

“SMART” Vehicles effect on Highway Design, Construction, Operation, Financing and Maintenance



IBI GROUP

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SMART VEHICLES EFFECT ON HIGHWAYS

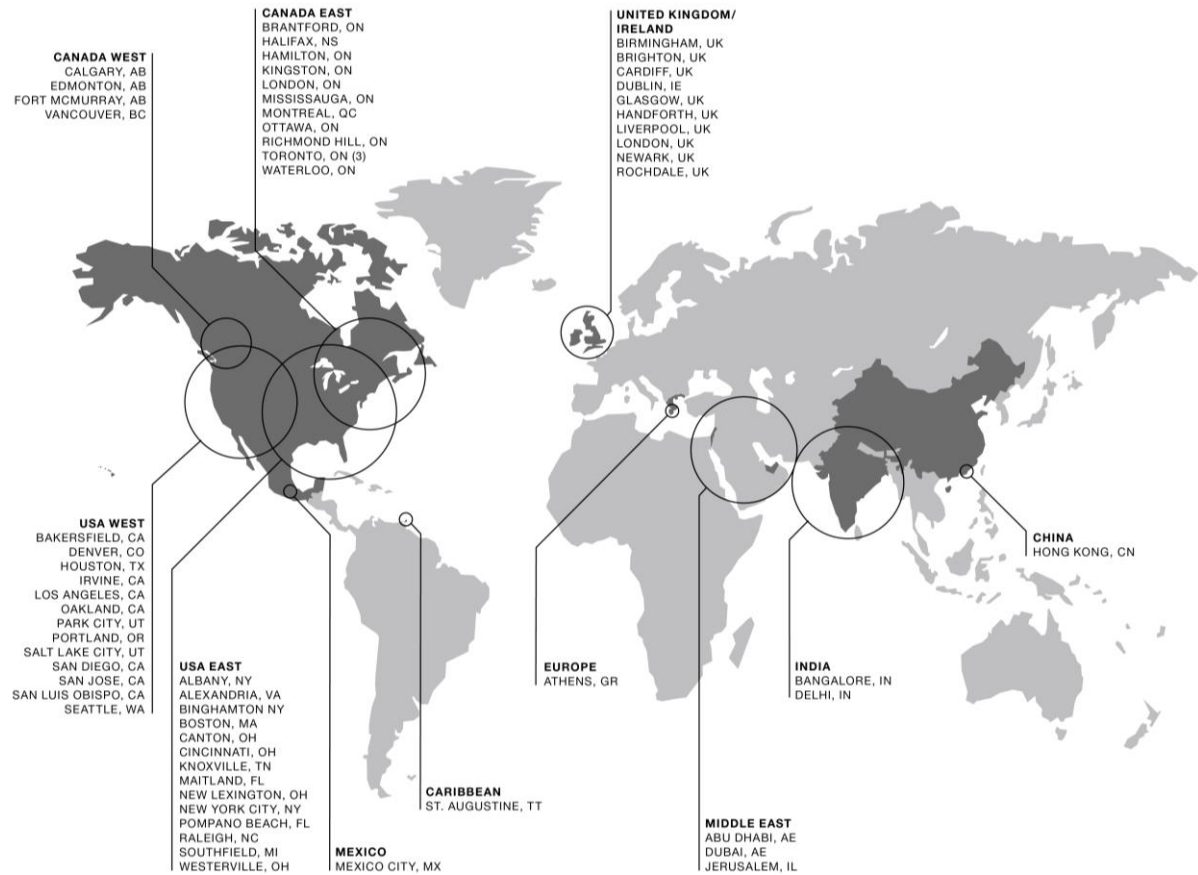
40+
years in
business

2600+
employees

60+
global
offices

In Greece

- Since 1998
- Leader in the provision of Toll Collection and ATMS
- Transportation planning & consulting
- Since 2018 Infrastructure Design



63 offices located in major urban centres within North America, the Caribbean, Europe, Middle East, and Asia
Canada 17 offices | USA 27 offices | International 19 offices

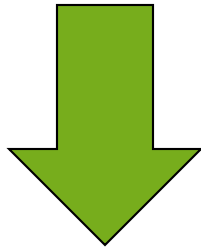


SMART = Autonomous + Connected + Green



AUTONOMOUS

No steering wheel, no driver...



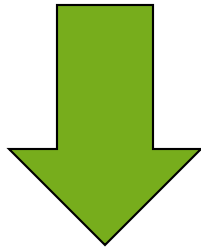
View not depending on driver's position, ambient light...

No fatigue, no nervous reactions, no "wrong" decisions...

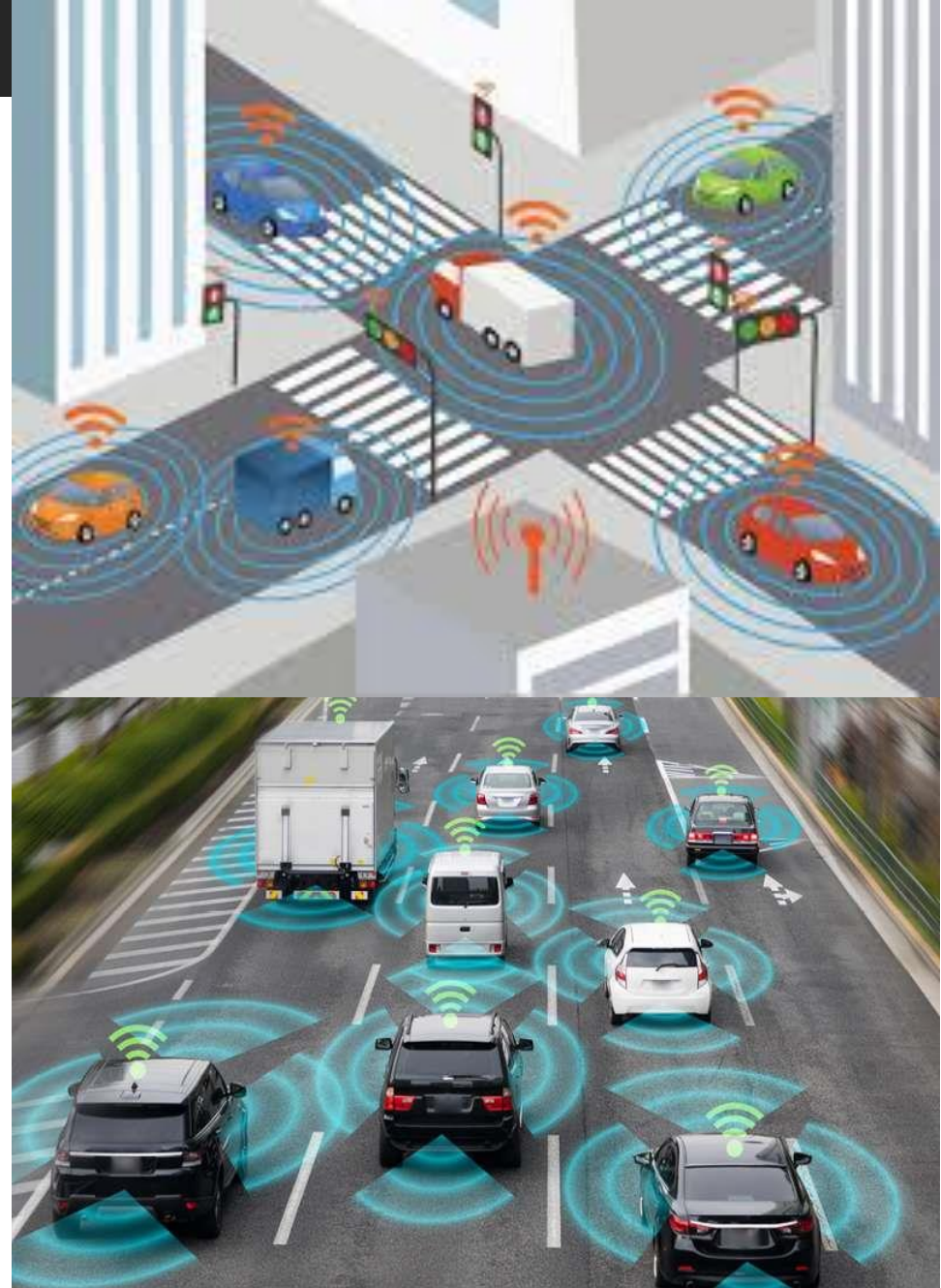


CONNECTED

Continuous real time flow of information to and from the vehicle...

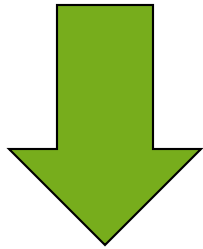


Real time exchange of information about dangers, traffic conditions, network/ infrastructure conditions, events and incidents...



GREEN

Zero emissions (while traveling...)



Demand for alternative refueling, battery charging, hydrogen, fuel cell technology...



DESIGN

New safety considerations and features

- Relaxation of driver visibility rules, safety distances etc.
- Good marking more important than vehicle restraint systems
- Lighting not necessary any more

Increased capacity through efficiency (traffic lanes can be 2,50m wide instead of 3,75m = three lanes instead of two in the same cross section)

Static or dynamic signage not necessary anymore



CONSTRUCTION

Simulation on Digital Twins + Autonomous construction equipment

Reduction of construction risks & work accidents



OPERATION

Continuous communication with ALL vehicles

Extensive use of Digital Twins and simulations

24 x 7 shifts in control rooms?

24 x 7 manned patrolling?



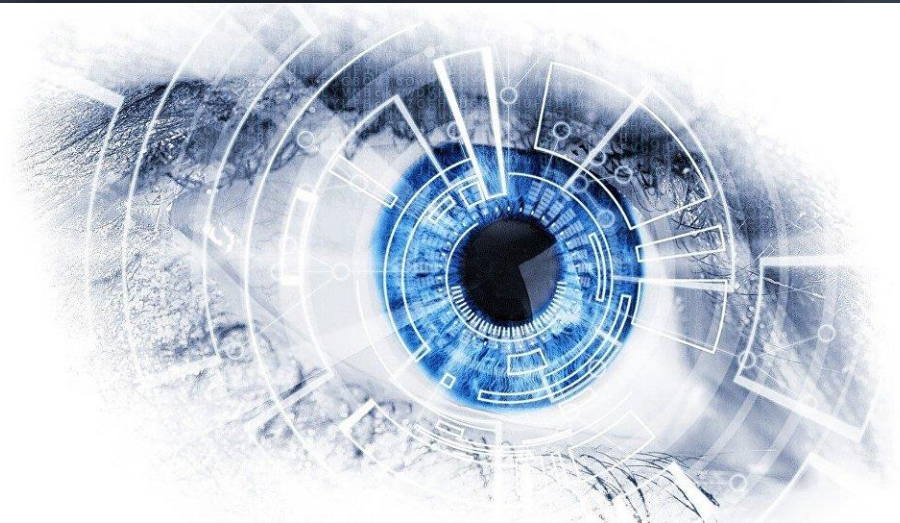
OPERATION

What will the new services be?

Infotainment (possibly over 5G, 6G...) by Netflix?, Amazon? Apple?

Safety (possibly over ITS G5 or ..6, ..7) by the Operator?

Navigation, (over either technology) by the Operator or third parties?



OPERATION

If there is no driver, the driver cannot be the “customer” any more

Is the “owner” going to be the “customer”?

Will there be individual owners?

Most likely we will see car fleets and fleet managers...



Mercedes-Benz



Volkswagen



TOYOTA



FINANCING

Digital Vehicle ID – No toll evaders

Fleet managers will be “Large” clients and shall negotiate with a different leverage...

How will revenue be affected? No evasion, but “big” discounts...

Revenue risk with the State or the Concessionaire?

During tariff negotiations, who will have the more accurate and reliable revenue models, the Concessionaire or its customers?

FINANCING

Will our industry continue to sell just safety, comfort and capacity through... tolling???

Third parties will be doing more profitable businesses on the Highway assets; is the “tolling” industry going to participate to these businesses and share profits?

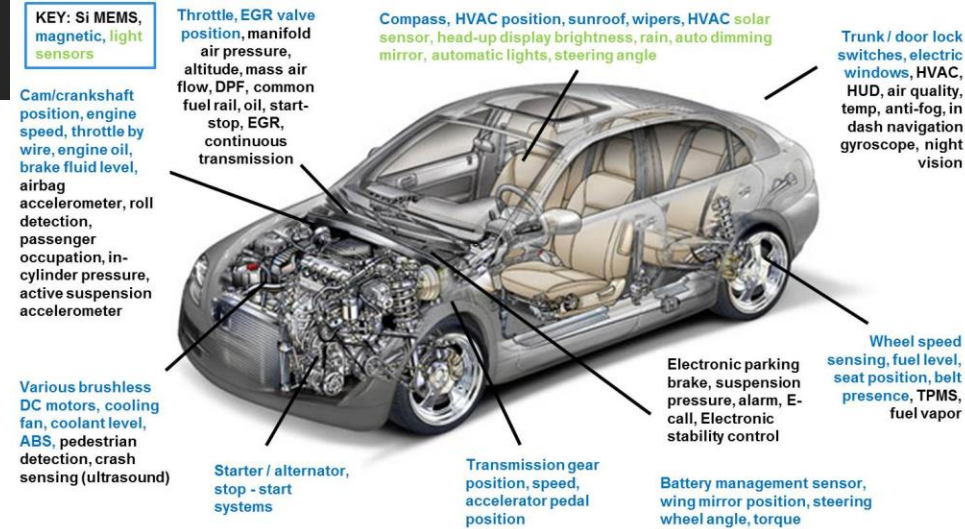
Maybe new “disruptive” Financing and Exploitation Models will appear.

MAINTENANCE

Each smart vehicle >100 sensors, hundreds of thousands of sensors will be inspecting the motorway every day...

Big Data processing, AI, machine learning

New maintenance models, maintenance on demand





Thank you!

