http://smartdrivingcar.com/PartDeux-072116
Thursday, July 21, 2016

Master Plan, Part Deux

E. Musk, July 20 "...**Integrate Energy Generation and Storage**
Create a smoothly integrated and beautiful solar-roof-with-battery product that just works, empowering the individual as their own utility, and then scale that throughout the world. One ordering experience, one installation, one service contact, one phone app....

Expand to Cover the Major Forms of Terrestrial Transport...
With the Model 3, a future compact SUV and a new kind of pickup truck, we plan to address most of the consumer market. A lower cost vehicle than the Model 3 is unlikely to be necessary, because of the third part of the plan described below.

What really matters to accelerate a sustainable future is being able to scale up production volume as quickly as possible. That is why Tesla engineering has transitioned to focus heavily on designing the machine that makes the machine -- turning the factory itself into a product....In addition to consumer vehicles, there are two other types of electric vehicle needed: heavy-duty trucks and high passenger-density urban transport. Both are in the early stages of development at Tesla...With the advent of autonomy, it will probably make sense to shrink the size of buses and transition the role of bus driver to that of fleet manager. Traffic congestion would improve due to increased passenger areal density by eliminating the center aisle and putting seats where there are currently entryways, and matching acceleration and braking to other vehicles, thus avoiding the inertial impedance to smooth traffic flow of traditional heavy buses. It would also take people all the way to their destination. Fixed summon buttons at existing bus stops would serve those who don't have a phone. Design accommodates wheelchairs, strollers and bikes.

Autonomy
As the technology matures, all Tesla vehicles will have the hardware necessary to be fully self-driving with fail-operational capability, meaning that any given system in the car could break and your car will still drive itself safely. It is important to emphasize that refinement and validation of the software will take much longer than putting in place the cameras, radar, sonar and computing hardware.

Even once the software is highly refined and far better than the average human driver, there will still be a significant time gap, varying widely by jurisdiction, before true self-driving is approved by regulators....I should add a note here to explain why Tesla is deploying partial autonomy now, rather than waiting until some point in the future. The most important reason is that, when used correctly, it is already significantly safer than a person driving by themselves and it would

therefore be morally reprehensible to delay release simply for fear of bad press or some mercantile calculation of legal liability....It is also important to explain why we refer to Autopilot as "beta"....

Sharing
When true self-driving is approved by regulators, it will mean that you will be able to summon your Tesla from pretty much anywhere. Once it picks you up, you will be able to sleep, read or do anything else enroute to your destination. You will also be able to add your car to the Tesla shared fleet just by tapping a button on... Read more *Hmmm....This is a chock-full vision that sounds pretty good me (and doesn't have a mention of DSRC, V2V or V2x :-)); except, do I really want to invest to become a "Tesla (AirBnB) Host" or simply use the "Mobility-on-Demand Transit System" (MoDTS) that Tesla or ALK or ???? (unfortunately NJ Transit, the obvious MoDTS operator, will pass.) Alain*

Germany to require 'black box' in autonomous cars
July 18, "Germany plans new legislation to require manufacturers of cars equipped with an autopilot function to install a black box to help determine responsibility in the event of an accident, transport ministry sources told Reuters on Monday...Under the proposal from Transport Minister Alexander Dobrindt, drivers will not have to pay attention to traffic or concentrate on steering, but must remain seated at the wheel so they can intervene in the event of an emergency.

Manufacturers will also be required to install a black box that records when the autopilot system was active, when the driver drove and when the system requested that the driver take over, according to the proposals..." Read more *Hmmm....What is the definition of "an emergency situation" ? Is it just like some other things that "I know it when I see it"? But here, it is the automated system that is "seeing it". What "false alarm" and 'false negative" rates will be imposed/tolerated? Will there be a driver training program that will instruct us on how to react in these emergency situations? How will the system alert us of this emergency situation? Will it blare: "**Watch out**!!"?? or will it gently nudge us back into the loop. Please, there are more questions than answers at this time and we need some focused research and creative thinking before we rush into "intervening in event of emergency" legislation.*

With respect to capturing of "all" sensor data: of course!. Plus these data need to be shared and placed in the public domain so that everyone can benefit and avoid making the same mistake AND most importantly, we need "hold harmless" legislation that forbids the data to be used against the data owner (the owner of the vehicle), and only allows for determining liability in the event of a crash. (For example, the data can't be used to give the car owner a ticket for a broken tail light, because the data stream indicated a broken tail light.) Alain

Pokémon Go-playing driver after hitting police car: 'That's what I get for playing'

R. Premack, July 20 "Not surprisingly, playing Pokémon Go while driving is a poor idea. That was demonstrated early Monday in Southeast Baltimore. Three police officers were standing outside their patrol car, parked nearby Patterson Park. About 3:30 a.m., according to body-camera footage, a Toyota RAV4 moving down the street side-swiped the parked police car..." Read more *Hmmm....And now another reason why we need Automated Emergency Braking (AEB) and Self-driving that actually work. Alain*

State to buy former Willow Run Powertrain site for connected vehicle research

M. Durr, July 18, "The Michigan Strategic Fund is closing in on a deal to buy the former Willow Run Powertrain site to convert it into a connected and autonomous vehicle (CAV) research facility in Ypsilanti Township.

RACER Trust has agreed to sell the 311-acre site to the fund for a purchase price of $1.2 million and has committed to making other contributions toward making the center a reality. In turn, the MSF would allow the American Center for Mobility to develop and operate a facility where testing and research for CAV technology will be conducted..." Read more *Hmmm...Land is really inexpensive in Michigan. Alain*

Regulator on Tesla Autopilot Death Says One Incident Won't Derail Tech

K. Fehrenbacher, July 20, "Mark Rosekind, the administrator of auto safety regulator the National Highway Traffic Safety Administration, ...Most importantly, he forcefully said, "No one incident will derail the Department of Transportation and NHTSA from its mission to improve safety on the roads by pursuing life-saving technologies." Read more *Hmmm..."derail its mission???.. It's been focused on crash mitigation and "connected" stuff instead of making sure that Automated Emergency Braking (AEB) systems actually work. When are they really going to get "on the rails".??? Highway deaths went up last year! Alain*

Autonomous Vehicles: A Case Study of Liability and Insurance

D. Cusack, July 19, "...We have run across only one policy so far that bills itself as a "Driverless Car" policy. Written by Trinity Lane Insurance Company (a Malta-based insurer) for the British market, it expressly agrees to cover the driver if the autonomous systems fail, or if the owner

failed to install updates to the system software in a timely manner....Read more *Hmmm...This is somewhat informative, but very light. Alain*

SCIENTIFIC AMERICAN **What NASA Could Teach Tesla about Autopilot's Limits**

J. Pavlus, July 18, "...Stephen Casner, a research psychologist in NASA's Human Systems Integration Division, puts it more bluntly: "News flash: Cars in 2017 equal airplanes in 1983."...Here are three things about how humans and automated vehicles behave together that NASA has known for years...THE LIMITS OF BEING "ON THE LOOP"... THE LIMITS OF ATTENTION...AUTOMATION AND AUTONOMY: NOT THE SAME THING..." Read more *Hmmmm...Well worth reading. Alain*

Some other thoughts that deserve your attention

Forbes **Uber Just Completed Its Two Billionth Ride**

B. Solomon, July 18, "...The milestone comes less than six months after Uber hit one billion cumulative rides at the end of 2015–a feat that took Uber more than five years to accomplish....Comparing Uber's numbers to those of its competitors is tricky. U.S.-only competitor Lyft told FORBES that in April it did 11 million rides, suggesting an annual trip run rate likely under 200 million, only 10% of Uber's probable yearly goal. To be fair, many of Uber's rides came outside the U.S. where Lyft doesn't operate....

This time, Uber declined to single out one ride as the one that pushed the company over two billion. Instead, Kalanick says 147 rides in 16 different countries began on the moment of 4:16:48 AM GMT on June 18. 54 of those trips were in China, 46 in the U.S., 13 in Mexico, and seven each in Brazil and India...." Read more *Hmmm...That's good progress, but, there are about 1B non-walking person-trips on a typical day in the US. This means that Lyft served about 0.04% of the non-walking person trips in the US in April. Still a long way to go to be significant. Uber, if it is 10 x Lyft, would be doing about 0.4% . Again a good start, but still a long way to go. Alain*

Los Angeles Times **Controversy over Tesla 'autopilot' name keeps growing**

R. Mitchell, July 21, "...Some of the most enthusiastic proponents of autonomous vehicles and features are worried that autopilot — not the technology itself, but the very name, which some find misleading — might slow down the evolution of the driverless car. They say that would be a shame, as autonomous technologies are designed to make driving safer by preventing minor fender-benders as well as reducing the number of traffic fatalities. ..." Read more *Hmmm...I pointed out in SDC that this was a bad product name when it was first announced by Tesla. :-) Alain*

On the More Technical Side

http://orfe.princeton.edu/~alaink/SmartDrivingCars/Papers/

Half-baked stuff that probably doesn't deserve your time:

HYPEBEAST **The Mercedes-Benz Future Bus Will Change the Way We Commute to School and Work**

K. Estiler, July 18, "Mercedes-Benz struck the fairway with a lavish concept golf cart last week and just recently, the German automobile manufacturer introduced its Future Bus that is seemingly a game-changer in the burgeoning world of public transportation. The kernel of this latest concept is Mercedes's CityPilot — an operating system for autonomous driving. The mechanization involves a network of various cameras that are placed all around the bus, GPS as well as two distinctive radar systems. The Future Bus works exactly how a normal bus would except it doesn't require a driver to help it traverse through city streets—touting streetlight recognition and the ability to stop and unload passengers by itself. However, there is a driver seat and wheel **just in case human intervention is needed**.(emphasis added) ..." Read more

Hmmm....This bus is simply same-old, same-old except "over-the-top lip-stick' that greatly increases the cost of mobility without dding much utility. The relief in driver work-load and improvement in driver workplace provided by the Self-driving technology is substantial, but not even mentioned in the announcement which focuses only only on the lavish lip-stick. In the end big buses will remain just an infrequent scheduled service that it is way too often running around essentially empty (at which time it is a financial train wreck) or it is stopping so often to let people on and off that it is excruciatingly slow. In either case, it is only the transit captives are using it. Unfortunately, the true future bus can't afford to pay a driver a living wage nor the cost of the lip-stick. (The golf cart is the epitome self indulgence. Golf should be exclusively Walk&Carry, Walk&Pull or Walk&Caddie. The course is not a freeway! You could use the exercise. :-)) Alain

COLUMBUS BUSINESS FIRST **Transit Columbus starts petition urging city not to 'leap-frog' light rail**

T. Knox, July 18, "An advocate for integrated public transportation has started a petition urging Columbus to include light rail and other mass transit in its transportation plans.

Transit Columbus wants local leaders to not overly rely on driverless cars and other technologies proposed in its Smart City Challenge bid..." Read more *Hmmm.... And Columbus won the SmartCities grant?? (I do understand that a $1B LightRail system brings more $$$ to Columbus than a $40M SmartCities grant.) Alain*

C'mon Man! (These folks didn't get/read the memo)

Tesla Working On Autopilot Radar Changes After Crash

July 16. "...CEO Elon Musk, in a Twitter post Thursday night, said Tesla is working on improvements to the radar system....Experts say this means that the radar likely overlooked the

tractor-trailer in the Florida crash...." Read more *Hmmm....But the tractor preceded the trailer across Tesla's path and the Tesla reportedly didn't try to slow down for that. And, what if it was a flat-bed with no load? And... C'mon man, we need a much better explanation of what the Tesla's sensors (and the truck driver) "saw', didn't see and why. Alain*

Calendar of Upcoming Events:

NEXTGEN TRAIN CONTROL

Sept 15 & 16, 2016
Arlington, VA

Sept 19-21, 2016
Antwerp, Belgium