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From Chaos to Clarity:

Data Engineering Magic

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@ Daffodil International University

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Agenda

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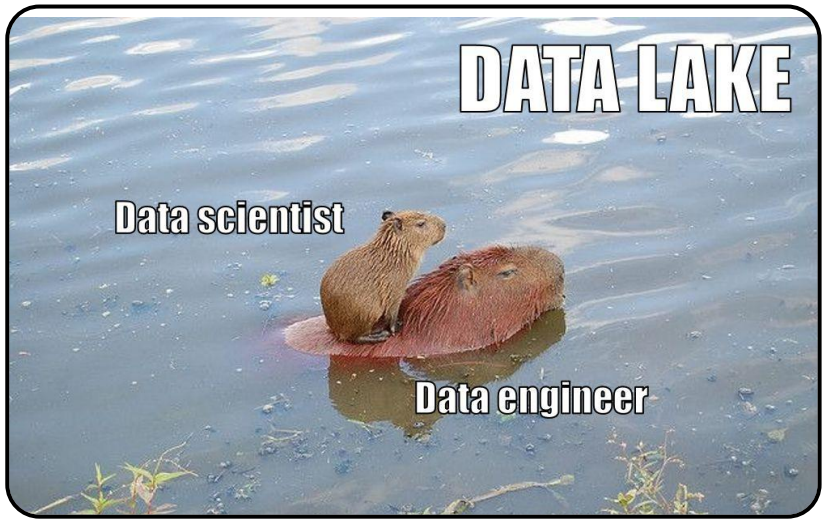
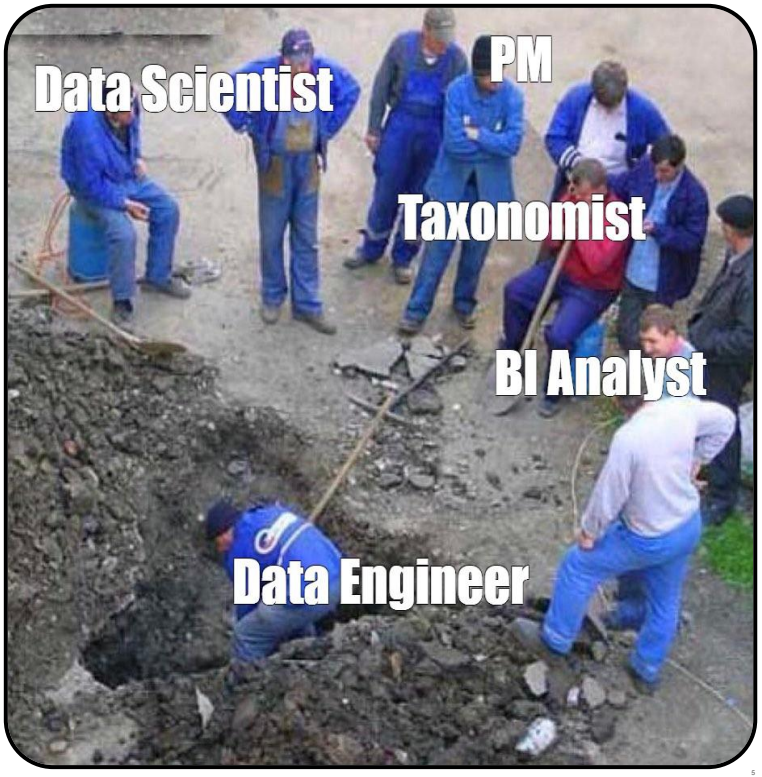
- Chaos to Clarity: Data Engineering Way
- How Data Engineering is evolving
- Use Cases
- Data Platform on GCP
- GCP DE Tools & Learning Path

So, What Actually Data Engineers Do?

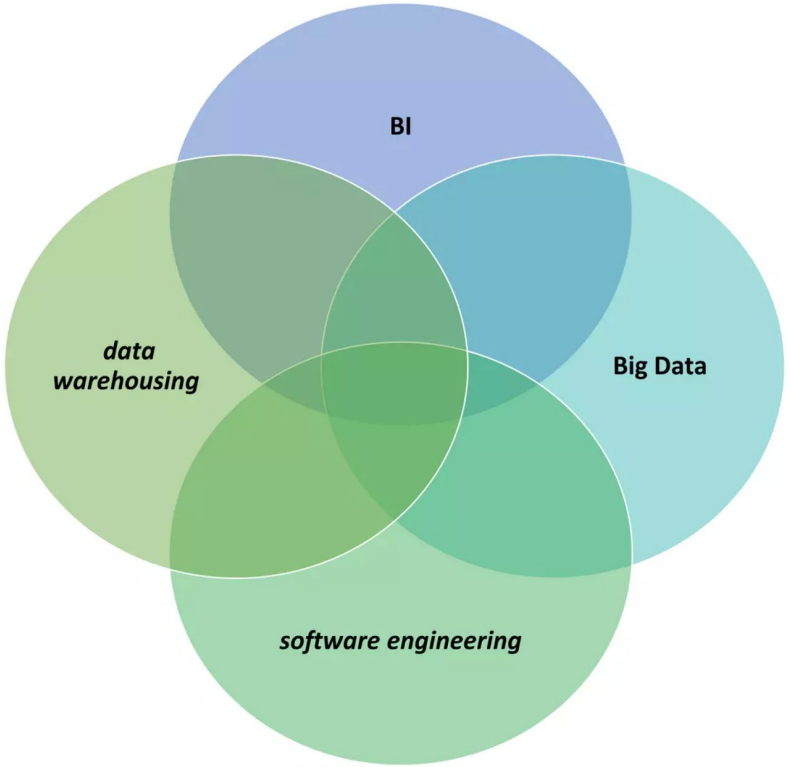
We are doing this





Data Engineer is

Who designs and maintains data pipelines for efficient data storage and processing.



Let’s Solve Jigsaw Puzzle

Chaos (Raw Data):

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At the beginning of the data engineering process,

- We encounter raw and unprocessed data
- Data can come from various sources, such as sensors, databases, social media, and more.
- It's often messy, unstructured,

Data Ingestion:

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The first step is to gather data from various sources.

- From Databases
- APIs
- IoT/IIoT Devices
- Streams
- Files and more...

Just like gathering puzzle pieces from different places.

Data Transformation:

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Data engineers then clean and transform the raw data. This step involves

- removing inconsistencies, errors, and duplicates,
- restructuring the data into a unified format,
- validating the data

Think of it as arranging puzzle pieces in a way that they fit together perfectly..

Data Storage:

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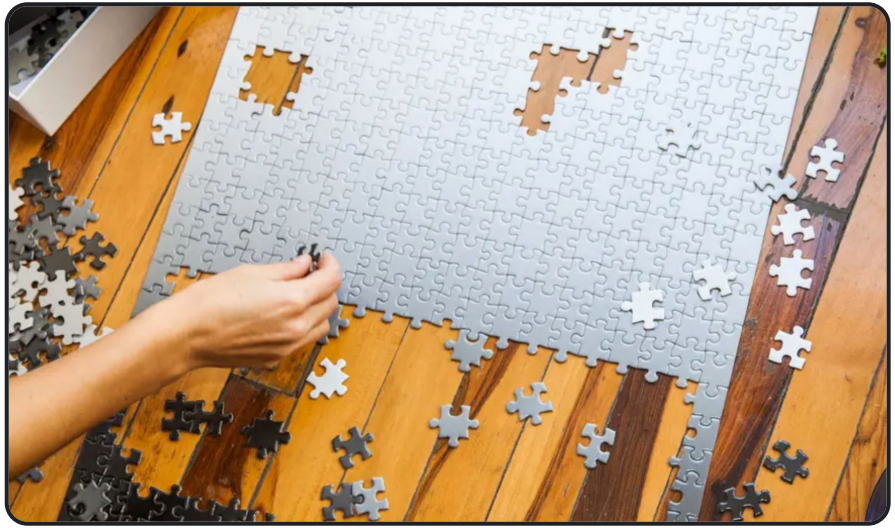
Once cleaned and transformed, data is stored in

- Databases,
- Data lakes, or warehouses.

This is similar to putting the pieces of a jigsaw puzzle together in a specific order. Once the pieces are in the correct order, they form a complete picture.



Clarity (Actionable Insights):

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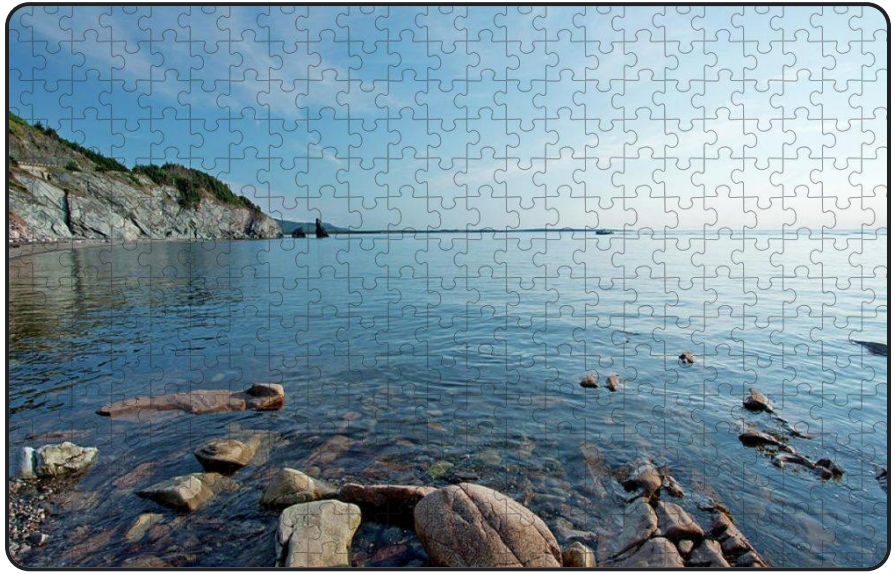
The ultimate goal of the data engineering journey is to achieve clarity - Through

- BI Analytics
- Predictive and Prescriptive Analysis



Just like a fully assembled puzzle reveals a clear image, processed and visualized data unveils valuable insights.

Data Engineering is evolving

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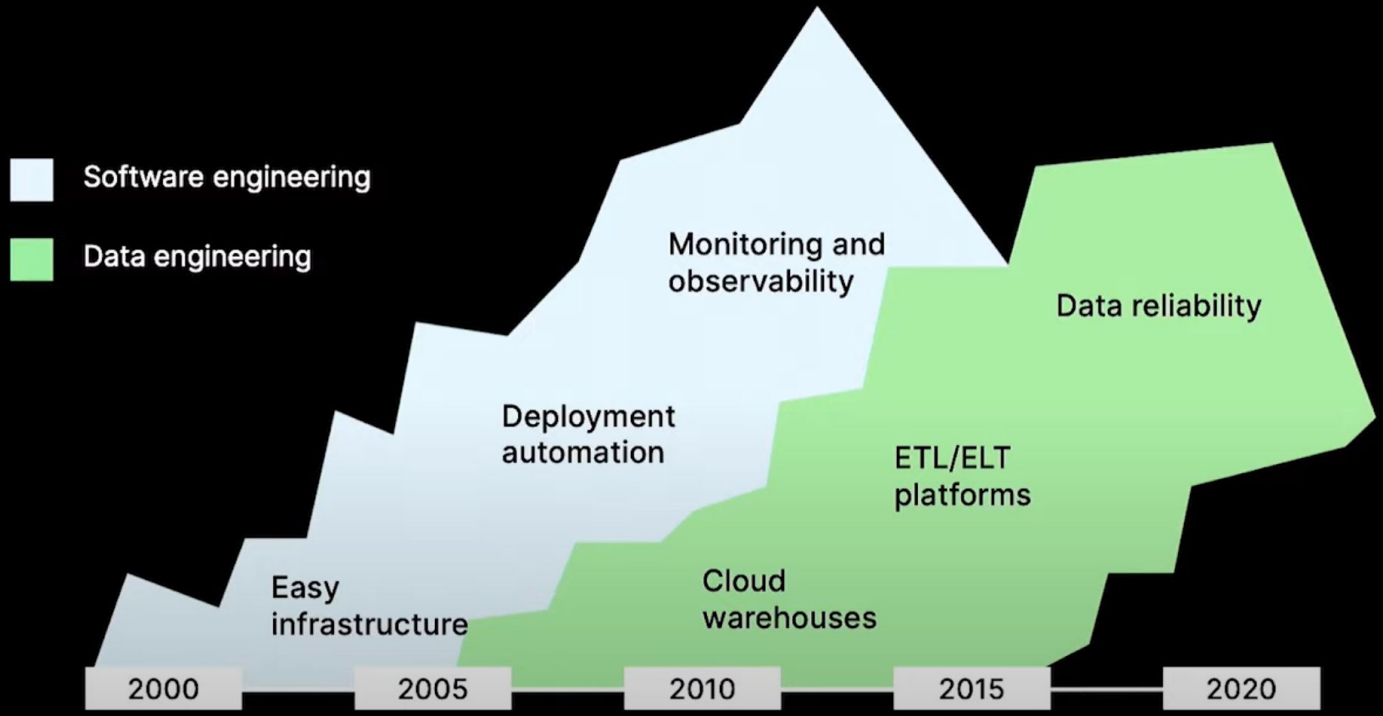

Sources: https://www.datacouncil.ai/talks/data-reliability-engineering-a-new-approach-to-data-quality?

Data Platform Architecture

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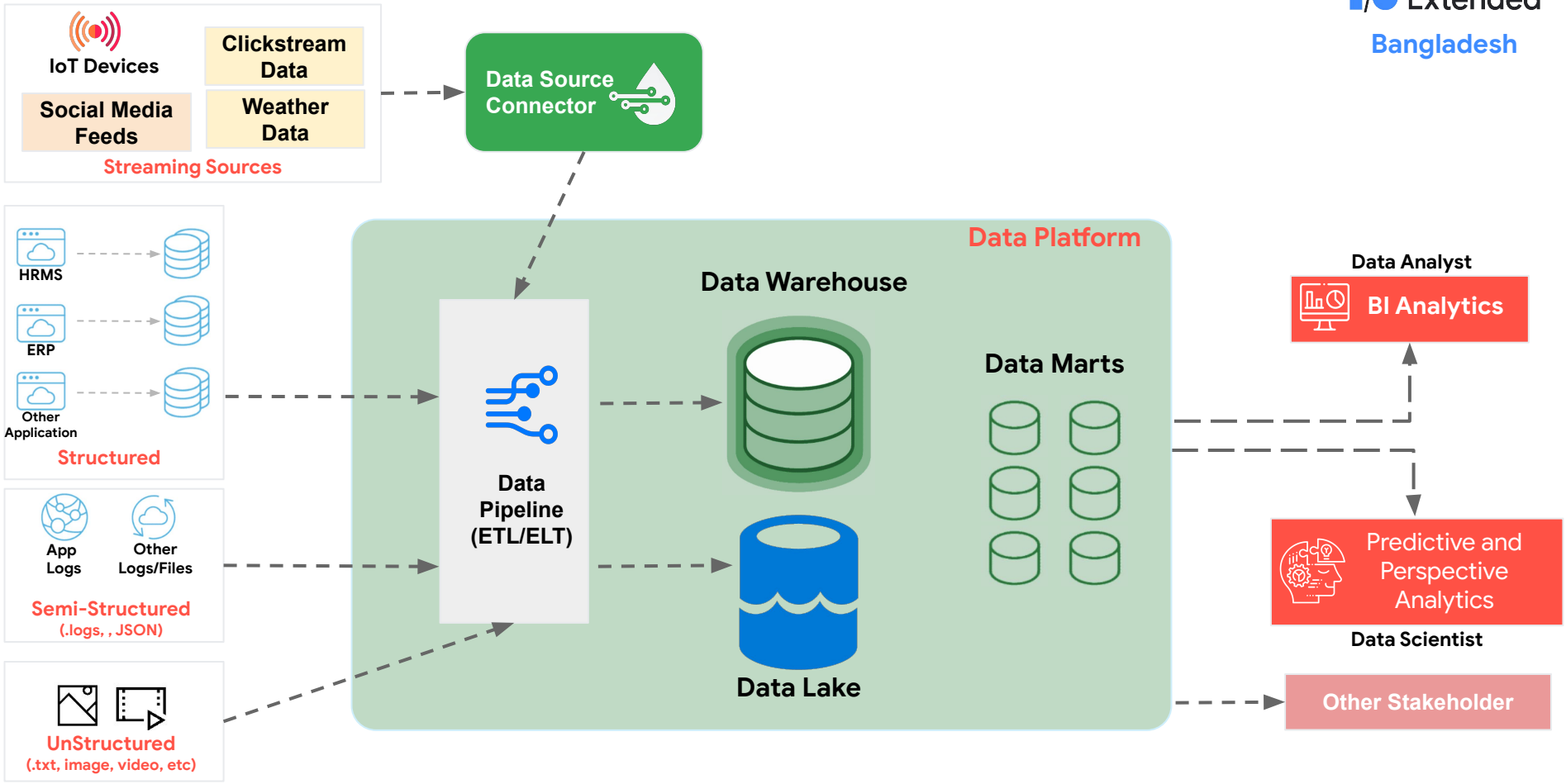

A Typical Data Platform on GCP

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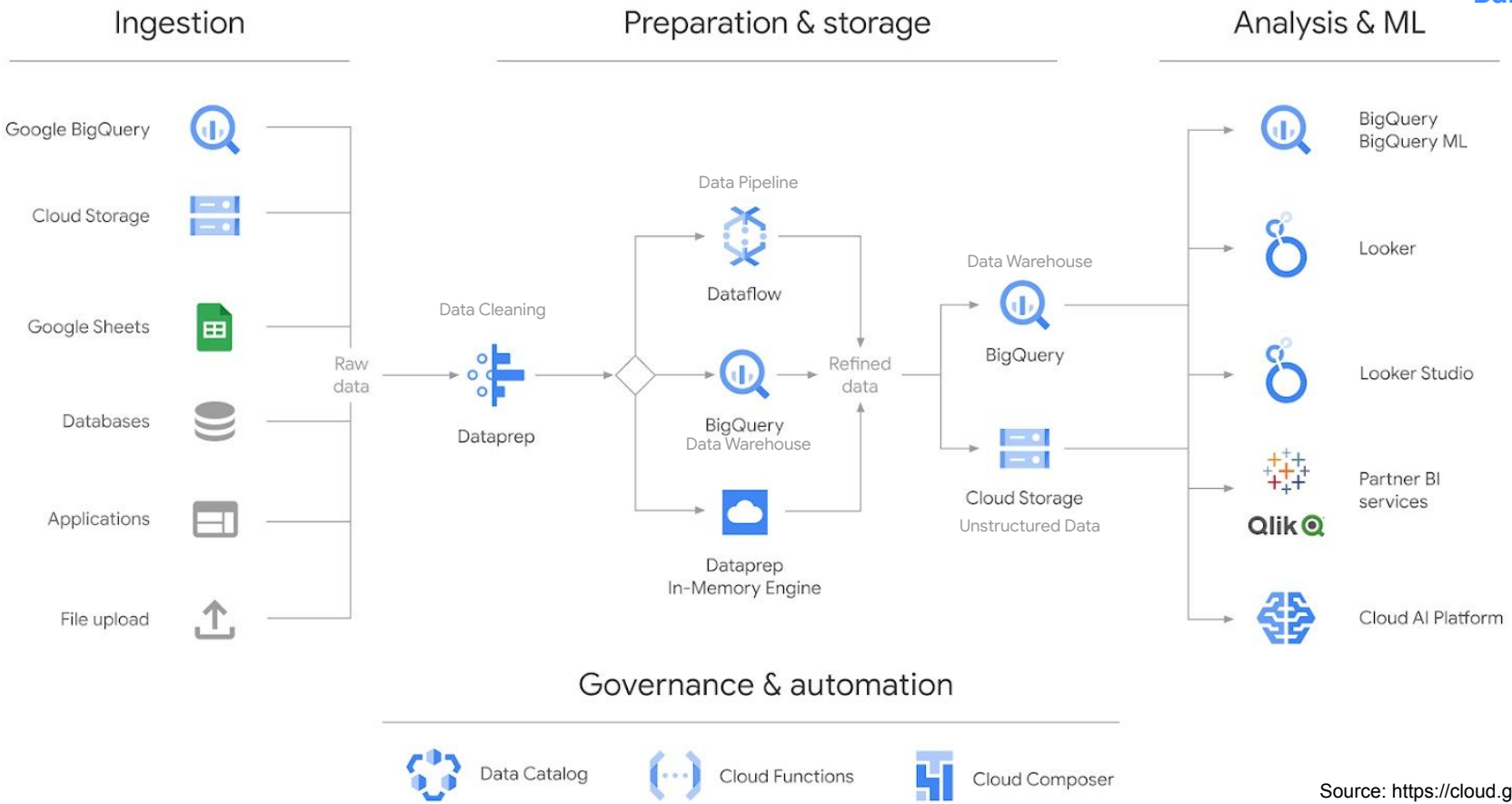

Source: https://cloud.google.com/dataprep

GCP Data Engineering Tools

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Database Management


Cloud SQL


AlloyDB for PostgreSQL


Cloud Bigtable


Cloud DataStore


Cloud Spanner

Data Pipeline


Dataflow


Data Fusion


Dataproc


Composer

Data Warehousing & Governance


BigQuery


Cloud Storage


Data Plex

Streaming Data Analytics


Pub/Sub


Dataflow


BigQuery Streaming


Apache Kafka® on Confluent Cloud™

Batch Ingestion


BigQuery Transfer Service


Dataflow (Batch Mode)


DataPrep

Data Engineering Learning Path

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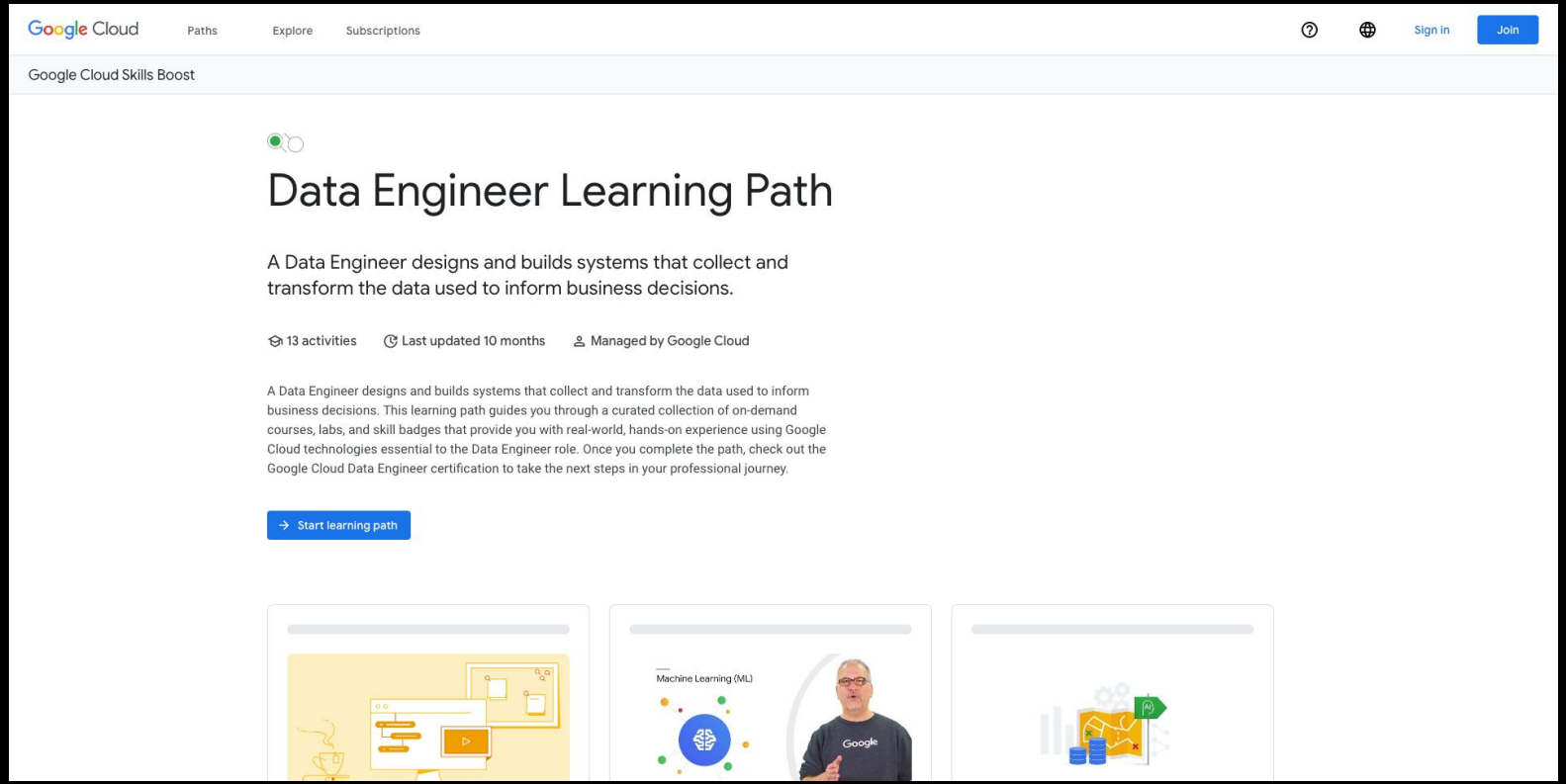

https://www.cloudskillsboost.google/journeys/16

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Thank You

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