



Deliverable report 46

AI and IAGEN Application Use Case

Reservoir Modeling for the creation of multiple scenarios realistic subsurface maps that capture the geological complexity of Vaca Dead

Classification of deliverable report 46: "Reservoir Modeling with IAGEN for the Creation of Multiple Subsurface Scenarios in Vaca Muerta":

Classification 1: By Main Resource

- Selected option: Gas (main), Petroleum (secondary).
- Justification:

The report focuses on shale gas as a primary resource, highlighting its role strategic in the energy transition and the LNG export potential of Argentina. Although unconventional oil is also mentioned, the priority

The analytical and operational aspects of the document are focused on reserves, modeling and natural gas exploitation.

Classification 2: By Activity within Vaca Muerta

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

The use of IAGEN is oriented towards the creation of multiple scenarios of

simulation, which allows for strategic drilling decisions, well planning, production prediction and uncertainty management. This aligns it with an activity focused on improving decision-making based on geological, seismic and production information.

Classification 3: Type of AI Technology Used

- Main selected option: 1) Generative

AI Models, 2) Machine

Learning Algorithms, 4) Computer Vision

and Image Analysis Systems, 6) AI Platforms for Data

Integration and Big Data, 5) AI Systems Based on Intelligent Agents.

- Justification:

The paper describes an advanced and comprehensive architecture, including GANs, VAEs, Transformers, CNNs, RNNs (LSTM and GRU), proxy models, simulators substitutes, and agentic flows. It also incorporates automated seismic analysis, fracturing simulations, production prediction and optimization well location.

Classification 4: By Strategic Impact on the Industry

- Selected option: Strategic Decision Making and Data Analysis

- Justification:

The report emphasizes that IAGEN reduces uncertainty, improves planning of fields, optimizes well placement, and accelerates decision-making strategic exploration and production. In addition, it improves profitability, predictability and operational sustainability in Vaca Muerta.