

New technical data management solution based on the Whereoil software

OBJECTIVE: Implementation of a new cloud-based data management software

Challenge:

Ecopetrol has been accumulating huge amounts of information in different formats from various countries, using metric and imperial unit systems and with huge diversity in quality, presentations and formats. How can this be made more efficient?

Possibility:

Enhancing the digital capacity by using a new technical data management platform.

Specific Solution:

Deployment of the Whereoil Software as corporate data management system, using Artificial Intelligence algorithms, access to enriched data and possibility for extensions by third-party products and much more.

Background

Ecopetrol is the biggest oil company in Colombia, with a net profit of 4.4 billion USD in 2019. It is amongst the 40 largest oil companies in the world, and it is one of the main four ones in South America. As an integrated oil company, Ecopetrol manages an enormous amount of data from multiple departments, disciplines and formats.

The company has been using different technologies for the management, integration and extraction of value from this data, both structured and unstructured, to facilitate its access and quality.

By enhancing the digital capacity of a new technical data management platform, Ecopetrol can accelerate its Exploration and Production processes.

The system:

The characteristics of the new system are the following:

1. To maximize the elasticity and productivity of the Cloud
2. To treat large volumes of structured and unstructured data
3. To reduce substantially the Total Cost of Ownership
4. To increase and enrich the quality of the data and metadata
5. To automate the process for the evaluation of the data quality
6. To integrate with other data sources and specialized geoscience applications

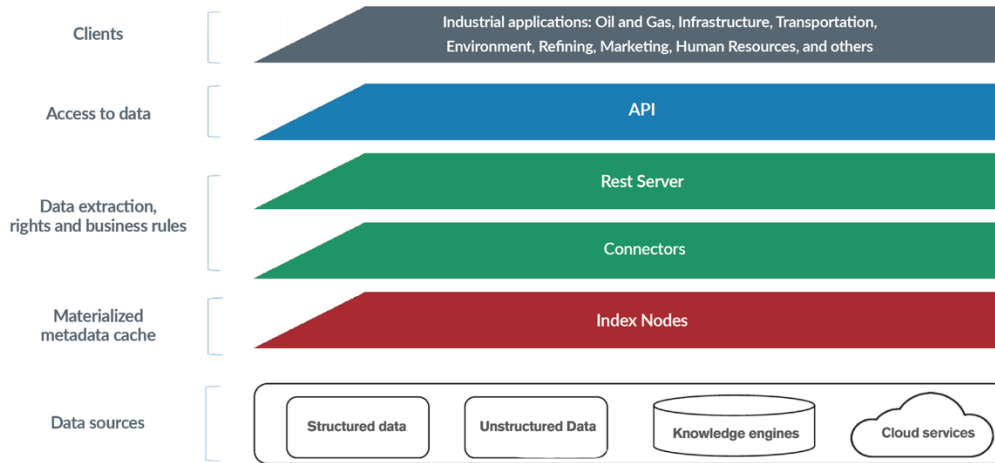
The traditional systems used in the industry do not allow the management of “Big data” and the use of Artificial Intelligence and have not been developed using the current Cloud services.

In the new system, Ecopetrol has access to:

1. Data history and traceability
2. Multi-dimensional searches (content and context) in natural language
3. Native visualization of different data types
4. Multiple entry points for data, that can be configured independently from their location
5. An agnostic infrastructure that could be easily extended to cover other data types
6. Public Cloud wherever possible, therefore reducing the maintenance cost

Diagrammatically, the implemented solution can be described in the following diagram:

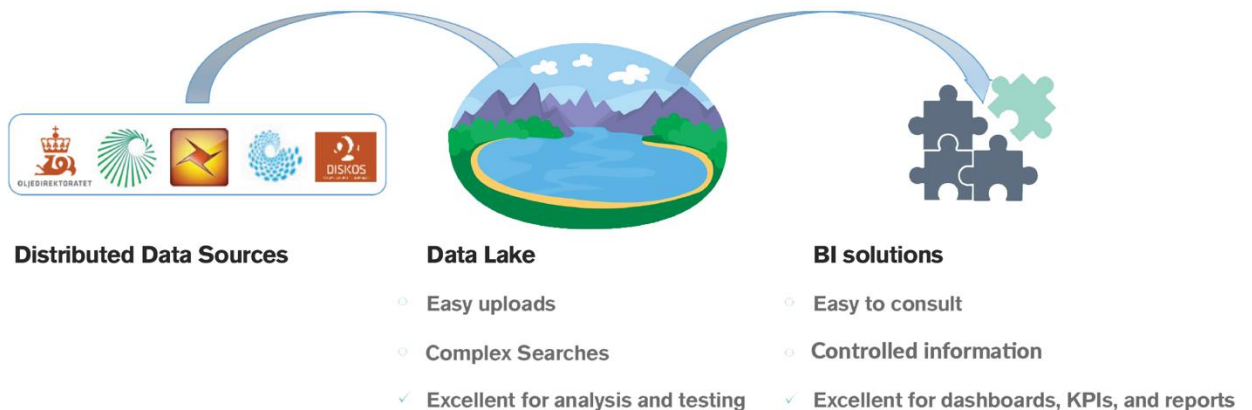
Proposed solution diagram - universal to the industry and type of data



The Whereoil software

The Whereoil software can retrieve data from all the data sources listed above, and creates indices of this data, that can be accessed very quickly by the Whereoil Rest Server. This is the core of the application, that is accessed by a multitude of client applications, via its powerful API. The solution increases the efficiency by a number of Business Intelligence algorithms.

Data Lakes & BI/Business Intelligence



Powerful functionalities

- Unstructured documents, including scanned images, are automatically geo-referenced
- Data can be searched spatially and temporally, across the multiple data sources and presented also in a GIS interface
- The corporate consolidation of data brings down the silos in which the data had been stored
- The complete scanning of documents and the powerful API allows the automatic document classification and the extraction of data entities from them
- Visualization of seismic and well data directly in the GIS interface
- Creation of data dashboards for individual users and for management
- Management of physical archives
- Advanced Natural Language capabilities, also in Spanish

Great advantages

A great advantage provided by Whereoil is in the data enrichment that is done after the content of each document is extracted and indexed.

This happens also for scanned images, which are processed by an automatic OCR process. The data enrichment consists in making all the text in the document searchable, Geo-referencing the documents and Geo-tagging the spatial data and also creating quality flags for seismic files and for wellbore data.

Conclusion

Ecopetrol has received many advantages from the deployment of Whereoil as their corporate data management system:

- A new technology that increase the efficiency and reduces the cost
- The introduction of more advanced methods of treating the data, via Artificial Intelligence algorithms
- Access to enriched data, of higher quality, giving a reduced cost and risks when taking decisions
- A solution that can be easily extended by third-party products working on top of its API