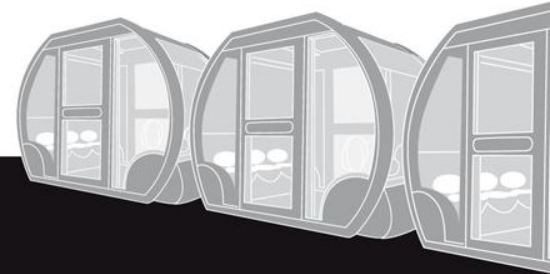




pitom
think over movement

Eng. Roberto Mati, PhD



International Encounters

Mobilis

2011

Belfort - France

15th and 16th november



Cluster Pôle Véhicule du Futur

Solutions for future vehicles & mobility

www.mobilisconference.com

Driverless vehicles: why?

✦ Military operations

- ✦ Patrolling and surveillance in battlefields
- ✦ Recovery of prisoners
- ✦ Fast and smart attacks to enemy locations
- ✦ Lighter and smaller solutions w.r.t. manned vehicles
- ✦ Better stealth capability

✦ Civilian use

- ✦ Improve human safety by augmenting human reacting capabilities
- ✦ Reduce pollution and traffic jam
- ✦ Avoid risky operations for humans
- ✦ New scenarios in transportation/monitoring/fire prevention/search&rescue



Example of PITOM activities: piShip Autonomous Vessel

✦ An Autonomous Vessel:

- ✦ Equipped with advanced GNC algorithms
- ✦ Dynamic Positioning
- ✦ Can be used in adverse meteorological conditions
- ✦ Can be equipped with various type of sensors
- ✦ Can cooperate with other vehicles
- ✦ Real-time data transmission to one or more base stations
- ✦ Able to navigate in rivers, lakes and sea
- ✦ Fully electric



- ✦ Video surveillance of seabed, water and coast surface
- ✦ Environmental data survey (water quality, bathymetric, currents, hydrogeological survey)
- ✦ Georeferenced identification and mapping of chemical pollutants
- ✦ Port security e Coast surveillance
- ✦ Sea and river traffic control

The 2007 DARPA Urban Challenge

The most important robotic challenge in the world

- ✦ Participation with Ohio State University Team
- ✦ Toyota Highlander hybrid vehicle, fully actuated, able to:
 - ✦ autonomous navigation in urban traffic
 - ✦ intersection recognition and management
 - ✦ observe speed limits and safety distances
 - ✦ autonomous overtaking
 - ✦ U-turns
 - ✦ parking



The 2007 DARPA Urban Challenge: demo video



What about future?



- ✦ Autonomous ground vehicles will be soon operated in
 - ✦ Agriculture
 - ✦ Confined, private and low people-density areas
 - ✦ Industrial field

✦ Before we see autonomous cars on the road, some aspects must still be solved:

- ✦ Technical issues (safety, sensors, integration issues, unified framework)
- ✦ Vehicle-to-vehicle communication
- ✦ Infrastructures
- ✦ Regulations



MERCI À TOUS!



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