Big Data Opportunities in Next-Generation Mobility

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5 megatrends changing personal mobility

- Urbanization
- Traffic congestion
- Sharing economy
- Aging population
- Pollution and climate change
These megatrends make on-demand mobility popular
Five technology advances …

- Data
- Intelligent autonomous behavior
- Computing power and storage
- Broadband connectivity
- Batteries
... are leading to the development of Autonomous Connected Electrified Vehicles
ACE vehicles will first be broadly adopted by fleets because they …

① Improve the economics of ride-hailing ($0.35/mile vs $1.6/mile)
② Address the driver shortage logistics companies face today
③ Enable the fleet operator to offer a more consistent experience to the customer
④ Enable fleet operators that exploit big data to deliver vehicles at the right place, at the right price, in the right condition, and at the right time
ACE vehicles combined with on-demand mobility will lead to 3 major shifts
Consumer shift: from a Car Ownership-centric model to a hybrid model that combines Car Ownership with on-demand Car Access
Automotive industry shift: from designing and manufacturing vehicles to providing transportation solutions
Mobility Services shift: to capitalize on ACE vehicles. Transportation Network Companies will become Fleet Operating Companies.
Much like with air travel, consumers need more integrated terrestrial transportation solutions. Providing such solutions will result in a new value chain
The new value chain will consist of:

1. Vehicle designer
2. Vehicle manufacturer
3. ACE platform provider
4. Data services providers
5. Fleet Operating Company (the fleet operator)
6. Fleet Maintenance Company (the fleet maintainer)
7. Global Mobility System (a GDS for mobility)

Value to the Fleet Operating Company
Value to the consumer
The participants of this value chain generate and consume big data

① Vehicle designer
② Vehicle manufacturer
③ ACE platform provider
④ Data services provider
⑤ Fleet Operating Company
⑥ Fleet Maintenance Company
⑦ Global Mobility System

Big data sources
Big data comes from

1. The ACE vehicle’s sensors
2. The vehicle’s configuration data
3. The passengers, e.g., infotainment choices, passenger profile, rides booked, smartphone data, digital assistant queries, etc.
4. The vehicle’s operating history and performance
5. Other vehicles (V2V) while operating
6. The transportation infrastructure, e.g., bridges, roads, traffic lights, etc.
7. Data service providers, e.g., weather, traffic, mapping, infotainment, etc.
ACE vehicles are big data hubs
A new framework for organizing the big data and create a variety of intelligent applications across the new value chain
Three emerging value chain models

① **Vertical integration model**: OEM offers ACE vehicle and Mobility Services through its own Fleet Operating Company

- Examples: BMW + ReachNow, GM + Maven, Daimler + Movel, Volvo + Lynk, …
  + Full control of the transportation solution experience
  + Full control and ownership of the big data
  + Full control of the IP
    - High investment
    - OEMs lack data exploitation expertise
    - OEMs’ corporate culture inhibits fast implementation and roll-out
Three emerging value chain models (cont.)

② **Partnership Model 1**: OEM offers ACE vehicle and partners with Fleet Operating Company for Mobility Services (today the OEM partners with TNCs)

- Examples: FCA + Waymo, Volvo + Uber, Daimler + Uber, GM + Lyft

  + Balanced investment between OEM and Fleet Operating Company

  +/- Most of the transportation solution experience comes from the Fleet Operator

  +/- Co-ownership and control of the big data

  +/- Co-ownership of the IP

- OEMs lack data exploitation expertise

- OEMs’ corporate culture inhibits fast implementation and roll-out
Three emerging value chain models (cont.)

3 Partnership Model 2: CE Vehicle OEM partners with Autonomous platform provider and Fleet Operating Company (today a TNC)

- Examples: Mitsubishi + nuTonomy + Grab
  - Low OEM investment
  - OEM doesn’t control the transportation experience
  - OEM doesn’t own or control any of the important big data
  - OEM owns little new IP
  - Small innovation opportunity
Automotive and logistics incumbents must

1. Appreciate the shifts ACE vehicles and Mobility Services are causing
2. Enter the customer insights business in order to provide transportation solutions
3. Develop a data-sharing culture
4. Adopt a new innovation model that includes collaboration and value exchange with startups
Next-generation mobility startups must

Understand the value chain model they are working in and the value they provide. Big data provides big opportunities but just being data-centric is not sufficient.