

Reduce Carbon Footprint with Efficient Energy Management

Predictive Maintenance – Anomaly Detection – IoT – AI

CONTEXT

As part of its energy efficiency improvement strategy, Total wanted to diversify from its main fuel products and offer services designed to reduce the carbon footprint of large industrial complexes around the world. A large mining complex for example, can easily burn more than 80 million US liquid gallons (+300 million liters) per year.

With the help of the digital strategy consulting firm [Eleven](#), Total defined a unique solution called [Total Optimizer](#), designed to manage and optimize mining and industrial sites' energy consumption and offer predictive equipment maintenance.

CHALLENGE

Building a solution that combines data from disparate sources and integrates them with existing operational processes is a complex undertaking. Total identified a wide-range of data sources that needed to be taped into and integrated. These included different fuels, various kinds of lubricants, electricity and solar systems, IoTs from different equipment, and other external sources like maintenance records and orders systems. All these data are in distinctive formats and need to be processed according to different rules. The solution also needed to combine batch and real-time extractions, manage several different loading and correlation processes, and offer actionable information through an intuitive interface and alerts.

Total considered using several off-the-shelf analytics solutions, or potentially build it themselves. They were looking for a flexible, secure, and pure PaaS solution that could easily be used by clients anywhere around the world and on any device.

Total did not want data analysts to interpret complex reports. They wanted their clients' operational managers to quickly use the solution and take action. They also wanted their solutions to be up and running in a few weeks as opposed to months or years.

SOLUTION

Total chose ForePaaS' cloud-native AI platform to build and customize solutions for their multiple clients around the world. The [Wavestone Consulting Group](#) is currently in charge of the maintenance and evolution of the application. The ForePaaS AI Platform templates, tools, point-and-click interface and other built-in features give Total and Wavestone the flexibility and speed they needed to quickly and efficiently build these tailored applications, at speeds unmatched by non-cloud-native software offers, or in-house development.



Total is a French multinational oil and gas company. It is one of the seven largest publicly traded international oil companies in the world, commonly referred to as the seven Supermajors. In 2019, its number of employees was 107,776, and it surpassed \$200 billion in Revenue. Total aims to limit its impact on the climate. By 2035, the company plans to be 20% invested in low-carbon energy, by developing renewable energies, improving its energy mix and advancing energy consumption efficiency solutions.

KEY OBJECTIVES

- Reduce carbon footprint
- Control and optimize energy consumption in large industrial sites
- AI-driven: with alerts pointing to specific issues and recommendations
- Offer flexible and customized solutions
- Optimize costs and resources at scale
- Easy software updates

KEY RESULTS

- 7% saved on fuel costs
- 3% reduction in fuel pilferage (fuel theft)
- +20 data sources
- < 5 weeks to build and deploy first working pilot



Driving shopping mall growth through laser sharp marketing

Omnicanal – Processing customization – Predictive models

The ForePaaS AI Infrastructure Platform manages all the bricks of a [Data Pipeline](#) or an [AI Pipeline](#) together. Each client's new data sources are easily added, painlessly integrated with any operational processes and alerting requirements, and the resulting new database structures effortlessly updated. The data can be accessed from anywhere in the world, from any device, thanks to ForePaaS' secure cloud-native platform.

ForePaaS' pre-built AI components and capabilities are helping Total's clients quickly build actionable AI models and become AI-powered industries. A large extraction complex for example, monitors lubricant consumption and tracks machine burn rates to predict equipment faults and to extend equipment life.

Total's first pilot, designed for one of the world's largest mining companies, was built in less than 5 weeks. It integrated more than 20 different data sources, including different legacy systems and flat files. The implementation accounted for different data velocities - IoT devices send information in real-time, whereas some of the legacy systems send updates only once a month.

The system is set-up with 522 different actions. Actions are triggered or part of an automated workflow. Actions can include for example: retrieving data, checking the data, aggregating the data, and performing pre-defined calculations or modifications. Each action represents a job to be run. Certain jobs run automatically either periodically or once a month, others can be started by the request of the end-user. The system runs 50 jobs per day.

This first implementation quickly delivered value in several ways. Large haulage contractor fuel consumption, which amounted to over US\$ 9 million annually, was reduced by 7%, and fuel pilferage (fuel theft) was reduced by 3%. Total's client also managed its CO2 emissions and reduced its carbon footprint with its innovative eco-driving challenge: Better drivers and equipment operators were incentivized to use less fuel, which promoted safer, more energy-efficient driving behavior, and had a direct impact on the mine's total fuel consumption.

Total is offering Total Optimizer to numerous mines and industrial sites with large fleet of vehicles, such as cement plants and quarries. They're focused on building customized solutions without investing heavily in expensive and extensive infrastructures. New implementations are rapidly tailored to each client's need and deployed at a minimal cost and time. They don't need to provision for server performance and capacity; manage complex software stacks, programming environments and security settings; or handle hardware and software maintenances. As Total adds additional clients, the scaling and management of the backend infrastructure and provisioning are left to the cloud-native ForePaaS AI Platform. ForePaaS automatically scales the necessary compute resources; manages increased server loads and handles server failures; offering Total's clients the uptime reliability their businesses require. Total didn't need to hire a large talent pool to keep up with the demand, and doesn't require its clients to go through long and costly end-user training.

Total Optimizer's success has encouraged the company to offer new services based on the ForePaaS AI Infrastructure Platform. They're also able to better differentiate themselves from their competition and win more contracts by offering innovative energy management services.

TESTIMONY

"Now we can measure the impact of a media plan on digital and physical traffic generation. In the blink of an eye, we can access graphs to correlate media investments to web and physical traffics, or measuring the impact of events on turnover."

Elise Masurel
Head of Marketing, Digital & Innovation