CUSTOMER CASE STUDY

Mining new value from data in remote locations with AVEVA™ Data Hub

Cobre Panama - cobrepanama.com
Industry - Mining and minerals

Goals

- Reduce truck fleet's unplanned downtime and extend equipment life
- Share critical data between mine operators, local experts, HQ, and key vendors
- Enable real-time monitoring of hazardous residual materials

Challenges

- Keep equipment operating in coastal environments with high humidity and salt corrosion
- Simplify the process for securely sharing real-time data
- Reduce the risk of an environmental disaster in an extremely rainy locale

Results

- All relevant data in one central repository owned by Cobre Panama
- Significant savings through smarter maintenance, damage avoidance, and reduction of unplanned downtime
- Reduced risk of environmental disaster with near real-time tailings management

Solution

- AVEVA Data Hub

Operating one of the world's largest new copper mines in one of the world's rainiest, most humid countries makes an already difficult job even tougher. Cobre Panama, a jointly owned mining operation, produces over 81,000 tons of copper a year, as well as 36,000 ounces of gold, and 609,000 ounces of silver. All year long the operations team must contend with staggering rainfall, high humidity, and – with the Caribbean Sea to the North, and the Pacific to the South – pervasive salt corrosion. These harsh weather conditions push the operation's fleet of mining trucks to its limit. Here, equipment deteriorates quickly, rubber tires first. These conditions inflict severe damage on assets and, without predictive maintenance, can lead to frequent periods of unplanned downtime. Cobre Panama needed a robust solution to monitor the condition of equipment in real time and make that information available to its internal maintenance teams, as well as the industrial vendors and service providers it relies on. Cobre Panama's solution: a new, digital repository of knowledge in the cloud, built on the data aggregation, enrichment, and sharing capabilities of AVEVA Data Hub, a cloud-based data management SaaS.

Capturing data on the move

Cobre Panama, which primarily exports copper concentrate, is the Panamanian subsidiary (80% owned) of Toronto-based First Quantum Minerals. Besides its processing plant and other facilities and assets, the project oversees a fleet of 56 mining trucks, worth around $5M apiece. Each truck is fitted with IoT sensors, which collect valuable information detailing the overall health of the asset. In all, these sensors are collecting 378 different data streams per truck – information such as average speed, temperature, oil levels, fuel levels, and even road conditions.

Finding a sophisticated solution to collect and aggregate mobile asset data was only the first of Cobre Panama's goals. What the operation really needed was a way to share real-time and historical data between several parties, including its corporate headquarters and internal maintenance experts, as well as key vendors and service providers, such as Monico, Michelin, and Relialytics, an Australian-based advanced analytics consulting firm. "We needed to be able to collect that sensor data in real time to do predictive maintenance." Ruben Perez, ICT Operations Lead, First Quantum Minerals LTD

Before it embarked on this project with AVEVA, essential asset-condition data was commonly siloed in reports and behind vendor portals, which severely impeded Cobre Panama's efforts to build an effective predictive maintenance program for its fleet of mining trucks. In 2021, Monico, an AVEVA partner, suggested an AVEVA solution to serve as the foundation for a cloud- based, digital knowledge and collaboration center: AVEVA Data Hub.

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Creating a digital repository of knowledge in the cloud

To create its cloud-based repository of knowledge, Cobre Panama also enlisted the help of its partner, Monico, to provide a custom solution for data ingress. Monico's IoT software and hardware solution collects real-time data from the mining trucks and writes it directly to AVEVA Data Hub. That means all the information IoT sensors are collecting – hundreds of data streams per truck – is accessible in the cloud in real time via AVEVA Data Hub, which allows Cobre Panama to check in on the conditions of their assets wherever they might be operating at the moment.

Once collected, the next step is to aggregate the data and make it available for deeper analysis, which is where AVEVA Data Hub comes in. From this central data hub, accessible by any authorized user via a web browser, teams at Cobre Panama can visualize real-time and historical data and share it securely with service providers they hire for predictive analytics and advisory services.

In addition to the data coming from the organization's many IoT sensors, the new central knowledge center also aggregates valuable information from vendor portals. Now, maintenance teams at Cobre Panama and service providers can collaborate from the same set of context-rich data to identify operational deviations, measure KPIs, and develop new strategies to improve operations.

The cloud-native data sharing capabilities of AVEVA Data Hub form the foundation of Cobre Panama's predictive maintenance program

Mining new value from data

Cobre Panama's new digital knowledge and collaboration center, built on the cloud-native capabilities of AVEVA Data Hub, seamlessly connects to the organization's enterprise resource planning (ERP) systems, which automatically generates ERP work orders and requests for necessary parts. Now, when a truck needs any maintenance, Ruben says, "It's just a matter of taking the truck to the shop."

Gaining this real-time visibility into the condition of its mobile fleet has helped Cobre Panama stay a step ahead of equipment breakdowns. "If we reduce the downtime on the trucks, we can produce more, which, in the end," Ruben says, "translates to transporting more copper, and more money for the company."

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Cobre Panama is already extending its use of AVEVA Data Hub beyond its fleet of mining trucks, starting with its tailings management. Tailings are the waste byproduct of mined ore. Mining operations must regularly measure the level of tailings in their facilities to ensure that none of this waste makes its way into the atmosphere or waterways. Until now, Cobre Panama has monitored tailings the old-fashioned way, by sending workers out to the field once a week to collect the measurements in person. One obstacle to that method, besides the time and effort it requires, is Panama's heavy rainfall. "Panama is a rainy country," Perez says. "Very, very rainy. There could be one week where the tailings levels are totally different." But now, with its new system and the cloud-based data aggregation and sharing capabilities of AVEVA Data Hub, Cobre Panama can automate that monitoring. The new solution can measure tailings levels as often as every fifteen seconds, then write that data directly to AVEVA Data Hub, where it is accessible in real time for analysis. This allows Cobre Panama to accurately gauge the level of tailings in its facilities and avoid possible ecological disasters, no matter the weather.