HUB TECH IA

AI and IAGEN Application Use Case

Exploration of Seismic Images for the Identification of Fractures and Porosity Zones in Vaca Muerta, Neuquén, Argentina

Classification of Deliverable Report 36: "Seismic Imaging Exploration for the Identification of Fractures and Porosity Zones in Vaca Muerta":

Classification 1: By Main Resource

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

  The report focuses on improving efficiency in seismic exploration to Identify productive zones with high porosity and fractures in Vaca Muerta, oriented towards hydrocarbon extraction. Although energy efficiency is mentioned as a side benefit, the core is the optimization of the unconventional oil and gas production.

Classification 2: By Activity within Vaca Muerta

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

  The main objective is automated seismic interpretation to improve decision making on well location, reservoir simulation and Drill planning. Uses predictive analytics and data visualization to guide exploration more accurately, facilitating decisions high-impact strategies.

Classification 3: Type of AI Technology Used

- Main selected option:

1ÿÿGenerative AI Models,

2ÿÿMachine Learning Algorithms,

4ÿÿComputer Vision and Image Analysis Systems,

6ÿÿAI Platforms for Data Integration and Big Data.

• Justification:

The report describes an advanced seismic analysis architecture based on 2D and 3D CNNs, U-Net, GANs, RNNs (BiGRU, LSTM), and agentic flows that combine geological visualization, simulation, and real-time seismic processing. It is a use case of AI applied to deep visual analysis in seismic images.

Classification 4: By Strategic Impact on the Industry

• Selected option: Strategic Decision Making and Data Analysis

• Justification:

The key impact is the radical acceleration of seismic interpretation, which allows you to decide where to drill more precisely, reducing the risk of wells dry and increase productivity. The possibility of also being mentioned reduce exploration costs by up to 40%, positioning AI as critical tool for strategic decisions in upstream.