Software and Processes for Data Management

Yapi Donatien Achou

Semcon

yapi-donatien.achou@semcon.com

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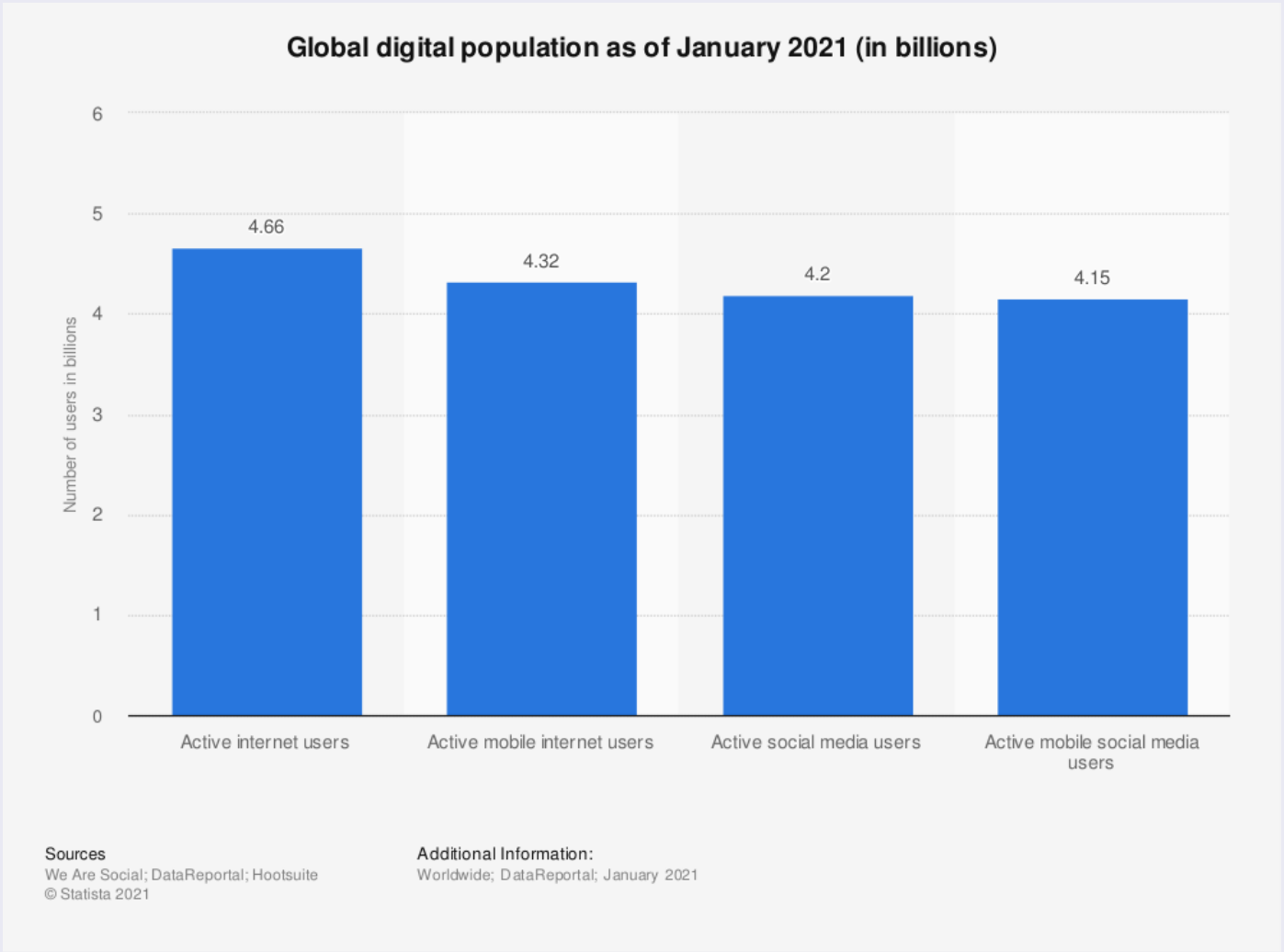
Overview

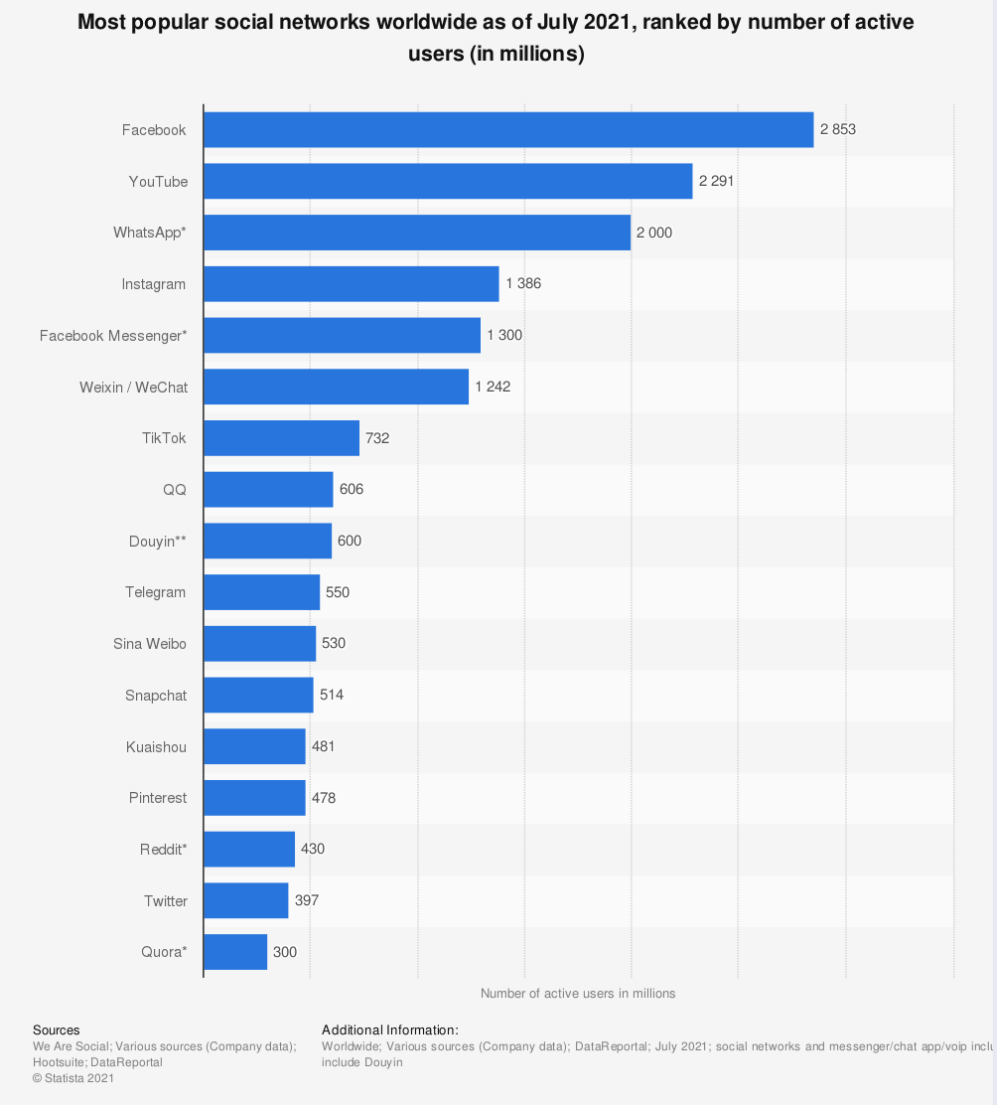
Data source

Internet Users in 2021



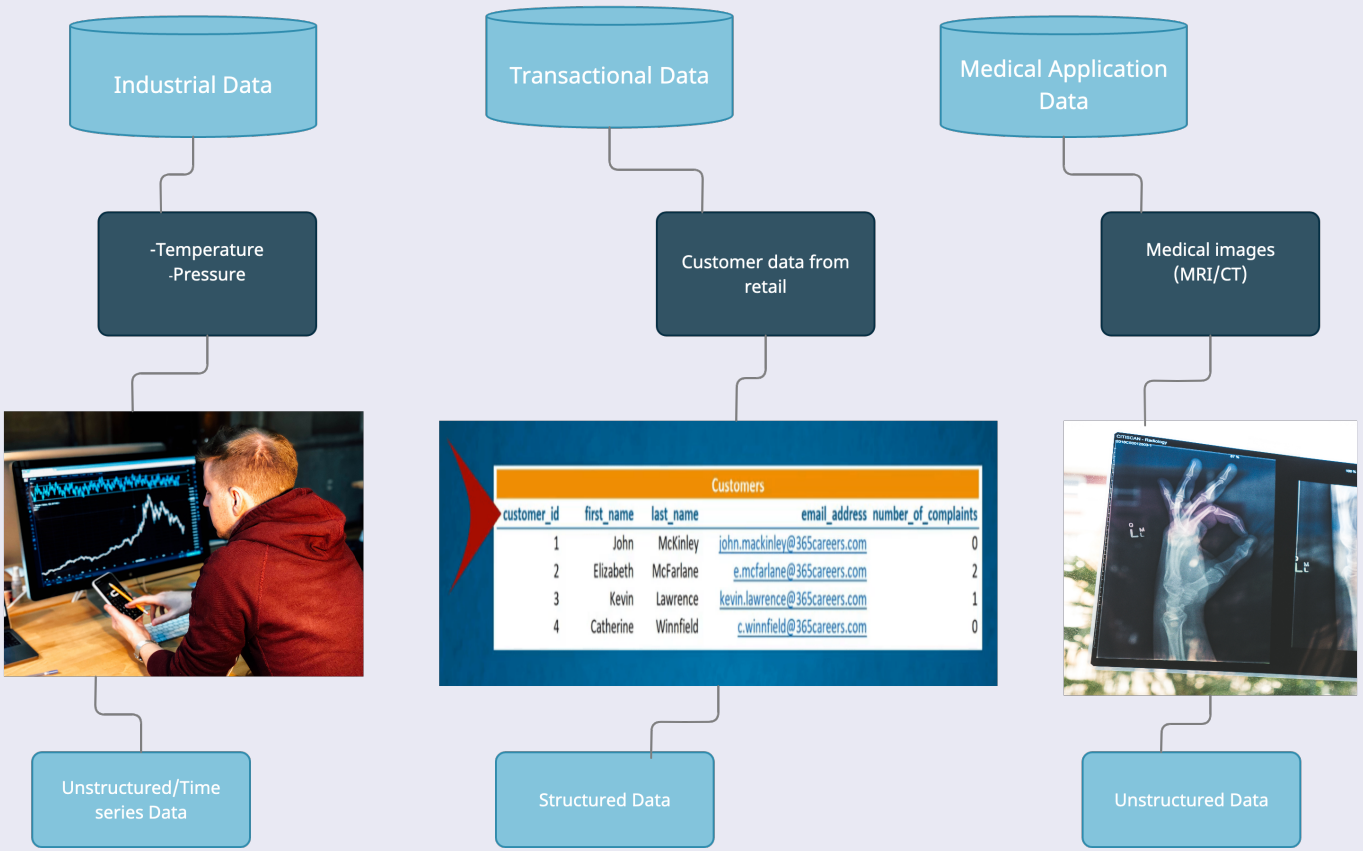
Data source

Social media



Data source

Other data sources



Data source

Example

1. Read time series data with pandas and plot with matplotlib
2. Read transactional data from a series of json files and set them in a tabular format with pandas

Data quality

Data Storage

Structured vs unstructured

The type of data dictates how it is stored

Structured data storage

Structured data are typically stored into relational databases

Data Storage

Unstructured data storage

Unstructured data are typically stored in non relational data bases such as time series databases, datalakes

Data Ingestion

Ingestion

Moving data from one or more sources to one or more destinations

Challenges

- From one source/destination to thousand of sources/destinations
- Different data types (structures, unstructured)

Example

Extract Tranform Load (ETL) pipeline

- Moving transactional data into a SQL database
- Moving time series data into InfluxDB

Data Ingestion

Data pipeline

Data pipeline can be define as a set of processes that allow you to orchestrate and monitore data movements

Software framework

- Apache Airflow

Data pipeline

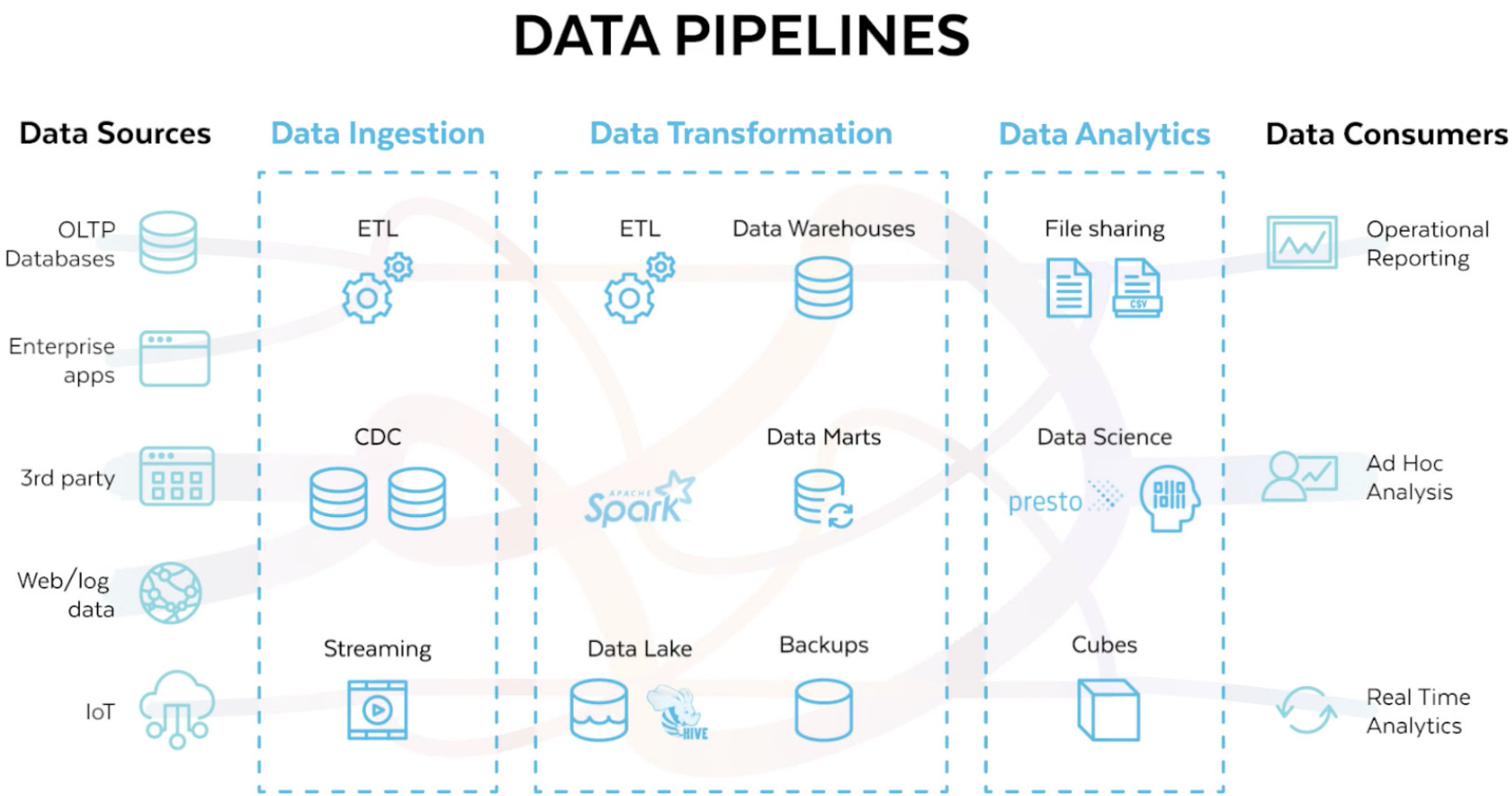


Figure: Cortesie https://www.snowflake.com/guides/etl-pipeline

Data science

Machine learning pipeline