Optimization of the Royalty Project Management Tool through Triggers and Interactive Support using Power Automate and Virtual Agents

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Abstract— For the proper sustainable development of Colombia, it is critical to ensure appropriate management of projects that will use these royalties. The GES group has a tool where all technical and legal inspections are managed, and developing and optimizing this tool is fundamental to comply with the objectives of Law 2056 of 2020 and Resolution 271 of 2021 and avoid the process of misuse of resources for sectors such as construction, education, and health. A total of 31,583 projects have been approved since 2012 with investments of COP$ 111,318,490,310,087, from which have been invested COP$ 95,848,713,073,511 from royalties. This evidence the reliance of the country to guide resources to the sector where they are most needed and the commitment of the government and entities to make an efficient investment. This project's innovative proposal is to integrate triggers with automated workflows with Power Automate and a human-like chatbot that will operate through Power Virtual Agents, technologies that have proven efficient in automating administrative processes and increasing operational efficiency in many other industries. The implementation will be made with the SCRUM methodological approach and change management, which would allow the GES group to make a change that can be improved and adapted. The expected results of the implementation will enable the automation of many processes in different parts, such as alerts and notifications much more accurately and quickly, and the chatbot will assist experts by providing real-time assistance, so it will also increase the quality of the user experience. All of this increased efficiency will grant the experts more time to do more critical tasks, which will improve productivity and quality. A capacity for innovation and improvement will also increase. In conclusion, the implementation of these technologies and methodologies is a pilot test that eases the way for like processes in the public and private sectors. Nevertheless, this implementation can only occur with the commitment of the entire group of GES to make these changes sustainable and help the country find Sustainable Development Goals 9 and 16, promoting inclusive societies, and resilience infrastructure.

Keywords—Project management, SCRUM, PMBOOK, royalties' projects.

I. INTRODUCTION

One of the biggest challenges in terms of sustainable development for Colombia is being able to control and manage appropriately projects financed from royalties. This team (the GES Group) in charge of monitoring and supervising these projects had opportunities to improve the monitoring process, but they were also able to simplify interactions within their management tool. Used for saving and organizing inspections done by engineers, this system is currently being implemented after development. The optimization of this system is necessary not only to improve operational efficiency but also because the projects financed must comply with the development objectives established by articles 164 and 183 of Law 2056 in formative State sectoral plans and defined broadly in terms that do not match Resolution No. 271 from September 23rd, 2021.

This project has the relevance of its enormous effect on the citizens, and it is possible to serve various municipalities in Colombia. Lack of monitoring efficiency and the inefficient use of resources can adversely impact infrastructure, education, and health sectors at large. Therefore, having management with optimized performance plays a positive contribution not only to the responsiveness of the GES group but also regarding how much resources are applied in these projects and that it is well managed for sustainable development and improving the quality-of-life issues in common at a grand scale. Since 2012, the management and financing of royalty projects in Colombia has had remarkable growth. So far, 31,583 projects have been filed for and approved with a combined investment of $111,318,490,310-087 pesos Of this amount, royalties alone account for COP$ 95.8 trillion (which is around 86% of the value projects). This is a big investment by the best-known name in town, and it underscores how critically important royalties are for funding projects within Australia.

The large share of revenues from royalties per investment dollar also highlights the importance not only to projects but more widely of these key resources, as well as the effectiveness of targeting those strategic sectors through royalty payments. The scale of these numbers serves to underline the total commitment by Governments and intervening entities, that since resources were being directed they would be done in the most rational manner possible hoping for regional and national developments. Furthermore, the public sector entered projects for investment spreading across various sectors such as Infrastructure, Information Technology (IT) & IT Enable Services (ITES), Industries and Commerce; Health; and environment among others. Some of the fundamental aspects that have resulted in building trust and continuing to support for royalty system is its efficient management concerning these financials; however, at a deeper level, it further boils down to how transparently are you allocating such capital.

Royalty management has been demonstrated to be an important economic concept for financing mega projects in Colombia as Figure 3 (as a Sample Diagram of the Public Investment Model) shows, and this should continue being part of the norm if adequately structured);" with adequate governance models remain vital tools public investment model demonstrating their importance within sustainable country development. The present study provides an innovative solution where power automation has been utilized for implementing the triggers and automated workflows, followed by deploying a conversational chatbot using Power virtual agents. As automation of administrative processes is one area that has been proven very effective, a self-service system based on bots within Microsoft Teams would be implemented to maximize operational efficiency. Recurrent tasks how generating job certificates, asset and document consultation, and requests for holidays were automated using Microsoft Power Automate e Power Virtual Agents. T

This way, response time becomes more optimized and the need for manual work is reduced maintaining user satisfaction through support by quickly answering questions and processing natural language in an environment like Microsoft Teams [1]. Also, a cloud integration platform comparison of Power Automate and Zapier/IFTTT judged that they are not the right choice for the impact one due to their limitations in customization options available (for IFTTT) or by lack of relevant connectors(for both). This makes Power Automate a highly effective integration tool that you can specifically be unique to the impact of one user, very flexible in requirements, and rich with capabilities for automating complex workflows. Compared with the other platforms Power Automate can increase operational efficiency in a more effective and time-saver way due to its versatility [2].

This will allow for notifications, alerts, and approval processes to be automated - revolutionizing operational efficiency in the GES group. In Malaysia, it has helped push the data backup process from local records into MyVAS Servers automatically to minimize human error with ease as a key solution(see Microsoft Power Automate Desktop in action in vaccination centers across Malaysia). Such automation not only saves time but also reduces the opportunities for human error, leading to an efficiency gain and accuracy in vaccination data

management [3]. This paper explores, how end-to-end programming can manage agile royalty revenue projects along with the SCRUM (Secured Complete Royalty Using Model) to deal with these concurrent win and finance projects under one Sprint then operators have their small sprints every day for deals cases etc. It is also used as a change management approach; the author included on-the-job training and implementation, and continuous communication thoughts (based on expert judgment) during project development. This proposal seeks to address both the current need and a broader objective: increase operational efficiency now -- in Sustainable Development Goals (SDGs) 9 and 16 [4], resilient infrastructure is a key element; transparent institutions underpin successful outcomes. Currently, there is a range of 7,321 projects with an estimated worth amounting to 46,987.752 billion pesos. Of this sum, the execution of royalties is 88% financed by the corresponding figure of COP$41'383,229 contributed from the General Royalty System (SGR). This further justifies their importance in financing necessary projects for regional development and the necessity of them being able to be effectively monitored from within GES groups, contributing towards sustainability goals.

The continued implementation of these projects demonstrates that the SGR is dedicated to fostering development and better lives in different communities, making sure all resources are put to good use towards realizing important developmental goals. The results that are anticipated, include a streamlined business process as automated workflows and personalized chatbots integrated within Microsoft Teams which will ultimately result in a synergetic improvement on the side of efficiency and responsiveness by the GES group. This system has led to real progress in the efficiency of educational processes and an increase in involvement among students, as shown by the Mahalle & Chopade survey on the Use of chatbots in education [5]. With tools like Microsoft Power Virtual Agent, teachers can create and maintain chatbots without coding - answering student queries instantly while decreasing administrative work as well. This method promotes information availability and accessibility as well as allows educators to concentrate on producing content and researching - thereby improving learning quality [5].

II. METHODOLOGY

The adoption of agile methodologies and change management expert judgment is recommended to handle the optimization for managing the GES group. These are tailored flexible frameworks for systematically introducing technology and managing change within human service organizations. The University of Toyama, using Power Automate as the tool for automation has been able to successfully automate its technical support approval system which integrates Microsoft 365 Teams and SharePoint. In this system, paperless working has helped in very effective processed-based improvement from request arrival to last statements. Workflow automation reduces the volume of manual labor necessary and significantly enhances operational performance-- indicating capabilities abounded by Power Automate to streamline administration processes in an education setting (佳子, 2022).

The SCRUM, which is commonly used for managing complex and adaptive projects, will be applied. It breaks the project into sprints, short periods of intensive work (usually two to four weeks) where a specific product couplet is complete. It provided a backlog, it had points of detailed planning and execution in the form of individual sprints (with scrum meetings) to hold progress reviews which increased transparency. They will demonstrate progress daily and weekly to ensure changes are made in time. Regular feedback will also be built in, so that input from users and stakeholders is threaded through each sprint-back into a rapidly evolving system product to assure that the solutions delivered are congruent with what the GES group needs. We will also be more flexible by working in short cycles that allow the team to respond quickly as requirements or operational circumstances change so we can reduce alignment risk and prevent delays.

To ensure proper usage and understanding for the users using change management methodology will be a necessity. It comprises the process of undertaking an extensive impact analysis, creating and scheduling training programs along regular interaction with every stakeholder involved in this change. Change resistance is helped through focused training and communication to shape an adoption-and-change-friendly culture. The planning team will need to constantly train and guide for this shift. Likewise, training sessions are conducted to make sure that users grasp and optimize the new means for better outcomes. There will be a process for both monitoring these forms and the use of an expanding dashboard (real-time metrics that measure form adoption and its effectiveness at operational efficiency) to make proactive adjustments, targeted responses, etc. Satisfaction, as measured by the Likert methodology implemented in forms(evidence this opportunity)

The desired process leadership knowledge and experience (age, years of management advisory service) will be initially provided by reliable professionals with HR or business managers backgrounds as sources in the collection of informational expert judgment textual information source. It is this methodology that directs project implementation, helps to consider and employ best practices, and identifies the opportunities of tomorrow. Expert Judgment Validate and provide recommendations to help decisions or actions during the development and implementation of a project, ensuring they are aligned with best practices. The practices will give us a framework to follow but the methodologies in it will also allow us to more easily identify if there are patterns and areas of improvement that may not be as visible internally.

III. RESULTS

Triggers and AI Results of this project - To automate responses from professionals to the management system using Microsoft tools/its licenses will be focused on the integration, automating efficiency through royalty consumer projects monitoring & administration. Depending on the business processes, automation is also planned for management time alerts as well as assignment and authorization processes which should largely simplify these tasks. This automation will lead to faster and more accurate decision-making which is required when meeting deadlines or optimizing the use of resources.

The Interactive Chatbot, which will be developed with Power Virtual Agents, aims to make technical and legal assistance for the management system professionals more agile, allowing access to informational content, models of terms/minutes/templates/process manuals/systematization formats/instructions while answering frequently asked questions in order operation during task troubleshooting and fulfillment by user-focused service/productivity algorithm. Similarly, it will enable the technical and legal professionals to spend more time on value-added tasks which in turn would enhance not only productivity but also the quality of project monitoring and supervision due to automation & immediate access to information.

TABLE I. DEVELOPMENTS.

DEVELOPMENTS WITH POWER VIRTUAL AGENTS	
Support for Collaborators	Develop bots that respond to frequently asked questions, manage support requests, and provide information about products or services.
Internal Process Automation	Create bots that assist in managing administrative tasks, such as booking meetings, managing tasks, and updating records.
Integration with the Management Tool	Develop bots that interact with the system to update assignment status information, track reviews, and respond to requests.
Training and Onboarding	Implement bots that guide new employees through onboarding processes, provide resources, and answer questions about policies and procedures.
Project Management	Create bots that help in project management by providing status updates, deadline reminders, and facilitating communication between team members.
Surveys and Feedback	Develop bots to conduct surveys and gather feedback from customers or employees, analyzing responses to improve products or services.
Education and Tutoring	Develop bots that provide tutoring and support to professionals, helping them with questions about course content and study resources.
HR Assistance	Implement bots to manage HR-related inquiries, such as certifications, company policies, and leave requests.

When you compare Power Automate with other workflow automation tools like Zapier and IFTTT, it stands out for its customization, deeper integrations, and ability to handle complex workflows. While Zapier and IFTTT are great for simple automation, they can feel limiting when you need more control. Power Automate gives you the ability to fine-tune triggers and actions, which is a big deal when you're managing

something as detailed as royalty projects. In this space, especially where regulatory compliance and task accuracy are crucial, Power Automate offers GES a scalable, flexible tool that handles the unique challenges of large projects with government oversight.

Power Automate and Power Virtual Agents together tackle GES's operational pain points—like manual workflows, slow approvals, and frequent human errors. Automating these areas speeds things up and cuts mistakes. For instance, automated alerts and approval workflows are expected to reduce processing time by up to 50%, which means quicker decision-making. Plus, using an interactive chatbot to answer common legal and technical questions helps cut down repetitive queries, giving staff more time for important strategic work. Overall, this will boost productivity across the board.

The benefits go beyond efficiency—you'll also see improvements in project tracking and resource use. By cutting down manual work and bringing in automated, data-driven processes, GES can manage resources and track compliance more accurately. These improvements directly support Colombia's Sustainable Development Goals (SDGs) 9 and 16 by strengthening infrastructure and promoting transparent governance [6]. Since Power Automate is so flexible, GES can continue to adapt and grow, staying agile while keeping accountability and high standards intact.

TABLE II.   FEATURES.

Feature	Power Automate	Zapier	IFTTT	Make (Integromat)
Functionality	Automates complex workflows across multiple platforms and services, ideal for enterprise environments.	Automates simple workflows between web applications without code, focused on small businesses or freelancers.	Ideal for automating very simple tasks between devices and web apps, focused on consumers.	Automates intermediate workflows with multiple scenarios and applications but is not as robust as Power Automate.
Flexibility	Highly flexible with integration capability across various environments and multiple Microsoft 365 applications.	Flexible in terms of connectable applications but less robust in advanced automation.	Low flexibility for businesses or advanced business processes, useful only for simple or everyday tasks.	Moderate flexibility, with the ability to handle more advanced integrations than IFTTT or Zapier.

Feature	Power Automate	Zapier	IFTTT	Make (Integromat)
Limitations	Limited connectors for some external services. Advanced workflows can be complex and require technical knowledge.	Limited to basic integrations and simple processes. Difficult to handle large volumes of data or complex business processes.	Very limited in customization and business applications. Not suitable for complex or multi-step processes.	Limited connectors for specific services and may lack advanced functionality compared to Power Automate.
Costs	User-based monthly pricing with standard and premium plans is generally higher than others.	Tiered pricing model based on the number of zaps (automations) and users. Less expensive than Power Automate.	Low cost or even free in certain cases. Less expensive than Power Automate and Zapier but is limited in functionality.	Lower costs than Power Automate but scalable based on usage. Pricing is based on the number of executions and data volume.
Customization	The high degree of customization for workflows and triggers. Customizable at an enterprise level.	Limited customization compared to Power Automate, focused on basic and predefined automation.	Minimal customization is available. Automations (applets) are basic and predefined.	Moderate customization, better than Zapier but still limited compared to Power Automate.
Integration	Native integration with Microsoft 365, Teams, SharePoint, and Dynamics, among others. Also allows external APIs.	Integrates many popular apps but lacks native integration with Microsoft enterprise tools.	Basic integration with popular apps but not designed for large businesses or custom integrations.	Good integrations with popular services and custom APIs but not as robust as Microsoft 365.

Feature	Power Automate	Zapier	IFTTT	Make (Integromat)
Scope	Large scope in enterprise environments, especially in large or complex projects such as royalty management.	Limited scope for small businesses, not designed for complex or enterprise-specific projects like royalty management.	Limited scope to individual users and personal tasks. Not applicable to large projects or enterprise environments.	Suitable for medium-sized businesses with intermediate processes, but not as specialized in managing large projects.

This project will help support the realization of a stronger and more flexible administrative operation within comparative organizational development. Benefits include training and change management programs in place so that all the GES group members will be trained on these new tools. This will reduce friction between the old and new systems so that your transition to a consolidated system is as seamless and promising as possible. Conversely, a culture of innovation and the deployment of advanced technologies as well as agile methodologies will lead to an environment where collaborators are increasingly used to new tech/tools/accomplishment techniques improving over time with iteration cycles driven by continuous feedback.

These periodic reviews and sprint retrospectives will give a strong indication of the performance of the team and where it needs to improve, which should help in doing course corrections well before time.

Power Automate is an absolute solution to integrate and automate workflows in multi-platform environments, which leads to high productivity benefits along with operation efficiency. However, it is inherently difficult to implement (due to partial triggers, actions in some connectors, and Complex AI/RPA implementations) and governance & environment management issues. These factors require a structured thought process for the full exploitation of the potential & avoid long-term issues [7].

TABLE III. ALERTS.

POWER AUTOMATE ALERTS	
Email Alerts	When a project is added or modified in a list with a specific criterion.
	When an email meets certain criteria (subject, keywords, etc.).
Instant Message Alerts	Notifications through Microsoft Teams when approval is requested.

	Notifications through Microsoft Teams when a document is created or updated.
Calendar Alerts	Reminders of upcoming events or meetings.
	Notifications of changes in calendar events.
Document Alerts	When a document is created, modified, or deleted in SharePoint or OneDrive.
	Changes in specific files or monitored folders.
Task and Project Alerts	When a new task is assigned in Planner or the management tool's inbox.
	Reminders of upcoming deadlines or overdue tasks.

IV. CONCLUSIONS

SCRUM in project management has become a rather effective way to structure and improve the work process, allowing you to adapt it on the fly for dynamic changes easily aligning it with continuous feedback. SCRUM, used in agile development schemes runs projects on sprints - short consecutive periods of intense work (usually 2-4 weeks long) during which a specific incremental part of the product is completed. Every sprint has a backlog, planning level is very well defined to the extent of detailing execution and daily meetings which we shortly call scrum meetings. Another benefit is that this structure enables effective and transparent project management which reduces the risk of any misalignments or delays as it helps to respond quickly to changes in requirements or changes related to the operating environment.

Adoption of Technology Change management features is very helpful to the success of new technology features or tool adoption phase. This method comprises the study of consequences in remission, devising and conducting training programs as well constant communications with all stakeholders. Specifically, overcoming resistance to change by adopting defined strategies (e.g. training & communication programs) alarms an adoption and adaptation culture in the organization. Ongoing training and support are required for users to recognize that they are using the tools, mentoring feedback form from a connected source gives online dashboard views of tool adoption & its operational efficiency impact in real-time.

Additionally, expert judgment is another key ingredient that offers diverse viewpoints and suggestions to use proper practices in project decisions that are consistent with the latest market trends. This technique commonly includes collecting and analyzing the opinions of management advisors, process leaders, or others with deep experience in a particular area. Expert judgment validates and suggests how the project should proceed, to ensure that all best practices are being utilized in this new digital world as well as uncovering potential opportunities for future initiatives. This integration of agile methodologies

(ex: SCRUM) and strong change management allows the GES group to be innovative by design and continuously improve.

Going forward, these enhancements in the said integration are expected to facilitate faster alert (and authorization) automation and considerably reduce the time as well as manual effort involved with those activities. This automation provides for more accuracy and faster decision-making, driving deadlines to be met in an optimal use of resources.

Using Power Virtual Agents to Enable Interactive Chatbot Conversations Improves Access to information for users, Real-time query resolution. This tool, which is integrated into Microsoft Teams, provides support to technical and legal specialists from the management system in an accessible way to real-time with an information repository, process guides, and models of meetings commonly raised doubts. Professionals are more productive and spend all their time on value-added activities while enhanced monitoring & supervision for project control is provided through automation coupled with interactive support.

This allows for the development and deployment of solutions through functionality that combines Power Automate and Power Virtual Agents, improving project management capabilities to ensure deadlines are met while keeping your resources used efficiently. In other words, this contributes directly to Sustainable Development Goals (SDGs) 9 and 16 [8] which focuses on building resilient infrastructure managed responsibly. Its impact on public administration in Colombia ensures that it implements the management tool more effectively. Experience drawn from this project can be a model for other projects, both in the public and private sectors. Combining technologies with agile methodologies appear to be a promising avenue for solving wicked problems of management open those IT professionals involved in public policy.

New technologies need ongoing training, and the successful process of implementation depends also upon communication. Of course, the most significant limitation is resistance to change, and this can only be overcome by more encouragement through reinforcement practices and ongoing support. The involvement and engagement of everyone in the GES group is key to enabling this project to be a success, sustaining improvements implemented beyond its close.

Power Automate has been very successful in automating enterprise processes, bringing agility and operational excellence. It enables the creation of flexible workflows and easy integration with other tools that provide rapid response to market requirements. Moreover, its low-code approach also ensures users create automated workflows even without the deep technical knowledge needed to transform the business landscape into more productive and competitive.

The integration of Power Automate with the SCRUM methodology has brought more organization and agility in managing automation development, allowing for better adaptation to changes feedback collection process as well as structured continuous evolution of automated processes. They are elements that allow more agile and efficient project management which together lead to an administrative basis for greater strength, solidity, and resolution in decision-making processes with the development of an innovative culture (continuous improvement) The GES group moves at one step [9].

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