POLITECNICO DI TORINO

Center for Automotive Research and Sustainable Mobility

CARS@POLITO

Center for Automotive Research and Sustainable mobility

Visit the web site

http://www.cars.polito.it/

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Outline

- The Mission
- The Objectives
- The Organizational Model
- The Staff
- The Investment in new Facilities
- Synergies with related ongoing and future initiatives
- Location

The Mission
- short, medium, long term -

Green Vehicles

1. New powertrain and chassis technologies for future hybrid/electrified vehicles
2. Decarbonization and renewable low-carbon fuels for new propulsion systems
3. Powertrain and vehicle system integration & control
4. Affordable zero/low emission vehicles
5. Post-lithium batteries

Affordability & Competitiveness

1. Affordable lightweight: products and processes
2. Competitive automotive: lean and innovative manufacturing cycles

Safer & Integrated Mobility

1. Passive/Preventive Safety of new vehicles
2. Enabling SAE high level automated vehicles
3. Safe & Secure connected vehicles - validation of automated driving
4. Automated transport systems

Urban Mobility and Logistics

1. City Logistics: Modelling and Simulation
2. Pervasive ICT Technologies
3. Social Engagement and Behaviors

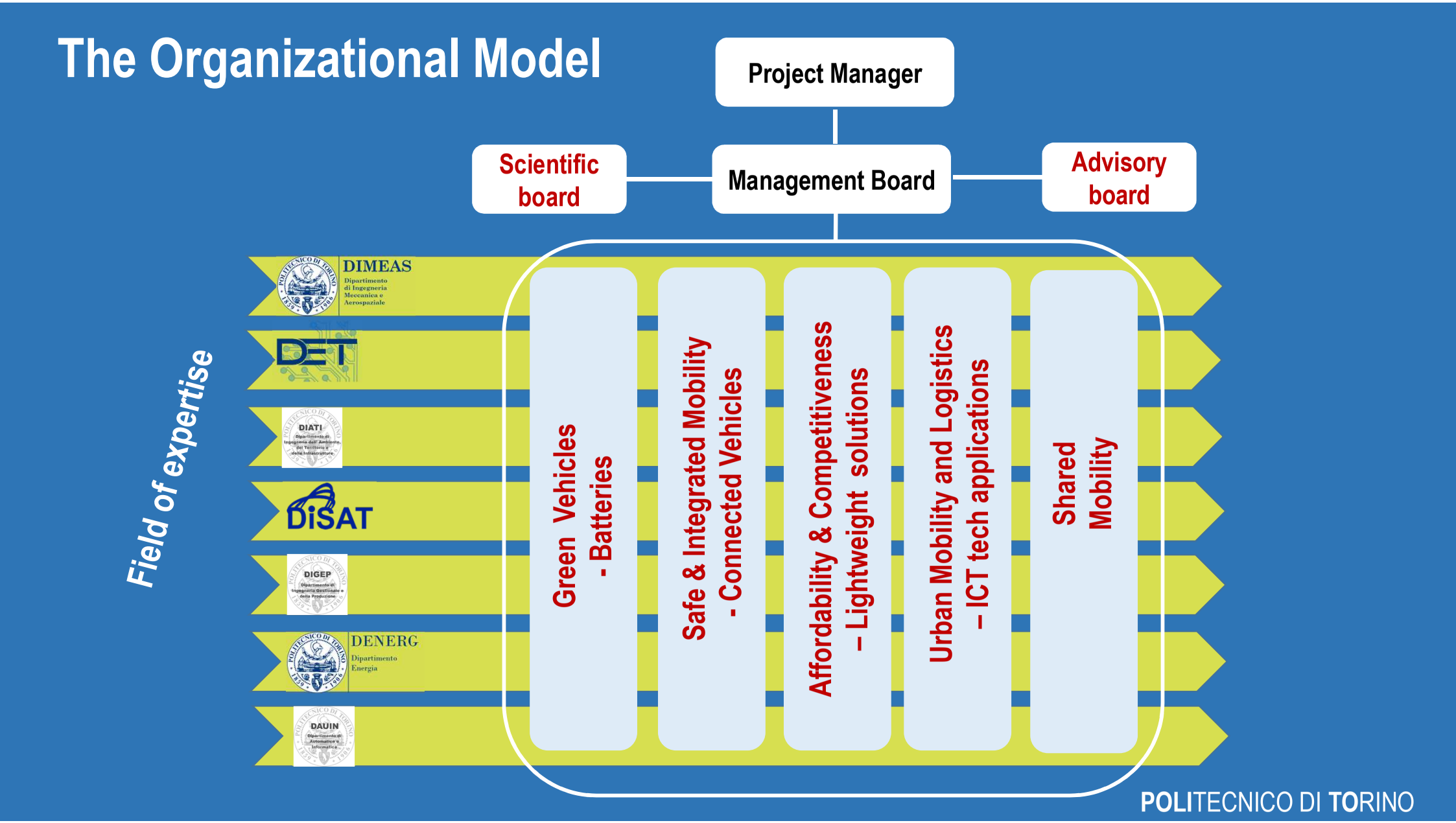
Sharing Mobility

1. Monitoring and analysis
2. Integration in traffic monitoring system
3. EV Introduction in the urban system

The Objectives

- Promote multidisciplinary approaches.
- Establish a reference Center for Automotive Engineering and Advanced Transportation Systems for Companies and Public Institutions of Piedmont District, but not only.
- Reinforce the already existing cooperation with public and private research institutions.
- Place the Center in the international framework of Sustainable Mobility.
- Invest in challenging research lines at vehicle-environment level with interdisciplinary research teams.
- Invest in new test facilities and instrumentations for Vehicle System and Vehicle/Environment Level Validation.

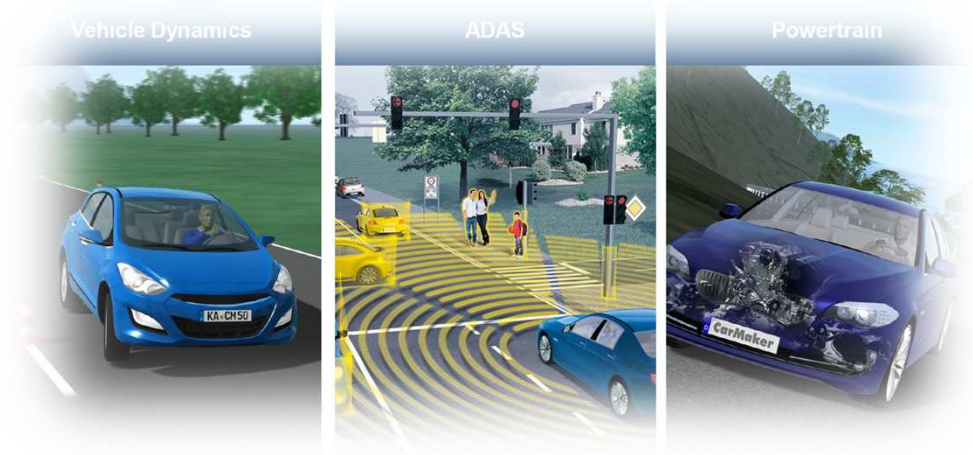
The Organizational Model



The Staff

PoliTo People joining CARS (50 % of time)	Permanent Staff	Temporary Staff	Technical Staff	Total
	37	55	2	94

Investment in dedicated staff (first year)	Assistant Professors time contract	PhD Students	Technical Staff	Total
	2	5	2	9



The Investment in new Facilities

Static Virtual Test Simulator for Advanced Driver Assistance System, HMI, Ergonomy

Hardware

- *6 m diameter screen (210 deg.)*
- *3 Projectors*
- *Modified Automotive cockpit*
- *Steering wheel motor*

Software

- *Vehicle Dynamics - Real Time Simulation*
- *Traffic and sensor modelling*

The Investment in new Facilities

Instrumented Vehicles for Connected Cars and Advanced Driver Assistance Systems

Instrumentation of 1 + 1 vehicles for:

- Validation of sensor and actuators for assisted and autonomous driving.
- Implementation and validation of control strategies for autonomous vehicles.
- V2V and V2X field tests.

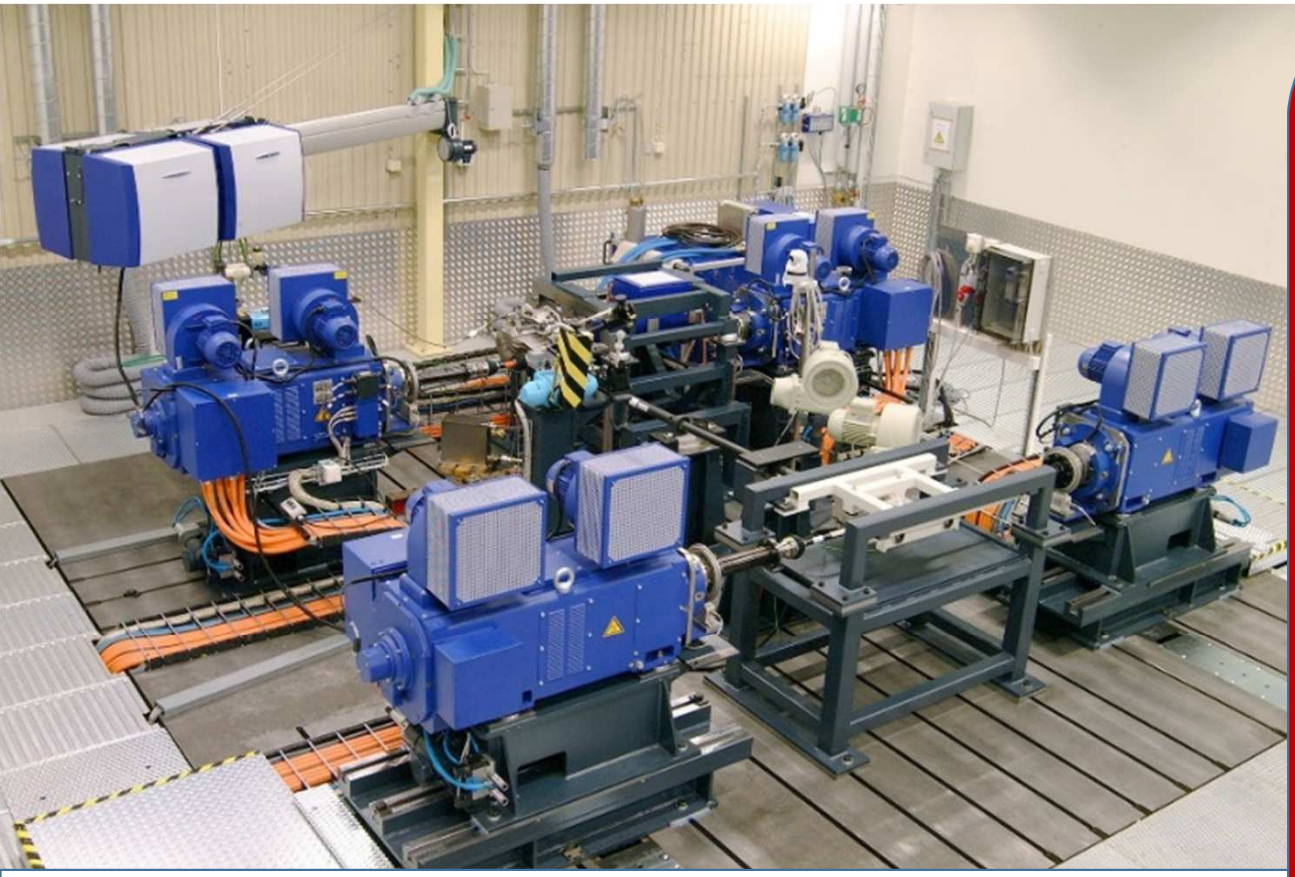
The Investment in new Facilities

Test Bench for conventional, Hybrid and Electric Vehicles dedicated to the experimental tests of complete vehicles

- Control Strategies for the energy management of conventional, Hybrid and fully Electric Vehicles
- HIL of autonomous and connected vehicles
- Energy consumption referred to homologation and other relevant driving cycles

MAIN DATA

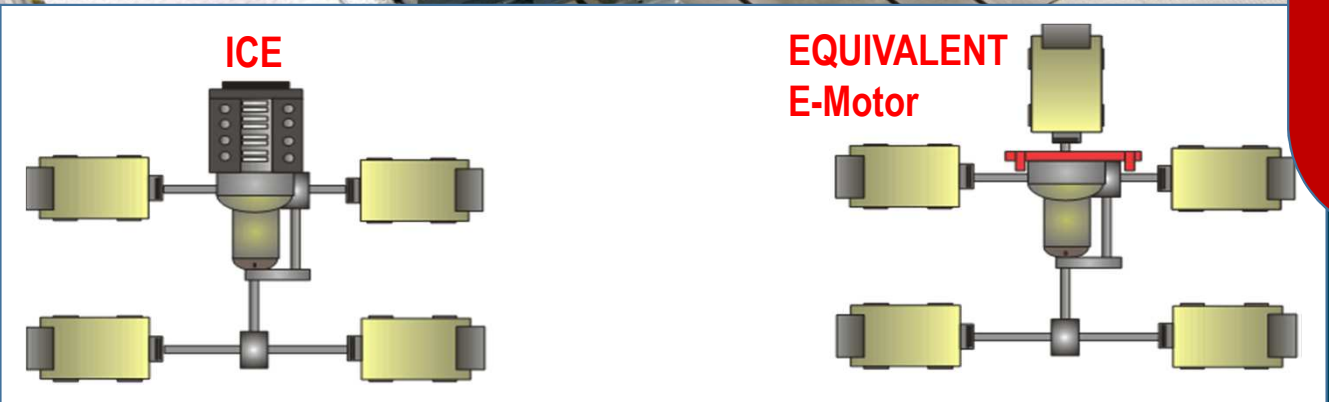
- Power Unit up to 240+60 kW (2WD e 4WD)
- Test of Vehicles (ISO SUV) with mass up to 3500 kg
- Ability to perform homologation tests
- Max speed: 180 km/h
- Cell temperature: 20°C (Tmax 35°C)



Investment in new Facilities

Test Bench for conventional, Hybrid and Electric Vehicles dedicated to the experimental characterization of

- Complete Hybrid Powertrains (P0-P4) with ICE installed
- Complete Hybrid Powertrains (P0-P4) with equivalent e-motor replacing the ICE
- Powertrain Components and Subsystems




Synergies With Related Ongoing and Future Initiatives
MIUR – national CLUSTER on Transportation and related PRN
Regional Projects – INFRAP + Automotive platform
Competence Center for Mobility
KIC Urban Mobility Collocation Center – UMOVE consortium
EU funded projects (H2020 and beyond) + EGVIA initiative
Nat and Int. Automotive Industries/ Public Bodies investing in new Cooperation/Installation @ PoliTO


Location
Short Term:
Areas within the 7
Involved Departments
Long Term:
Mirafiori Campus –
Competence Center
Area

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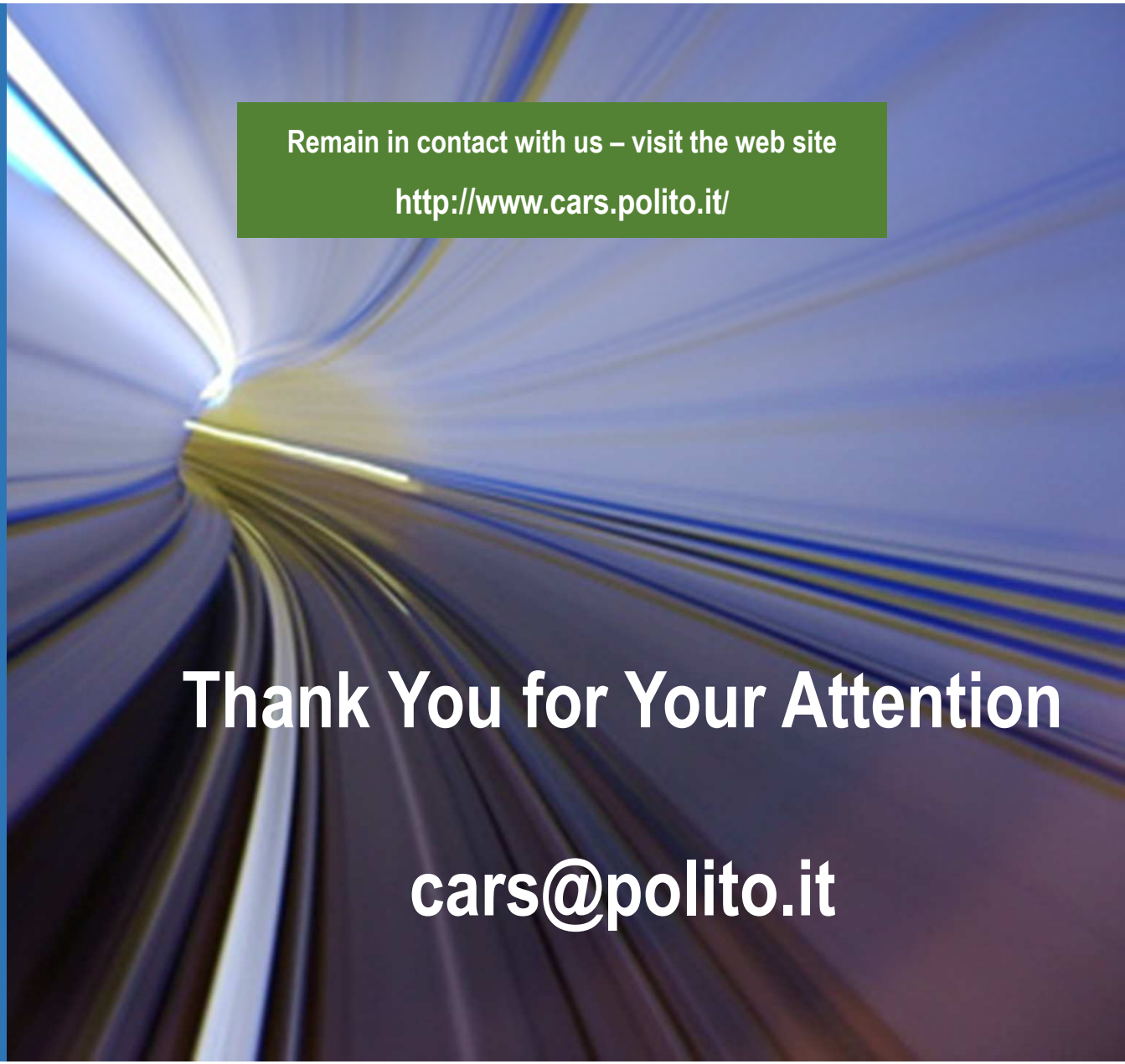

Remain in contact with us – visit the web site

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Thank You for Your Attention

cars@polito.it