SAP user insights

At TAC Insights, we speak with leaders in the global SAP ecosystem on a daily basis. Via our events, webinars and content platforms, we aim to keep you informed and updated with the very latest insight and learning directly from SAP users.

Petrobras **COMPANY**	Rio de Janeiro, Brazil **HQ**	<45,500 **EMPLOYEES**	Oil, natural gas and integrated energies **INDUSTRY**	SAP Intelligent Asset Management, comprising SAP Asset Strategy and Performance Management, SAP Predictive Asset Insights, SAP Asset Performance Management **SAP FOOTPRINT**

The **critical importance** of Intelligent Asset Management and maintenance reliability

Award winning SAP Intelligent Asset Management implementation at Petrobras

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Headquartered in Rio de Janeiro, Brazil, Petrobras is a world recognised leader in ultradeep water oil and natural gas exploration, production, transportation, and logistics. It is driven by a vision to be the best diversified and integrated energy company – generating value, building a more sustainable world, diversifying in low carbon business and always operating with respect for the environment and people.

Petrobras operates a vast asset and infrastructure portfolio in a complex and highly regulated industry. As such, best-in-class asset performance is paramount to achieving the ambitious vision driving the organisation. As a transformative step in its digitalisation journey to reduce manual processes and better predict asset insights, Petrobras embarked on an implementation of SAP Intelligent Asset Management solutions at BUZIOS ultradeep water oilfield.

This implementation has as target the increasing in operational efficiency. Here we tell the story of the why and how, plus the significant business outcomes realized as a result of this 2023 SAP Innovation Award winning project.

The business **drivers**

When recounting the story at our 2023 SAP for Asset and Service Management conference, Bruno Vidal, Business Applications Consultant at Petrobras pointed to Petrobras's use of manual spreadsheets, lack of accurate and reliable information and decentralization of maintenance processes.

There was a clear business case for a solution that could rectify these challenges and unleash value. Furthermore, worker morale was impacted by regular failures and disruptions, supplier assets and related systems were out of sync and the connection between ERP and third-party products could be problematic. Petrobras required a solution that could offer real time insight and information flow, reduce downtime, allow it to adopt the most appropriate maintenance strategies and tie in with its wider ERP and digital transformation strategy.

Building on Petrobras' **ongoing SAP journey**

Why SAP Intelligent Asset Management? The answer to this question lays – in part – with Petrobras' rich SAP ecosystem and legacy. Core data – from accounting and HR to operations and projects – was already situated in SAP systems. Building on this, the organization established in 2020 its #tranS/4mar program aimed at driving the evolution of Petrobras' digital core from SAP ECC to SAP S/4HANA. This presented an opportunity for Petrobras to enhance its SAP footprint across the organization and implement other SAP innovations.

From **proof of concept to MVP and beyond**

What did Petrobras' journey to SAP-enabled intelligent asset management and maintenance reliability look like? In 2020, Petrobras conducted a Proof of Concept to evaluate the feasibility, viability and potential of SAP Intelligent Asset Management. With the successful execution and approval of the solution, Petrobras defined the BUZIOS field – the world's largest ultra-deepwater reservoir, representing almost 16% of oil and gas production for Petrobras – as the main scope for a pilot implementation project.

With four units at BUZIOS – each with almost 10,000 pieces of equipment – project scope initially needed to be restricted given the potentially huge data sets involved. For this reason, the solution components were limited to SAP Asset Strategy and Performance Management for making reliability assessments and SAP Predictive Asset Insights for equipment monitoring and failure predictions.

Additionally, Petrobras limited scope to a single unit and to the most critical systems that drive the most failure notifications and maintenance orders – gas compression, oil and gas production gathering, fire and gas detection, firefighting

and energy generation. These systems alone represent 100,000 technical objects and 200,000 maintenance orders and failure notifications – a huge amount of maintenance and reliability data. The pilot implementation project was executed in the form of a Minimum Viable Product (MVP) in which gas compression and oil and gas production gathering were first tested at one unit, followed by extension to all units and inclusion of the fire and gas detection, firefighting, and energy generation critical processes.

An additional milestone was also reached this same year with the activation of the Machine Learning engine in the SAP solutions as a pilot project for one single piece of equipment. The main objective was to explore the key features of the machine learning engine, which Petrobras did through electing algorithms to make anomaly detections and generate failure predictions. Up until this point, the focus had only been on using SAP Asset Strategy and Performance Management and SAP Predictive Asset Insights for assessment, monitoring and process behaviours.
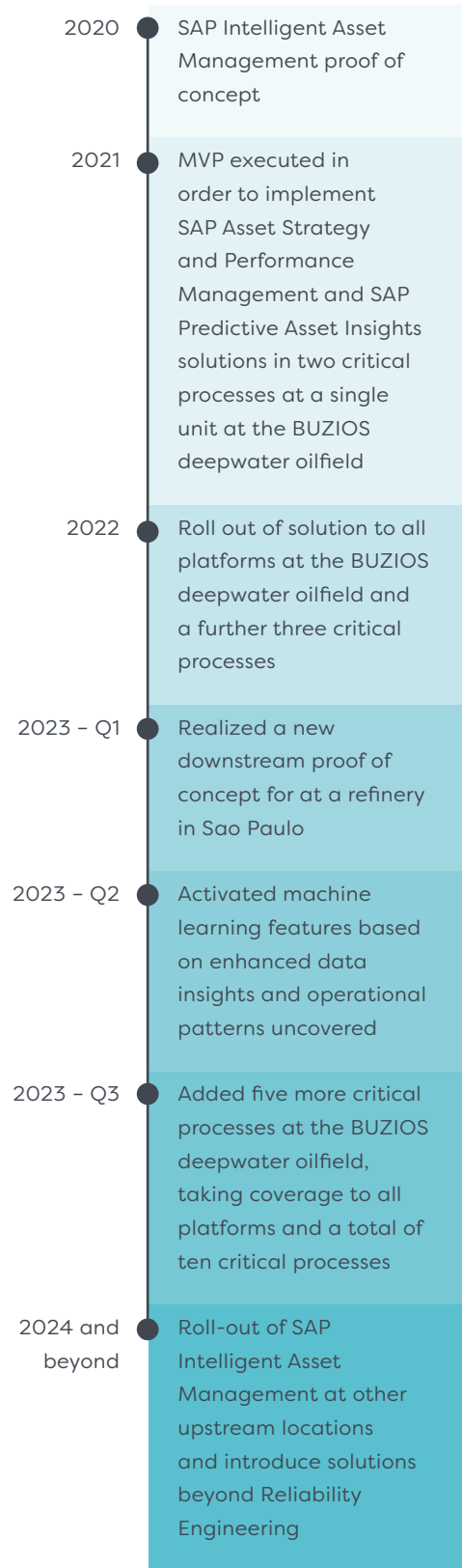
"We had some huge results from the machine learning features which has allowed us to uncover further insight and make performance improvements"

BRUNO VIDAL, BUSINESS APPLICATIONS CONSULTANT, PETROBRAS

A final journey highlight in 2023 was the launch of the solutions in a further five critical systems across all units of the BUZIOS field, including offloading, oil, water and gas treatment, water pumping for injection. By the end of 2023, this left Petrobras – in just three years – having moved from proof of concept through to go live in ten critical systems in all units from BUZIOS field and the first uncovering of machine learning benefits, not to mention the proof of concept for the same solutions in Petrobras' downstream operations.

It is important to note that there is a lot more to come. Having uncovered significant operational benefits at the BUZIOS deepwater oilfield, a technological plan is in place to roll out SAP Intelligent Asset Management solutions for

SAP Intelligent Asset Management **timeline**

2020 — SAP Intelligent Asset Management proof of concept

2021 — MVP executed in order to implement SAP Asset Strategy and Performance Management and SAP Predictive Asset Insights solutions in two critical processes at a single unit at the BUZIOS deepwater oilfield

2022 — Roll out of solution to all platforms at the BUZIOS deepwater oilfield and a further three critical processes

2023 – Q1 — Realized a new downstream proof of concept for at a refinery in Sao Paulo

2023 – Q2 — Activated machine learning features based on enhanced data insights and operational patterns uncovered

2023 – Q3 — Added five more critical processes at the BUZIOS deepwater oilfield, taking coverage to all platforms and a total of ten critical processes

2024 and beyond — Roll-out of SAP Intelligent Asset Management at other upstream locations and introduce solutions beyond Reliability Engineering

Petrobras upstream units in other locations. And it's not just about the technology – Petrobras also aim expand usage across its team, allowing the solution to gain exposure at the operational level.

The near future will also bring a migration from SAP Asset Strategy and Performance Management and SAP Predictive Asset Insights to the new solution: SAP Asset Performance Management.

Business benefits, learnings and conclusions

Petrobras' implementation of SAP Intelligent Asset Management represents an unprecedented and pioneering implementation in Latin America, contributing significantly to its internal programs that aims the operational efficiency "state-of-art" Efficiency 100% (EF100) strategic program for its offshore industrial assets.

As a result of its pilot projects and implementation, Petrobras has transformed the reliability, prediction, optimization and mobility in tracking 83,000 pieces of equipment at BUZIOS deepwater oilfield, providing a template for roll-out across other Petrobras upstream assets.

One of the great challenges for 2024 is to evaluate the value returned by this technological solution to Petrobras.

Moreover, with better operations around its assets, Petrobras can further support corporate environmental goals which include the reinjection of a cumulative 35+ million tons of CO_2 equivalent, to support offshore production, regulations, and lower emissions.

> "Our implementation of SAP Intelligent Asset Management has led to an improvement of our operational efficiency and increased availability of our machines. When we reduce failures, when we accurately monitor our equipment, when we get real-time performance data, when we reduce production losses and when we implement a reliability culture, we reduce oil losses, inspire greater confidence in our people and return huge value to our organization"
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> **BRUNO VIDAL, BUSINESS APPLICATIONS CONSULTANT, PETROBRAS**

Insights for other SAP customers

Integrate with your core ERP
One of the great advantages of the Petrobras implementation is its integration with SAP S/4HANA.

Intelligent Asset Management solutions will not implement a reliability process
to get the best return of value on new solutions, implement your reliability process prior to your technology.

Intelligent Asset Management is a decision support tool
the human critical analysis made by the reliability engineers is still essential!

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