

# SLB DATA INNOVATION CHALLENGE

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# Conceptualizing an effective metadata management strategy for ABC to enhance data accessibility and history tracking

## Data Sources

- A --> All well log files
- B--> Seismic + same well log files
- C--> Documents related to seismic & well log files present with A,B

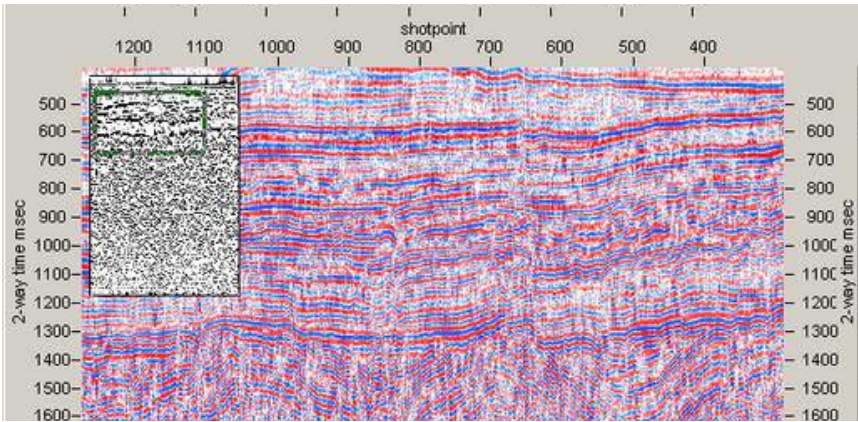
## Based on metadata, ABC assumed analogous to Oil and Gas Company

- Challenges with **data management due to scattered data across multiple sources** and formats, including seismic data, well-log data, images, and documents.
- Difficult to gain an **overview** of known data, manage metadata, ensure **data accuracy**, and **security**, and promote contextual decision-making
- A **unified solution** is expected to address the above issues, emphasizing effective metadata management, enhancing data discoverability, history tracking

## Oil & Gas industry- Exploration & Production

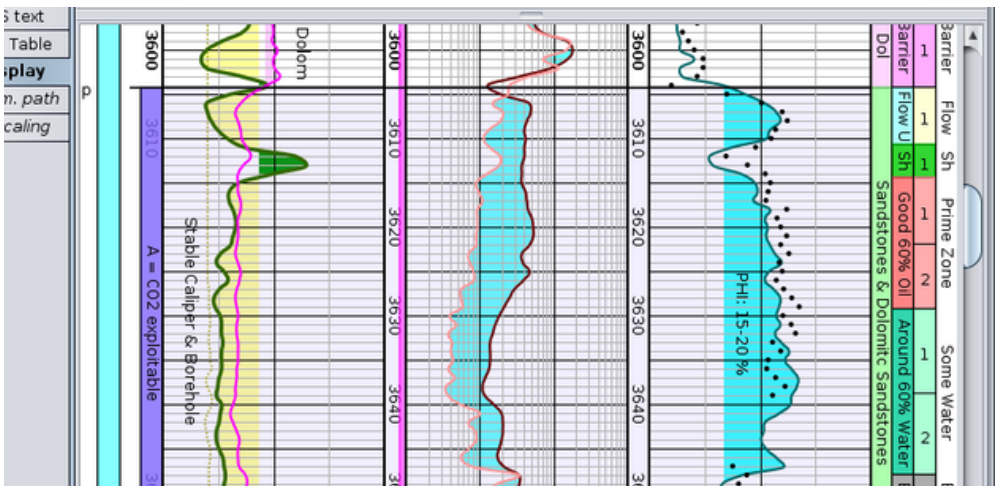
### Seismic files

- Information collected through seismic surveys
- Sound waves are sent into the ground, echoes are recorded to create images (of subsurface geostructures)



### Well Log files

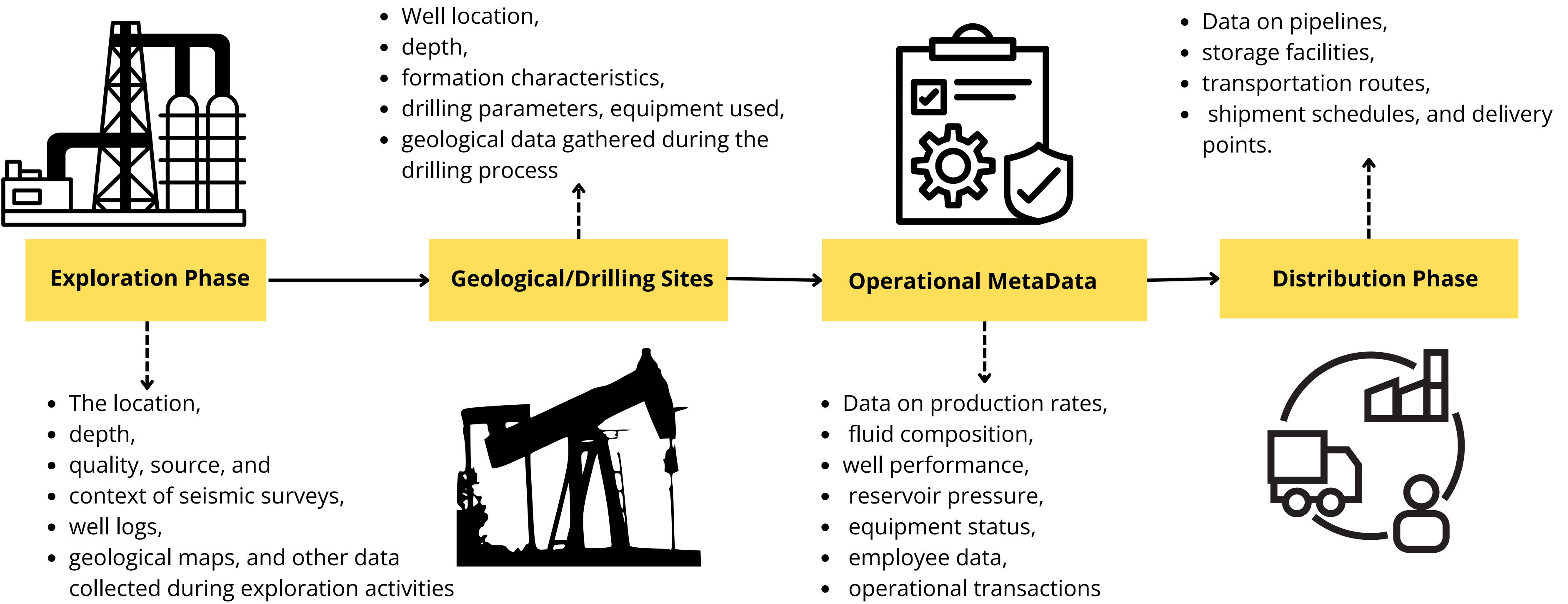
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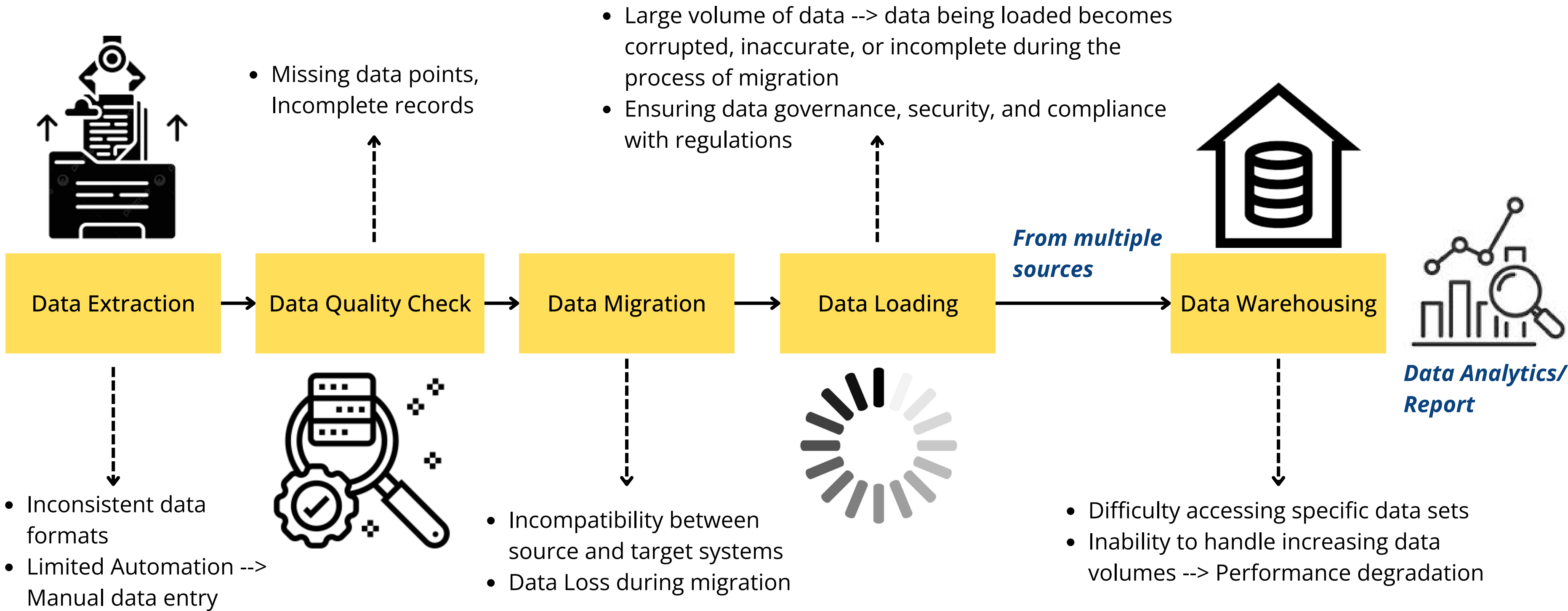
Seismic Data	.segy, .sgy
Well Log data	.las,.lis,.dlis
Images	.png,.jpeg,.tiff
Documents	.pdf,.csv,.xlsx

# Understanding the supply chain of ABC with the impact of Metadata in different steps of operation

*Process flow of an Oil & Gas company. Where does the metadata come from?*

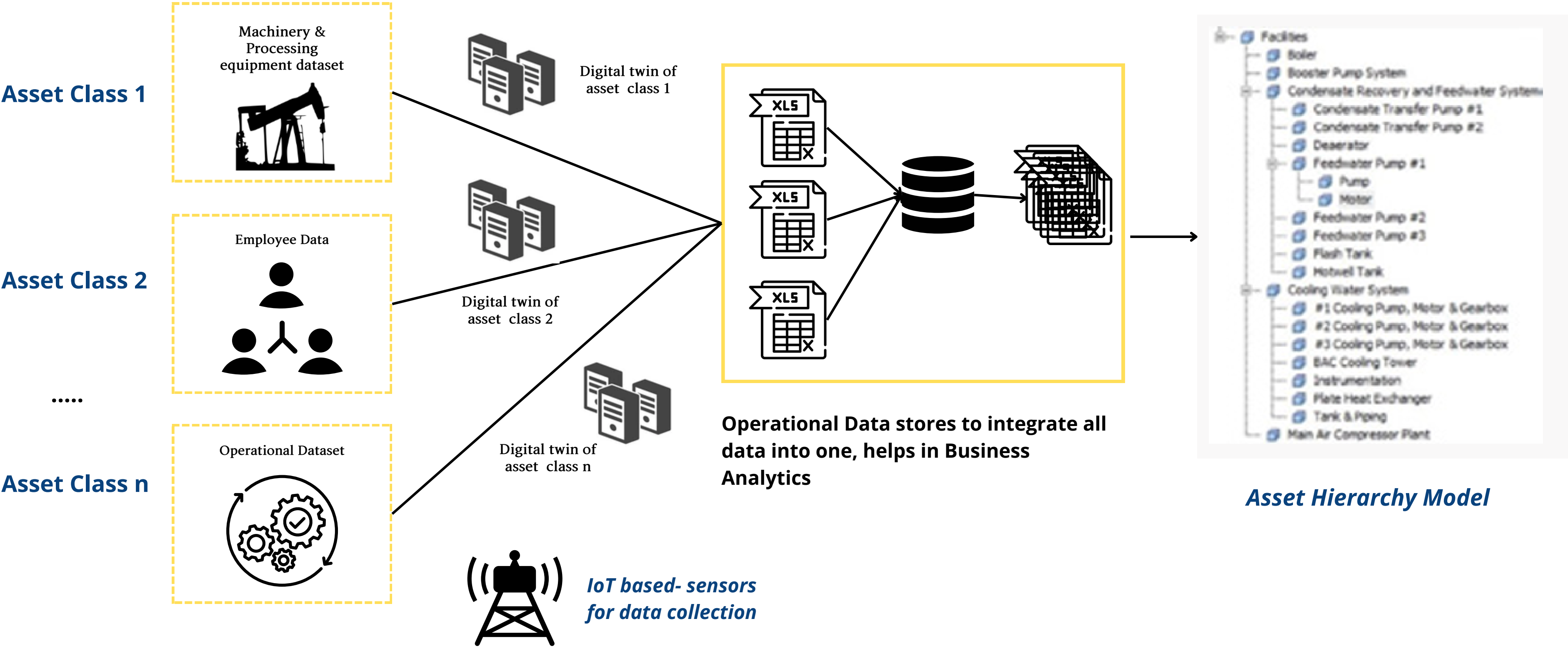


# Identifying underlying problems in each data flow point

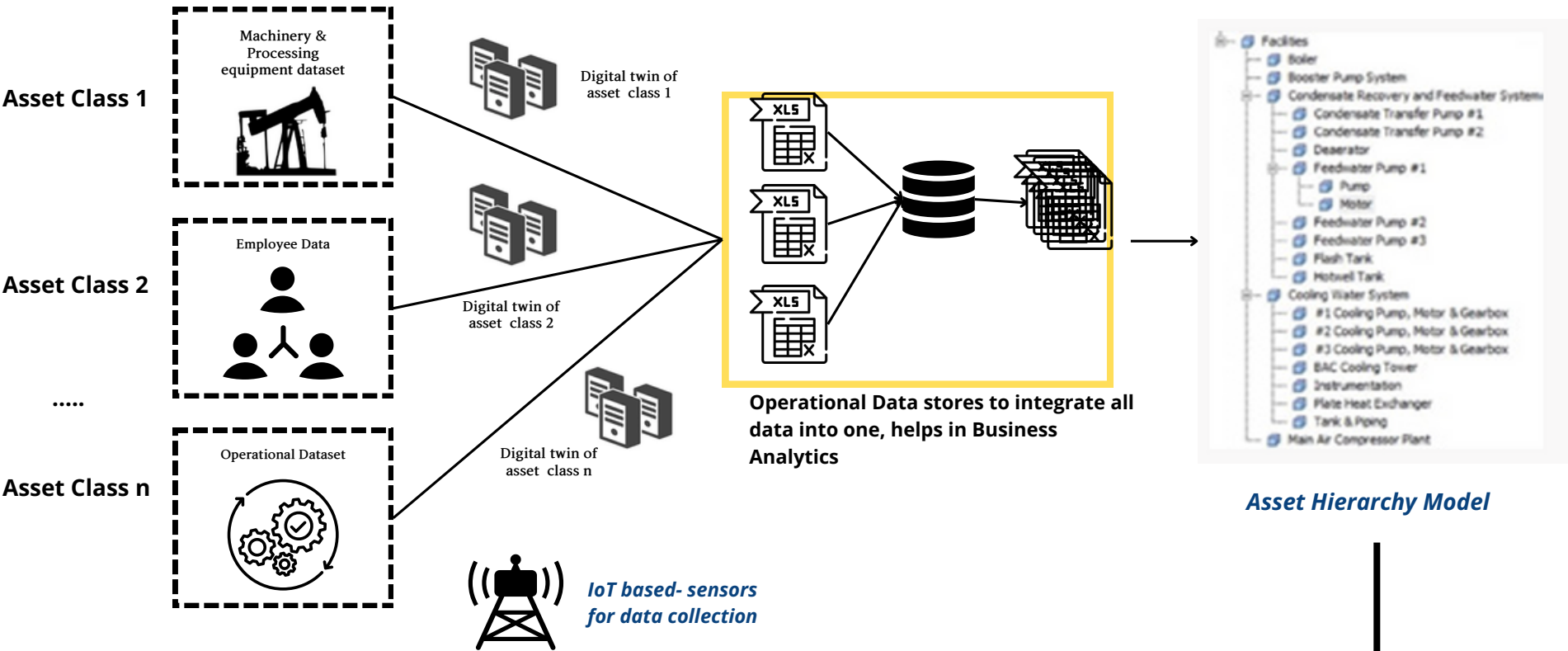




# Operational data management---> Asset hierarchy model tackles integration, inconsistency problems.



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## Operational data management

- Define the **structure and context** of sensor data, like the performance of equipment, processes, its temperature, pressure, etc. in real-time
- Enabled **analysis and integration** of all information (machinery, employee, operational) from all disparate sources
- Allow operational teams to organize information, standard KPIs, descriptive metadata and calculations

## Asset Hierarchy model

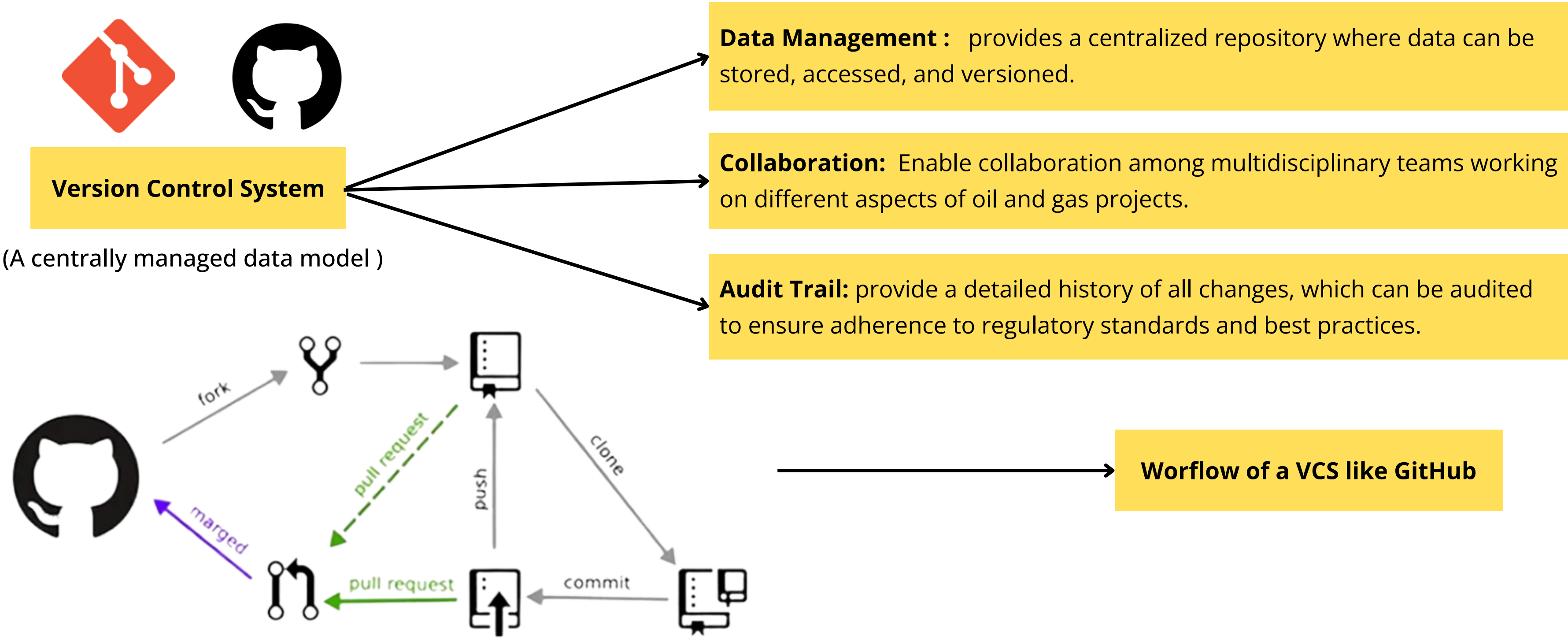
- Allow users to group all information (machinery, employee, operational) in a single space
- Data consistency and accuracy of specific type of asset is ensured

## Benefits of operational Data model

- Contextualized, relevant and structured information
- Avoid missing data, eliminating duplication efforts

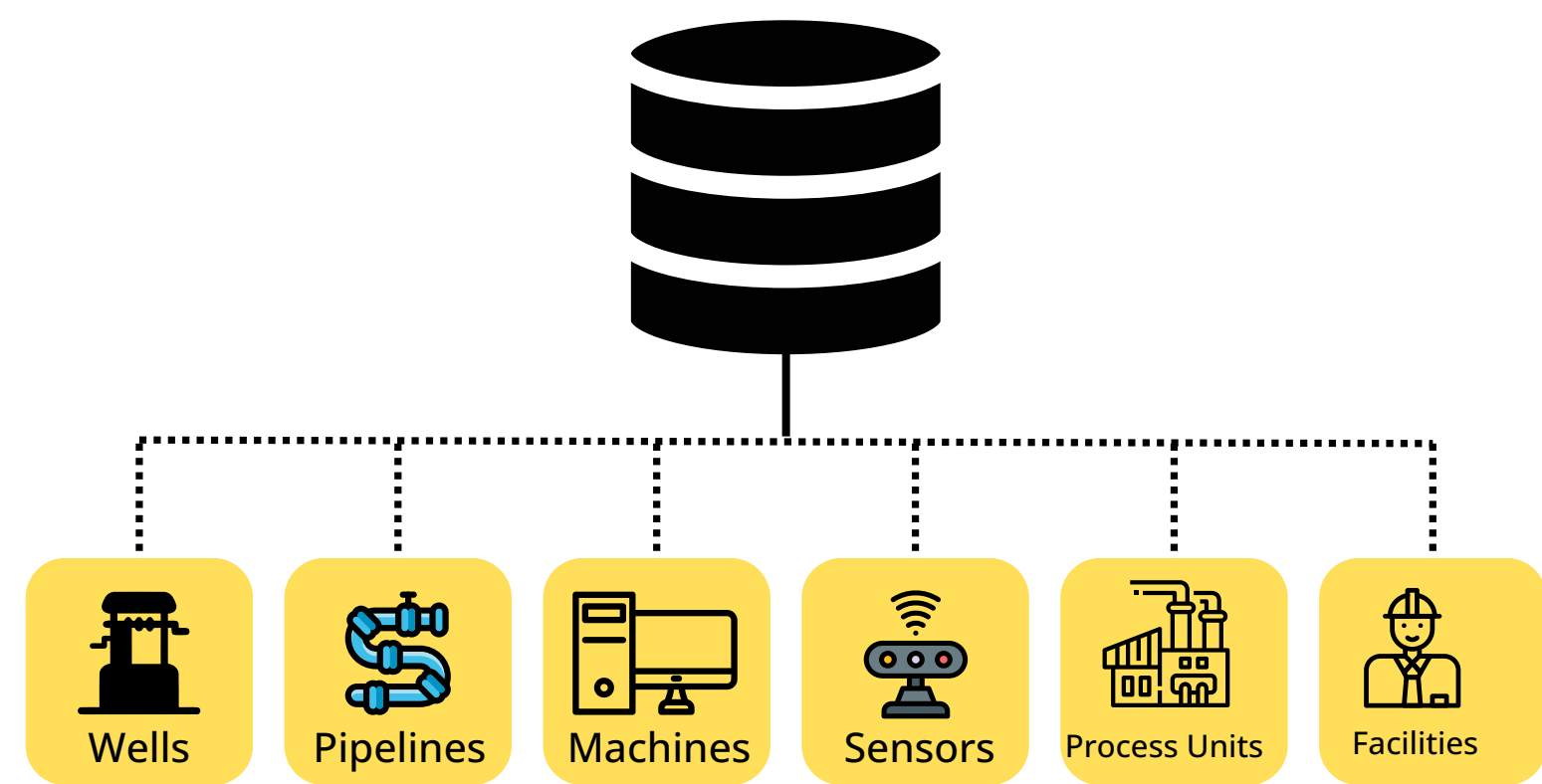
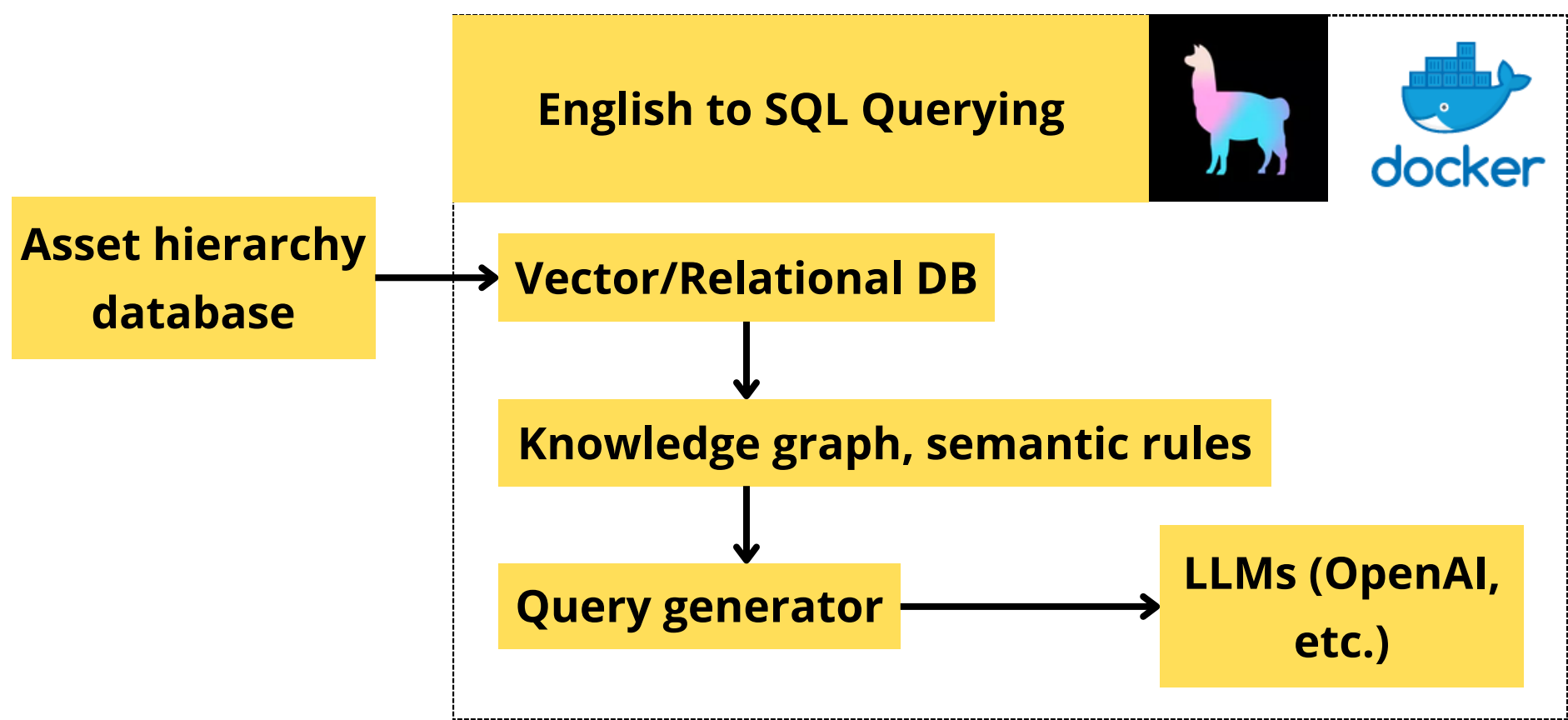
# Establishing an Centrally Version Control System

- Version control systems (VCS) for data serve a critical role in managing and tracking changes to various types of data such as seismic data, well logs, production data, engineering designs, and more



# Addressing the problem of data contextual interpretability, tracking history and maintenance of records over lifetime.

- Large Language Models like Llama 70b can easily interpret structured data and unstructured dataset using LlamaIndex for text-to-SQL queries
- Proposed solution aims at simplifying **Advanced analytics using LLMs**, like LlamaIndex agent and SaaS platform like waii services for storing Asset hierarchial model dataset into a vector store that can easily help in English-SQL conversation



## Advanced Analytics SaaS Platforms

dataPARC Baker Hughes

Deloitte. ENVERUS



# Thank You

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