2014 Ground Transportation Technology Symposium: Big Data and Innovative Solutions for Safe, Efficient and Sustainable Mobility

Urban Mobility Management, Planning and Operations with Big Data Analytics
Presented by Vassilis Papayannoulis, Ph.D.
Travel Demand Management

• A general approach to influence people’s travel behavior.

1980’s

1990’s

2000’s
What is the Big Idea Behind Metropia?

Metropia is an incentive-based intelligent traffic management platform that engages commuters, businesses, employers and governmental agencies to work together to improve mobility, reliability and quality of life.
Metropia Ecosystem: Community-Based and Incentivizing Change
• A solution for a sustainable, safe and efficient transportation system
• Provides information for smarter decisions via a mobile app
• Uses real-time + historical data and travel prediction technology
• Incentivizes users, by earning points—more points earned for shifting departure out of peak period or taking an alternate route
• Deployed (beta-test) in Los Angeles, CA and Austin, TX
• Will be deployed (beta-test) in NYC (NYCDOT’s DriveSmart program)
Predictive Optimal Routing and Load Balancing

Reserve

Validate

Reserve Trip

Your Next Trip will be at:
5:30 PM

Arrival Time
6:10 PM

N Euclid Ave

You Have Arrived!
345 N Palm Rd
Metropia’s Gamification Features

- Earning Points can be exchanged for local merchant rewards or to plant trees
Metropia’s Gamification Features

• Users also get CO2 and Time Savings and Driving Scores
Consistent with the ATDM & ICM Frameworks

Source: ATDM Program Brief: An Introduction to Active Transportation and Demand Management, FHWA, June 2012

Source: FHWA Traffic Analysis Toolbox Volume VIII: Integrated Corridor Management Analysis, Modeling and Simulation Guide
Metropia Synergy & Big Data Analytics
Metropia Synergy Data Applications

- Active Transportation Demand Management
- Traveler Information
- Origin-Destination Surveys
- Corridor Travel Times & Speeds
- Travel Patterns Analysis
- Activity history and patterns
- Reliability Measures
- Driving Behavior
- Safety Analysis
- User Based Incentive Policies
- Transit Lead Generation
GPS Trajectories

- Visualization

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- Second-by-second GPS Trajectory Sample Data
• Activity History

• Activity Pattern
Safe Driver Pre-Qualification for Auto Insurance Partners
• Real time traffic condition

• Travel Time Reliability measures
Targeted Multi-Modal Campaign

• Through data analytics, identify auto drivers who have transit as a competitive/attractive mode.
• Effectively apply resources for promoting transit to targeted drivers.
Metropia Multi-Mode “Lead Gen” Example
(Portland Metro Network - PM Period)

Schedule Based Transit Network Database
with Detailed Departure/Arrival Times and
Stop Locations

Dynamic Vehicle Trajectories (Real Time or
Simulated) with Exact Temporal and Geo-
Spatial information to Match the Static
Transit Network
Potential Travel Shed for Mode Shift with Lead Gen (Simulated)

**Alternative Mode Feasible:**
- SOV trips with direct transit services between origin and destination
- 280,000 trips captured (15%)

**Alternative Mode Attractive:**
- SOV trips with direct transit services between origin and destination
- Wait time < 15 minutes
- Walk distance < 0.5 Miles
- 10,000 trips captured (0.5%)
For more information:

www.metropia.com

Thank you