The Future of Mobility: TE³ 2017

- Our October 20 TE³ Conference included a panel of experts who discussed the future of mobility and the likely “slope of the curve.” How fast will change take place?
- There was a panel consensus that “this time is different,” i.e., that the technology has advanced which will allow a take-off of electrified and autonomous vehicle penetration over the next decade.

The discussion kickoff centered on the question around the likely penetration of electrified vehicles in commercial and retail fleets during the next decade or two. Is this time different? We have seen earlier forays by automakers into new technologies that did not materialize.

- Neil Schloss agreed that this time is different and that the transition to electrified and autonomous vehicle technology would likely unfold between now and 2030. He talked about mobility as a holistic concept — as a right, as companies strive to offer mobility services which service everyone.
- The economic and social changes likely will be faster than any other prior shifts in the mobility industry.

- Companies are experimenting right now, trying many different activities and in different across the globe, according to Schloss. Each market offers different challenges.
- Electrified vehicles (EVs) are the most likely platform for autonomous vehicles. Most of the panelists expect that the cost structure associated with EVs is improving, although the expense of a long-range battery and attractive recharging times remained a concern and could delay the move to EVs.
- Alex Keros talked about the core of these questions — urban, suburban, and rural environments pose challenges but Maven’s shared mobility services is a platform for solving these mobility challenges. City officials ask how we can get disadvantaged workers to their jobs in an efficient way, or senior citizens to physician’s appointments. All are thinking holistically about mobility. Maven provides car and ride sharing services in 14 markets as of 2017.
- Rod Lache, as a financial analyst, still struggles with the economics of an EV – the battery pack, motor, gear box, powertrain and other $15,000-$17,000 of cost for 200-300 miles of range. This compares to conventional gasoline engine (ICE) costs of $3,500-$5,000. Battery costs are projected to fall to $100 per KwH in the next several years. There will be convergence in these costs around 2030. Auto companies are pursuing these technologies due to regulatory drivers and autonomous vehicle technology. Some countries and even states in the U.S. are talking about banning ICEs.
- He also indicated that autonomous vehicles and shared mobility will have a profound impact on the industry. Private mobility costs from $.78 to over $3 per mile. UberX costs about $1.53 per mile (major metro areas) and further advances in shared mobility with autonomous features will make it cheaper for 60% of households as compared to owning their own vehicle. This type of shared mobility in metro areas could happen a lot sooner than what most people now believe.
Additional Takeaways from the Panel Discussion

- GM has 200 autonomous vehicles on the road now and will have 1,000 units in operation by end of 2018 — they can take safety drivers out of these vehicles in the next few quarters, and having them deployed 8,000-10,000 of these vehicles deployed by 2020 in major urban areas in a geo-fenced area (Level 4 autonomous content).
- GM gave a group of drivers GM Bolt EV cars to rent and access to D.C.’s fast charging network — and they were putting 130 miles on the car per day — indicating that they are putting a lot of miles on these cars.
- These drivers had no prior experience with EVs; it was important to make it easy for them to charge vehicles. One in ten of this experimental driver group going more than 240 miles per day on a charge.
- This is happening with free-willed drivers — if you plug in autonomy and that will push utilization rates higher.
- AV is one tool in the tool box — there will be transit options and other ways to deal with peak mobile times. Jobs will not disappear. Uber and Lyft with a real person driving — tech costs will be high for a while and need a human driver. Now with Uber and Lyft — car sharing was adopted fairly rapidly.
- Batteries are expensive. Lithium is not the problem, it is cobalt which is tighter. Costs remain high — Tesla’s gigafactory has helped. Costs are one-half of what they were in 2010 — and are now at $150 per KwH — and will come down to $50-$60 per KwH by 2035-2040 as compared to today.
- Tesla put in $5 billion — 500,000 packs — and there is a lot more capital required for EVs as compared to ICEs. Will there be financing for it? If an automaker wants to put AVs on the road in NYC, it is right now expensive — but capital markets will support it — can make a compelling case for this. There will be innovation in the way this will be financed. The issue is getting the economics to make sense. Capital will flow to the investment if the economics are right.
- Balieiro sees autonomous technology and EVs reaching high penetration in the fleet by 2030. EVs are easier and less costly to maintain and they will likely be the platform for AVs.
- This will take some time because the “brains of AV,” according to Schloss, requires a lot of power and technology needs to improve in order to accommodate this AV power demand. Moreover, the environment with AVs — reduction in congestion, improvements in safety
- Lache indicated that modeling of EVs and AVs need to be modeled on vehicle miles traveled, not so much on units. An increase in utilization may result, e.g., as AVs provide mobility to senior citizens and other underserved populations.
- In the AV world, there will be a need of capital for the fleet as compared to Uber today where the driver funds the vehicle.
- We need to ensure policymakers will work with the mobility industry to ensure that we can improve the services. Competition for capital and talent is going to have to come from other parts of the business — developing more EVs will mean that less capital will go to ICE technology development.
- Emerging markets have significant needs for mobility — in India, for example, they have the benefit to leapfrog since they don’t have the same household vehicle stock that is the case in developed markets.
- The shared mobility could take off more quickly in emerging markets. Ride hailing services could take off more quickly and then the adoption of AVs would happen there because the need is greater there due to congestion.
- Cities and states will be partners with companies more so today than in the past.
- Safety is critical—AVs will be safer than conventional vehicles. An accident with an AV will be a big deal — therefore, there will be government policy will be important — standards will have to be developed.