

The Driverless Revolution

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**POLYTECHNIQUE
MONTREAL**

WORLD-CLASS
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Road Safety

- Road safety is one of the major world health problem, and one of the most invisible
- About 95 % of accidents involve human factors
- The good news is that we have the solution and that the issue will most likely be solved within 10-20 years thanks to driverless vehicles
- The bad news is that I will be out of a job

Science fiction ?

- Prototypes by Google, Volkswagen
- Mass production within 10 years (Google, Ford, GM)
- Legal advances: Nevada
- Why is this going to work this time ?
 - No need for special infrastructure
 - Progressive introduction of the technologies

Consequences

1. Safety
2. Capacity: only 10-20 % of the a highway surface currently used at “capacity”
3. Increase in the number of trips and in trip distances (driving time becomes productive)
4. Decrease and “disappearance” of required parking space
5. Increase of mobility for children, persons with disabilities
6. Decrease of car ownership and sharing: fleet of robotaxis

Questions

- What driver assistance technologies should we develop?
- What will be the job of a transportation/traffic engineer ?
- What happens to transit systems ?
- What happens to rail transport ? Does high speed train have a future ?
- Disappearance of the job of driver: trucks, buses, taxis, etc.
- How to manage interactions with vulnerable road users ?
Infractions ?

Research Needs

- Feasibility of the system, technical questions (cooperation, vehicle-vehicle / vehicle-infrastructure communications)
- Acceptability of the technology
- Characteristics of a heterogeneous fleet of autonomous and non-autonomous vehicles
- Road safety in developing countries

Conclusion

- Road safety gains are sufficient on their own to justify the shift to this new technology
- We have to act now to anticipate and better develop this new technology

Eric Schmidt, Google CEO, said in 2010

“It’s amazing to me that we let humans drive cars. It’s a bug that cars were invented before computers.”

Questions?

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