New Mobility

TRB 2015
What’s new in shared mobility: the hardware and business models

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Exhibit 20
Timeline for Adoption

Phase 1 (now to 2016): 'Passive' autonomous driving
Phase 2 (2015 to 2019): Limited driver substitution
Phase 3 (2018 to 2022): Complete autonomous capability
Phase 4 (two decades): 100% autonomous penetration, utopian society

Source: Company data, Morgan Stanley Research
Consumers Desire More Automated Automobiles

Consumers Trust Driverless Cars

57% of consumers, globally, trust driverless cars—even more so in emerging markets.

- Brazil: 95%
- India: 86%
- China: 70%
- USA: 60%
- Russia: 57%
- Canada: 52%
- France: 45%
- UK: 45%
- Germany: 37%
- Japan: 28%

Source: Cisco Customer Experience Report for Automobile Industry, May 2013 survey of 1,511 consumers in 10 countries.
A laser sensor scans 360 degrees around the vehicle for objects.

Radar measures the speed of vehicles ahead.

An orientation sensor tracks the car’s motion and balance.

A processor reads the data and regulates vehicle behavior.

A wheel-hub sensor detects the number of rotations to help determine the car’s location.

Source: Google

Raoul Rañoa / @latimesgraphics
New Technology: City
Urban Scale Vehicles

SOCIAL MOBILITY

[Logos of WSJ, TODAY, CNN, and MNN]
Transit Assumptions

**FIGURE 3**
Estimated CO₂ Emissions per Passenger Mile for Average and Full Occupancy

Sources: See Appendix II for data sources and methodology.

Notes: The average number of passengers for private auto trips is 1.14 for work trips and 1.63 for general trips.
Ann Arbor Case Study

Personal travel costs can be dramatically reduced using shared, driverless fleets

- A shared, driverless vehicle fleet can provide the same mobility as personally owned vehicles at far less cost.
- Cost/trip-mile could be reduced by 80% compared to a personally owned vehicle driven 10,000 miles/yr.
- Reduced parking costs and the value of time not spent driving would further increase these benefits.
These vehicles are carrying...

69 people who could all...

be on this one bus →
Join a road train
A safe and energy-efficient way to travel

Drivers who want to join a road train state their destination and are guided by their on-board navigation system to the nearest road train. The car joins the rear of the queue and the system takes over control of the car.

The lead vehicle, for instance a bus, is driven by a professional driver. In this system, the lead vehicle takes over all the following vehicles via wireless radio communication.

The system is built into the cars and does not require any extended infrastructure along the existing road network.

As they approach their destination, drivers take over control of their own vehicles, leave the road train by pulling out to the side and then continue on their own to their destination.

The other vehicles in the queue close the gap and continue together on their journey to the locations where the road train segments once again into individual vehicles.
What is a bus?
Is Ride Sharing's Next Stop a Bus?

Gabe Klein, the former head of transportation in Chicago and D.C., talks about Bridj, his new bus ride-sharing venture and what's next for transit.

A new Boston ride sharing app called Bridj hopes to be a positive disruptive force for buses and low-cost commuting.
**Structure**

DCTC (any regulator) will mandate app usage for all DC taxicabs.

For the meter to work, driver must be logged into the app. If an app is logged out the meter will disengage.

CO-OP is open for fleets and individual drivers to join, yet not mandatory.

Fees will be charged to CO-OP for software hosting, maintenance and development and credit card processing.

CO-OP would have a Managing Director and an operating board

CO-OP would have a staff, and other normal operational expenses

CO-OP has its own legal structure (must work out how to share costs and distribute profits based on rev share or equity ownership)

CO-OP has no formal relationship with DCTC
Forward Collision Warning with Brake Support

1) Radar detects slower vehicle ahead
2) System provides audible and visual warnings
3) The vehicle automatically initiates braking to avoid or reduce the speed of a collision
Driverless Cars for All: More DANGEROUS Than Driving

-FORBES
Street of the Future

Much of Chicago’s adaptation work is about transforming paved spaces, which in the form of alleys and streets account for 25 percent of the city’s ground cover.

NEW TREE SPECIES
The city has replaced native Illinois species with Southern ones that are expected to thrive in higher temperatures.

WIDER SIDEWALKS
These allow more space for pedestrians and include planting areas for trees to provide shade and absorb rainwater.

PLANTING AREAS
Lower than the street surface, these will be filled with drought-resistant plants that sponge up excess water and help to filter pollutants like de-icing salts.

PARKING SPACES AND BIKE LANCES
Permeable pavers for these street additions let rainwater filter through. The light-reflecting street surface includes recycled tires to allow the asphalt to expand in summer’s heat without buckling and to contract in winter without cracking.

Sources: City of Chicago; Wight & Company
Autonomous Vehicles and the Parking Bubble

By Matthew Yglesias

A parking lot in downtown Los Angeles.
Fixing a Secret Cause of Urban Traffic

Delivery trucks are responsible for a big chunk of the congestion we experience. Here are some ideas for getting them off the road.

GREG NICHOLS | @gcnichs | Feb 11, 2013 | 26 Comments

Package trucks—those familiar parcel delivery vehicles that double-park on your block—have become an international target of commuter ire.
How the Self-Driving Car Could Spell the End of Parking Craters

by Tanya Snyder
Best Places: New York City developers are converting garages into spacious new condos

Transformations do away with grime and gears and take advantage of large spaces and prime locations

BY MATT CHABAN / NEW YORK DAILY NEWS / Friday, January 10, 2014, 2:00 AM
Flexibility & Modularity
Disruptions: How Driverless Cars Could Reshape Cities

By NICK BILTON  JULY 7, 2013 11:00 AM  235 Comments
Last Mile: Personal Transit?
Existing Bikeshare

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BUILT ENVIRONMENT TRANSFORMATION

Necessary?

Weekends: empty parking lot

Smaller cars = smaller lanes