White Paper:

IterisPeMS™: Return on Investment

July 2012

ITERIS®

Innovation for better mobility

State-of-the-art performance measurement, analytics and reporting

IterisPeMS™ analytics enable performance measurement by connecting automated data streams with agency performance measures. This automation is the core return on investment of the product: it automates staff time that would have otherwise been spent on low-level data tasks. Analytics investments yield high returns on investments because they leverage existing data infrastructure, currently used for operations. Over time, returns on analytics investments increase in value and scope as staff members learn to automate more and more business processes using data.

How do analytics investments generate internal returns for agencies?

Analytics investments transform processes by automating the business processes associated with turning data into information. Time that staff once spent on low-level data acquisition, quality control, and processing can now be spent on higher-level business processes: analysis, decision-making, and communication. This makes agencies more efficient and saves money by automating tasks that previously took expensive and time-consuming outside consulting efforts.

How do analytics investments generate returns for agency customers?

As agencies begin to understand the impacts of their investments through analytics, they can improve their overall agency performance and save their customers time and money. Because understanding system performance is the key requirement to improving system performance, these returns to agency customers are substantial.

Why do analytics investments yield such high returns?

Analytics software and services leverage existing investments in operations data systems. Analytics approaches often entail a modest investment in software, a minimal investment in staff, and no additional investments in hardware. Thus, the investment is relatively modest. Because it fundamentally transforms the way that agencies do business, the payoff is large, leading to high returns.

Why do analytics returns increase dramatically over time?

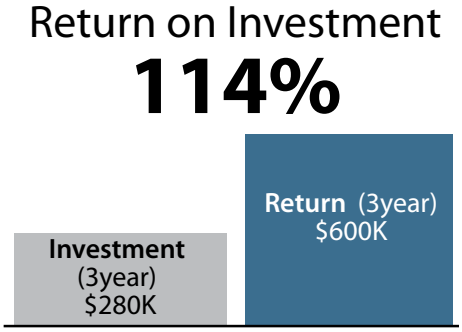
As agency staff incorporate analytics from IterisPeMS into their daily routines, they begin increasing opportunities to automate data business processes and gain deeper understanding of their system's performance. The cumulative impact of these agency resources, saved through automation, continuously adds to the overall return on an analytics investment. In addition, as agencies better understand their system performance, they find new ways to improve it and serve their customers.

At-a-Glance: Return on Investment (ROI) for IterisPeMS

Summary of Four Case Studies

	Type of IterisPeMS Usage	The Client	What was the Problem?	How IterisPeMS Solved the Problem	What was the Benefit?	Dollars Invested	What was the Return or Cost Savings?	Return on Investment (ROI)
1	**Annual State-Of-The-System Report:** Leverage Existing ITS	Metropolitan Transportation Commission (San Francisco)	Costly routine report produced by consultant	Pulled better & more data automatically	Lowered cost to produce report	$280,000 (over 3 years)	$600,000 (over 3 years) in monies not paid to consultants/ contractors	**114%** (Namely, a $320,000 "profit", after repaying the original $280,000 investment)
2	**Work Zone Lane Management:** Increase Automation	Caltrans	Costly manual preparation of approvable work zone lane closures	Fully automated the data crunching task	Quicker and cheaper task completion	$250,000 (over 3 years)	$400,000 (over 3 years)	**67%**
3	**Detector Fitness Program:** Automate the Business Process	Caltrans	Broken detectors repairs were not timely	Contractors paid based on verified repairs	Detector health leaped in six months	$500,000	$800,000	**60%**
4	**Fixing An Operational Issue:** Improving a System's Performance	Attiki Odos Motorway (Greek tollroad)	A bottleneck's financial impact to motorists and agency	More rapidly detected and diagnosed the problem	Resolved bottleneck, and did so 6 months sooner	$350,000	$400,000 of drivers' time-value savings	**14%**

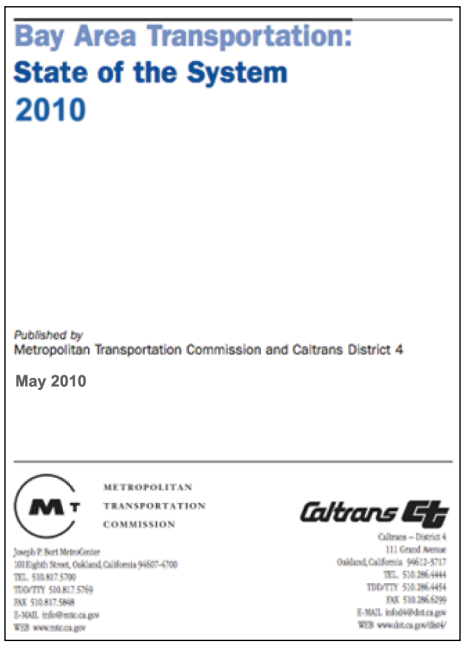
ROI Case Study 1: Leveraging Existing Investments



Metropolitan Transportation Commission

State-of-the-System Report

The Metropolitan Transportation Commission (MTC) is the regional Metropolitan Planning Organization for the San Francisco Bay Area. It maintains a network of around 50 electronic toll tag reader stations throughout the Bay Area, used to calculate travel times for the 511 system. These stations cost approximately $100K each to install and additional dollars to maintain. In addition, Caltrans has installed a network of over 2,000 detector stations in MTC's region, at a cost of approximately $10K per station. All told, ITS the hardware sensor and communication infrastructure investments made by MTC and its agency partners sum up to nearly $50M of sunk capital costs, plus substantial additional yearly operations costs.


Bay Area Transportation:
State of the System
2010

Published by
Metropolitan Transportation Commission and Caltrans District 4

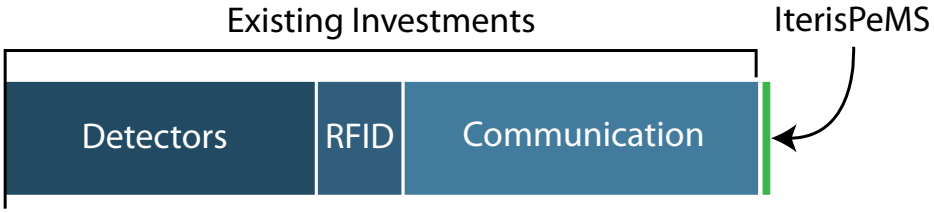
May 2010

METROPOLITAN TRANSPORTATION COMMISSION

Caltrans

IterisPeMS leveraged existing ITS investments to save MTC over $100K per year.

Traditionally, to prepare its annual State of the System report, MTC contracted with an outside consultant to conduct floating car runs with GPS-enable vehicles in order to identify congestion hot spots and communicate system performance both internally to staff and externally to the public. This approach was costing roughly $200K/year. In 2010, MTC started a partnership with Iteris, Inc. to leverage its existing ITS data infrastructure to generate a more cost-effective State of the System report, using IterisPeMS analytics.



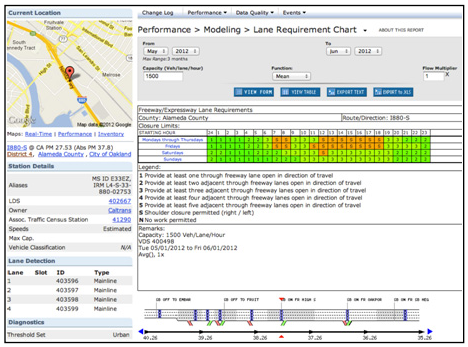
With a modest investment of approximately $100K in software and $60K in yearly services, MTC was able to leverage major sunk cost in ITS data infrastructure, used for operations, and create an additional use of this investment for analytics. This is an example of why analytics ROIs for IterisPeMS are so high: they leverage large investments that were previously made elsewhere within the agency and by agency partners.

- Maximize ITS device payback — not just real-time operations, but also analysis and planning issues
- Multipurpose uses demonstrate validity of ITS-related investments

ROI Case Study 2: Increasing Automation

Return on Investment

67%



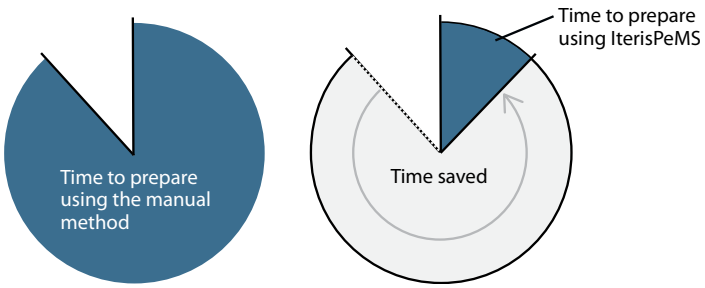
Caltrans streamlined its Traffic Management Planning process using IterisPeMS, saving staff time.

California Department of Transportation

Work Zone Lane Closure Management

The California Department of Transportation has been on the vanguard of analytics and performance measurement, due to its continuous investments in IterisPeMS. The state has invested tens of millions of dollars in data and millions in analytics. Because IterisPeMS is so integral to state operations, new groups within Caltrans have found ways to leverage the data from IterisPeMS to improve the efficiency of state operations.

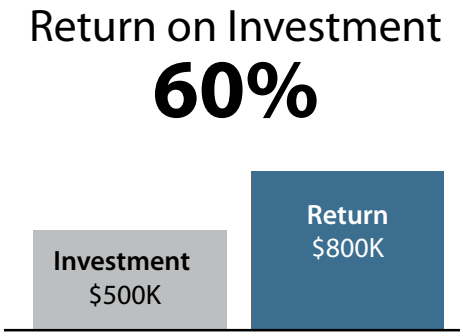
Traffic Management Plans (TMPs) are a required component of capital construction projects within the state. These plans include a lane closure assessment: this assessment determines how many lanes the contractor may close at any given time, for a particular day of the week. As input, these assessments include traffic volume data statewide. Under the traditional method, these plans are prepared using spreadsheets. To utilize the statewide traffic data inputs, these engineers need to locate census station volumes and manually transfer this data into their spreadsheets. This is a labor-intensive process that adds to the staff burden for the TMP process.



To improve this process, Caltrans staff took the initiative to develop a design for a lane closure assessment that was fully integrated with IterisPeMS. Iteris then implemented this design within the system. Subsequently, statewide staff members were trained on how to use the new lane closure assessment by Iteris staff. This new process can be accomplished in minutes, pulling data automatically from detectors and performing standard calculations instantly. The entire project cost about $250K and the individual savings are modest: approximately 2 hours are saved per TMP. However, once these savings are tallied for the entire state, the real savings come into view: Caltrans saves approximately 1,500 hours per year through this program.

• Enables staff to “imagineer” better/smarter processes
• Improves value of staff hours by eliminating data munging
• Makes for a smarter and more empowered workforce

ROI Case Study 3: Automating Data Business Processes



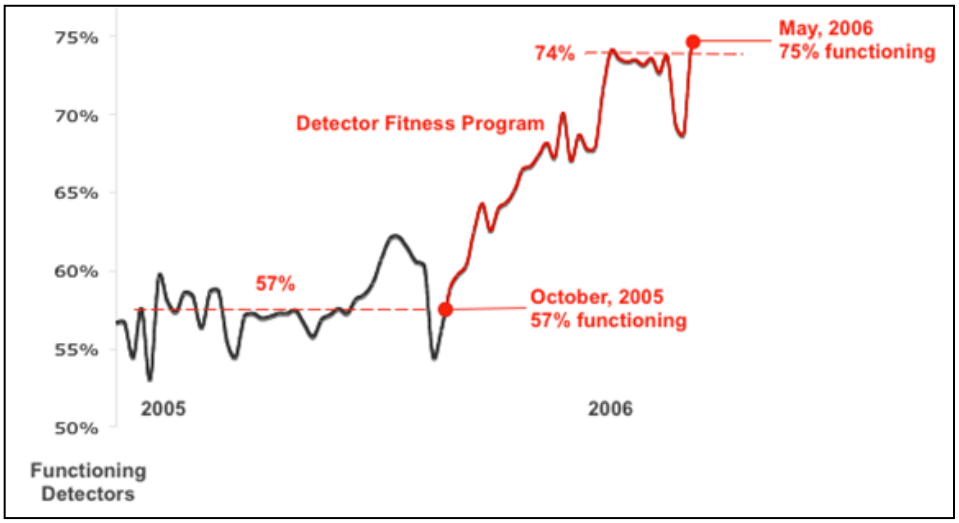
California Department of Transportation

Detector Fitness Program

The California Department of Transportation has made one of the largest investments in performance tracking in the world, with over 30,000 traffic sensors on the roadway. The health of this traffic detection equipment itself is the key building block to measure performance meaningfully. In 2005, detector health in California statewide was around 55%. In order to improve detector health, senior management at Caltrans headquarters decided to initiate a multi-million dollar Detector Fitness Program.

Initially, a field visit was the only ground truth available for traffic detectors. Caltrans was concerned that these field visits were an expensive and imperfect way of monitoring detector health. Because of this, in 2005, Caltrans began to track contractor performance using analytics from IterisPeMS. The impacts of this approach can be seen in the graphic below. The red section of the chart shows the time when Caltrans began to use IterisPeMS.

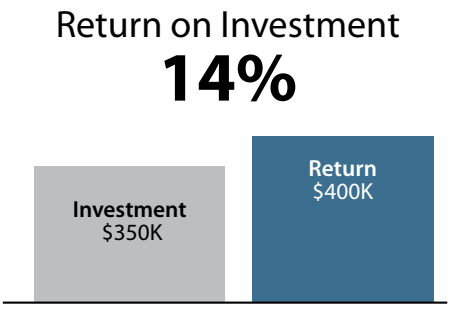
Caltrans used IterisPeMS to improve detector health by 33%.



"In only six months elapsed time, detector health improved from 57% to 72% statewide, strategically targeted for maintenance by analyzing individual sensors' health. Over 3,000 detectors were either fixed or correctly configured. IterisPeMS helped Caltrans ensure that the dollars it was spending on maintenance were actually improving system performance.

• Verified that first $10M expenditure was ineffective
• Provided a "pay for results" transparency—highly effective second $10M expenditure
• Was the mechanism that produced the different outcome

ROI Case Study 4: Improving System Performance

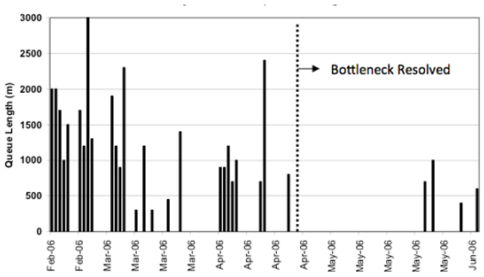


Attiki Odos Motorway

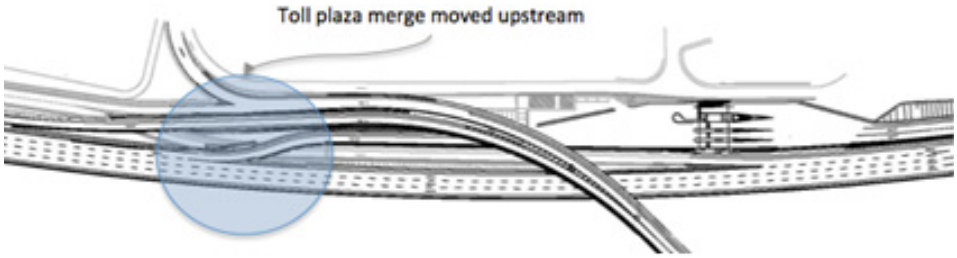
Fixing an Operational Issue

Built for the 2004 Olympic Games, Attiki Odos Motorway (AOM) is a privately operated toll road outside of Athens, Greece. The private operators of AOM have invested heavily in IterisPeMS, utilizing it for both reporting to the public and internal operations. This 10-mile spur of the ring road around Athens runs through mountainous terrain and was built using a public-private-partnership model. Fares range from about $1.50 to $3.00.

AOM used IterisPeMS to detect, diagnose, and fix an operational issue on its network. In 2005, the AOM operators used analytics to detect a new and growing bottleneck on a specific merge point, near a toll plaza ingress. They also used analytics to determine what was causing the bottleneck: a late merge that reduced effective capacity. Within 16 months, they had invested nearly $1M of their own private capital to fix this operational issue and restored the high quality service that their customers had come to expect. They then used analytics to measure the impact of their fix. The results were positive: a bottleneck that typically lasted 2 hours and occurred 90% of the time, was reduced to a bottleneck that typically lasted less than one hour and occurred 10% of the time.



AOM used IterisPeMS to save its toll customers thousands of hours of delay every day.



Based on data from the system, this effort saved 5,000 Greek motorists on the roadway 4,000 hours of delay every week, from a problem that would have otherwise gone unnoticed and unfixed for a longer time period (estimated at 6 months). From the perspective of its customers, this one intervention in system operational performance saved them the entire cost of the IterisPeMS investment. This demonstrates not only the efficacy of analytics tools, but also the speed at which they enable agencies to address issues for their customers.

- Enabled rapid detection and quantification of an operational problem
- Measured the total delay savings achieved with the mitigation project
- Rapid response prevented costly customer defections