Multi-Modal Traveling: beyond cars

Luis-Daniel Ibáñez
University of Southampton

W3C workshop on Data Models for Transportation
12th September 2019
Summary

- Why we need multi-modality
- What are the opportunities for public and private sector
- What we need to realise them and the challenges
- What should be our role?
Problem 1: Survival
Road transport — Share of transport greenhouse gas emissions

- Other Road Transportation
- Motorcycles
- Light duty trucks
- Heavy duty trucks and buses
- Cars

Source: European Environment Agency (EEA)
2017 U.S. Transportation Sector GHG Emissions by Source

- Light-Duty Vehicles - 59%
- Medium- and Heavy-Duty Trucks - 23%
- Aircraft - 9%
- Other - 4%
- Rail - 2%
- Ships and Boats - 3%

Source: US environmental protection agency
Problem 2: Traffic
2 to 4 days lost, $1.5 to 3k cost ...per driver!
Policies are coming
Europe's answer to the emission reduction challenge in the transport sector is an irreversible shift to low-emission mobility

European strategy for low-emission mobility

Shift means changing to more energy efficient modes or routes... or shifting passengers from private vehicles to public transport and non-motorized modes.

Asian Development Bank

Restructuring the regional transport system in line with urban development, supporting the introduction of various transport services that match the needs of each region.

Japan's National Land Formation Plan
PARIS TO BAN CARS IN CITY CENTRE
ONE SUNDAY A MONTH

Only those travelling on foot, rollerblades, bikes or scooters will be allowed access.

Oslo car-free plan builds on micro-mobility trend

Norway’s capital steers away from reliance on cars as political agenda is aided by technological innovation to realise social goals.

New York banning cars from Central Park starting this summer

Chengdu "Great City"

Copenhagen low-emission zone
Solutions

Low-emission vehicles

Multi-modal traveling
Multi-modal traveling

Goal: Enable and encourage multi-modal transport to balance

1. Co2 emissions
2. Traffic
3. Time to arrival
4. Costs
Trip as fundamental unit

Some(thing/one) goes or needs to go from A to B

Several providers may cover all, or combinations possible
Service examples (Opportunities)

For Public sector:
- Accurate modal share data
- Data-driven policies and infrastructure decisions
- Better journey planners
- Citizen engagement

For Private sector:
- Identify possible alliances
- Uncover demand
- Customer engagement
- Show they do help with mobility
What we need? (Needs)

- Enable data sharing spaces
  - In the context of an urban area (Smart City)
  - Ad-hoc sharings (P2P agreements)
- Model different types of vehicles
- Include travelers (for their data, for their feedback, for their custom)
Challenges

- Vehicle heterogeneity
  - Vehicle sensor heterogeneity (availability and accuracy)
- Several existing efforts, how not to be another drop in the ocean?
  - ISO TC/204
  - FiWare / CCAM / C-ITS / C-Roads
  - Private Companies
- Trust and accountability (Is the data you provide accurate?)
- Privacy and data protection
- Data valuation
What should be our role?
Define this top classes and relationships?

Set this line?

ISO TC XXX
ISO TC XXX + 1
VISS
FiWare
Every car is an endpoint

Every city is an endpoint

Every train is an endpoint

Every bike is an endpoint

Web of vehicles?

W3C Standard
Scope questions

- Urban transportation? Or should we also support freight?
- What to include beyond vehicles? Payments? Infrastructure?
- What do defer/link that to other standards?