HUB TECH IA

Deliverable report 34

AI and IAGEN Application Use Case

Documentation Automation in Vaca Muerta, Neuquén, Argentina.

I. Introduction

The energy industry in Vaca Muerta, Neuquén, Argentina, faces the challenge of manage a large amount of documentation for your logistics operations and productive. Transport guides, load reports, safety logs and Internal audits are just some examples of the documents that are handled diary. Currently, much of this documentation is written manually, which which consumes time and resources, increasing the likelihood of errors and inconsistencies in the information.

II. IAGEN for documentation automation

Generative Artificial Intelligence (GENAI) is a branch of artificial intelligence that focuses on creating new content, such as models, images, code, or text, from existing data. This technology uses advanced algorithms to analyze large amounts of information, identify patterns and generate new content and original that is often indistinguishable from that created by humans.

Generative Artificial Intelligence (IAGEN) is presented as an innovative solution to automate the generation of documentation in the Vaca energy sector. Dead. This model, by processing data from sensors and embedded systems (IoT) in real time, can automatically generate documents.

standardized in digital and physical format.

III. Application of agents powered by Generative AI in the activity

IV. Concept of IAGEN agents

In recent years, generative artificial intelligence (GAI) has revolutionized the way we interact with technology, enabling the development of systems capable of generating content, answering complex questions and assisting with tasks high-demand cognitive skills. From this capacity, a new architecture emerges Technological: IAGen-powered agents. These agents are not simple conversational interfaces, but autonomous systems that can interpret instructions, make decisions, execute tasks and learn from their interactions with the around.

An IAGen agent combines large language models with components additional features such as external tools, memory, planning and autonomous execution. This allows them to operate in complex environments, with the ability to break down Step-by-step objectives, coordinate multiple actions, interact with digital systems (such as databases, APIs or documents) and adapt to changes in context in real time. These qualities distinguish them from traditional chatbots, and open up a spectrum of more sophisticated and customizable applications.

At the organizational level, these agents are being used to automate processes, generate data analysis, assist in decision making and improve the user experience, both internally and externally. For example, they can assume human resources, legal, financial or logistical tasks, and even those linked to the technical areas of production processes, acting as intelligent assistants that collaborate with human teams. This ability to integrate knowledge and execute tasks autonomously transforms the way organizations can scale your operations without losing quality or control.

In addition, agentic workflows—structures where multiple agents collaborate with each other to solve complex problems—allow responsibilities to be distributed between different agent profiles, each with specific functions. This generates Hybrid work environments where humans and agents coexist, optimizing times, costs, and results. The ability to connect agents with tools such as Google Drive, CRMs or document management platforms further expands its capabilities.

The development of IAGen-powered agents represents a crucial step towards a new era of intelligent automation.

Among the benefits of authentic workflows driven by business models generative artificial intelligence, the possibility of automating processes is found complete, end-to-end production systems, and even add value from the leveraging the skills of language models based on these technologies.

However, its implementation also poses technical, ethical and legal challenges, from responsible design to human oversight. Therefore, understanding your architecture, its operational logic and its potential impacts is fundamental to its effective and safe adoption in various professional contexts.

2. Agentic Flow design proposal for implementation

Phase 1: Automatic Data Capture

- Sensory Agents (IoT): Different types of sensors are used, such as sensors pressure, temperature and flow meters, to capture and transmit relevant data from trucks and logistics points (weight, schedules, routes) in real time real.

Phase 2: Processing and Validation

- RPA Agents: Extract and validate information from ERP systems existing.
- GPT-4 (Generating Agent): Receives validated data and automatically generates official documents and forms, formatted according to the requirements specific.

Phase 3: Automatic Distribution

- Digital Distribution Agent: Automatically distributes generated documents to relevant recipients (driver, logistics supervisor, administrative base) via email, internal platform, or enterprise cloud.

Where can this agent be applied?

- Water/gas pumping equipment (ESP, PCP) •
  High-pressure control valves
- Water treatment systems (osmosis, clarification, disinfection)
- Motors and compressors
- Surface phase separation units
- Gas or water distribution networks.

V. Concrete example of optimized flow

A truck transports fuel from a logistics center in Neuquén to a well.
oil tanker in Vaca Muerta.

1. IoT sensors transmit weight, volume, and real-time departure/arrival time.
2. The IAGen automatically generates the transport guide and safety sheet, validated and ready for audit.
3. The documentation is instantly sent to the driver, logistics supervisor and administrative base.

V. Advanced Document Analysis with AI

In addition to automated document generation, AI can be used to analyze their content and obtain valuable information. Using techniques Natural language processing (NLP), key elements can be extracted, categorize information and connect it to other systems for analysis. This allows, for example, identifying patterns, detecting anomalies and generating reports that facilitate the decision making.

VI. Operational and strategic benefits

Documentation automation using IAGEN offers a number of benefits:

- Elimination of manual errors: By automating the process, errors are eliminated humans, ensuring the accuracy and consistency of the information.
- Immediate document generation: Documents are generated in real time, streamlining processes and reducing waiting times.
- Increased accuracy and uniformity: Uniformity in the generation of documents, complying with standards and regulations.
- Reduction of administrative time: Administrative staff can dedicate their time for more strategic tasks.
- Greater traceability and regulatory compliance: It facilitates monitoring of the information and ensures compliance with regulations.
- Improved decision-making: Real-time data analysis is available thanks to systems integration and data capture using IoT[2], allows better resource allocation and greater operational efficiency.

VII. Measurable impact

The implementation of this solution has a positive and quantifiable impact on

various areas:

- Efficiency: 80% increase in document processing speed.
- Costs: 60% reduction in administrative costs related to errors and reprocessing.
- Time: 70% reduction in the time spent by administrative staff on routine tasks.
- Security: Greater traceability and compliance with regulatory standards.

Safety and Environmental Benefits

Documentation automation with IAGEN not only improves efficiency administrative, but also has a positive impact on safety and Environmental compliance in Vaca Muerta. Automated data capture and analysis allows constant monitoring of transport operations, which facilitates the identification of potential risks and the implementation of preventive measures. In addition, the generation of accurate and real-time reports on the consumption of fuel and emissions contributes to better environmental management and reduction the impact of operations on the environment.

VIII. Challenges and strategies to overcome them

The implementation of this solution presents some challenges that must be addressed strategically:

- Integration of old or isolated systems: To overcome the difficulty of integrating old or isolated systems, it is proposed to implement intermediate modules of integration with open APIs.
- Short-term investment in AI agent implementation teams Technology and training: Investment in proof of concept and testing is required pilot. The focus here has to be on training the talent to implement, since There is a trend towards cost reduction in systems that allow “no code” and “low code” automation. For the first stage, we also

recommends using teams with experience in design and implementation AI agents. Finally, it is key to form an in-house team for the accompaniment and appropriation of an agentic culture that redefines the human-computer interaction.

- Legal approval for AI-generated documents: The approval must be managed early regulatory approval through pilot projects validated by regulatory bodies, ensuring that the solution complies with legislation current.
- Resistance to change on the part of administrative staff: It is crucial to implement Constant training and awareness strategies to show the benefits tangible to the personnel involved, facilitating the adoption of the solution.

VIII. Conclusions

The automation of documentation through IAGEN in Vaca Muerta presents a opportunity to significantly improve administrative efficiency in the sector energy. The solution based on GPT-4, IoT and RPA, offers a series of benefits tangible benefits such as error elimination, cost reduction and optimization times. In addition, AI's ability to analyze information in real time enables better decision making and greater operational efficiency, which is translates into greater competitiveness for companies in the sector.

While there are technical, regulatory and cultural challenges, the research carried out demonstrates that there are strategies to overcome them. The adoption of IoT in the sector, the availability of RPA solutions and compatibility of existing systems with the API integration are factors that favor implementation.

It is essential to implement a change management plan that includes training of staff, effective communication and adaptation of internal processes. collaboration between the different areas of the company and the participation of the stakeholders are key to the success of the project.

represents an optimization of operations, but also drives the digital transformation of the energy sector in Argentina. This technology has the potential to generate new employment opportunities in the technology sector, attracting investments in AI and automation, and position Vaca Muerta as a benchmark in the modernization of the energy industry in Latin America.

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