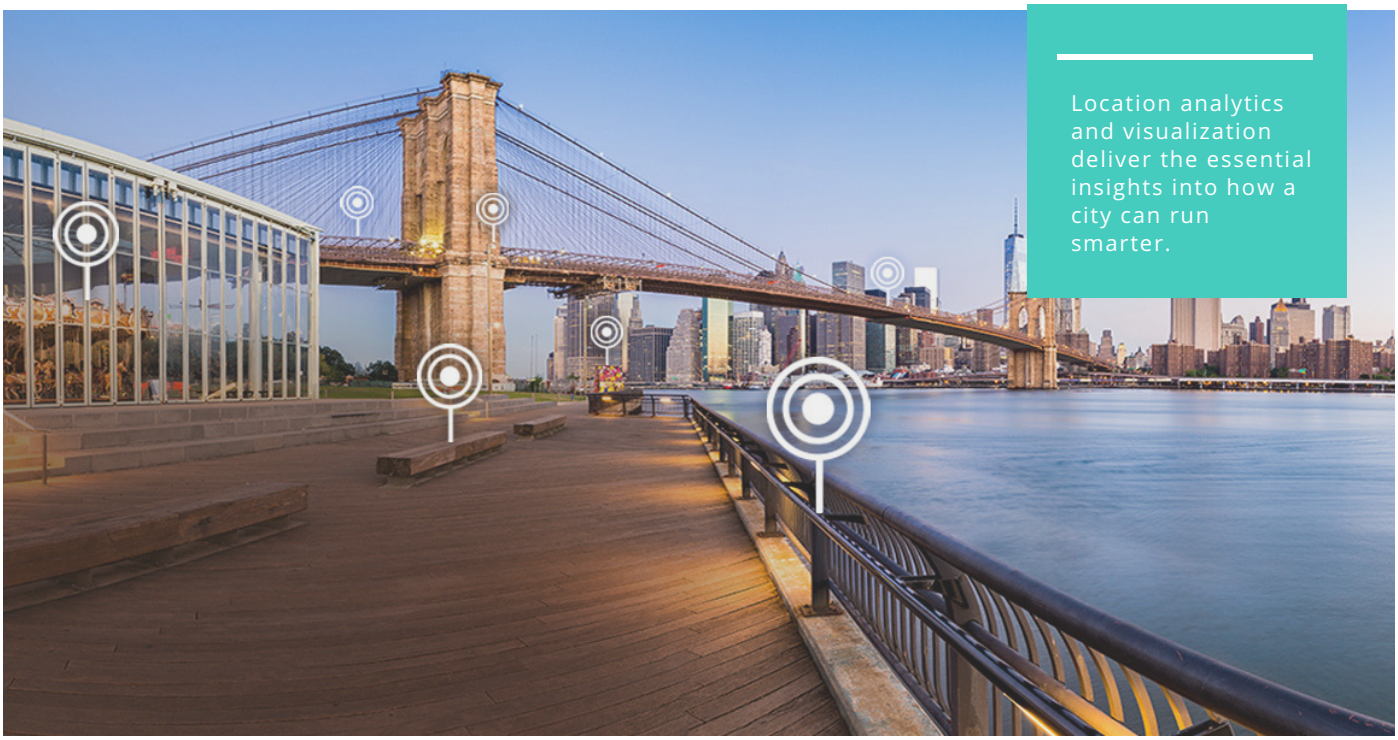
IF ONLY YOUR ROAD COULD TALK

If your road could talk, would it tell you that repairs completed today would save three lives and $500,000 tomorrow?

by Joe Francica



Location analytics and visualization deliver the essential insights into how a city can run smarter.

If your road could talk, would it tell you that repairs completed today would save three lives and $500,000 tomorrow? Would it estimate repairs over multiple time horizons as a function of net present value? Would it tell you that installing a traffic light at a busy intersection could improve urban traffic flow during rush-hour and substantially reduce your carbon footprint?

And, what if your car could talk to the road? Would it say that the road is experiencing shifting substrate with insufficient subsurface support? Would it tell you that conditions are changing from merely wet to icy? Would it provide a report on the degrading asphalt that would indicate that a pothole is sure to open shortly?

In a world of sensors, mobile devices and IoT technologies, every government authority – whether a city or state department of transportation – is on a path to becoming smarter and more connected. Intelligent infrastructure management attempts to integrate sensor technology and data with traditional asset management operations. This empowers public entities – and those serving public entities – with the insight to make informed decisions on repair, maintenance and investment for

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critical public infrastructure assets.

While it's interesting to discuss the possibilities of a smart city – interconnecting various city services into a single IT platform – the bottom line for mayors, city administrators or department managers is to fix roads, keep traffic moving and securing a safe, livable environment.

The key is to deploy an intelligent infrastructure management solution capable of not only fulfilling the needs of city administrators but one that leverages all possible means to connect with an existing network of sensors, traffic signals and pavement management systems. It starts with an asset register that records the location, physical condition, financial status and operational data for all infrastructure assets in a single, secure data store. It should include scheduled and reactive maintenance programs, incorporating work priorities, schedules, tasks, contract documentation, bill of quantities; contractor bid evaluation; and cost forecasting. Finally, it should be designed for the mobile workforce allowing inspectors, surveyors and work crews to spend more time in the field carrying out asset evaluation and repair activities.

However, the solution must also comply with new legislative guidelines to secure the necessary funding for repair, maintenance and future investment. These guidelines are particularly important for sustaining critical infrastructure if unforeseen events or impediments occur. The objective, therefore, is safeguarding the regional economic development and viability of the community.

A fundamental underlying element for an intelligent infrastructure management solution is geographic information because government is a fundamentally geographic business. Whether its infrastructure or tax information, location-based data is essential. As such, GIS lies at the heart of a solution, taking account of the geospatial characteristics of proximity, distance and time.

Tech-savvy mayors and State DOT managers are now running their local government using GIS. As sensors are used to monitor highway traffic, utility efficiency and the location of field service teams, the ability to get a citywide view of its infrastructure is vital to maintaining city and statewide services. As a result, location analytics and visualization deliver the essential insights into how a city can run smarter.

Figure 1. Strategic Asset Management