Automated Governance: An Integrated Microsoft Application for Enhanced Management Processes

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Abstract

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Automated Governance, a tool designed to automate management processes, integrating several interfaces within a Microsoft application environment was successfully developed in reliability and asset management at Paragominas Mining in Brazil. Utilizing resources such as Microsoft Teams, SharePoint, Power Apps, Power Automate, and Power BI, this innovative approach leverages advanced technology to expedite and enhance workflows. The primary challenges addressed in this work include data quality and integration, human interference in automation, audience targeting, and information security. In response to these challenges, components of Automated Governance were developed, encompassing strategic and reconnection actions, management of strategic and tactical Key Performance Indicators (KPI), and the creation of numerous reports in Power BI. Additionally, databases were modelled and integrated, automations were established for repetitive tasks, and a low-code application was developed to assist in routine management and support activities of a company adhering to International Organization for Standardization (ISO) standards. Upon completion, all interfaces and components were consolidated into an application, centralizing all reports, applications, normative and guiding documents within a Power BI web interface. This provides real-time information for the decision-making process of the reliability and asset management team, as well as users from other areas.

The effectiveness of Automated Governance was demonstrated through audience analysis of the main reports and the frequency of tool usage by the reliability management team and client areas, where dozens of daily accesses per report were recorded, totalling thousands of monthly application accesses. The tool's use by the management team proved cost-effective, freeing up 10 to 20 % of technical labour to analyse relevant information, proactively identify failures and their solutions, and enable assertive decision-making regarding the company's assets.

Keywords: Automated governance, Data quality and integration, Audience targeting, Enterprise digitalization.

1. Introduction

Hydro is a global company, with more than 35 000 employees, spread across operations in 40 countries. Our businesses are divided into bauxite, alumina, energy, primary metal, rolled products and extruded solutions. Bauxite and alumina represent the first two links in the aluminium value chain and the work on Automated Governance applied to Reliability and Asset Management was developed at Paragominas Mining, one of the largest bauxite mines in the world, currently certified for ISO 9001, 14001, 55001 and Aluminium Stewardship Initiative (ASI). Located in the city of Paragominas, in the State of Pará, all processed products are sent by

pipeline to Alunorte (a bauxite-to-alumina transformation plant, the largest alumina refinery in the world, located in Barcarena, in the same State).

Figure 1. Bauxite extraction operation at Paragominas: strip and stack mining process.

Automated governance is a concept that combines governance practices with technology to optimize and standardize activities and workflows [1]. This can increase the efficiency, transparency, and security of governance processes. IBM [2] describes it as the use of technology to perform tasks where human input is minimized. This includes some enterprise applications, such as business process automation (BPA), and system-to-system integration automation. An automated management system streamlines operations, reduces errors, and saves time by efficiently handling repetitive tasks, provides real-time data analysis, improving decision-making and productivity.

In BPA, the use of technology to streamline repetitive tasks and processes in an organization covers the use of software, robots, and other tools to automate manual tasks, speed up processes and improve the efficiency and accuracy of activities [3].

Governance is a structure with practices, standards and processes that govern the company to achieve objectives [4]. With automated management, this practice is elevated and ensures that the rules are followed in all processes managed by the area, including users and members of other areas who interact with the tools and/or management structures created to meet demands. from the company.

In summary, automated governance allows organizations to standardize and automate their activities and workflows, increasing the efficiency, transparency, and security of governance processes. Mining asset reliability refers to the ability of an asset (such as equipment, machines, systems, etc.) to perform its expected function consistently and effectively [5]. This is crucial to the efficient and safe operation of a mining operation. and involve several aspects, including:

A) Equipment Performance: Equipment reliability is essential to ensure the mine operates efficiently and safely. This may involve regularly maintaining equipment, using advanced technologies to monitor equipment performance, and implementing safe work practices.
B) Asset Management: Effective asset management is a decisive factor in the performance of mining operations. This may involve adequate planning to ensure the smooth performance of operations at the mine, as well as making effective decisions about the use of available assets.
C) Asset Security and Integrity: Asset security and integrity refers to the ability of an asset to perform the function required of it effectively and efficiently, while protecting health, safety, and the environment.

Figure 2 shows the interaction of Automated Governance in reliability and asset management in mining operation.

The work resulted in an automated governance tool, integrating Power BI reports, process automation, low-code applications, and extensive data modeling, delivering precise, reliable information without straining management's labor resources. This resulted in a considerable reduction in engineering team hours and associated costs in, obtaining data, and creation of new and widely scoped insights for decision making.

It was also found that all work was standardized and shared with members of the entire organization, serving as training and even internal benchmarking. Components of tool utilization such as frequency of use, total security in relation to information sharing and user access to database were observed in this study.

The team will continue to monitor the performance of the developed tool, where a tool satisfaction survey will be made available to measure the degree of satisfaction of team members and users from other areas. Automated governance is the first necessary step in the management of digital tools, resources such as Machine Learning (ML), Artificial Intelligence (AI) and decision-making tools that will be created for asset management, require this to be implemented successfully.

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