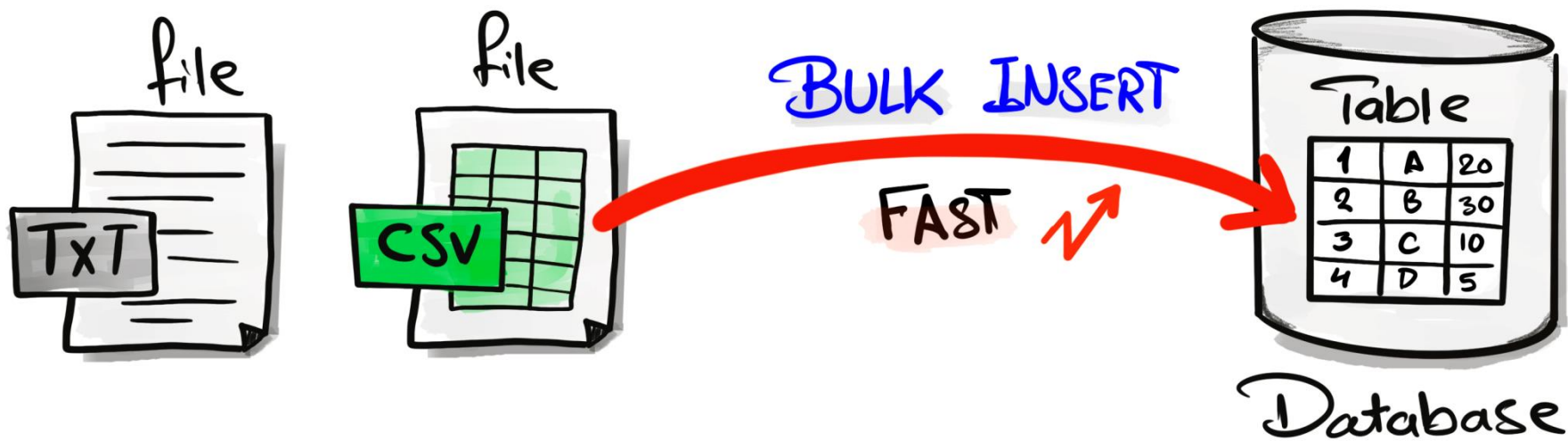
















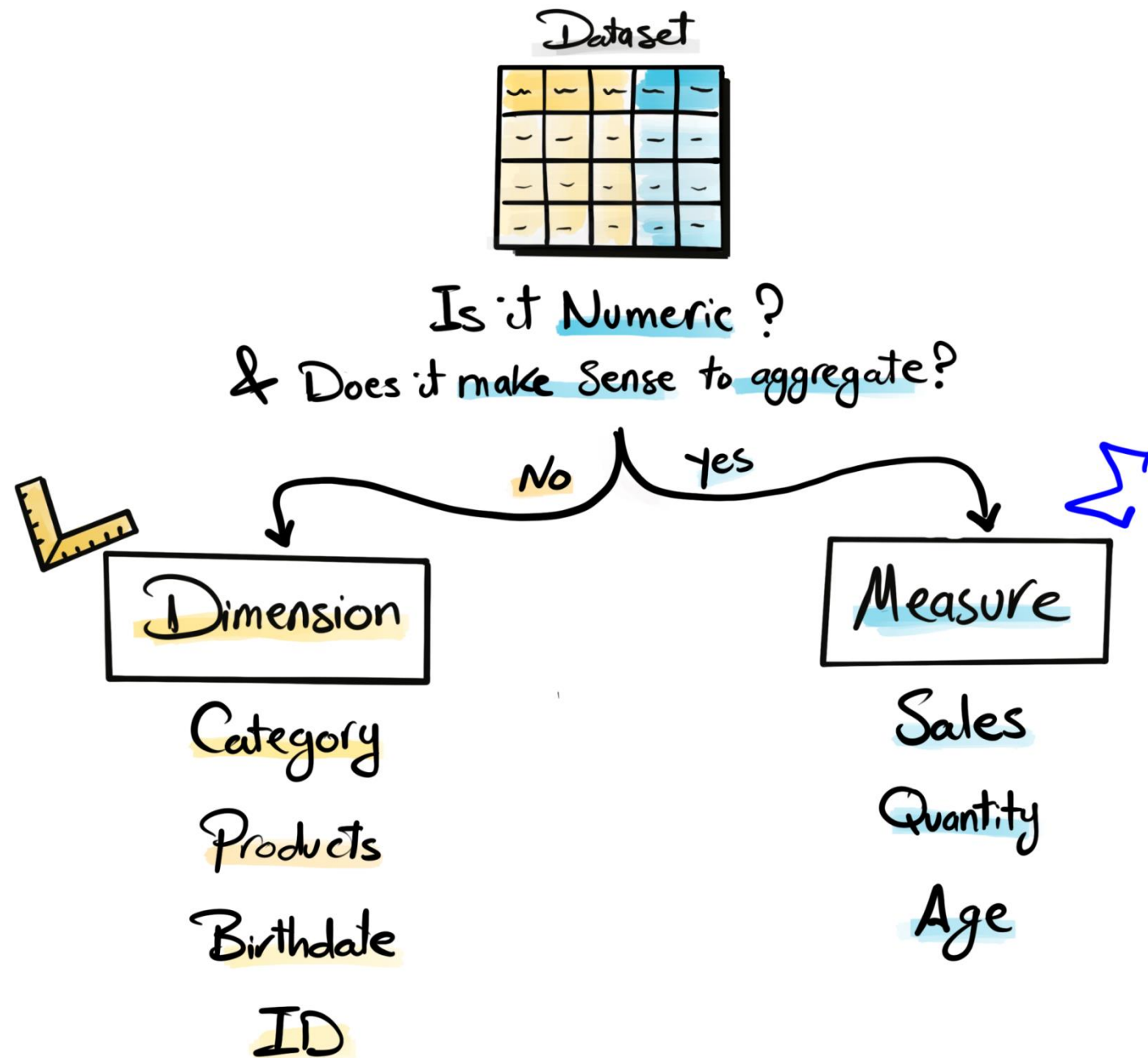
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# SQL DATA Analytics

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A	C
B	D

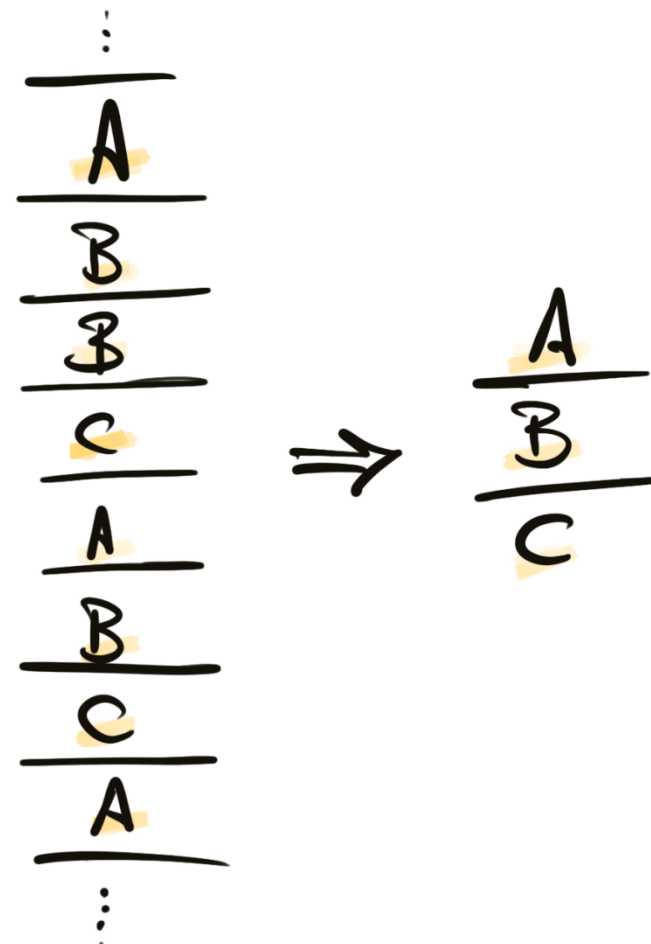
# Dimensions Exploration

**DISTINCT** [Dimension]

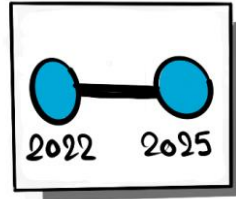
**DISTINCT** Country

**DISTINCT** Category

**DISTINCT** Product







# Date Exploration

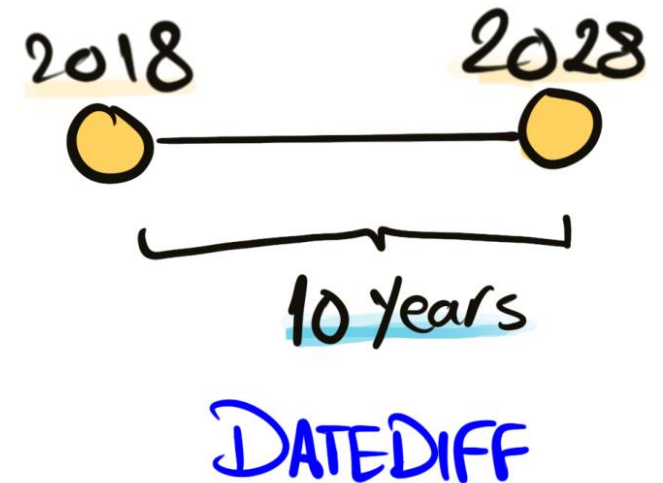
## MIN/MAX [Date Dimension]

MIN Order\_date

MAX Create\_date

MIN Birthdate

2019  
2020  
2018  
2018  
2022  
2023  
2023  
2028  
2022



999  
~~~~~

## Measures Exploration

$\Sigma$  [Measure]

SUM (Sales)

AVG (Price)

SUM (Quantity)

|    |
|----|
| 10 |
| 20 |
| 50 |
| 30 |
| 10 |
| 80 |
| 30 |
| 10 |

$\Rightarrow$

240

BIG Number

Key Metric



# Magnitude

$\Sigma$  [Measure] By [Dimension]

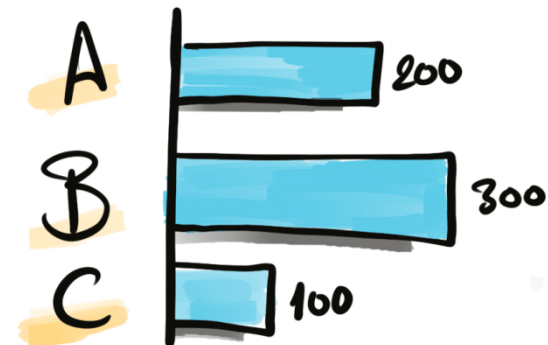
Total Sales By Country

Total Quantity By Category

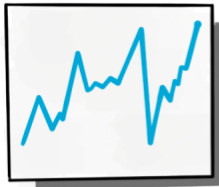
Average Price By Product

Total Orders By Customer

|     |     |
|-----|-----|
| 600 |     |
| A   | 200 |
| B   | 300 |
| C   | 100 |







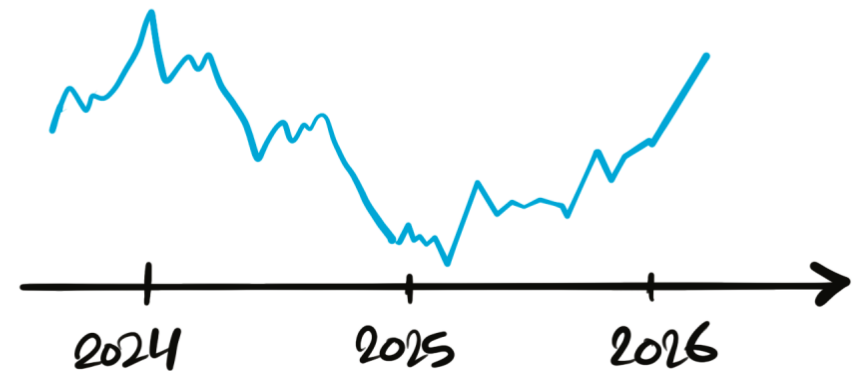
# Change - Over - Time ~Trends~

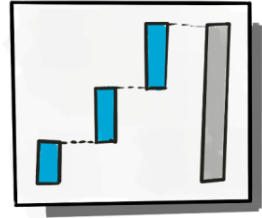
$\Sigma$  [Measure] By [Date Dimension]

Total Sales By Year

Average Cost By Month

|      |     |
|------|-----|
| 2024 | 300 |
| 2025 | 100 |
| 2026 | 200 |





# Cumulative Analysis

$\Sigma$  [Cumulative Measure] By [Date Dimension]

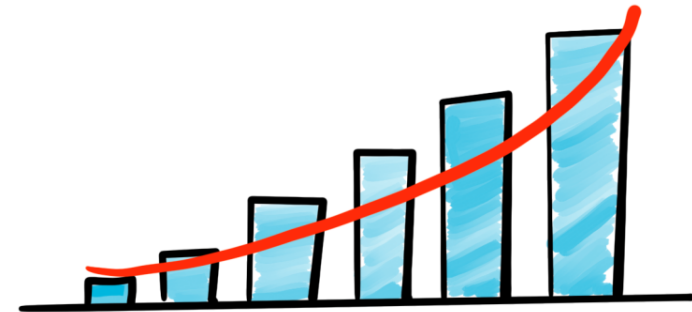
Running Total Sales By Year

Moving Average of Sales By Month

Cumulative

|      |                  |     |
|------|------------------|-----|
| 2024 | 300              | 300 |
| 2025 | 100 <sup>+</sup> | 400 |
| 2026 | 200 <sup>+</sup> | 600 |

## WINDOW FUNCTIONS





## Performance Analysis

$\text{Current [Measure]} - \text{Target [Measure]}$

Current Sales - Average Sales

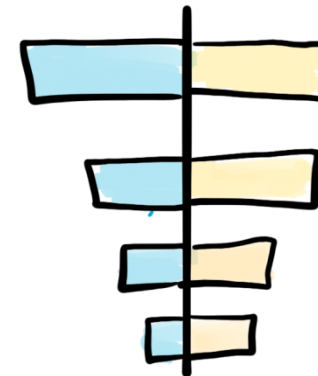
Current Year Sales - Previous Year Sales

Current Sales - lowest Sales

Diagram illustrating the calculation of Performance:

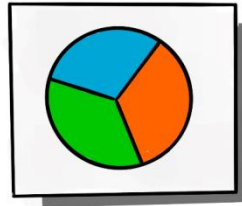
Current (200) - Target (AVG) (200) = Performance (0)

|   | Current | Target (AVG) | Performance |
|---|---------|--------------|-------------|
| A | 200     | 200          | 0           |
| B | 300     | 200          | 100         |
| C | 100     | 200          | -100        |



## WINDOW FUNCTIONS





## Part-to-Whole

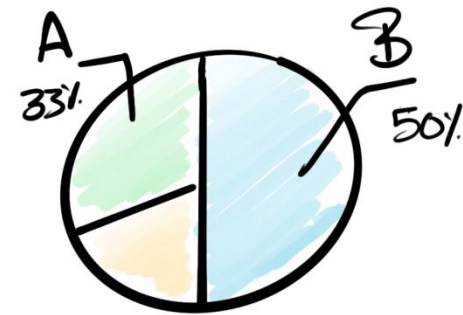
Proportional  
Analysis

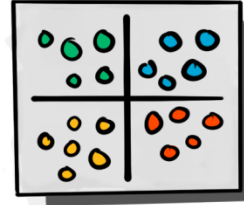
$([\text{Measure}] / \text{Total} [\text{Measure}]) * 100$  By [Dimension]

$(\text{Sales} / \text{Total Sales}) * 100$  By Category

$(\text{Quantity} / \text{Total Quantity}) * 100$  By Country

|   |     |     |
|---|-----|-----|
| A | 200 | 33% |
| B | 300 | 50% |
| C | 100 | 17% |





# Data Segmentation

[Measure] By [Measure]

Total Products By Sales Range

Total Customers By Age

Σ ↘ Categorize ↘

|    |     |   |        |
|----|-----|---|--------|
| 3  | 50  |   |        |
| 4  | 100 | ↘ | Low    |
| 5  | 150 | ↘ | Medium |
| 1  | 200 | ↘ | Large  |
| 10 | 250 |   |        |
| 5  | 300 |   |        |
|    |     |   | 7      |
|    |     |   | 6      |
|    |     |   | 15     |

CASE WHEN STATEMENT

