Driverless Cars - The Way Forward

Executive Summary

The Automobile industry, when established, completely transformed the world and has shaped modern society ever since. Today, we are on the verge of witnessing yet another transformational revolution in this old industry. Thanks to the innovation and dedication of many engineers, scholars and industry leaders, the novel technology of driverless cars has been brought very close to reality. Autonomous vehicles, once introduced, will be a disruptive kind of innovation that brings profound impact to the entirety of our world. Since the technology is still in its infancy and has not been adopted yet for mainstream use, nothing can be said for sure. But it definitely has the potential to bring another transformation to our economy, society and culture, like the very establishment of automobile industry once did. In this project we studied the technology of driverless cars (sensors, mapping, environmental impact, testing and experimentation) and identified limitations. We also identify political barriers (legal status, legal framework, liability laws, sales model) and social impact (personal impact, public safety, morality dilemma).

All things considered, we recommend that driverless cars should be introduced gradually to the market. First, once major urban cities have been mapped to create a priori maps, we suggest that the large players developing driverless cars should introduce a driverless taxi program. This will allow time for society to ride in, and learn about the driverless car so that, in general, people will become more comfortable adopting the innovation. While the taxi service is available and expanding to more and more cities, the suburban and countryside infrastructures (mapping) can be developed. Furthermore, as the technology improves in this time, the cost of

producing driverless cars will decrease; with cheaper cars, individuals will be able to afford to buy or lease them. Retrofitting existing manual cars to become driverless is also a technological possibility if the retrofit option becomes financially viable; as it stands, the current cost of LIDAR sensors are $70,000. It is recommended that the, due to liability insurance, the driverless car manufacturers take full responsibility for any accidents as a method of establishing complete confidence in their product. Moreover, direct sales would be necessary in order to avoid a middle-man - in this case dealerships - when dealing with any liability claims. During this introduction phase, it would be of interest of the government to construct freeways specifically intended for driverless cars. The benefits of this would be freeways with increased speed limits, since human error is no longer a factor, and also a top down introduction of the innovations which will further influence consumers to adopt the product. In this sense, the abilities of the driverless car will not be suppressed because they will not have to be concerned with human drivers and all cars on these freeways may be able to communicate to path plan seamlessly.