Go with the flow: Transportation information management solutions from IBM.

Highlights:

- Extend the life of your transportation assets, optimize parts management, reduce the number of breakdowns and move to predictive maintenance
- Implement traffic prediction and intelligent route planning capabilities
- Use information and analytics to improve the transportation experience, reduce congestion and, if desired, encourage a modal shift for travelers
- Collect, share and analyze information to generate new insights

Meeting today’s transportation challenges with a smart transportation system

A population explosion, urbanization and globalization are stressing our transportation networks. These factors have created an increase in transportation demand that is outstripping current capacity. A well-integrated transportation and technology system can help you address the issues that are created when demand is greater than capacity. Such a system provides the tools and infrastructure for:

- Predicting demand better and optimizing transportation infrastructure and assets
- Improving traveler and customer experiences
- Improving operational efficiencies while reducing carbon emissions
- Assuring and sustaining safety and security

In this system, vehicles of all types can be instrumented and interconnected with the systems of transportation operators. These instrumented, interconnected systems and devices also generate volumes of new data. Advanced analytics can turn that data into intelligence—insight that transportation providers can use to make better decisions, often in real time. A main component of such smarter transportation systems is transportation information management, which has numerous benefits for transportation providers.
How transportation information management solutions from IBM can help

Transportation information management supports the archiving and retrieval of data generated by transportation system applications and enables intelligent applications that use archived information. Decision support systems, predictive information and performance monitoring are examples of applications that transportation information management enables. In addition, transportation information management systems can help transportation operators plan routes, schedules and maintenance and enhance safety and security.

Transportation information management solutions and services from IBM® provide transportation operators with greater control over the flow and operation of their infrastructure. Transportation information management can help public and private transportation providers coordinate their existing physical infrastructure with new technologies, such as sensors, cameras and dynamic signs.

Smarter transportation for the public sector: IBM Government Industry Framework

IBM's transportation solutions are a key part of the IBM Government Industry Framework, a software platform with government-specific software, solution accelerators and best practices. The Government Industry Framework can help government agencies reduce risk and accelerate the deployment of solutions that help countries, states, regional governments, municipalities and provinces implement intelligent transportation solutions, improve citizen services, increase transparency, enhance public safety and achieve a sustainable environment.

Transportation information management solution components

The transportation information management solution portfolio from IBM includes research, technology, software and consulting services for:

- Asset management
- Analytics and performance management
- Resource optimization
- Surveillance and video analytics
- Traffic prediction

The results include faster travel times, flexible tolling and fare options and better navigation information. You can also analyze information generated by the infrastructure to make fact-based decisions about where to invest capital for future transportation projects. For example, with transportation information management solutions from IBM, your agency or company, working with others in a smart transportation ecosystem, can deliver traveler advice to Web browsers, 511, personal digital assistants and smart telephones. Performance reporting and analytical software, such as a traffic prediction tool, can help optimize traffic flow and passenger journeys.
A transportation information management solution helps Kyoto plan for the future

Kyoto, Japan, has implemented a transportation information management solution jointly developed by the IBM Tokyo Research Laboratory and Kyoto University that can simulate a broad range of urban transportation situations. This simulator system provides the current status of traffic, including current speed and positions of vehicles and even the distance between cars. City planners can use the system to simulate a broad range of urban transportation situations, including millions of vehicles involved in complex traffic interactions. By adding a variety of attributes to the model, the system can simulate traffic conditions with an eye to reducing carbon dioxide and potential accidents. In addition, Kyoto can use simulations created by the solution to predict what will happen if someone builds a new office building, sports arena or other major facility is metro Kyoto and how to improve planning of roads and public transportation.

Transportation asset management solutions from IBM are based on best practices that help reduce costs by improving the productivity of these critical transportation assets. These solutions can manage almost all transportation asset types, including fleets of cars, trucks, buses, locomotives and rail vehicles, aircraft and vessels and include:

- Advanced asset management capabilities that provide information about equipment status, position, serial number changes and warranty recovery
- Enhanced work management for campaigns, industry codes, labor certification, maintenance alerts and outside repair orders
- Extended inventory management features for cycle counting and fuel tank management
- Features that import data to drive preventive maintenance and enhanced vehicle management for internal billing

By extending asset life, optimizing parts management, reducing breakdowns and moving to predictive maintenance and away from planned and preventive maintenance, public and private transportation providers can improve operational efficiency while reducing their environmental impact.

Asset management

Asset management is a method for managing all of the assets of a transportation organization, including:

- Fleet assets, such as cars, trucks, buses, trains, vessels and aircraft
- Linear assets, such as highways, toll-ways, roads and railways
- Facility assets, such as depots, terminals, stations and buildings
- IT equipment, such as servers, networks, desktops, laptops, software and telephony (while also managing service providers)
Asset management from IBM helps improve operational efficiency

Tube Lines of London uses an IBM asset management solution for proactively maintaining 200 miles of track, 255 trains, 100 stations, 2,395 bridges and structures, 71 lifts and 227 escalators. The solution also provides mobile access to asset information and helps Tube Lines understand the trends in asset performance that can drive maintenance strategies that maximize performance and minimize passenger interruptions.

DP World Southampton operates the second largest container terminal in the U.K. Using an IBM asset management solution, they have achieved a 10% reduction in equipment breakdowns.

A U.S.-based airline uses an IBM enterprise asset management and MRO solution to increase reliability and availability while reducing maintenance and materials cost. Streamlined maintenance processes have reduced delays and decreased material and maintenance costs.

With transportation analytics and performance management solutions from IBM, you can:

- Monitor performance and adjust day-to-day operations to meet or exceed targets and respond quickly to transportation patterns.
- Align vehicle, aircraft, rail, transportation networks and supporting infrastructure with demand based on real-time metrics.
- Formulate and implement programs that respond to changing transportation requirements, meet the goals of cities and nations and improve customer experiences.
- Streamline and improve the accuracy of plans and forecasts with model-based strategies to achieve better alignment.

Analytics and performance management solutions from IBM help turn data into action

A busy port uses an IBM business intelligence solution to integrate and automate metrics from diverse data sources so that their management has real-time performance information and can make decisions based on facts.

A state department of transportation in the U.S. used an IBM performance management solution to improve their operational reporting and financial management, which had a direct positive affect on their bond rating and the interest rates available to them.

Crucial to success in today’s highly competitive air-freight market is the ability to access business-critical information fast. To maintain a lead in this volatile market, Lufthansa Cargo relies on business intelligence tools from IBM to conduct detailed evaluations of its operations.

Analytics and performance management

Analytics and performance management solutions from IBM can improve decision-making with access to mission-critical information and deep analytics. Leading performance management technologies, business intelligence software, support and services help you integrate existing data silos to create a comprehensive view of your transportation operations and turn transportation data into actionable information.

Using scorecards, real-time dashboards, event management, reporting and analysis tools, you can manipulate business data associated with activities such as transporting passengers, moving freight, shipping cargo and consumer goods or securing hotel reservations.
Resource optimization

Resource optimization solutions from IBM arm transportation decision-makers with insights into best-case, expected-case and worst-case scenarios. Using these solutions, you can make the right choices about transportation flow, scheduling, maintenance and much more. Grouped in three main categories—planning and scheduling, strategic design and revenue and yield management—these solutions help address:

- Workforce planning, such as staff sizing, simulation of regulations, weekly scheduling, daily task allocation, task reallocation and more
- Fleet management, such as fleet sizing, transportation network design, time tabling, vehicle allocation, loading and routing and fleet re-allocation or re-scheduling
- Yield and revenue management, which includes setting price levels based on passenger and freight levels and forecasted demand
- Dynamic pricing, which includes adjusting prices and fares depending on demand and availability
- Dynamic packaging, which includes building an optimal products bundle, typically air ticket, hotel and car rental, to maximize customer preferences and minimize prices

The resource optimization solution from IBM offers the full range of optimization tools, engines and environment for developing long term to short term planning and scheduling applications. The solutions are flexible, so that you can easily make adjustments to cope with changes in regulation, infrastructure, fleet size and type, along with any general changes in business and operations.

Resource optimization from IBM helps clients streamline processes and plans

Aeroports De Paris uses an IBM resource optimization solution to coordinate equipment and facilities. As a result, there are fewer flight delays, passengers move through the airport faster and operating costs are lower. Also, creating a plan for aircraft parking stands and ground equipment takes 3 minutes instead of more than 4 hours, which means the staff can react quickly to unexpected events or delays.

The Port of Singapore uses an IBM resource optimization solution to produce their loading plan in less than 30 minutes. This process used to take hours.

An IBM resource optimization solution powers one of the main applications that a leading global logistics company uses for consolidating shipments and routing deliveries. Using this solution, the company has improved delivery times and reduced transportation costs. In addition, one customer has saved approximately $3,000 per business day.
Surveillance and video analytics
IBM's digital video surveillance and analytics solution applies advanced analytics to video data to identify risks. Based on open standards-based middleware, this solution can monitor and analyze real-world events using data from multiple sources, including video cameras and biometrics. The advantages of the solution include:

- Real-time alerts that warn of suspicious behaviors
- Enhanced forensic capabilities that include indexing and attribute-based searches of video events to classify objects into categories such as people and cars.
- Situational awareness of the location, identity and activity of objects in a monitored space, including license plate recognition and face capture.

With real-time analytics capabilities, this solution can open up a wide array of new applications that go far beyond the traditional security aspects of surveillance systems.

Traffic prediction
IBM has developed a traffic prediction tool that helps municipalities, transportation operators and hubs that struggle with congestion. This tool uses real-time data and projects it into the near future, producing accurate, near-term traffic predictions that can help improve transportation operations and planning.

A few of the processes that this solution can enable include traffic planning, dynamic enterprise resource planning, congestion-based tariff setting and route guidance. It also facilitates decisions for variable-message sign information and assists with proactive signal setting and ramp metering.

The solution has a number of benefits, such as greater prediction accuracy than existing methods. It can run on medium-sized and large networks in real-time for greater efficiency. It provides valuable predictive data, including input for traveler information systems that can help with route planning. It is also possible to augment the tool with a number of extensions. For example, one extension enables the input of up-to-date traffic data into planning and simulation tools.

Surveillance and video analytics from IBM help clients assure safety and security
A U.S. hub airport implemented a digital video surveillance solution from IBM and a security command and control center that uses information from biometric handprints and badge readers. The system is more effective at recognizing risks and alerting the command center. The effective labor cost savings is $2.2 million per year.

A delivery company in Italy reduced their security staff and increased the level of security for their 10 hub facilities using an IBM solution that centrally monitors intrusion, access control readers, digital video and smoke detection.
A transportation authority in Singapore uses an IBM tool to improve traffic management

The Singapore Land Transport Authority needed to resolve ongoing traffic management issues. With the help of IBM Global Business Services, the IBM Watson Research Center, IBM Global Innovation Outlook and IBM Singapore, it installed an IBM traffic prediction tool. Predictive analytics from the tool provide the authority with a highly reliable view of traffic conditions in the present and near future. As a result, the authority can adjust signal settings, variable message sign displays and ramp meters to display travel advisories and help prevent traffic congestion. During a pilot, the tool predicted traffic flows over pre-set durations (10, 15, 30, 45 and 60 minutes). Overall prediction results were well above the target accuracy of 85 percent.

The tool helps the authority better predict and avoid traffic congestion. It offers transportation planners access to a rich set of traffic pattern data stored in vast data warehouses. With the tool, the authority can mine the data for trends and patterns while also taking into account temporal and spatial relationships.

IBM's powerful analytical tools can aggregate, analyze and act on data gathered from disparate sources—providing solutions for planning, scheduling, routing, customer relationship, pricing, revenue management, intelligent traffic and infrastructure management. Our practical experience can help clients become smarter—more instrumented, interconnected and intelligent.

For more information
To learn more about IBM solutions for transportation information management, contact your IBM marketing representative or IBM Business Partner, or visit the following Web sites:

ibm.com/travel
ibm.com/software/industry/government

Why IBM?
IBM is a market leader in collaborating with transportation clients to deliver the fastest time to value with minimum risk. Our expertise; innovative solutions; comprehensive hardware, software and services; and broad experience with transportation implementations worldwide can help transportation operators achieve these objectives:

- Predict demand and optimize capacity, assets and infrastructure.
- Improve traveler, commuter and customer experience.
- Improve operational efficiency while reducing environmental impact.
- Assure safety and security.