



## **AI and IAGEN Application Use Case**

### **Exploration: Reserve Prediction for Accurate Estimation of Volume of Recoverable Gas in Vaca Muerta, Neuquén, Argentina**

**Classification of Report Deliverable 37: "Reserve Prediction for Estimation"**

**"Specific Volume of Recoverable Gas in Vaca Muerta, Neuquén, Argentina":**

Classification 1: By Main Resource

- Selected option: Gas (main).
- Justification:

The report focuses exclusively on the estimation and prediction of the recoverable volume of gas in the Vaca Muerta formation. Although it mentions oil production in some context points, the technical focus, economic, geological and regulatory is focused on natural gas conventional as a key resource.

Classification 2: By Activity within Vaca Muerta

- Selected option: Information Management and Decision Making
- Justification:

The objective of the report is to improve the accuracy of reserve predictions using advanced models (deterministic, probabilistic and generative) to make strategic decisions on investment, energy planning, and infrastructure development. These predictions directly inform the decision-making at the national and industrial levels.

Classification 3: Type of AI Technology Used

- Main selected option:

1. Generative AI Models,  
2. Machine Learning Algorithms, 6. AI  
Platforms for Data Integration and Big Data.

- Justification:

The report details the use of generative models (GANs) to simulate reservoir behaviors, integrated with reservoir simulators traditional and continuous monitoring agent flows. It is also used Machine learning and Monte Carlo simulation to quantify uncertainties, all supported by digital data integration infrastructure geophysical and operational.

#### Classification 4: By Strategic Impact on the Industry

- Selected option: Strategic Decision Making and Data Analysis

- Justification:

The strategic impact of the report lies in the accurate prediction of volume of recoverable gas, which is essential for attracting multi-billion dollar investments, planning exports, building infrastructure (such as LNG terminals), designing energy policies, and projecting the trade balance. These decisions structure the national and regional energy strategy.