Future of Automotive

Presenter: Gary Silberg

November 2017
I see. I think. I drive. (I learn).

How Deep Learning is revolutionizing the way we interact with our cars
The Ecosystem is evolving with new power players

Who are the key players?
- Intel Capital
- Andreessen Horowitz
- Kleiner Perkins

- NVIDIA
- Intel/Mobileye
- Google
- Qualcomm
- Microsoft
- Amazon/Alexa
- IBM/Watson

- National Labs
- MIT
- Stanford
- Carnegie Mellon
- Univ of Mich

How and when will investments be made?
- Bosch
- Visteon
- Delphi
- Magna
- Denso
- Continental

How will the balance of power shift amongst the players?
- DOE
- NHTSA, CARB, DOT, FHWA
- EU – CO2
- Japan
- China

- GM ventures
- BMW ventures
- Nissan
- Renault
- Hyundai

- Tesla
- Google
- Apple
- Uber
- Lyft

Potential Non-Traditional OEMs

Universities and Research Labs
- DOE
- NHTSA, CARB, DOT, FHWA
- EU – CO2
- Japan
- China

Potential Non-Traditional OEMs
- Tesla
- Google
- Apple
- Uber
- Lyft

Traditional Tier 1s
- Bosch
- Visteon
- Delphi
- Magna
- Denso
- Continental

Traditional OEMs
- Toyota
- Ford
- BMW
- GM
- Daimler
- Others

High Tech Entrants

- NVIDIA
- Intel/Mobileye
- Google
- Qualcomm
- Microsoft
- Amazon/Alexa
- IBM/Watson

Tech Start Ups

- VocalZoom
- Proterra
- nuTonomy
- Eyeris

Venture Capital

- Intel Capital
- Andreessen Horowitz
- Kleiner Perkins

Auto Venture Capital

- GM ventures
- BMW ventures
- Nissan
- Renault
- Hyundai

Governments & Regulators
- DOE
- NHTSA, CARB, DOT, FHWA
- EU – CO2
- Japan
- China

- National Labs
- MIT
- Stanford
- Carnegie Mellon
- Univ of Mich

- Bosch
- Visteon
- Delphi
- Magna
- Denso
- Continental

What are the competitive strategies?
Islands of Autonomy

Understanding Personal Mobility is Critical to Forecasting Change

U.S. personal miles traveled (PMT) per capita 2014–2050 (Kmiles)

Parents can be everywhere at the same time

82% of people asked in focus groups would want mobility options for kids

Note: (a) Discounted 25 percent from U.S. Bureau of Transportation Statistics (BTS) total Vehicle-miles traveled (VMT) for 1995, 2001, 2009, 2014 (assumed to be commercial miles), (b) multiplied by NHTS occupancy rates applied 2009 rate to 2014 numbers. Source: U.S. BTS data, NHTS data, U.S. Census data, KPMG Analysis

“I do not have to take keys away from dad”

79% of people asked in focus groups would want mobility options for seniors
Islands of Autonomy

Personal miles will soar due to the impacts of autonomy

U.S. Personal Miles Traveled (PMT) and Vehicle Miles Traveled (VMT)
1950 – 2040, trillion of miles traveled

Scenario
- PMT grows due to increased mobility at all ages
- PMT grows with the population
- AV AOR is 40% lower than manually driven cars
- AV AOR is 20% lower than manually driven cars
- AV AOR is the same as manually driven cars
- AV AOR is 20% higher than manually driven cars

Insights
1. AV AOR is expected to decrease due to miles travelled without passengers
2. Carpooling and ridesharing trends may put upward pressure on AOR
Islands of Autonomy
Where every mile matters and has revenue potential

Vehicle Miles Traveled by Ownership Type & Mode

Value of Mobility & Connected Services

© 2017 KPMG LLP, a Delaware limited liability partnership and the U.S. member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative (“KPMG International”), a Swiss entity. All rights reserved.
Sales in the US have likely peaked as a result

VMT grows more rapidly than PMT due to a drop in average occupancy per vehicle

Growth in the car parc declines as AV MaaS vehicles eliminate the need for a portion of personally owned vehicles

Non-autonomous vehicle sales fall, but are replaced by autonomous personal and MaaS vehicles

Source: KPMG Analysis
Note: Passenger vehicle VMT analysis excludes non-MaaS commercial POV
The future of the automotive industry is bright - but there will be clear winners and losers

**Summary**

**Stunning innovation**

**Complete reshaping of the automotive ecosystem**

**Great reason for optimism**

There has never been a more exciting time to be part of the automotive industry. The future is full of possibilities – and it’s up for grabs!
Deep learning enabled cars only