



Connectivity, Data and Traffic Control

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Innovation for better mobility

Scene setting

A brief background on connectivity, data and traffic control

- where are we today
- where are we going
- why you should care

Indicators of likely demands.....



Study of 14 to 29 year olds:

Question posed : "I cannot imagine a life without"

..... my mobile phone: 97%

..... the internet: 84%

..... my car: 64%

..... my current partner: 43%



Source: BITKOM Study of Telecommunications and New Media

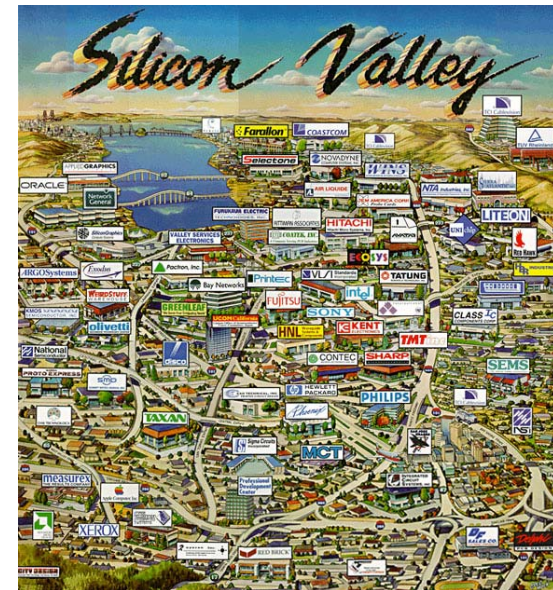
Trend indicator....

- A move away from the auto-centric view of personal transportation
- Greater willingness to consider and use other modes
 - Transit
 - Bike



Why should we be surprised?

- The success of **Transit Oriented Development** in changing land use and promoting transit use
 - In Long Beach.....decrease by almost a half in average number of parking spaces per living unit
- Regeneration of the **urban core**
 - Mixed use... live where I work
- **Business Clusters**
 - Silicon Valley..... Silicon Beach



5 **Results: Shorter trips modal shift**

Meeting the Demand by Ridesharing

- No secret: Transit is not idealTaxis are expensive.....
- Now we're connected (and won't give it up)
- Enter the world of Technology Enabled Ridesharing
 - Uber
 - Lyft
 - SideCar

Transportation Network Companies



... and Car Sharing



Enabled by mobile
devices and
connectivity

Affordable drive
through the city



Impacts

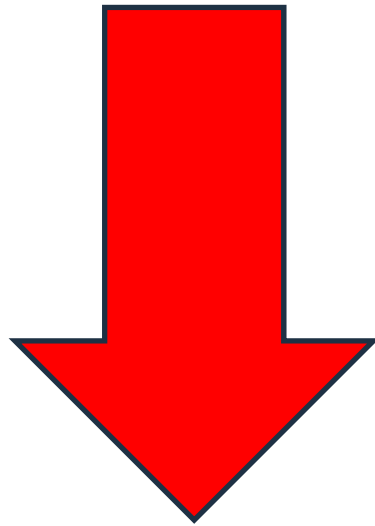
Zipcar & Other Car-Sharing Services Have Killed 500,000 Auto Sales: Study

On average, (*Alix Partners*) estimates that 32 vehicle sales are lost for every vehicle added to a car-sharing fleet.

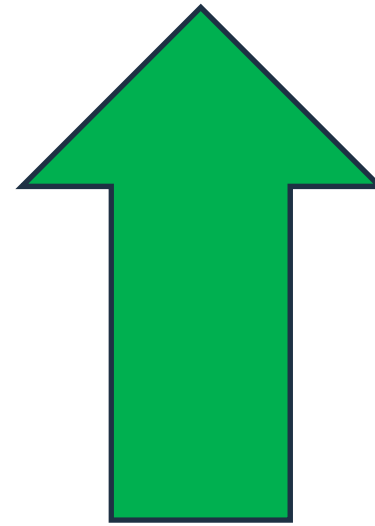


- Source: Car Connection , February 2014

Re-evaluation



- Car ownership
- Car sales



- Transit use
- Bike use
- Walking

We need to get away from STROADS

STROADS

The STROAD design -- a street/road hybrid -- is the **futon of transportation alternatives**. Where a futon is a piece of furniture that serves both as an uncomfortable couch and an uncomfortable bed, a STROAD moves cars at speeds too slow to get around efficiently but too fast to support productive private sector investment. The result is an expensive highway and a declining tax base.

Chuck Marohn, "recovering traffic engineer" and founder of the nonprofit Strong Towns



Complete Streetsthe anti-Stroad

Road systems that provide safe, convenient access for all users including motorists, bicyclists, transit operators and users, and pedestrians of all ages and abilities.

- **Help Keep Kids Safe**
- **Promote Good Health**
- **Make for a Good Ride**
- **Encourage Economic Revitalization**
- **Improve Safety for Everyone**
- **Create Livable Communities**



GREAT STREETS

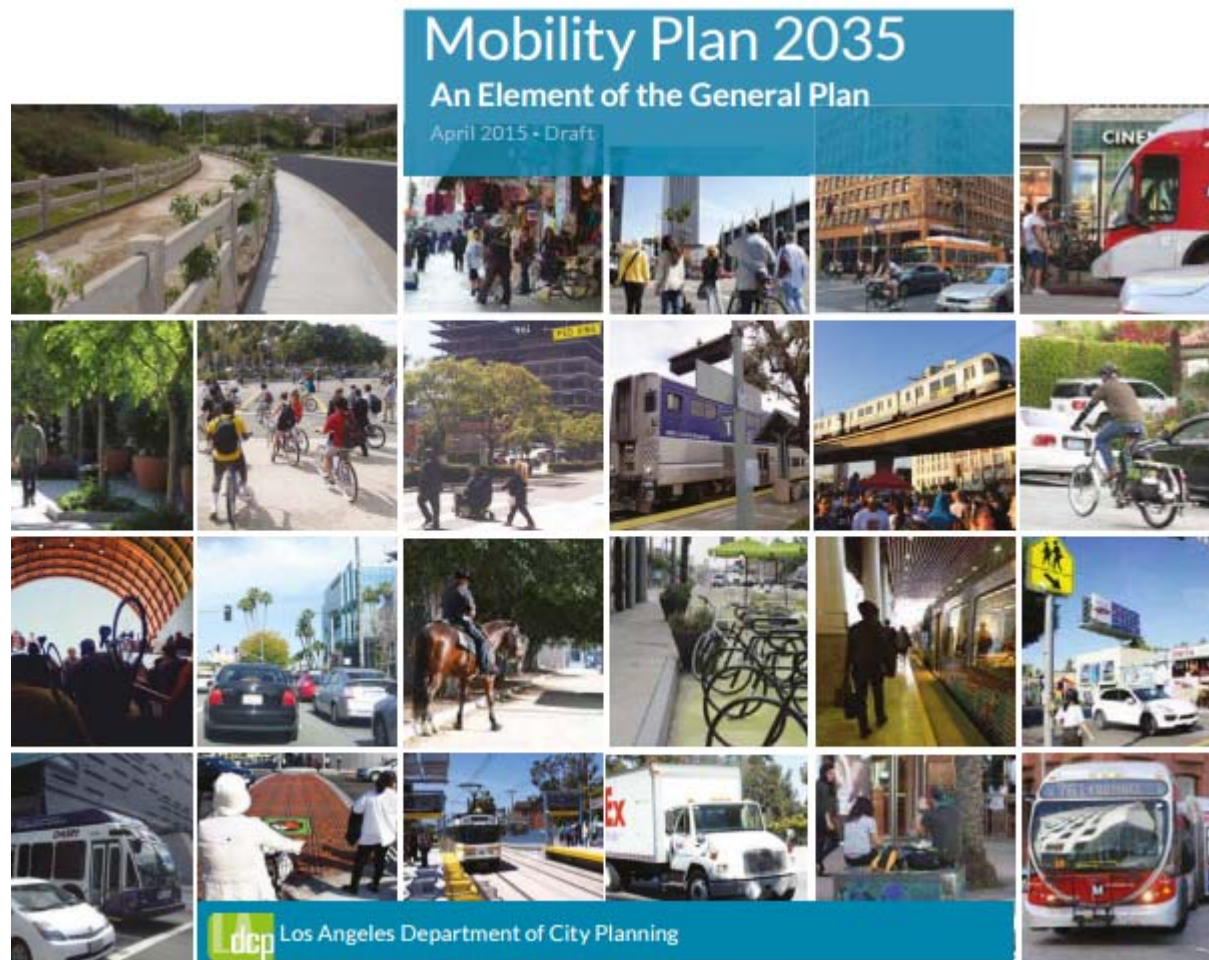
FOR LOS ANGELES

STRATEGIC PLAN

The logo for LADOT, with the letters "LADOT" in a bold, blue, sans-serif font.

City of Los Angeles
Department of Transportation

... and it is gaining momentum



Department of City Planning (DCP) staff emphasized that the city “cannot widen our way out of congestion” and that this multi-modal plan will provide choices, by making a “conscious shift toward complete streets.”

But it is generating concern.....



“Why Fix The City Opposes MP2035 – The “ImMobility” Plan”

“Fix The City Files Suit Over #MP2035”

“@LATStevlopez Covers the Rowena Road Diet Saying It Leaves Some “Hungry For Workable Solutions”

..... as it seems to take road space away from vehicles and so increases congestion SOMEWHERE ELSE.....

But wait....there's more



The Car As You Know It Is Dead

**GOODBYE, MOTORING.
HELLO, MOBILITY.**

First Step.... The Connected Vehicle



V2I – Vehicle to Infrastructure

V2V – Vehicle to Vehicle



New NHTSA Ruling : All light vehicles to have the Basic Safety message

NHTSA estimates that connected vehicle technology could potentially address 80 percent of all unimpaired crash scenarios

Next Step: Vehicular ad hoc Networks

- Vehicle-to-Pedestrian (V2P): messages are transmitted between vehicles and pedestrians who send and receive messages via their phones or other wireless devices.
- As a transportation professional :
 - How do I take advantage of these capabilities?

**Check out the CVRIA:
Connected Vehicle Reference
Implementation Architecture**

**Defines over 90
applications
using CV
technologies**

Final step: Autonomous Vehicles



Not only will they happen....



They are here now!



CV Impacts: Re-thinking the urban landscape



- Longer term, change in design standards:
 - Self parking vehicles
 - As throughput increases and accidents/crashes/incidents decrease (disappear?)
- Continued reduction of vehicle fleet
 - Cars won't sit idle in the office parking lot all day – they'll be more in use, for longer periods of the day, for multiple members of the family
 - Or for others, too **think ZipCar on steroids**

So, are we ready for this?

Decreasing miles traveled

VMT (MILLIONS)

Is this going to provide the opportunity for Complete Streets to flourish?

How can traffic control and management measures and methodologies adapt to this new street environment?



The Next Big Thing is here.....

- There's a lot of data out there
 - Data collected from mobile sources (GPS, smartphones, cellular phones)
 - Vehicle fleets
- Already provides speed, location and direction, travel times
..... for a fraction of the cost of infrastructure based detection

Think different

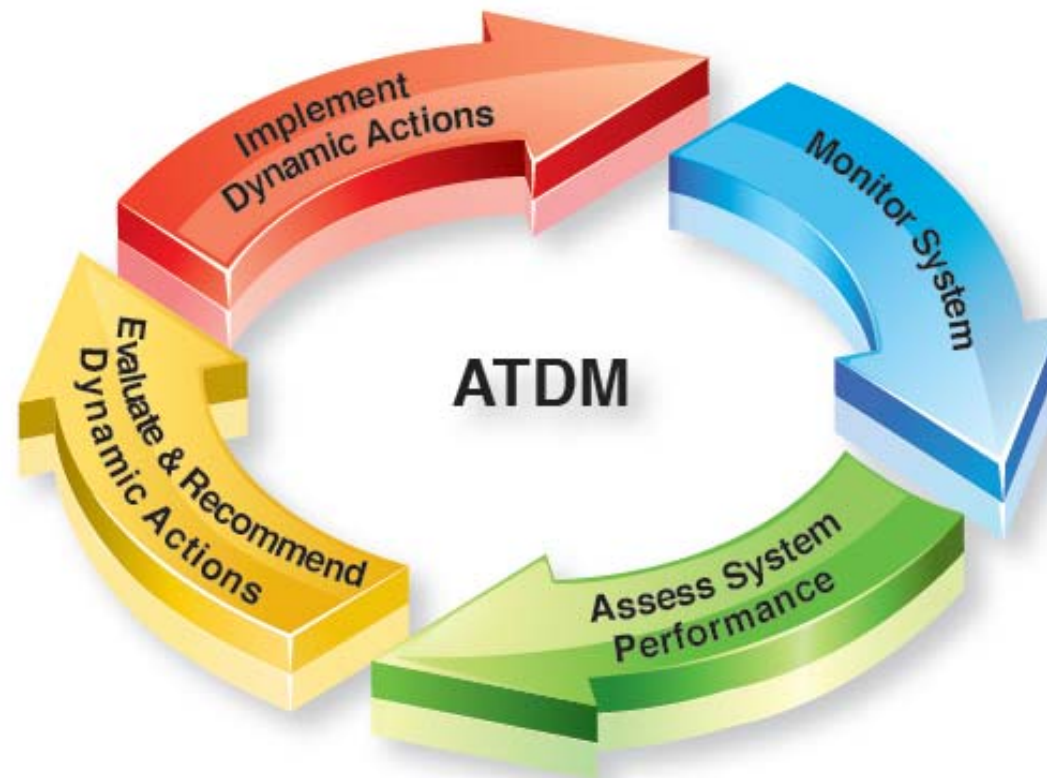
- Infrastructure-based detection is expensive, time consuming to install, operate and maintain.
- I can get 15 minute data for the whole of LA County for last year for \$10K..... tomorrow
- I can get real time data for \$12K
- I can identify hot spots for further analysis and future project definition
- I can see what impact a project/development had (even if I did not collect before data)
- I can create OD matrices

Other data points

- New sources of data for analysis Twitter feeds, Yelp messages
- Cisco : Only 1% of things that can be connected to the internet, are connected
- All those Connected Vehicles coming on-line
- More data, better data, cheaper data
- All without building more infrastructure



Active Transportation and Demand Management



“Hands-on” operations! More and better data – improved decision making?

Lane Management Strategies



As we build less, we need to operate better

... because this is not acceptable



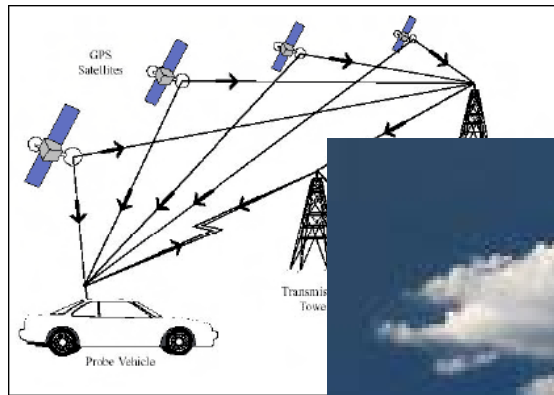
The Day We Lost Atlanta

How 2 lousy inches of snow paralyzed a metro area of 6 million.

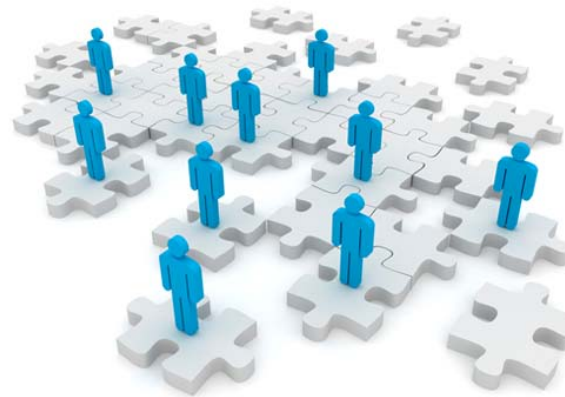
By REBECCA BURNS

January 29, 2014

The Age of Info and Telecomm



Probe Data



Cloud Computing

Crowd sourcing



So it's not about building infrastructure any more

Public vs Private Sector roles

- Financial pressures are causing public agencies to hand over more and more activities to the Private sector:
 - Trash collection
 - Parking management
 - Signal operations
 - TMC operations
- Performance-based contracting is reducing costs and improving services to the community
- The shift from building to operating means a re-evaluation of the public sector role in transportation

But innovative uses of new data is also not plain sailing



+



VS.



WAZE is being criticized for routing traffic through residential areas – using routes that are not meant for through traffic (remember STROADS??)

How can this data be used in Connected Corridors and Integrated Corridor Management to improve the efficient use of facilities without disadvantaging parts of the community?