

AEB Conference

Moscow, 2011, April 1st



*Rallying together
towards sustainable road mobility*

Michelin: 120 years of innovation...



120 years of innovation...

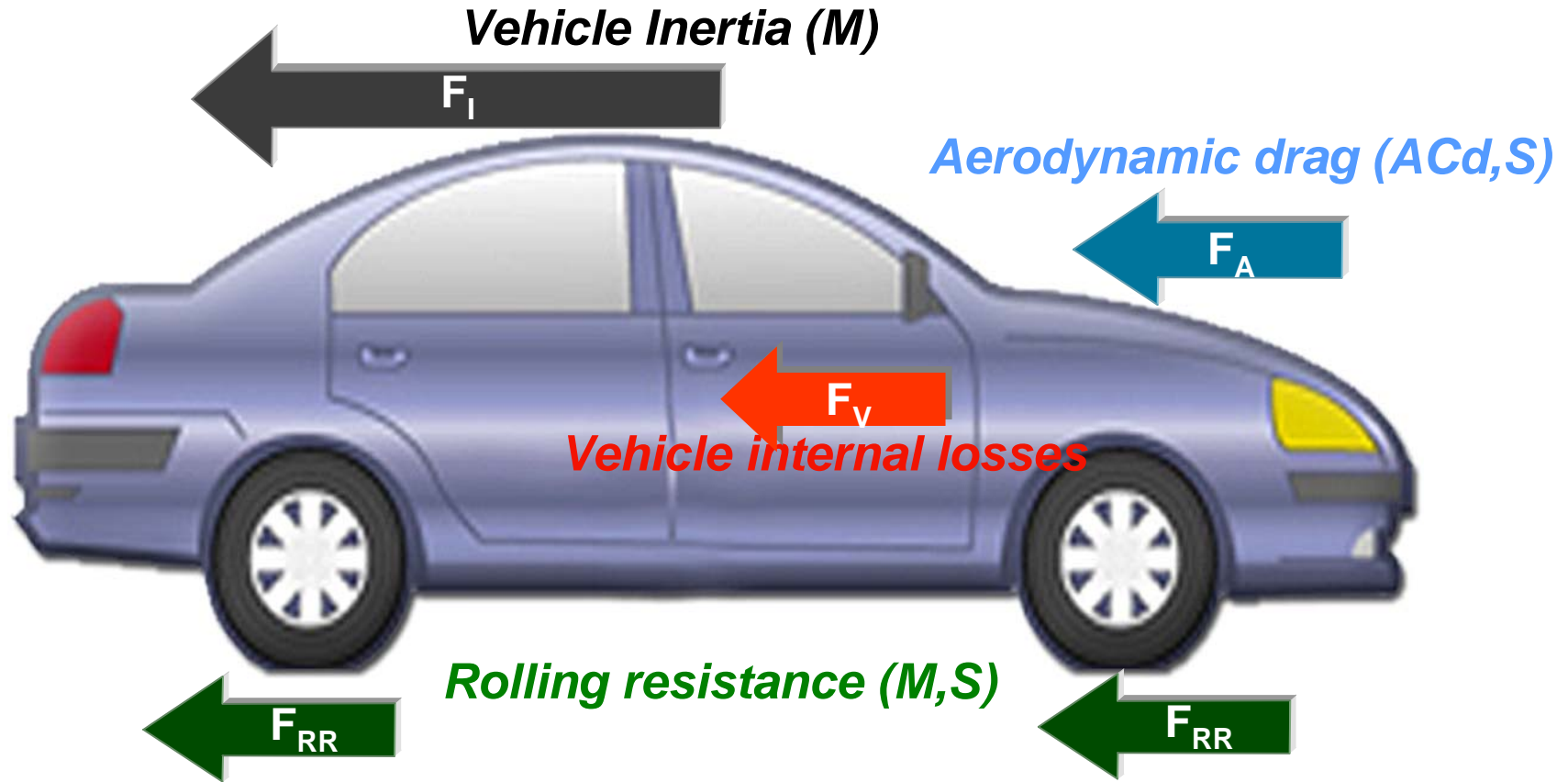


● ... in close partnership with all vehicle manufacturers in the world (16% of total market)



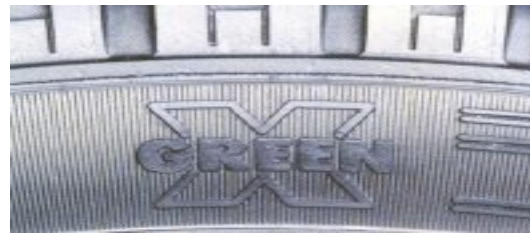
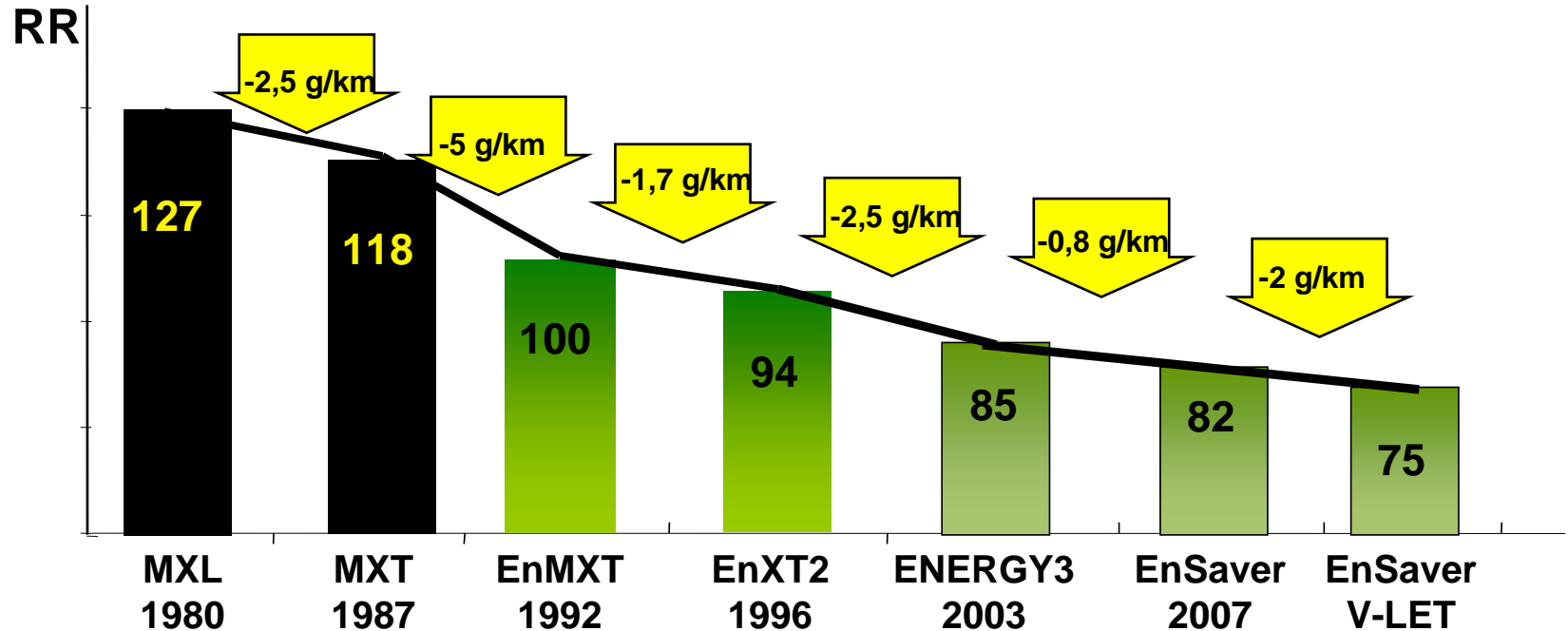
Tires?

A key contributor to road mobility !



Tire rolling resistance = 20% of all resistances (>30% for T&B)

Tire rolling resistance evolution of Michelin Tires

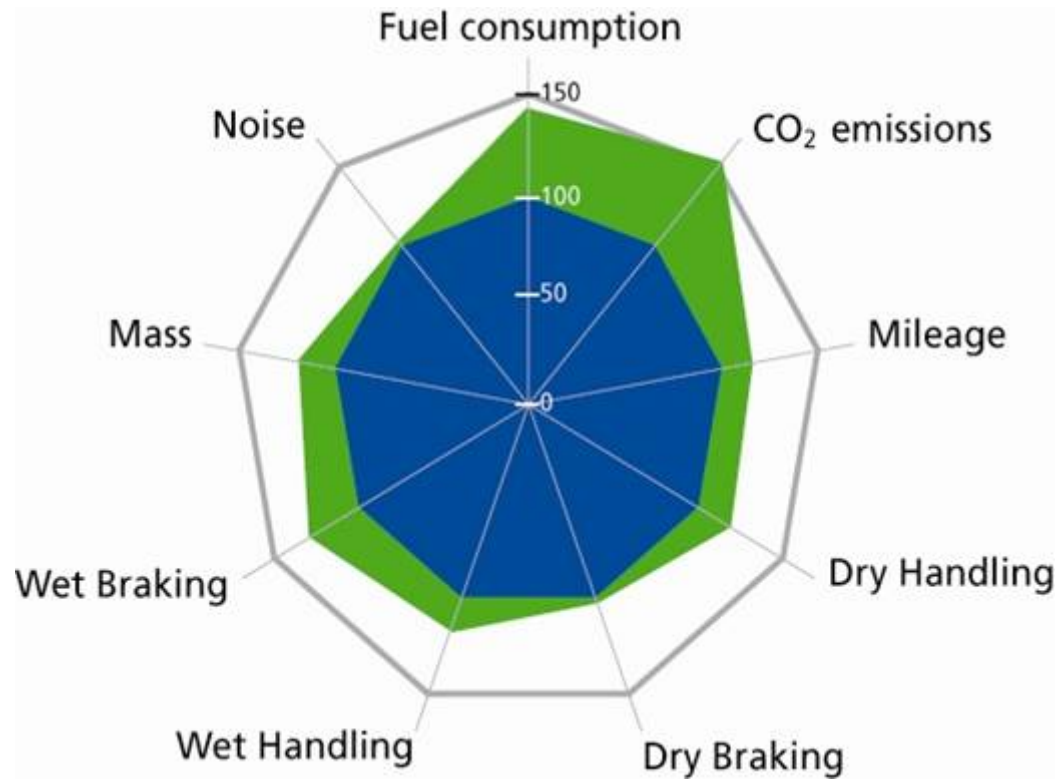


Green X



Michelin Energy Saver

The 4th generation of green tires



 Michelin Energy Saver

 Michelin Energy 3A (base 100)



Why Challenge Bibendum ? Let's be clear about it: Road mobility as we know it is NOT sustainable.

6 issues need to be addressed simultaneously:



Congestion

GHG emissions

Urban pollution

**Cost of
transportation**

Road (un)safety

Oil dependency

Good news for transportation! We are not in a dead end.



- 1. Reducing vehicle energy consumption by 50% and reducing CO₂ emissions by more than 50% is achievable.***
- 2. Lighter vehicles can also be safer***
- 3. ITS, ICT and new business models will transform transportation***

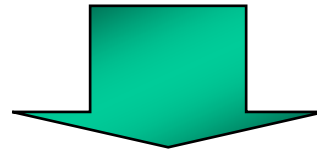


The way forward

- much less energy consumption and GHG emissions
- new fonctionnalités

And also...

- energy diversification (for ICEs & electric powertrains)
 - better road safety
 - adaptation to urbanization
- ICT development & interconnectedness
 - new business models



‘clean, safe, connected’
...and still affordable



*Rallying together
towards sustainable road mobility*



Challenge Bibendum 2011



Clean

Safe

Connected



Challenge Bibendum: 6 facets



1 Technical tests and rallies

Technical tests and a rally to analyze the performances of each technology

2 Ride'n Drive and Demonstrations

To enable the people attending the event to test for themselves and observe first hand the progress provided by the new technologies

3 Technological Exhibition Center

Where industrialists, research institutes and other organizations present their latest innovations



4 Thematic Workshops

Gathering experts on road mobility, to debate technical and regulatory developments throughout the world

5 Leaders Forum

Where political and economic leaders provide a global view of the stakes and possible progress for a sustainable mobility

6 Meeting with General Public

Public event enabling a selected 'general public' to discover these new technologies

Key targets



- **Public authorities: political decision makers and public administrations (local, national, international)**
- **Automotive industry at large**
- **Journalists (specialized and generalists)**
- **National and international organizations specialized in energy, climate change, transportation, road safety, ICT (and communication thereof).**



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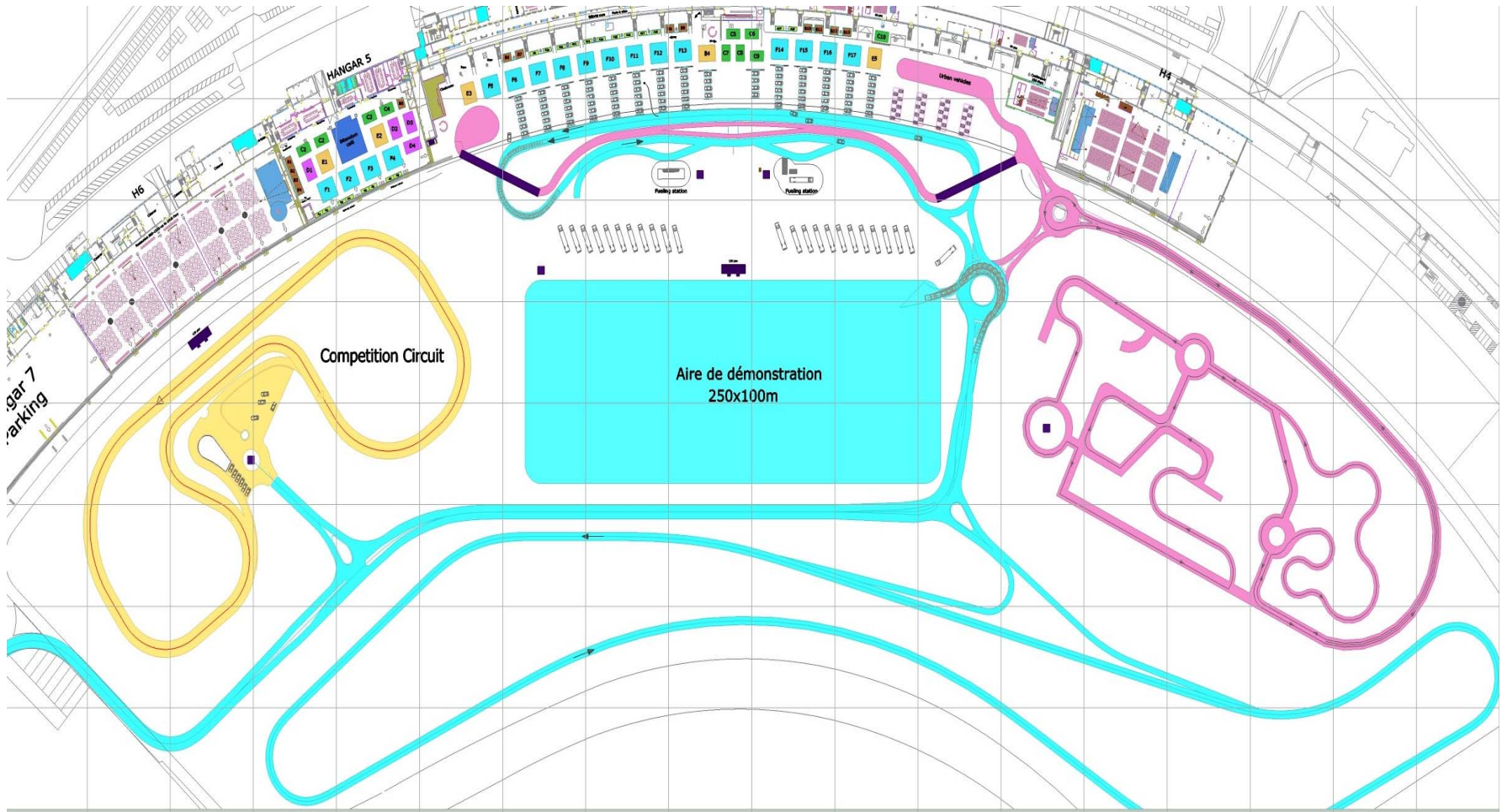
RALLYING TOGETHER TOWARDS SUSTAINABLE ROAD MOBILITY!

Wednesday, 18th May

Tests and Workshops



Berlin Tempelhof



Thursday, 19th May

**Demonstrations, Conferences,
Ride & Drive, Networking**



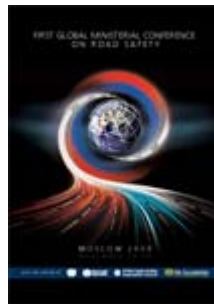
Friday, 20th May

Strategic meetings

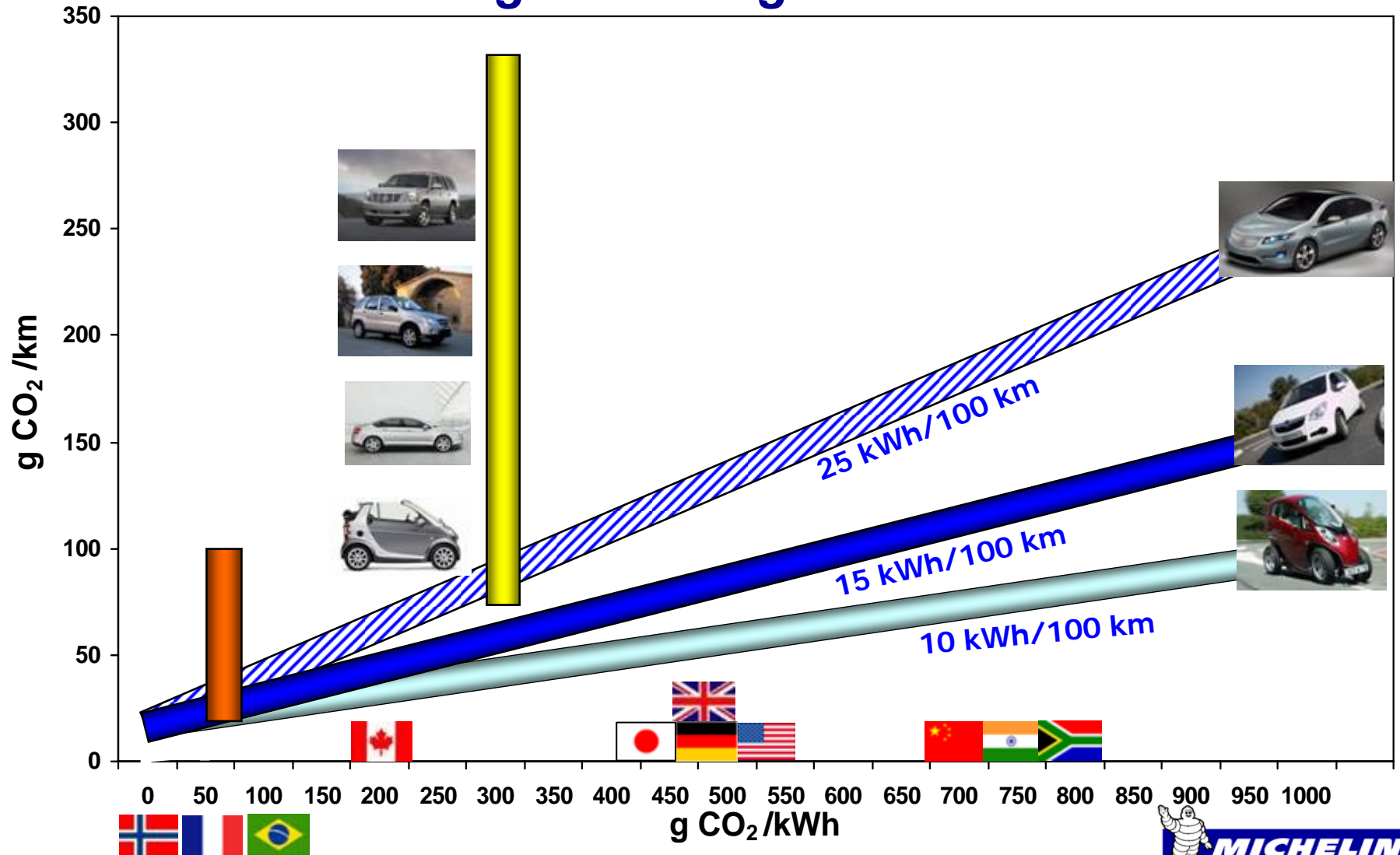


Major topics covered

- towards 100g CO₂/km
- the business case of going electric
- biofuels, natural gas: what perspectives?
- urban mobility: drivers for transformation
- road safety



Worldwide comparison of WtoW CO₂ emissions between battery EVs(15-25 kWh/100 km) and existing cars using oil-derived fuels



Hybrid / Electrical Market segmentation (cf. Valeo)

StopStart

MicroMild hybrid

Mild Hybrid

Full Hybrid

Plug-In Hybrid... Full Electric

12V

100V

2010
Continental



S-Klass



Ford Escape



TOYOTA



Prius



BYD F3D



I-Miev



Prius 3



Renault ZE



GM Chevy VOLT



Heuliez Will



HONDA



Insight

Engine Assistance

+ Electric Take-off

+ Electric Drive

+ Kinetic Energy Recovery

Stop & Start

12 Volts
3 kW

12- 36 Volts
8 kW

12 - 100 Volts
15 kW

300 Volts
30-50 kW
<2kWh

600 Volts
50-80 kW
Li+: 5 - 40kWh

Valeo



Smart mhd

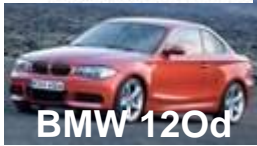
HITACHI



GM Saturn Vue

BOSCH

Invented for life



BMW 120d



GM Saturn Aura

Saturday, 21st May

Students' Day



Sunday, 22nd May

Public Day



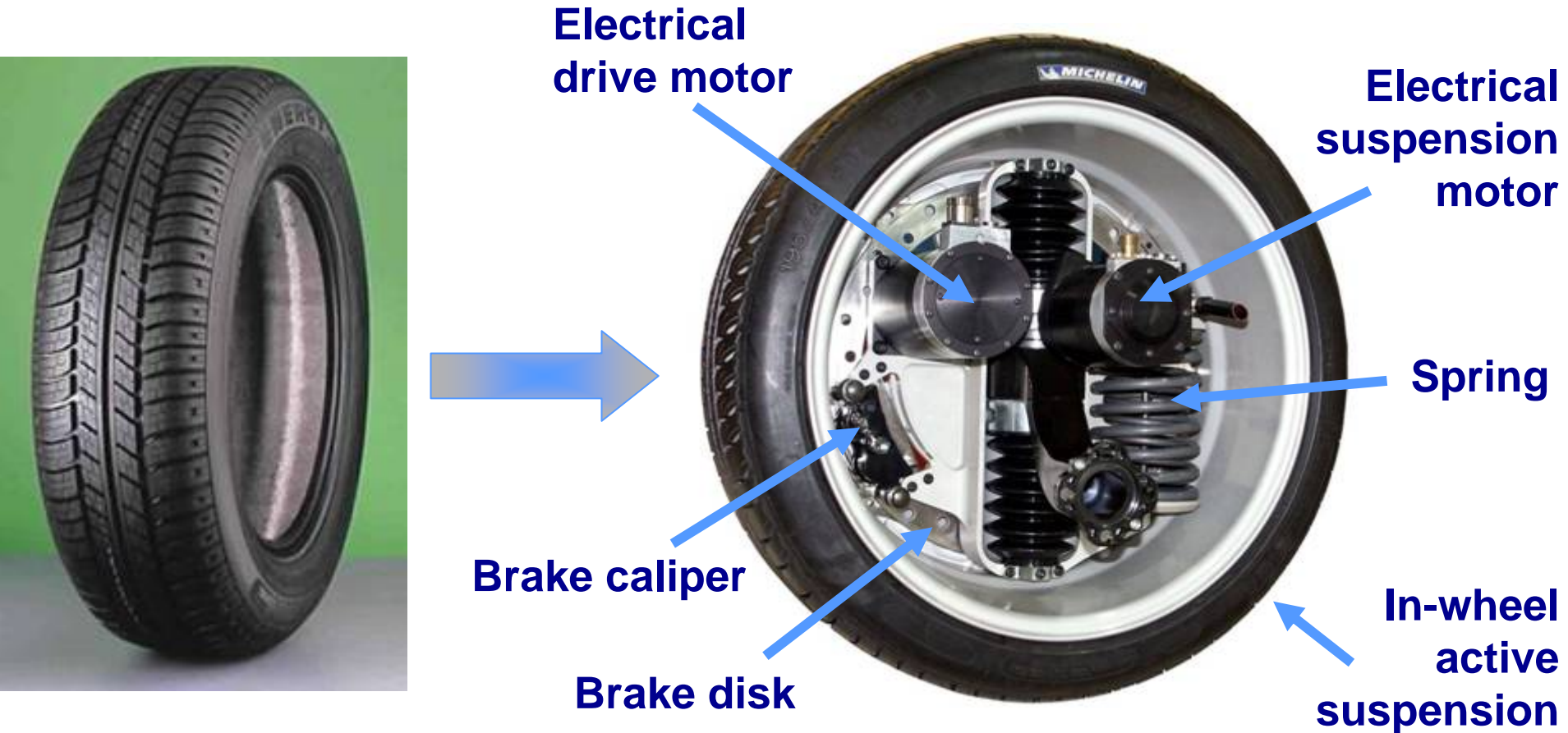


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Berlin, May 18 – 22, 2011



Michelin Active Wheels



Heuliez Will



- 5 seats, L: 3,74m
- 0-100 km/h: 12s
- Autonomy: 150km to 350km
- Mass: 1000kg
- Max speed: 140km/h
- High speed internet connection: WIFI, 3G+, machine-to-machine communication



Avant



Arrière

Venturi Volage: passion is still alive!

- 2 seats
- 4 motorized wheels
- 0-100 km/h: <5s
- Autonomy: 300km
- Max speed: 150km/h
- E-braking: 50kW



See you in Berlin!



Rallying together

towards sustainable road mobility

Next Challenge Bibendum, May 18-22, 2011...!!!

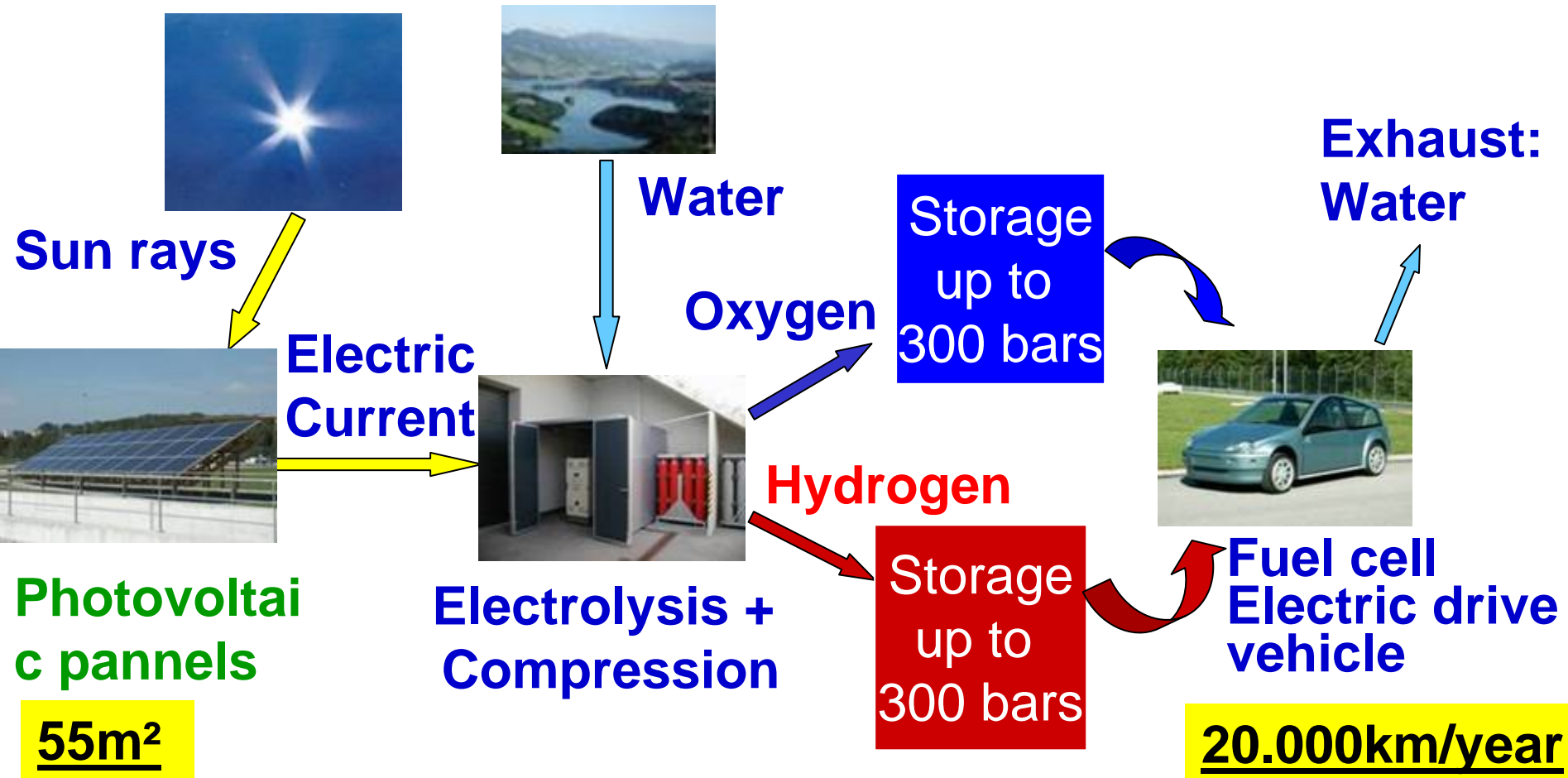




Thank you!

ANNEX

Food for thought: an integrated vision of modern, clean mobility!



BB1: soon the urban must ?

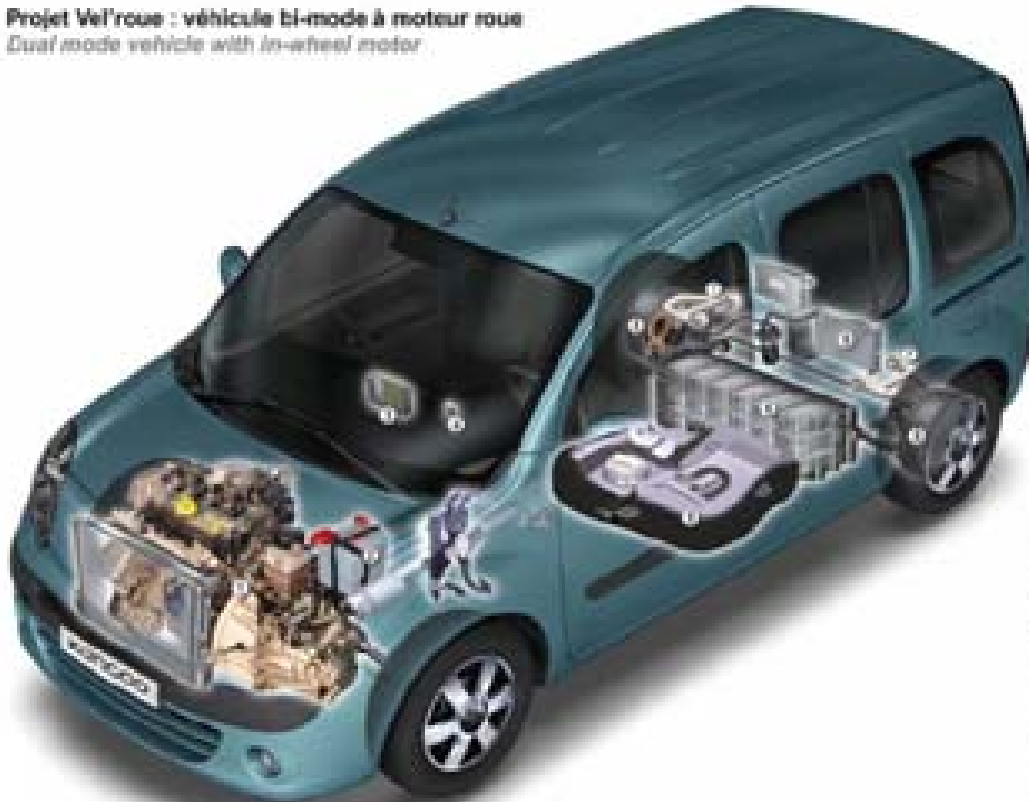
- 4 seats, L: 2,50m
- 0-30 km/h: 2,8s
- Autonomy: 120km
- Mass: 600kg
- Max speed: 90km/h



BB1: its father is a scooter. Its mother is a car!

VELROUE Bi-modal Project

Projet Vel'roue : véhicule bi-mode à moteur roue
Dual mode vehicle with in-wheel motor



- ① Moteur essence et boîte de vitesses robotisée
Fuel engine and automated Manual Transmission
- ② Batterie 12 V
12V battery
- ③ Écran d'affichage
Display
- ④ Sélecteur mode de fonctionnement
Driving mode selector
- ⑤ Réservoir d'essence
Fuel tank
- ⑥ Batterie de puissance Li-Ion
High power battery Li-Ion
- ⑦ Train arrière
Rear axle
- ⑧ Moteurs électriques dans roues
In-wheel motors
- ⑨ Refroidissement propulsion électrique
Electric motor cooling system
- ⑩ ECU
Electronic Control Unit

