HUB TECH IA

Use Case of AI and IAGEN Application

Site Assessment, Feasibility Analysis, and Evaluation of Exploitation Projects with Generative Artificial Intelligence (IAGEN) in Vaca Muerta, Neuquén

Deliverable Report Classification 6: "Site Assessment, Feasibility Analysis, and Evaluation of Exploitation Projects with Generative Artificial Intelligence (IAGEN) in Vaca Muerta"

- ◆ **Classification 1: By Main Resource**

  - ● **Selected Option:** 🛢️ Oil (main), ✅ Gas (secondary)
  - ● **Justification:**
    The report is primarily focused on site assessment and technical, economic, and environmental feasibility for the exploitation of unconventional hydrocarbons in Vaca Muerta, mainly oil, while also highlighting the strategic importance of gas as a secondary resource within the same operational context.

- ◆ **Classification 2: By Activity within Vaca Muerta**

  - ● **Selected Option:** Information Management and Decision-Making
  - ● **Justification:**
    The core focus of the report is on site evaluation and feasibility analysis, using IAGEN to generate accurate models, predictive simulations, and advanced data analyses aimed at enabling fast, reliable, and strategic decision-making regarding hydrocarbon exploration and exploitation. The aim is clearly to optimize decisions on well placement, productivity forecasting, and risk analysis.

- ◆ **Classification 3: Type of AI Technology Used**

  - ● **Main Selected Option:** ⬚1 Generative AI Models and ⬚2 Machine Learning Algorithms
  - ● **Justification:**
    The report specifically describes the use of advanced generative technologies such as GANs (Generative Adversarial Networks) and transformer-based models to create accurate geological models and simulate exploitation scenarios. It also explicitly mentions the application of deep learning techniques for productivity forecasting and drilling operation optimization, integrating these technologies with digital twins for robust simulations and predictions.

- ◆ **Classification 4: By Strategic Industry Impact**

  - ● **Selected Option:** Strategic Decision-Making and Data Analysis
  - ● **Justification:**
    The main strategic impact highlighted in the report lies in substantially improving the quality, speed, and accuracy of feasibility analysis and site evaluation, thus enabling more well-founded strategic and operational decisions. Particular emphasis is placed on significantly reducing operational time and costs, as well as mitigating risks through the implementation of IAGEN—all aimed at optimizing the economic and environmental performance of the projects.