

**A presentation about
the implications of
adding cheap, unsafe
software to
automobiles**

We Don't Have
a Problem
.....yet

By: Pedro Cruz

I Don't Understand

- The innovation of the car has taken big steps forward in the last few decades as compared to the last few centuries and the speed at which innovations are being made are at a record high.
- People are thinking about what they want to do with the automobile and how they want to change it.
- With the amount of technology available to us today though, what has taken many years to create is only taking a few years to completely re-invent the car.
- In the article 8 new advances in auto technology, Russ Heaps describes some of the changes being to the car:
 - mounting cameras
 - adding radar with pedestrian detection software
 - having a completely autonomous car

With the rapid advancement of technology, there are more things being added to the car. The problem is what possible risk come with this advancement.

Heads-Up-Display

- In the article “Heads-Up-Display and their automotive application” Nicholas J. Ward discusses the possibilities that would become available by adding the Heads-Up-Display, HUD, into cars
 - Detection of pedestrians
 - Displaying road signs
 - Convey other important information
- Tests with NASA prove it could be more of an inconvenience and prove to be a distraction (711)



(Boeriu)

Hydrogen Battery/ Fuel Cell

- Hydrogen fuel cell: An electrochemical cell in which the energy of a reaction between a fuel, such as liquid hydrogen, and an oxidant, such as liquid oxygen, is converted directly and continuously into electrical energy (The American Heritage)
- In the article “Fuel Cell and Battery Electric Vehicles” by C.E. Thomas the topic of environmental benefits is discussed but rivaled by the cost of installing and maintaining the hydrogen batteries in Cars (6013).
 - Thomas discusses how as time passes and cost of oil increases, the hydrogen battery will become a better alternative (6007).

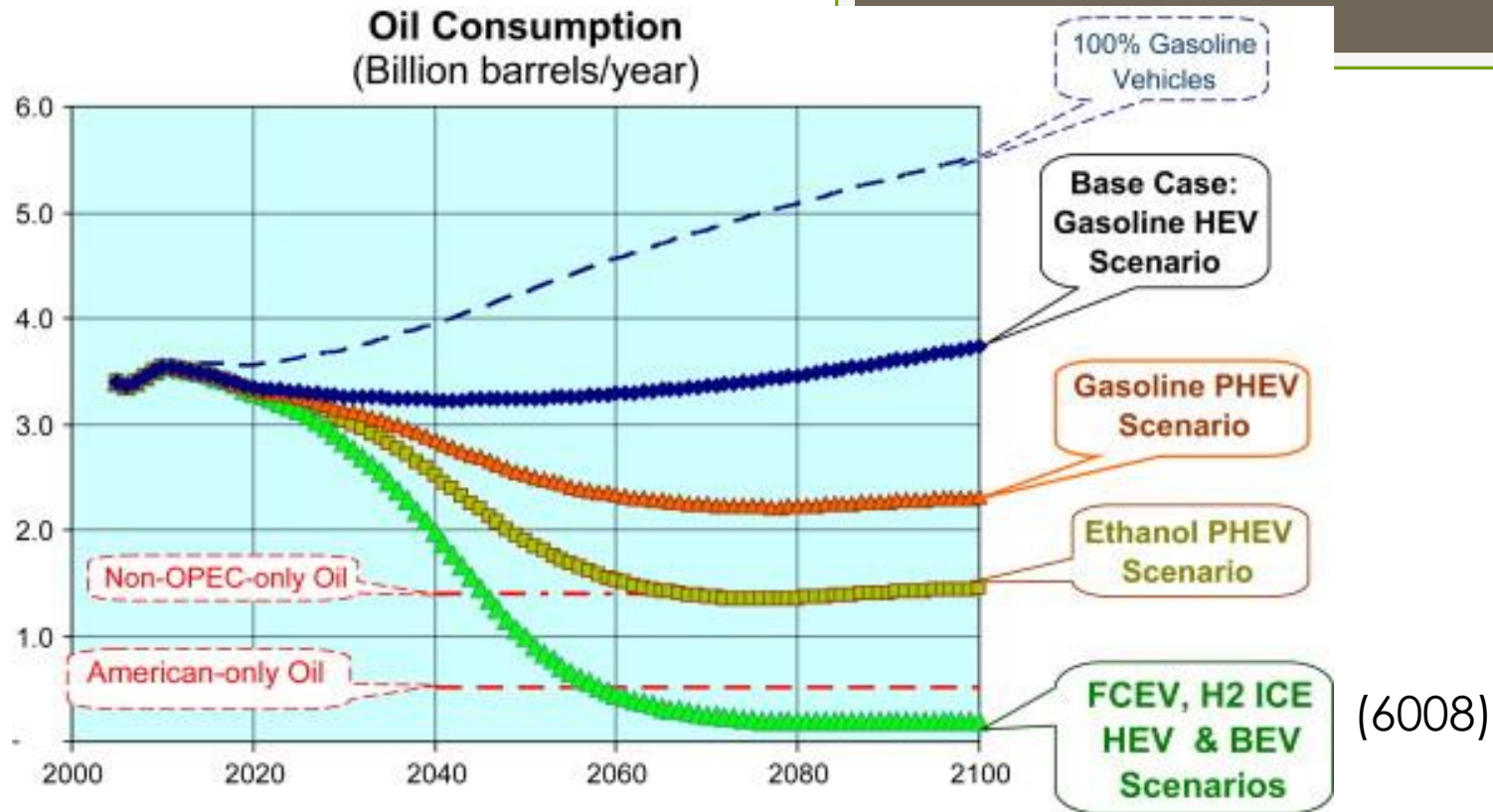


Figure shows the amount of oil the U.S would be estimated to consume in the following years and which type of batteries would allow to drop down dependency, including foreign oil.

Hacking

- Chris Neiger defines hacking as the ability to control the car, without a person being physically present- definition from his article “Car-Hacking gets Real”
- Neiger describes the story of the men who were able to successfully take over a car by installing a piece of hardware to the electronic control units, or ECUs, which have been in cars more than 30 years ago.
 - These simple little computers were developed during the first gas crisis. Initially, they were used as tiny computerized carburetors.

Different people, Same outcome

- An article in NPR, With Smarter Cars, The Doors Are Open To Hacking Dangers by Steve Henn, Henn portrays some the same scenario where a pair of people are able to do a “take-over” and shut the driver out.
- The message behind Henn’s story is that it is possible but when they went to companies like Ford and Toyota, they stated that they were not worried.

Who cares right?

- Well, do you drive?
- Do you know someone that drives?
 - If answered yes to at least one of the questions then you could be a victim
- Others affected would be big companies which would lose a lot of money if this became a problem
- Cause a multitude of deaths around the world
- If technology is managed, could create a new style of life

So then we should just manage it, Where is the conflict?

- Well, what level of automation should we be ok with.
- The National Highway Traffic Administration, NHTSA, released an article, U.S. Department of Transportation Releases Policy on Automated Vehicle Development, where Karen Aldana is provided as the contact
 - They developed four levels of automation from zero to four where zero is no autonomy and four is a full automation
- The NHTSA has tried to stay ahead of the technology to provide adequate laws and how cars would be classified



(Janner)

Google has a car that drives itself, currently it is listed on the 3rd level of automation as defined by the NHTSA. Inside view, photograph taken by Jay Janner.

Reflection

- What do I think?
 - Car companies should take into account what people have been saying and pay attention into installing better software that would prevent people from taking over cars
- The NHTSA is doing a good job by doing their own research to stay ahead of the game but will need the cooperation of manufacturers
- Will this lead to a total dependency on technology, is this just the beginning of a lazier generation?
- Will the risk be manageable?
- Do the benefits outweigh the risk, or is it too early to tell?

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