Connectivity, Data and Traffic Control

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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

*Results: Shorter trips ......... modal shift*
Meeting the Demand by Ridesharing

- No secret: Transit is not ideal ....... Taxis 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
Innovation for better mobility

… and Car Sharing

Enabled by mobile devices and connectivity

Affordable drive through the city
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
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 Streets ... the 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
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.

“Innovation for better mobility”

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

“Fix The City Files Suit Over #MP2035”

“@LATStevelopez 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. ….
The Car As You Know It Is Dead

GOODBYE, MOTORING. HELLO, MOBILITY.
First Step… The Connected Vehicle

V2V – Vehicle to Vehicle

V2I – Vehicle to Infrastructure

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
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

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 online
- 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 Telecom

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

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?