

# Rethinking Transportation 2020 – 2030

# Rob Bailey APSE



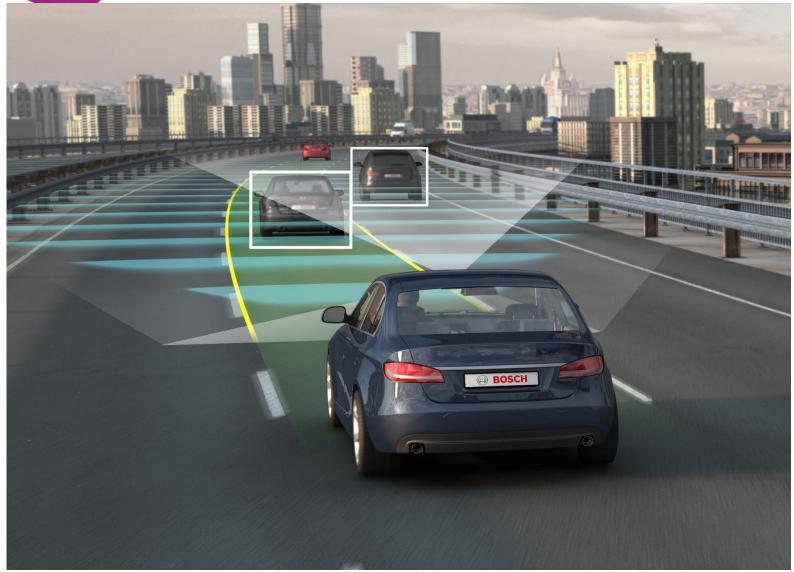












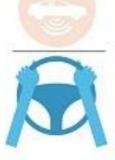






## **Five Levels of Vehicle Autonomy**



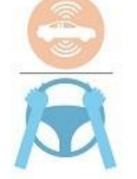


#### Level 0 No automation:

the driver is in complete control of the vehicle at all times. Level 1

#### Driver assistance:

the vehicle can assist the driver or take control of either the vehicle's speed, through cruise control, or its lane position, through lane guidance.



#### Level 2 Occasional self-driving:

the vehicle can take control of both the vehicle's speed and lane position in some situations, for example on limited-access freeways.

### Level 3

Limited self-driving: the vehicle is in full control in some situations, monitors the road and traffic, and will inform the driver when he or she must take control.



Level 4

under certain

the vehicle is in

full control for the

these conditions.

such as urban

ride-sharing.

conditions:

entire trip in

Full self-driving



### Level 5

#### Full self-driving under all conditions: the vehicle can

operate without a human driver or occupants.



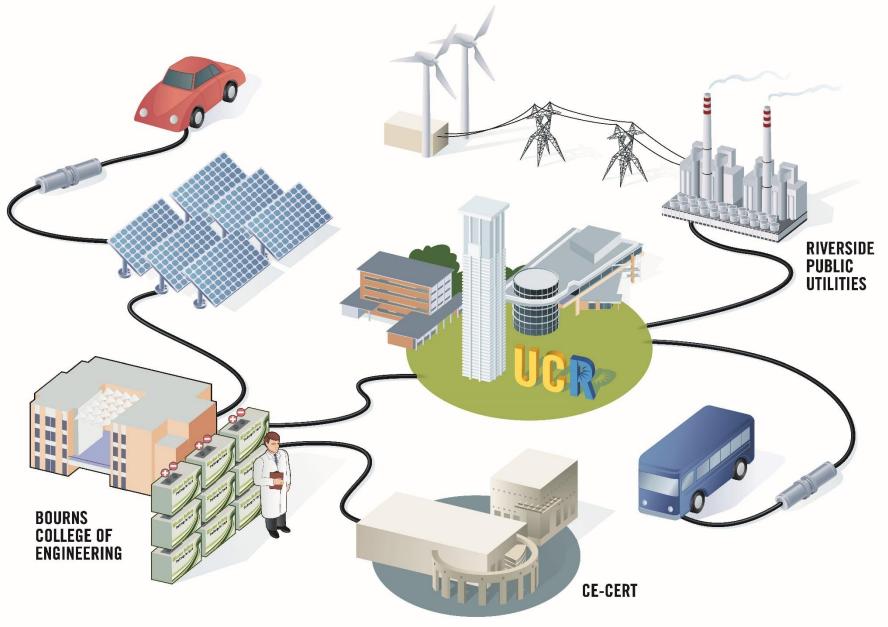




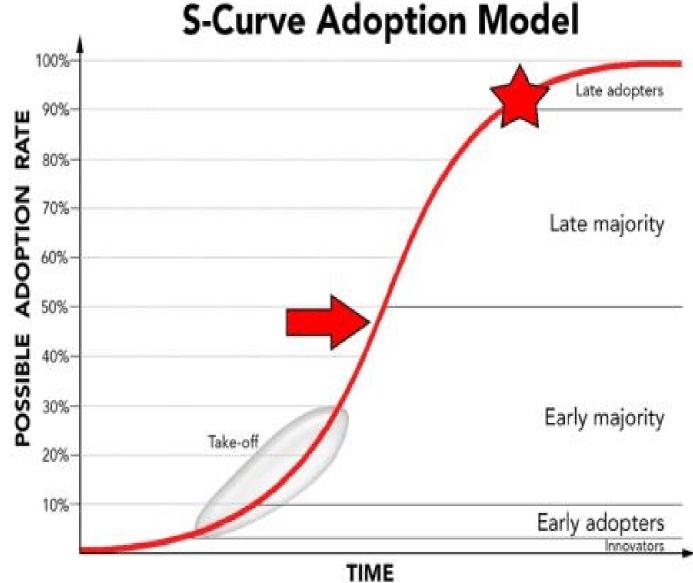














#### » Revenue distribution along the car value chain in billions of U.S. dollars



## » Potential impacts



### POSITIVE IMPACTS

Significant consumer savings and productivity gains Increased mobility and accessibility for those who cannot drive Fewer road accidents, fatalities and hospitalizations due to human error Lighter and less material-intensive vehicles Improved air quality and public health Decoupling of energy and geopolitics Potentially less military spending overseas Lower infrastructure costs Less traffic congestion Reclaiming parking spaces and infrastructure for productive uses Lower CO<sub>2</sub> emissions

### NEGATIVE IMPACTS

Formation of oligopolies/monopolies among TaaS providers Job losses Shrinking of government revenues from oil and parking



# **Oil Demand**

- 40% decline in Oil demand
- Huge decrease in \$ price
- Instability in petro nations Middle east



# Disruption

- Number of passenger miles will increase from 4 trillion miles in 2015 to 6 trillion in 2030.
- Cost of delivering these miles will drop from \$1,481 billion in 2015 to \$393 billion
- The size of the U.S. vehicle fleet will drop from 247 million in 2020 to 44 million in 2030.
- Annual manufacturing of new cars will drop by 70% during the same period.
- Annual manufacturing of new ICE mainstream cars sold to individuals will drop to zero. Car dealers will cease to exist.
- Huge opportunities will emerge in vehicle operating systems, computing platforms and TaaS fleet platforms.
- Global oil demand will drop from 100 million barrels per day in 2020 to around 70 million barrels per day in 2030.
- The price of oil will drop to around \$25 per barrel. Oil prices might collapse as soon as 2021.
- High-cost oil fields will be completely stranded. North Sea Shale oil





## **Contact details**

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