



Business challenge

Without a clear view of traffic and road conditions, it was challenging for ARTESP to prioritize highway maintenance and management activities, potentially causing delays to inspection activities.

Transformation

A traffic control system based on analytics and asset management solutions from IBM helps ARTESP identify and supervise the resolution of road-surface and traffic problems, improving motorist safety and convenience.



Giovanni Pengue Filho
General Director
ARTESP

Business benefits:

Prioritizes

highway maintenance based feedback from roadside sensors

Supports

smarter decision-making for contractors through sophisticated analytical capabilities

Accelerates

identification of traffic issues from hours to minutes

ARTESP

Proactively managing a vast road network and keeping drivers safe with intelligent analytics

The São Paulo State Transport Agency (ARTESP) regulates and supervises public transportation services for the Brazilian state of São Paulo. Some 20 private contractors provide services for 30 state highways, covering over 6,400 kilometers of road and serving 20 million people in 271 cities.

“IBM Maximo enables us to prioritize repairs and create better and safer conditions for road users.”

Giovanni Pengue Filho
General Director
ARTESP

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Ensuring safer roads for citizens

The roads of São Paulo State form an intricate web that stretches over 6,400 kilometers and serves more than 20 million people across 271 cities. Ensuring that traffic flows smoothly, and that motorists are safe from hazards and can count on fast assistance from contracted partners at all times, are the primary functions of the São Paulo State Transport Agency (ARTESP).

While private contractors are responsible for day-to-day road maintenance, toll collection, and responding to traffic accidents, they often differ in how they organize data reports and respond to particular problems. This inconsistency hindered ARTESP's capacity to manage the contracts proactively and risked jeopardizing road quality.

Giovanni Pengue Filho, General Director of ARTESP, explains: "Inspectors had to laboriously identify road hazards through physical inspections, and clerks spent hours poring over accident reports to find correlations between service issues and accidents. This manual effort was increasingly time-consuming and prone to human error."

To increase efficiency and safety, and to shorten average journey times, ARTESP wanted a better way to understand both the changing road conditions and traffic flows.

Smarter traffic monitoring

ARTESP chose to work with IBM based on its know-how in building smarter cities and its broad portfolio of intelligent monitoring systems and advanced asset management solutions. "We were impressed with IBM's track-record in smarter infrastructure solutions," says Giovanni Pengue Filho.

ARTESP selected IBM Premier Business Partner® Magna Sistemas Consultoria S/A to assist in implementing the IBM® Intelligent Operations Center and IBM Maximo® Asset Management solutions. The two organizations built an information control center that equips the agency and its contractors with a customizable dashboard that provides real-time visibility of road and traffic conditions all over the state.

Giovanni Pengue Filho comments: "Magna Sistemas Consultoria played an important role in implementing the new solution, helping to integrate a wide variety of standards from our 20 contractors to enable us to report information uniformly and carry out updates centrally."



While road inspectors were previously required to conduct physical road assessments, today, a customizable dashboard receives sensor-derived data, providing the agency and its concessionaires with a comprehensive, real-time view of the roads in their jurisdiction, along with detailed information about current weather and traffic conditions on each road. Accidents are reported instantly, and ARTESP can check if the contractors contact the appropriate emergency services.

"We have traffic sensors at many points on the highway that reliably count the number of cars passing that point every second," says Giovanni Pengue Filho. "More than one thousand rotating video cameras with zoom capabilities cover 70 percent of our road network."

"The cameras record all incidents, obstructions and traffic offences. The raw video feed can be forwarded to the São Paulo Police department, helping officers respond quickly to incidents, which also contributes to reducing crime."

The IBM Analytics solution also pulls in live information from weather stations, roadside emergency telephones and toll plazas, providing a detailed view of current road conditions and the impact on traffic flows and safety. The solution classifies and categorizes data as it arrives in the central operations hub, using a customized set of business rules to decide what is most important and timely. In this way, the solution intelligently interprets the data and highlights the events and conditions that decision-makers need to focus on. Integrated asset management enables ARTESP to monitor the condition of the road surface and other physical assets, helping the organization to work with its contractors both to complete routine scheduled maintenance and to prioritize emergency repairs.



Proactive road management

“With IBM Intelligent Operations Center in place, we can now harness analytical insight to improve the overall safety and reliability of the roads in the state of São Paulo, while opening up a valuable new dialogue with our highway maintenance contractors,” says Giovanni Pengue Filho.

The solution enables ARTESP and its contractors to correlate road damage with accidents, gaining a better understanding of where to invest maintenance time and effort to produce the greatest impact on road safety.

“A pothole described by a road inspector as ‘small’ one day might become much larger and much more dangerous. With IBM Intelligent Operation Center, we can now oversee roads in near-real time and act immediately, prioritizing repairs and diverting traffic if necessary,” says Giovanni Pengue Filho.

With standardized information from numerous state-wide sources available to analysts in near-real time, ARTESP can better identify traffic issues and collaborate with contractors on new road operations, enhancing traffic flow and safety for motorists.

For peak times, such as holidays and festive seasons, which raise the likelihood of accidents, ARTESP now prepares contingency plans with its contractors based on standardized information. This planning helps to save lives.

Error-free reporting

Sourcing data directly from sensors has dramatically improved the quality of information available to ARTESP and its partners, providing a better basis for decision-making as well as eliminating thousands of hours of human effort. Data can be analyzed in many ways, and tailor-made reports are produced in seconds rather than months, allowing ARTESP to prioritize and plan road maintenance and safety initiatives far more intelligently.

Repairs are tracked in real time, helping ARTESP to monitor contractors' compliance with service level agreements and to address non-compliance swiftly, saving time and money.

ARTESP is now developing its use of predictive analytics, looking back at the causes of accidents and delays in order to determine the likely future impact of current road surface and traffic conditions.

"The IBM solution has given us a smarter way to manage our infrastructure and understand how it affects the efficiency and safety of the state road network, says Giovanni Pengue Filho. "As we gather more data, we are building up a rich store of information that will guide our future investment decisions and improve the way we manage future incidents on our roads. Ultimately, the IBM solution is helping us to use public money more efficiently and to improve both the speed and safety of travel on the state road network."

Solution components

- IBM® Intelligent Operations Center
- IBM Maximo® Asset Management

Take the next step

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