

# Advanced Traffic & Demand Management

A Brief

Skyline Products Inc. 2903 Delta Dr. Colorado Springs, CO 80910 February 2015



#### WHAT IS ADVANCED TRAFFIC & DEMAND MANAGEMENT?

According to the <u>Department of Transportation</u>, Advanced Traffic and Demand Management (ATDM) is "market-ready technologies and innovative operational approaches for managing traffic congestion within the existing infrastructure." In less terms, it's a group of systems working together to make the general experience of being a driver easier and more hassle free. The ATDM concept looks at the Transportation industry as a whole, and looks into what can be changed in order to create a smoother flow of traffic.

As the graphic at right shows, there's an organized cycle to how the system works, along with a critical focus on taking stock of how processes are currently working in order to find ways to implement actions or processes which can improve the current system.

ATDM concepts use a variety of modern day technologies including Dynamic Message Signs (DMS), cameras, Bluetooth sensors, weight sensors,



Source: US DOT

smart phones, and Wi-Fi to gather data to feed into the traffic management communication systems. These technologies monitor road conditions and traffic, parking garage capacity levels, and demand which contributes to improved traffic flow.

So how does all this work? Cameras scattered a few miles apart on a freeway send images in real-time to traffic management facilities providing a view into an accident as it happens, a slow down due to a car breaking down, and more. Then the traffic controller is able to efficiently use DMS to communicate messages to drivers to indicate lane closures are ahead, exits are closed, HOV lanes are open, etc. in an effort to avoid any further traffic issues. Traffic systems can also tap into the Bluetooth inside of cars and Wi-Fi on phones in order to get a clearer picture of how many cars are traveling in a specific direction at a given time. Weight sensors tied into DMS can alert truck drivers who are over the weight limit to move into the correct lane. Using both Wi-Fi and Bluetooth capabilities, drivers are able to use an application on their phone to locate a parking spot and pay for their parking time from within their car. In essence, ATDM is a cost effective way to improve traffic management on all levels, which keeps roads safer, and drivers happier.

#### PART 1: ADVANCED TRAFFIC MANAGEMENT

Advanced Traffic Management (ATM) is a key component of ATDM, because it focuses solely on traffic management and handling congestion on roadways. As the <u>Federal Highway</u> <u>Administration</u> says, "Focusing on trip reliability, it maximizes the effectiveness and efficiency of the facility. It increases throughput and safety through the use of integrated systems with new technology, including the automation of dynamic deployment to optimize performance quickly and without delay that occurs when operators must deploy operational strategies manually." This technology has the ability to influence motorist behavior (such as suggesting alternate routes), manage congestion, and increase motorist safety.

Transportation departments are able to use DMS, such as Skyline Products' Full Color Walkin DMS, Lane Use DMS, and SlimLine DMS to create a robust traffic communication system. With such technology, traffic controllers are able to track the motorists' movement on the road, track how heavy the flow of traffic is, use their software to predict how many lanes need opened, and how they can best handle any congestion issues or accidents.

Skyline Products provides a variety of DMS which can be used in a ATM structure, including Walk-in (amber or full color), Large Lift-face (amber or full color), SlimLine (amber or full color), Variable Speed Limit, and Lane Use, just to name a few. Each of these signs can be used individually or tied together with central control software to create a network of signs, all running together to provide a well-structured ATM system.

#### PART 2: ADVANCED DEMAND MANAGEMENT

Active Demand Management (ADM) deals primarily with dynamically organizing and managing demand on roadways. Traffic demand, such as getting to and from a destination and how many people are trying to do so, affects the need for tolling centers and carpool lanes to be monitored. Signage and technology are used to help divert traffic to less congested roads, dynamically price fares on heavily traveled roads, and even influence what mode of transportation people are choosing. With the future holding countless technology devices, we can now dynamically organize ridesharing with applications on smart phones to make it easier to tell travelers the capacity of any public transit at a given time. Never worry about your connection from one bus to another with Transfer Connection Protection, a strategy that ADM encompasses to keep all transit (bus, train, and rail) on the same schedule, with protection to avoid missed connections. As for influencing travel choices, ADM supports the ability to dynamically price HOV lanes, to create an incentive for ride sharing motorist to use those lanes.

ADM really has the longest reaching influence of the ATDM strategies, because it's all about monitoring demand, adjusting processes, and promoting the more strategic use of resources. If ADM would be implemented in a wider spectrum, we'd see a growth in the use of public transit, HOV lanes, and generally less cars on the road, which would be a positive influence on the congestion in cities, travel times, and pollution issues.

Skyline Products offers a variety of products to work in an ADM system including Walk-in DMS (amber and full color), Large Lift-face DMS (amber and full color), SlimLine DMS (amber and full color), Speed Limit DMS, and HOV Lane signage with LED pricing. All of these signs can be updated as needed to accommodate demand through central control software.

### PART 3: ADVANCED PARKING MANAGEMENT

Advanced Parking Management (APM) focuses on the demand for public parking. According to University of California's Urban Planning article, *Free Parking or Free Markets*, "30 percent of the cars in congested downtown traffic were cruising for parking." Motorist frequently experience that there are a limited number of parking spots, but *almost* always more people trying to park than spaces available. The issue arises for the motorist when it becomes more of a hassle to park by their destination, than park further away from the venue and walk to their event. The issue for the cities and townships is that revenue from parking is a good source of funding so a lack of people parking means revenue lost.

However, technology continues to advance so parking facilities are using it to help motorist locate available parking locations quicker and easier. Imagine pulling into a parking garage that has already provided signage to say that parking spaces are available and finding that the available parking spots have green indicator lights above the open parking spaces. APM has just simplified the motorist need to park.

With APM, parking facilities are able in implement various strategies with signage to help keep the parking process as simple as possible. There are various ways in which APM can work including, the organization of overflow parking, parking reservations, dynamic real time parking information, and dynamically priced parking based on demand and availability. Say there's an event in downtown Cleveland, and normally parking is \$2, but because of the

2 - 10 - 2015

influx of drivers in town for the Indians gave against the Knicks, they can use their system to automatically increase parking in all their facilities to \$8 to take advantage of the event. This parking process not only makes changing prices quick and easy, but also allows for the city to gain a chance for increased revenue.

Skyline Products has a range of DMS solutions, such as dynamically priced parking, dynamic way-finding, and dynamic parking capacity signs, which can be used in a variety of parking applications. Each sign can be connected together through central control software to allow multiple parking facilities to all update their prices at the same time. Skyline's Front Access SlimLine DMS can also be used to post messages for special events, and where to find parking.

## HOW ATDM IS AFFECTING THE TRANSPORTATION INDUSTRY

ATDM brings a lot of progress to the transportation industry. As technology evolves, it stands to reason that everything else should evolve alongside it. ATDM is an approach to actively evolve the process of traveling from one place to another. And Skyline Products is making it smoother, quicker, and faster with its ATM, ADM, and ADM signage offerings.

We're going from static signs, and road flares to having the ability to change a message simultaneously on six signs, each a quarter mile from the lane closure. We're able to predict how heavy the traffic will be on given days, and open and close lanes accordingly to provide a smoothly, less hectic flow of traffic. With the advancement of Full Color LED signs, we can post symbols instead of messages, and reach everyone no matter what language they speak. Transportation systems are going digital and going global, and it's making for a much more enjoyable ride.

#### SOURCES

http://ops.fhwa.dot.gov/atdm/index.htm http://www.its.dot.gov/active\_traffic.htm http://www.uctc.net/access/38/access38\_free\_parking\_markets.pdf