# The Data Atelier
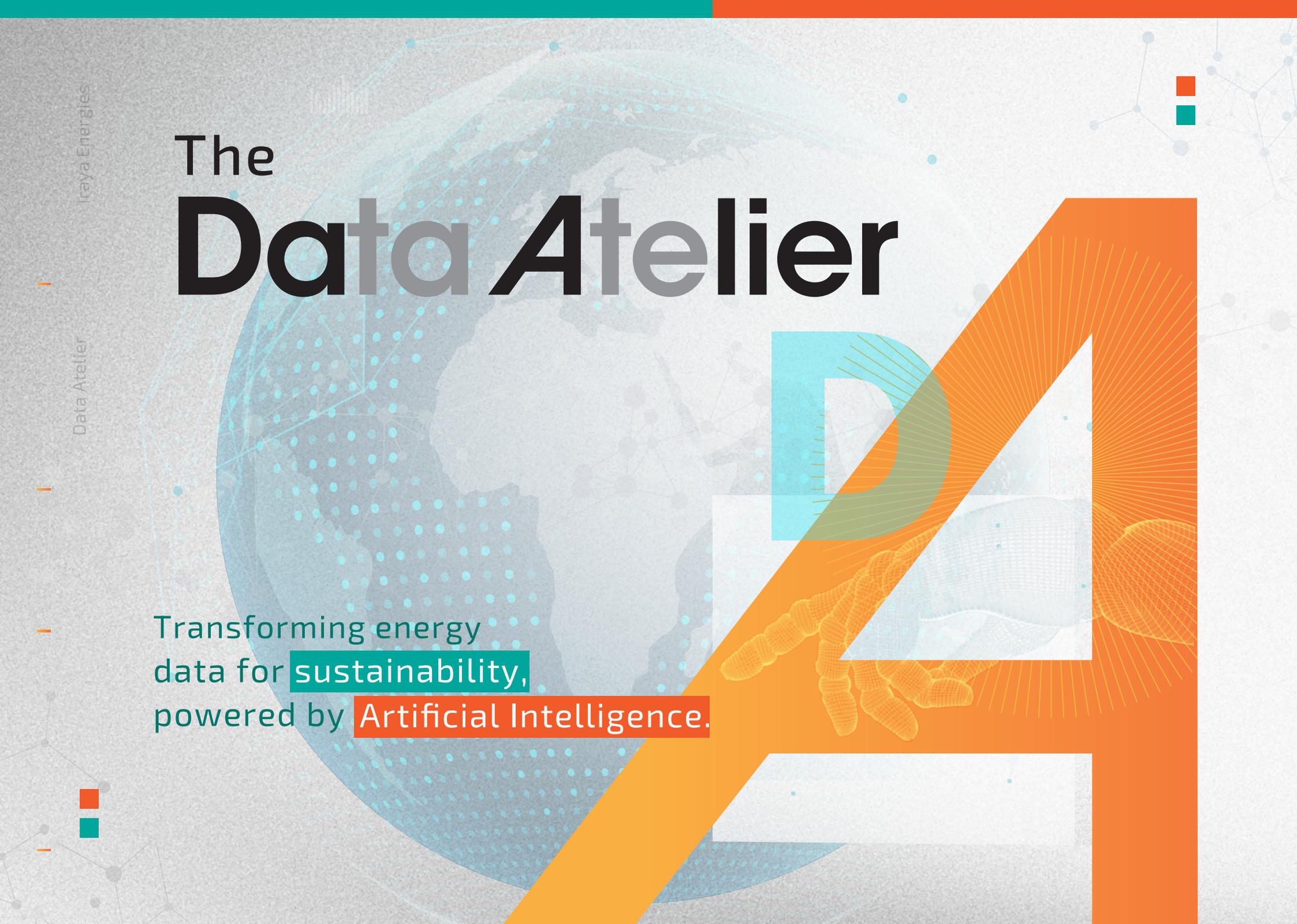
Transforming energy
data for sustainability,
powered by Artificial Intelligence.

# The earth is evolving.
# The way you manage your data should, too.



**Data Lifecycle**

1. Creating
2. Processing
3. Analysing
4. Publishing
5. Archiving

Upcycling

In today's fast-paced digital world, information flows faster than ever. Yet, the real question remains: how do you know which data truly matters? Without the right systems in place, poor data quality can cloud decisions and valuable insights can slip away unnoticed.

**That's where AI capabilities come in.**
By enhancing your system's data quality, Artificial Intelligence helps you identify what's relevant, reliable, and ready to drive results. From detecting patterns to uncovering opportunities, AI turns overwhelming data into actionable intelligence.

**Artificial Intelligence. Powering better data, smarter decisions.**

# Data *A*telier

The Data Atelier is a digital factory built for intelligent data orchestration. Combining pipelines, tracking, monitoring, and AI-driven automation.
It features a scalable engine that integrates machine learning, large language models (LLMs), and agentic AI for adaptive, self-improving operations.
With enhanced data quality, reliability, and trackable AI deployments, it ensures transparent and compliant data workflows across your organization.
Fully customizable to your company's data management needs, The Data Atelier empowers teams to experiment and scale efficiently.

**Here are the Innovative things it can do for you:**

**Streamline AI and data workflows:** Move from experimentation to full-scale deployment with trackable, low-code pipelines for ML and LLM models.

**Enable flexible innovation with Agentic AI:** Experiment, iterate, and deploy autonomous AI agents that enhance productivity and adapt to changing workflows.

**Empower collaboration and visibility:** Allow teams to monitor, visualize, and manage data and AI outputs in real time through integrated platforms like ElasticDocs™.

**Ensure reliability and governance:** Centralize data tracking, maintain compliance, and standardize processes for quality and consistency across operations.

# Agentic AI

## Build. *Customize.* Evolve.

Agentic AI is an advanced feature of Data Atelier that empowers you to create intelligent, autonomous agents that act on **energy and engineering data**. Each agent can analyze, reason, and execute tasks—automating complex workflows and enabling adaptive decision-making across your systems.

Designed for flexibility, it lets teams experiment and deploy agents with defined roles, connect them securely to enterprise data, and orchestrate multi-agent collaboration. With traceable, production-grade deployment, Agentic AI transforms experimentation into scalable intelligence.
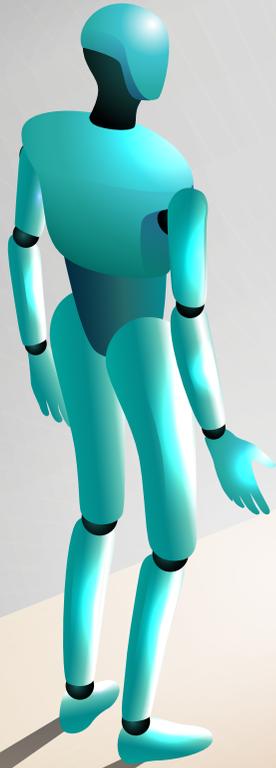
## With Agentic AI, you can:

| | | |
|---|---|---|
| Design and customize intelligent agents tailored to your organization's goals. | Connect agents to multi-domain data streams for real-time insight and automation. | Deploy and monitor agents at scale with transparency, control, and reliability. |

Your organization can transform static data operations into a dynamic ecosystem of intelligent, data-driven agents — ready to act, learn, and evolve.

# Step inside
## the workshop.

The Data Atelier has an **8-step** process to industrial artificial intelligence. All you need to do is feed your structured and un-structured data, our pipeline does the rest.

**Industries Where We Work:**

| Oil & Gas | Geothermal | Carbon Sequestration and Storage | Geotechnical | Facilities & Engineering |
|---|---|---|---|---|

# Data Governance

### Built-in audit and approval process ensure that costs are controlled and fit business needs

### Human-in-the-loop principles ensure that data security, data ethics and guidelines are strictly followed

### Regular, consistent feedback between man & machine

The Data Atelier will organize the data, sort out the duplicates and flag any issues during the preliminary audit. It uses a combination of the built-in and custom libraries for the data review process
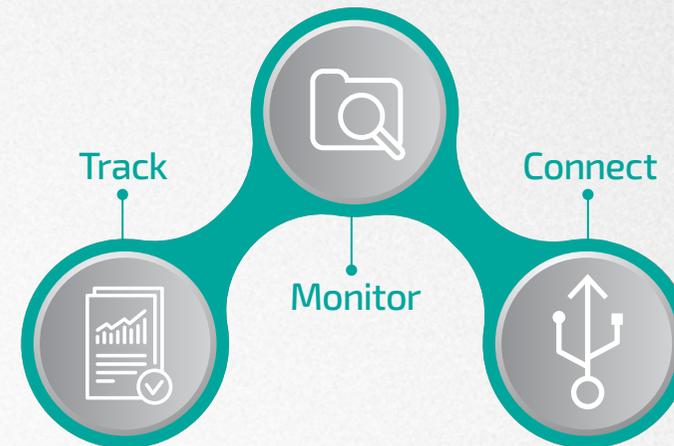
# The Extraction Pipeline

# The Aggregator Pipeline



Text



Image



Tables



Technical Diagrams

**Visualization of DAG**

(Directed Acyclic Graph) collection of all the tasks that needs to be run, organized in a way that reflects their relationships and dependencies.



**Process Traffic Light for:**

- Queued
- Failed
- Running
- Retry
- Success
- Scheduled

Data are extracted and classified into different categories **using optical character recognition, deep convolutional neural network, vision and LLM models,** which analyze both standard text and image elements, as well as industry-specific image classes.

This pipeline combines the **output of various processes** like extraction, file tagging, domain tagging, with client's domain-specific ontology to enhance data integration and retrieval.

# The Data Warehouse

The datawarehouse storage enables faster and more robust data insights, making big data accessible across different user groups, and maximizing the value of enterprise database.

The output is a consistent and quality assured corporate knowledge source.

Multiple domains can rapidly test theories and generate evidence-based understanding. This facilitates big picture analysis across the organization.

Track

Monitor

Connect

**APIs**

Search

Data Access

Extracted Info

Spatial

Images

Word Frequency

The **Data Warehouse** also tracks, catalogues, and monitors all extracted digital data. **With its unique ID system,** it delivers and connects the resulting structured data to the various stakeholders within the organization via API links. Data managers can track the usage of data and allocate additional resources, where necessary. Meanwhile, newly processed data can be accessed constantly by the data scientists in the organization.

These data can then go through additional processes such as **cognitive search, auto-image classification, and data analytics.** The Data Warehouse supports effective user and data governance within the Data Atelier.

# The Helmsman

Iraya recognizes that different enterprise teams follow different digital processes. Our internal data orchestrator, **the Helmsman**, enables the Data Atelier to scale horizontally. This tool allows for processing of different workflows and pipelines concurrently, which means that there is a huge level of flexibility in handling various tasks. This provides scalability to support enterprise digital transformation initiatives.
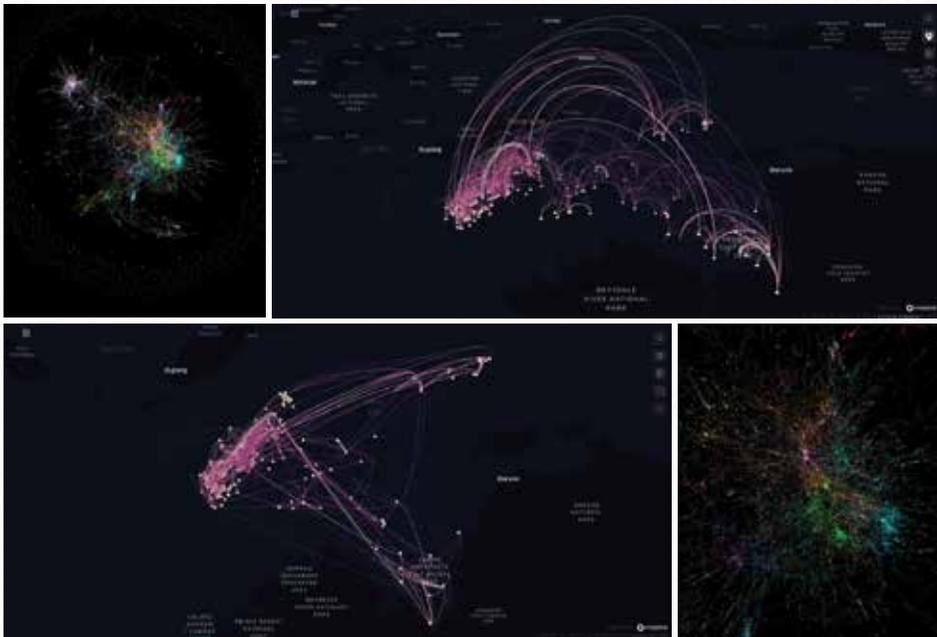
# The Machine Learning (ML) Application Layer

This can be either internal or external applications which can be combined to create new machine learning services. **Data Version Control (DVC)** is implemented to ensure that ML models are shareable and reproducible. It records & queries experiments, packages data science codes, and manages models in a central repository.

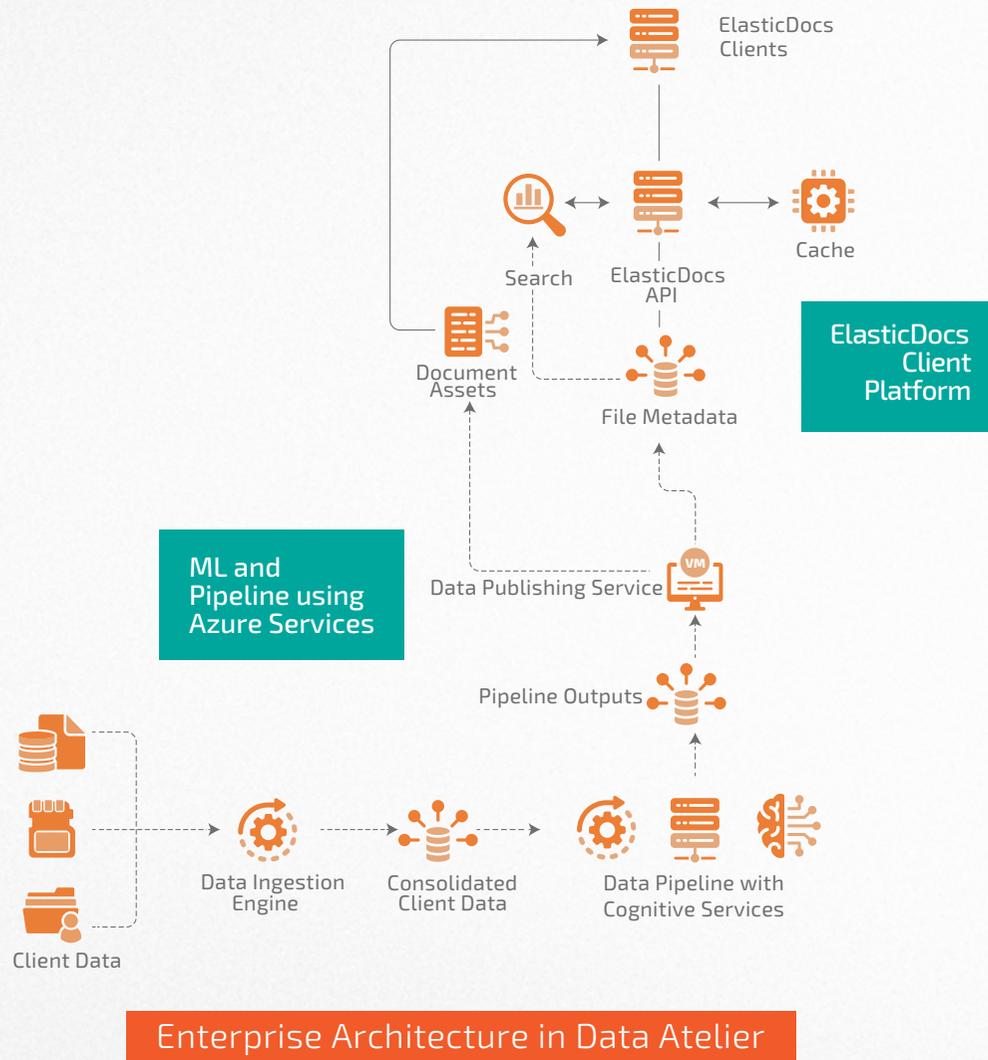# The Internal Connectors

# ELASTICDOCS



**This connects the Data Atelier to ElasticDocs** and makes the data ready for analysis for both up-stream and downstream applications. Developers can build new dashboard analytics or integrate existing legacy systems.

This feature allows for constant upcycling of data, thereby achieving the goal of **data sustain-ability** where you can maximize the use of existing knowledge to create new insights.

# The External Connectors

Cognitive service

Virtual Machine

Database for PostgreSQL

Cache for Redis

Kubernetes Service

Storage

Functions

ElasticDocs Clients

Search

ElasticDocs API

Cache

Document Assets

File Metadata

**ElasticDocs Client Platform**

**ML and Pipeline using Azure Services**

Data Publishing Service

Pipeline Outputs

Client Data

Data Ingestion Engine

Consolidated Client Data

Data Pipeline with Cognitive Services

**Enterprise Architecture in Data Atelier**

This final step allows you to connect the Data Atelier to a software of your choice. Here are a few external connectors and hosting platforms that can be paired with the Data Atelier

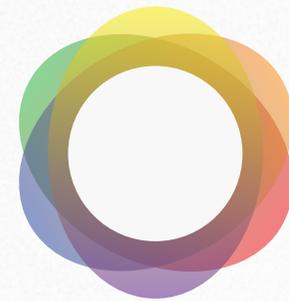**ELASTICDOCS™ ON PREMISE**

aws  Azure  Google

Integrability of **Data Atelier** with new Model Context Protocol (MCP) and community server configurations enables secure, adaptable **LLM** access to tools and data sources across multiple systems. This ensures interoperability, and safe data exchange within Client Data connected environments.

# The power of AI
## is now yours.

This process makes the **Data Atelier** one of the most powerful instruments in managing and operating data today. It has built and assembled thousands of AI and AI management tools — from machine learning models and LLMs to generative and agentic AI systems — so that you can work faster and smarter while optimizing cost and performance.

The **Data Atelier** is also your chance to discover and operate within the world of artificial intelligence and machine learning. Now is the time to explore how LLMs, generative AI, and agentic AI can transform your workflow and make innovation truly work for you.

Contact us at info@irayaenergies.com to learn more.

**iraya**

read the earth better