iraya
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ElasticDocs and Data Atelier
for **Mining**

ELASTICDOCS™

Data Atelier

Introduction

According to a study done by McKinsey, by 2035, innovations brought by artificial intelligence to mining operations, will save the industry from about $300 billion to up to almost $400 billion every year.

The success of digital disruption through artificial intelligence in a mining venture begins with well-organized and accessible data. Unfortunately, 90% of data is unstructured and only 50-65% of this data are manually transformed to make it usable. In general, unstructured data is poorly utilized and only 5-10% of these are being optimized through reuse. This leads to an increase of 13% in non-productive time, with time being allotted to data retrieval.

With Iraya's Data Atelier and ElasticDocs, you can own the power of your data.

Iraya's Data Atelier and ElasticDocs have all the digital capabilities to support the mining operations of an organization's biggest asset class - unstructured data.

The Data Atelier is an AI-enabled digital factory solution that can be connected to internal front-end applications, or Iraya's proprietary knowledge container, ElasticDocs. It leapfrogs the access of unstructured data for essential smart mining knowledge operations.

Through its innovative search-and-cluster technology, ElasticDocs enables professionals to browse through thousands of files in seconds. Interrogate all your files in a single query.

The success of digital disruption through **artificial intelligence** in a mining venture begins with **well-organized** and **accessible data**.

What's the value of processing unstructured data in mining?

The mining lifecycle starts with exploration and prospecting, followed by mine-site design and planning, construction, production, and will end with closure and reclamation. For each step of the mining lifecycle, volumes of documents, files, reports, images, and others will be created.

ElasticDocs and Data Atelier increase the data accessibility in the different stages of a mining project.

At the beginning of a mining project, ElasticDocs and Data Atelier enable putting together documents, files, reports, presentations, etc. creating a knowledge bank to enhance and enrich the analysis of exploration prospects, including current and past data.

Exploration and Prospecting

Search and Document Segmentation

- Search for mentions of mineral deposits in the documents
- Access the geophysical measurements and geochemical analysis in tables in the files for potential deposits
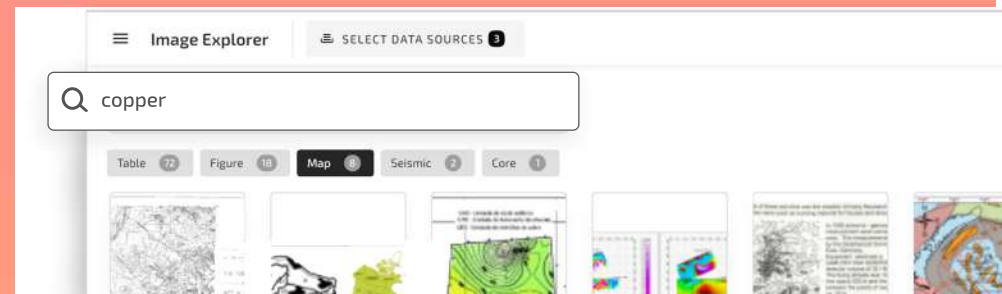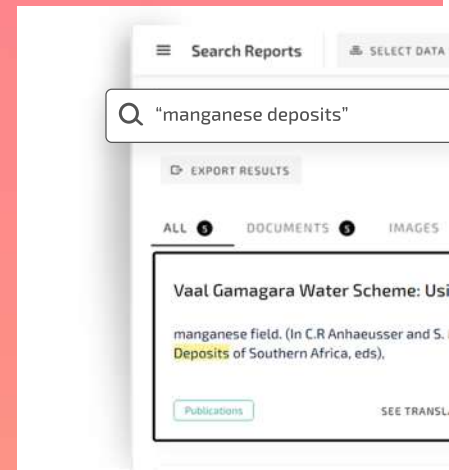

Image Classification

- Get all maps, output of geophysical surveys, and the like with all of the images identified, recognized, classified and made searchable through Data Atelier's pipeline
- With all the thin section images extracted and identified, immediately proceed with any subsequent thin section analysis required.

2 Mine-site design and **planning**

Geolocation

- Through the ElasticDocs' WebGIS module, all created and existing spatial layers can significantly improve the context of search results and insight development.
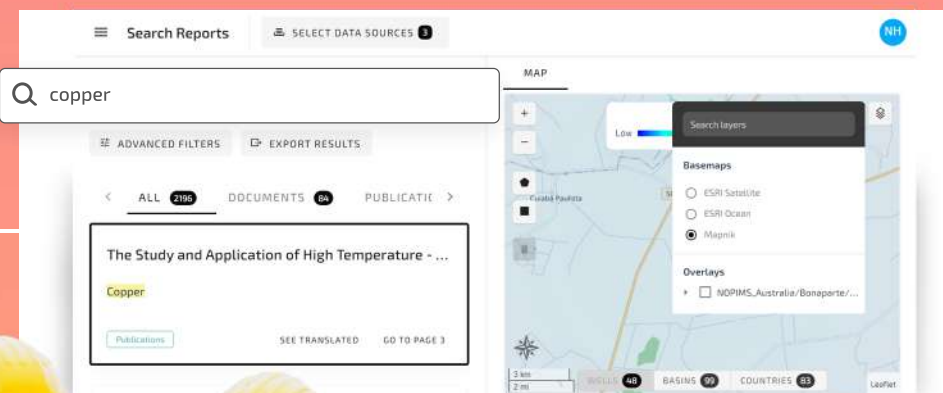

Image Classification

- Take advantage of all the classified and searchable images to get all the relevant engineering drawings that can be used as references for new design and plans.

3 Construction and **Production**

Georeferencing

- During these stages, data accessibility through ElasticDocs on the ground will augment the intelligence of the on-site construction and production team. Extracting information and specific data values to support 3D data georeferencing is also possible through ElasticDocs' full-corpus search.

- Interrogate among all your files at the same time: Operation and management files, Risk prevention studies, environmental impact reports, geoscience data, mineral value research, etc. And relate the results with a precise mine, quarry, or pit.

Navigate mergers and acquisitions with ease

Performing due diligence, preparing the necessary documentation and plans for closure merger and acquisition and subsequent reclamation, is easier with an accessible reference through all the extracted text and images.

Once your unstructured data is transformed through Iraya's Data Atelier and ElasticDocs, a variety of applications, analysis, and further processing can be easily done.

Mergers and acquisitions are a complex operations coming from a data management standpoint. But with Iraya's approach to knowledge management through both ElasticDocs and Data Atelier, centralizing multiple unstructured data sources, is made simple. Through the Data Source Tray feature, your organization can access multiple data sources and add more if needed.

Unlock the full potential of your data

Other than mining operations, data silos can affect many parts of an organization, such as budgeting, IT, human resources, HSEC performance, etc.

By breaking these silos with the Data Atelier and ElasticDocs, create a complete picture for not only the management but also for the engineering team to make more informed decisions and drive safety and operational excellence.

It supports and fosters communication and collaboration within and outside of the organization, with on-site and mineral processing personnel, other stakeholders, and more importantly your clients.

The Data Atelier increases the quality and credibility of the organizations' data by creating an accessible yet secured Knowledge Center of Excellence. Finally, it facilitates policies, HSEC, and SOPs compliance, helping to make a quick reference to the standards.

Benefits of using
Data Atelier and
ELASTICDOCS

With information accessibility increased to 95%, optimizing your organizations' workflows with Data Atelier and ElasticDocs, you will be able to lead new processes and workflow pipelines with reduced uncertainty.

- Unlock a level of insight and sustainability with the re-use of information and apply lessons learned to boost your operations' efficiency.

- Ultimately, by having access to all knowledge reported in the logbooks, be able to exploit staff experience (as extracted from files such as daily reports, surveys, operations, and production presentation, etc.) and standardized knowledge.
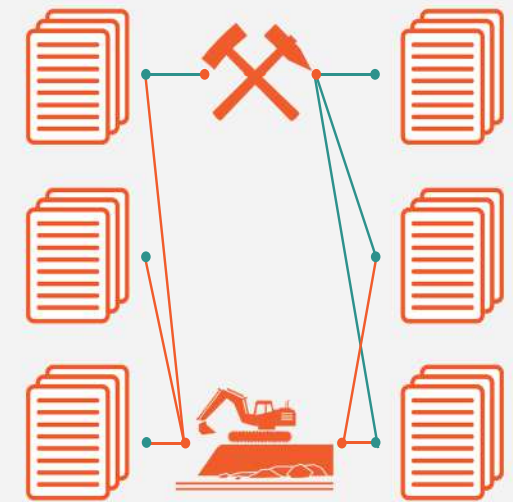
Iraya's Data Factory and Knowledge Workflows

With extensive knowledge and experience in utilizing machine learning and artificial intelligence techniques, Iraya also offers custom services on knowledge extraction, data processing, cataloguing, and visualization

On document tagging, Iraya can tag the documents in relation to each of the mining operations stages such as "Exploration", "Prospecting", "Production", Ore type, locations, date, working group related, etc. mentioned within the document. Mentions to specific mining sites/project names within each document and report will be identified and be used as metadata for relationships.

Tag each document to all the mining sites or projects mentioned within it

For document classification or segmentation, Iraya can classify all documents/files into classes that are relevant to Mining Operations such as closure plants reports, incident reports, soil characterization reports, water management, environmental metrics, community commitments, production, and reclamation plans, etc.

Iraya can include additional images classes and sub-classes relating to mining operations to our custom-made, multi-level classification using a convolutional neural network. This existing model will be taught to learn drawing texture, the colors, and the feeling of core samples or stratigraphy and other relevant information.

With Iraya's proven experience in custom data extraction, our models can identify, and extract locations mentioned within each document/report to spatially place all the assets and facilities and other specific metadata the client may want to use for whatever purpose.