Rolta OneView™

Enterprise Intelligence Suite

Maximizing Transportation Systems and the Value of Scarce Funding

Maximizing Transportation Systems

Solutions DOTs Need Now to Reach MAP 21 Metrics and Funding

The very backbone of the U.S. economy depends upon a strong, resilient transportation infrastructure. But aging assets and burgeoning population centers will require increased levels of maintenance and expansion in order to accommodate a projected population growth of 20% combined with a projected 80% increase in gross domestic product over the next 25 years.[1] And that creates quite a quandary to transportation officials, who are tasked with managing a system that is neither reliable nor resilient.[2]

Obtaining federal funds to maintain and expand the transportation system has grown increasingly challenging. The Moving Ahead for Progress in the 21st Century (MAP-21) provides $40.9 billion for highway and bridge improvements this year, or $1 billion less that the amount Congress enacted in 2010 and 2011. The $10.7 billion budget for mass transit in 2014 is only very slightly larger than the $10.5 billion in FY 2012.[3] With everyone scrambling for a bigger piece of a smaller pie, the road to maximizing transportation systems has become a rocky one.

Working with what you've got and less than you need has become a way of life in DOTs across the land, giving transportation agencies ever greater reasons to improve operational efficiency. Before it just made good sense. Now it's become the law.

MAP-21 sets forth new requirements regarding asset and performance management, and links funding to performance. That can prove rough for DOTs.

1. Projections of the Population and Components of Change for the United States, 2015 to 2060. U.S. Census Bureau, 2012. Growth in Total Economy Potential Output and Its Components, OECD Economic Outlook, Vol. 2012
2. Critical Issues in Transportation 2013, Transportation Research Board of the National Academies
3. Transportation FAQs, American Road & Transportation Builders Association

The GAO has found that most transportation agencies take a process-oriented approach rather than using a performance-based methodology, and fail to effectively address key challenges, have unclear federal goals and roles, and lack links to performance.[4] What's a burdened and besieged transportation exec to do?

Many are moving forward with steps to increase operational efficiencies while improving transparency and accountability by better capturing the data that supports business decisions and justifies projects and funding. And while funding may be stagnant, the wealth of data that can be used to gain an understanding of operations and predict outcomes based on various scenarios is growing by leaps and bounds. That data, however, is too often squirreled away in departmental silos, which serve their role for specific business functions, but hamper collaboration, streamlined business processes and comprehensive, enterprise-wide strategic management.

4. Key Issues and Management Challenges 2013, Department of Transportation

What's Needed Now: a Precise, Holistic View of Operations

Consequently, DOTs today often operate without a data-based overall strategic direction for managing operations and moving toward operational excellence. In fact, most transportation agencies are in a situation where:

- Decisions on data tools and processes are too often made at the functional level without concern for the influence of data important at the overall agency level.
- Because many sources of data within transportation agencies are not easily accessible, it is difficult for users to locate to make timely, fully-informed decisions.
- Functional databases typically lack state-of-the-art analysis, query and predictive capabilities, and older legacy systems fail to meet even current business needs.

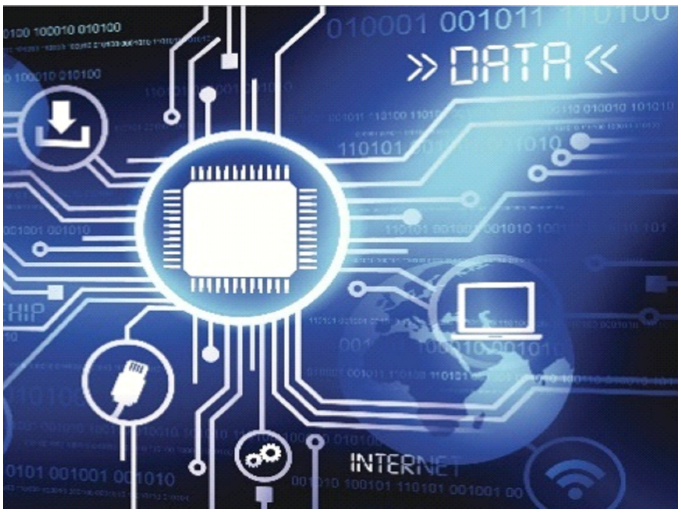
Few government agencies are in a position to jettison hardware and software that made sense a few years back, but now limit management's ability to meet new federal regulations. Transportation organizations have made huge investments in reporting platforms, and as most businesses have done, chose solutions able to easily integrate with financial and operational systems already in place. What's needed now, however, is a data solution able to deliver a precise yet holistic view of an operation's overall effectiveness and efficiency, along with the tactical data managers need to achieve improvements. Information compiled from disparate systems across the enterprise is needed to uncover critical performance, asset and strategy situations that can lead to sub-optimal resource allocation and system performance. Transportation executives must have access to information that will allow them to quickly understand what is working, what isn't, what soon may not, and to evaluate various 'what if' scenarios.

Stronger data management practices within transportation agencies is needed to increase transparency and accountability and improve business decisions.

Data-driven DOTs Fail without Strong Data Governance

Data in operational systems is a valuable agency asset. In order to protect it and utilize it to reveal the kinds of unique insights that can move the organization forward in meeting various MAP-21 and other strategic goals, DOTs need to cleanse, validate and preserve their data.

Data management practitioners and business owners within the agency must begin an assessment of current practices and the underlying assumptions on which their data governance program is based. Those assumptions may no longer be valid, as stakeholders and regulations put ever increasing usage demands requiring greater data agility for real-time reporting.



A strong, comprehensive data governance program improves data access, quality and security.

Take Advantage of the Power of Business Intelligence and Location

But without confidence in the accuracy and availability of data on the part of decision makers, they often create personal, mini-systems to gain access to information they feel they need. These freestanding data sources and spreadsheets are an individual's interpretation of the data, and can eventually be used by others in the enterprise, ultimately becoming sources of information rather than the manipulation of data for which they were originally created. Worse, these sources are outside any data governance structure, are often not kept current by any automated processes, aren't available to everyone and are backed up only sporadically.

A comprehensive and effective data management strategy that defines how data is sourced and made available throughout the organization enables more efficient and effective responses to new regulatory and audit requests in the context of a controlled and efficiently managed initiative. An effective data governance program not only improves reporting, but can play a vital role in performance improvement as well as strategic planning.

Business Intelligence for Departments of Transportation

Strategic Business Intelligence (BI) technologies enable users throughout the organization to access, analyze and share data to manage the business, improve performance, uncover opportunities and operate efficiently. To succeed, BI programs must manage data in an accurate, timely and integrated manner. Integrated BI solutions enable DOTs to move from a culture stymied by data silos to one where critical data to support business needs across the enterprise is readily available to all who need access.

A single source of organizational data enhances the ability to analyze, report and measure agency performance. It enhances executives' ability to provide data that proves the achievement of the agency's mission, vision and goals.

Without a single, integrated repository of data, DOTs struggle to show how key performance metrics and investment strategies lead to the achievement of strategic objectives. An integrated BI program can further ensure long-term scalability, flexibility and agility to meet the changing needs of the transportation business.

Proceeding with a strong BI program has been a logical step for nearly all transportation organizations. However, not all are as successful as they should be due to the processes they implement. BI is a business concern, not necessarily an IT one. Rolta has seen time and again that unless BI initiatives are led by decision makers—not IT—and emphasis is given to ensuring business processes capture the right data and store it in dimensionally correct and optimized data models that allow for currency and contextualization, BI efforts fail to meet stakeholder expectations.

What Every DOT Must Have: Location Analytics

In addition to implementing a BI program that fully meets the needs of decision makers in all levels of the organization, data points identifying location need to be incorporated into a transportation management system's capabilities. Location visualization further enhances operational levels of understanding obtained by BI analytics by not only showing what is causing problems, but also where the trouble lies.

GIS integrated with BI is a critical business tool for transportation agencies. These powerful applications enable organizations to look at data and information in new ways that allow them to better manage transportation infrastructures. When considering the adoption of new solutions that can combine the capabilities of BI and GIS, table stakes must include ease of use, enterprise-wide integration and a web-based technology for easy access to ensure widespread use and shared data.

Make Decisions from a Data-Driven Point of View

Most traditional BI vendors have incorporated maps in their product suites, which typically contain political boundaries of counties or states / provinces as well as locations of cities that BI developers can link tabular data to. The result is pretty maps that display comparative data—thematic maps in GIS Industry parlance.

More advanced BI platforms allow developers to designate one or two columns in the traditional database table as Latitude / Longitude coordinates that can then be overlaid on a web-based map service, such as Google Maps. However, even this is not adequate for DOTs with large spatial datasets holding a lot of operational, strategic and tactical information tied to them.

A BI/GIS solution able to pull disparate data from across the enterprise results in significant changes in the way transportation agencies conduct business, with an uptick following implementation of an increase in making decisions from a data-driven point of view. The Minnesota Department of Transportation determined that a strategically driven BI/GIS solution would provide answers to questions such as:[1]

1. Where is aging infrastructure failing to meet targets?
2. Where are wetlands being removed and where are they being replaced?
3. What are regional demographics by area?
4. Where is congestion occurring? What are alternative routes?
5. Where do safety improvements and pedestrian considerations need to be made?
6. What areas are underserved by transit?

Transportation Asset Management

With more people in more cars, buses and trains, an aging infrastructure and insufficient funds to support transportation networks—much less enhance or expand them—monitoring assets is a critical function. Here, too, efficiency is key, with the goal being the ability to minimize the life-cycle costs for managing and maintaining roads, bridges, tunnels, rails and roadside features. Successful asset management requires well-defined objectives paired with quality information.

While reaching defined strategic objectives is the end goal of an asset management plan, it is also the place where planning must begin. Next, you must identify specific, measurable performance and service levels, and ascertain what is working well, where isn't and what soon won't.

Pulling the immense amount of data needed for a robust asset management program can be difficult when so much of the information needed is housed is disparate systems throughout the DOT.

1. Data Business Plan, Minnesota Department of Transportation, 2007

Actionable, Accessible Data

The U.S. Department of Transportation Federal Highway Administration Transportation Asset Management Plans (TAMP) calls for "a focal point for information about the assets, their management strategies, long-term expenditure forecasts, and business management processes."[1] MAP-21 requires asset management programs to identify a structured sequence of maintenance, preservation, repair, rehabilitation and replacement actions that will achieve and sustain a desired state of good repair over the life cycle of the assets at minimum practicable cost.[2]

The gathering of asset information made accessible in easy-to-understand formats that provide actionable insights are needed by DOTs to not only ensure the effective use of resources, but also to deliver the indisputable data that justifies funding.

A BI/GIS solution with strong asset management capabilities is an essential tool for DOT executives, supporting decision making with analysis, scenario-based options development, and a reporting system to monitor progress toward strategic objectives.

Predictive Analytics to Help DOTs Prepare for What's Over the Horizon

Evolving information technology applications are coming online that can facilitate more informed trade-off analyses and permit more comprehensive scoping of the anticipated benefits, costs and impacts of decisions on transportation systems, neighborhoods and the environment. Predictive analytics can deliver to transportation planners and administrators real-time data highlighting possible actions to be taken and likely outcomes.

Predictive analytics for the transportation industry can improve operations, reduce costs and deliver enhanced levels

of service to the public. DOTs generate vast amounts of operational data and information, but it remains a challenge for most to unlock the insights hidden away in miles of data. Transportation agencies must be able to gather myriad types of information from disparate sources in order to identify actionable insights that move the organization toward operational excellence.

1. The U.S. Department of Transportation Federal Highway Administration Transportation Asset Management Plans
2. "Asset Management Requirements in Map-21," Butch Wlaschin P.E. Director, Office of Asset Management, Pavements and Construction, FHWA

The Road to Efficiency and Funding with Rolta OneView

The Next Steps

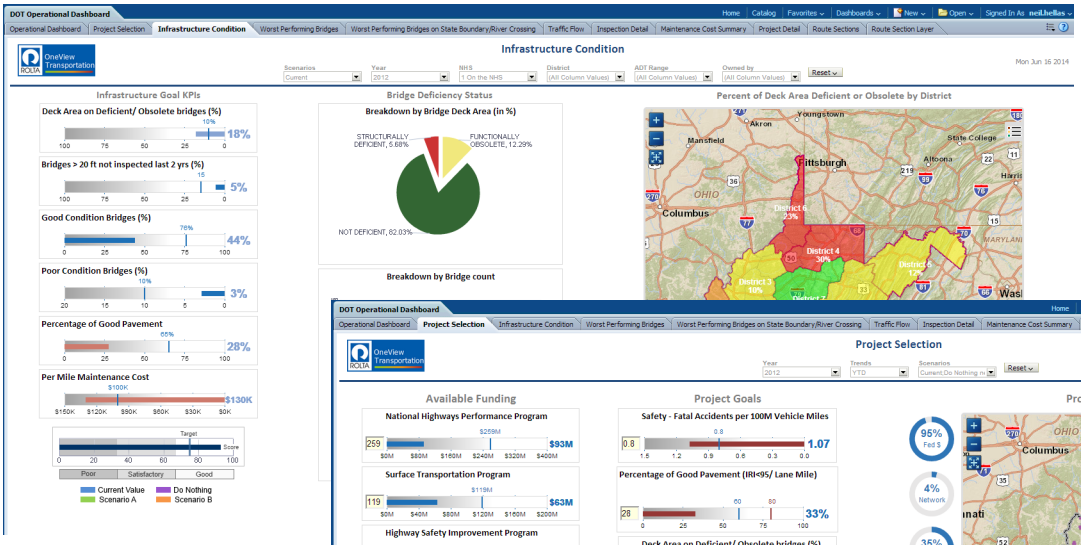
In moving forward, consider these steps:

- Begin by evaluating potential information technology solutions by determining which are most likely to ensure their support of data-driven decision making.
- Understand the importance of integrating BI and GI capabilities in your data-management solution and capitalize on previous investments in those technologies by incorporating solutions able to work with your legacy systems.
- Seek technology partners with transportation industry experience.

About Rolta OneView

Rolta OneView is a web-based Business Intelligence solution that enables personnel at all levels of the organization, from executives to managers and those in the fields, to make accurate and on-time decisions by visualizing their vast data in real time. Rolta OneView provides a platform to improve performance and overall operational effectiveness of the organization by aligning the work process of personnel with the goals of the Departments of Transportation and what is actually happening within the operation.

The necessity for DOTs to be more transparent and accountable requires the right data delivered at the right time to the right stakeholders. Data must be actionable, accessible and accurate. There is a clear need for better analytical tools and more accessible and integrated information systems.



Viewing infrastructure performance measures

Creating what-if funding scenarios for project selection

Rolta OneView—An Integrated, Ground-Up Approach for Transportation

Fast Facts about Rolta

- Established public company founded 26 years ago
- Global company with projects in more than 40 countries
- More than 3,500 employees and growing
- Annual revenue of $600 MM
- Forbes Global 200 Best Companies—4 times in 6 years

About Rolta

Rolta is a leading provider of Consulting, Managed Services and Technology for many vertical segments, including asset intensive industries like Transportation; Upstream, Midstream and Downstream Oil & Gas; Power Generation; Petrochemicals and Chemicals. Enterprise-level solutions are built around Rolta's intellectual property and domain expertise to offer deep insights and understanding of industry drivers and supporting business processes that help organizations achieve their business goals. Through our innovative approach, Rolta makes a lasting impact on your business.

Rolta is very excited to offer our Rolta OneView capabilities. If you have any questions or would like further information, please call us or email us at any time.

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