TRAVEL AND LAND USE IMPACTS OF TRANSFORMATIONAL TECHNOLOGIES

ITE Western District Annual Meeting
Session 3C: Smart Mobility

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NCHRP 08-117: Impact of Transformational Technologies

- Why: Rapidly evolving technologies in a number of fields have the potential to significantly transform how people and institutions use land and transportation systems to support economic and social activity.

- Goal: Provide help to local, state and federal transportation decision-makers to assess the likely impact of transformational technologies on future activity centers, land uses and travel demand.
Overall Study Approach

- Major steps:
  - 1) Define transformational technologies
  - 2) Establish technical foundation and inventory of existing conditions
  - 3) Identify short/long-term issues, metrics, and partnerships/information needed
  - 4) Develop recommendations and best practices
  - 5) Document in a guidebook (currently in publication process)
What are Transformational Technologies?

- Evolving new applications of science, engineering and societal organization
- Transform how people and institutions use land and transportation systems
- Collectively influence how people use public right-of-way, curb space and transportation facilities
What are Transformational Technologies?

- (1) Innovative methods of moving people and freight in vehicles
  - Alternative power sources
  - Vehicle communications, self-drive technologies
- (2) Innovative infrastructure (both public right-of-way and supporting land uses) that the vehicles utilize
  - “Smart” infrastructure
  - Active management
- (3) Innovative sharing of information (IoT) to account for the travelers, shippers and public agencies involved in people and freight movement
  - Applications that replace the need to travel
  - Applications that better utilize resources or manage systems
The World of Transportation
Our Focus
Focus Technologies
New Technologies, New Applications
(1) Personal Mobility Apps

- e-Commerce, 3-D Printing, Internet of Things (IoT)
(1 cont.) Personal Mobility Apps

- Mobility as a Service (MaaS)
  - Ride-hailing
  - Vehicle sharing
  - Vehicle rentals (daily or by the trip)
  - Next bus

- Route Guidance Apps
(2) Land Use Applications

- Apps that help residents and landlords fill up underutilized space (bedroom, parking spot, apartment, house, etc.)

- Restaurant at night, shared-workspace by day.
(3) Government Services Apps

- Smart City applications improving the delivery of general government services
- Applications improving the delivery of transportation services
- Applications improving the delivery of parking services
(4) Logistics Applications

- Applications Improving Line Haul
  - Truck Platooning
  - Self-Driving Trucks

- Applications Improving Last Mile Delivery
  - Unmanned Aerial Vehicles (UAVs)
Inter-Regional Land Use Impacts

**Metro Area**
- Lower travel costs...
  - Increase land values on the fringe
  - Increase overall attractiveness of region

**Manufacturers**
- Lower Labor Cost Metro
  - Lower travel costs...
  - Increase competition from lower labor cost areas

**Jobs**
- Rural Areas
  - Higher Travel Cost
  - Lower travel costs...
  - Increase disparity with rural areas
Key Findings

- Things that improve mobility are generally considered to be a positive, but may have a negative effect on the transportation network and surrounding land uses.
- Strong relationship between demand, cost and travel times.
- Three primary categories of Transformational Technologies that directly affect our industry: vehicle, intelligent infrastructure, information sharing.
- Need for agencies to (a) stay flexible, (b) keep informed, and (c) be nimble.
- Potential impacts to codes/ordinances, CIPs, short- and long-range land use and transportation planning, design, evaluations. Must take new technologies into account.
How Do We Plan for These Unknowns?

- SELF-ASSESS
- GET DATA
- GET SMART
- BE NIMBLE
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