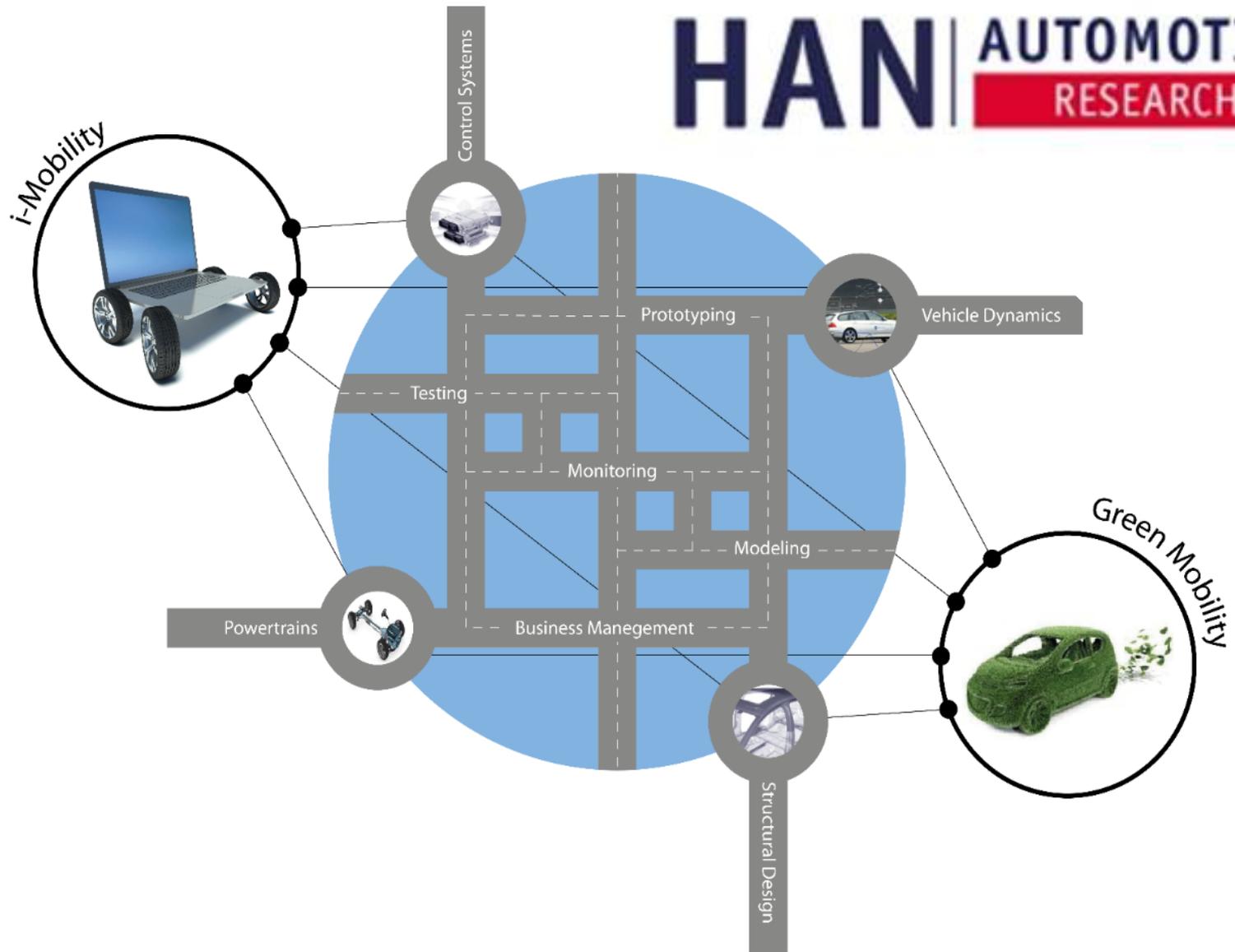


(Smart) Mobility

Trends, Feiten en Verwachtingen

Dr ir Frans Tillema











Smart Mobility

Is het een trend?

Bill Gates

“IF GENERAL MOTORS HAD KEPT UP WITH THE TECHNOLOGY LIKE THE COMPUTER INDUSTRY WE WOULD BE DRIVING \$25 CARS THAT GOT 1,000 MILES TO THE GALLON.”

If General Motors developed technology like Microsoft, motor vehicles would have the following characteristics:

1. Automobiles would frequently crash for no apparent reason. This would be so common that motorists would simply accept it, restart their car and continue driving.
2. Occasionally, for no reason, all doors would lock, and motorists could only enter their vehicle by simultaneously lifting the door handle, turning the key, and holding the radio antenna.
3. Vehicles would occasionally shut down completely and refuse to restart, requiring motorists to reinstall their engine.
4. Every time GM introduced a new model, car buyers would have to relearn to drive because all controls would operate in a new manner.
5. Whenever roadway lines are repainted motorists would need to purchase a new car that accommodates the new "operating system."
6. Cars could normally carry only one passenger unless the driver paid extra for a multi- passenger license.
7. Apple would make a car powered by the sun, more reliable, five times as fast, that required half the effort to drive, but could operate on just five per cent of roads.
8. Oil, water temperature and alternator warning lights would be replaced by a single 'general car default' warning light.
9. Airbags would ask, 'Are you sure?' before deployment.
10. Vehicle buyers would be required to also purchase a set of deluxe road maps from Rand-McNally (a GM subsidiary), regardless of whether or not they want it. A trained mechanic would be required to delete them from the glove compartment.
11. To shut off the engine drivers would press the 'start' button.

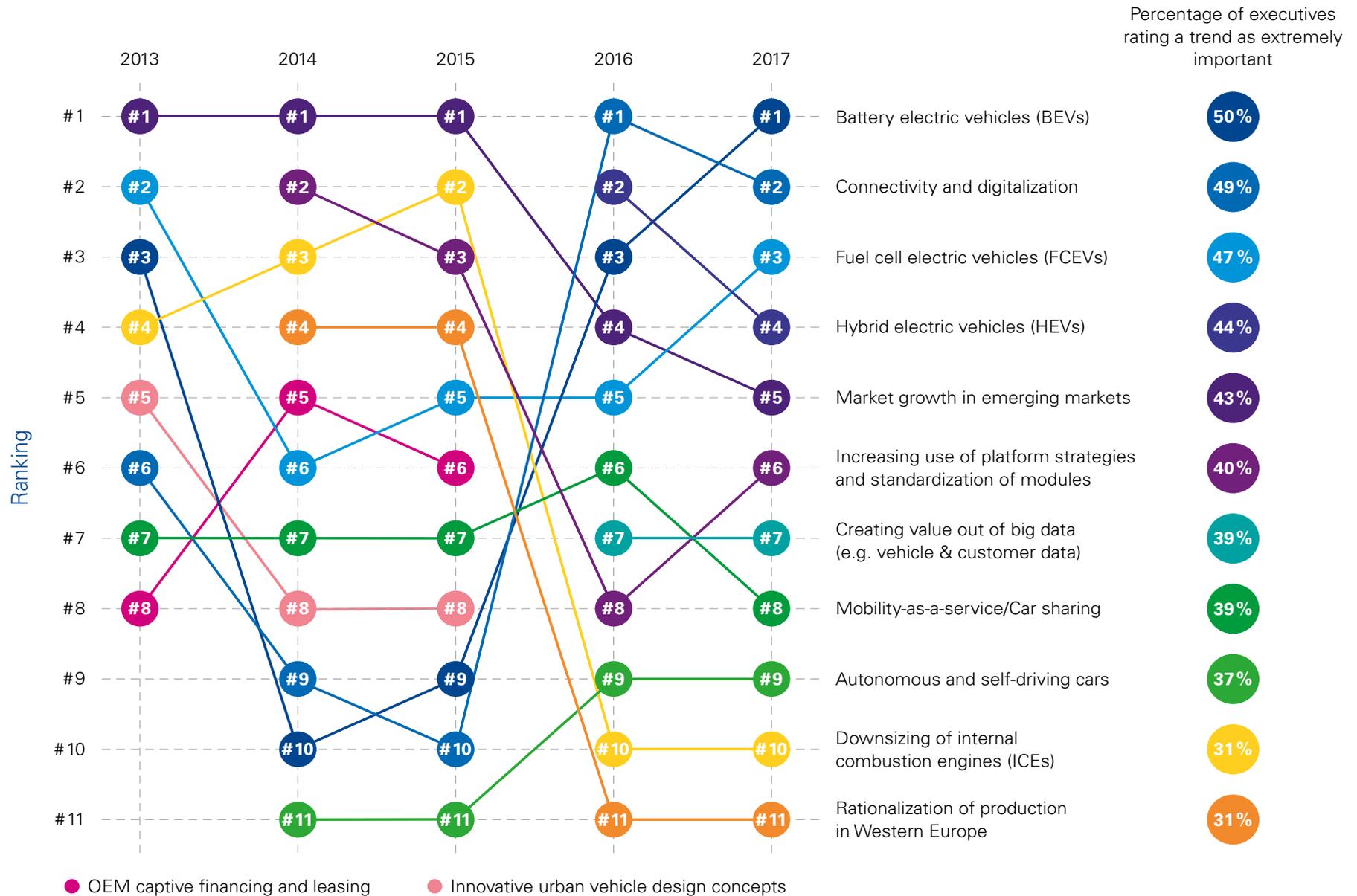
Statement GM

General Motors

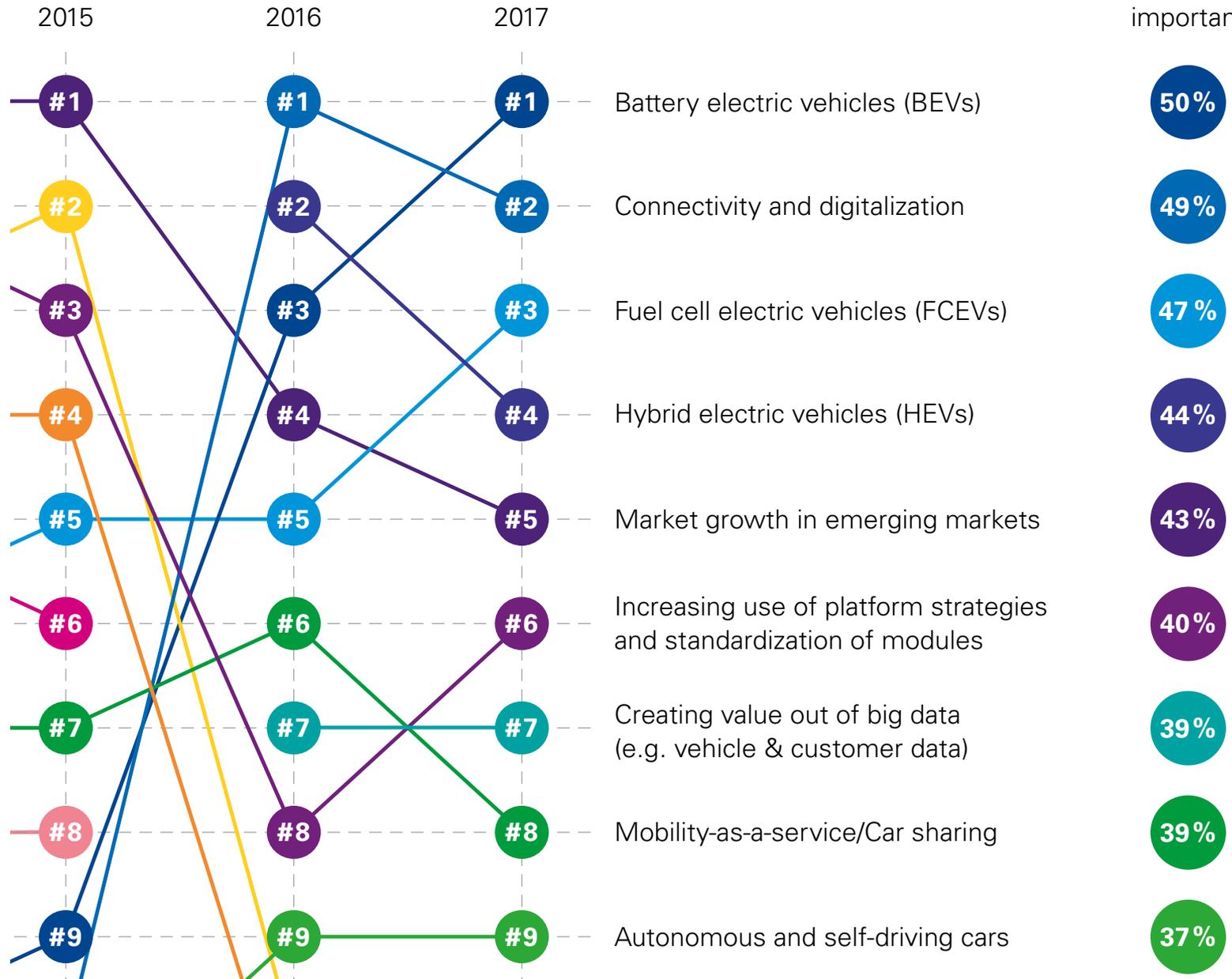
AIRBAGS WOULD ASK, 'ARE YOU SURE?' BEFORE DEPLOYMENT

OCCASIONALLY, FOR NO REASON, CARS WOULD CRASH

EVERY TIME GM INTRODUCED A NEW CAR, CAR BUYERS WOULD HAVE TO LEARN TO DRIVE ALL OVER AGAIN BECAUSE NONE OF THE CONTROLS WOULD OPERATE IN THE SAME MANNER AS THE OLD CAR



rating a trend as extremely important







3:00
●●●●●
LTE

Phone	Music	Maps	Messages
Now Playing	SYNC	Podcasts	Audiobooks

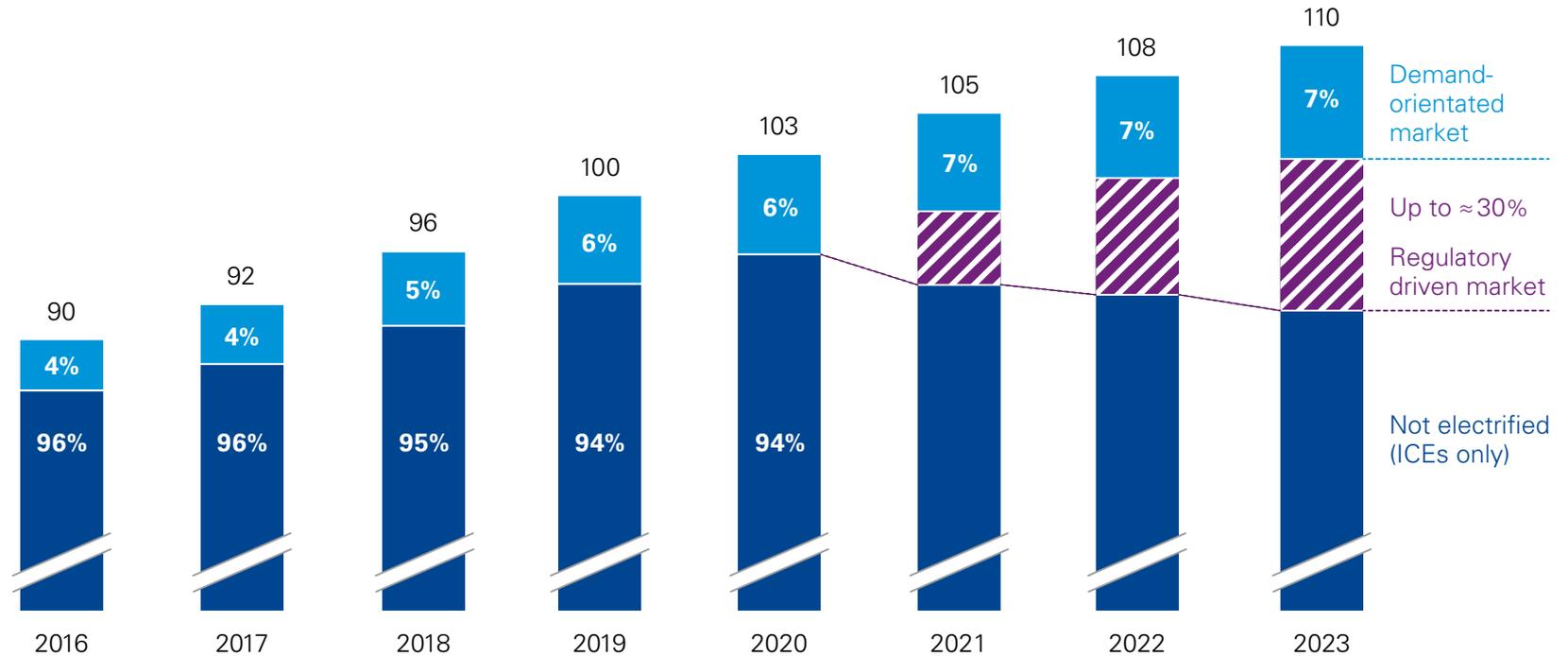
PASSENGER AIRBAG OFF

SONY

TEMP + - + - TEMP +

NextGen Analytics: Global automotive light vehicle production (< 6t) by drive technology (ICE vs. electrified)

[in m units]



● Internal combustion engines (ICEs) only

● All electrified drivetrains (FCEVs, BEVs, PHEVs, HEVs)

≡ Adjusted scale for better visibility



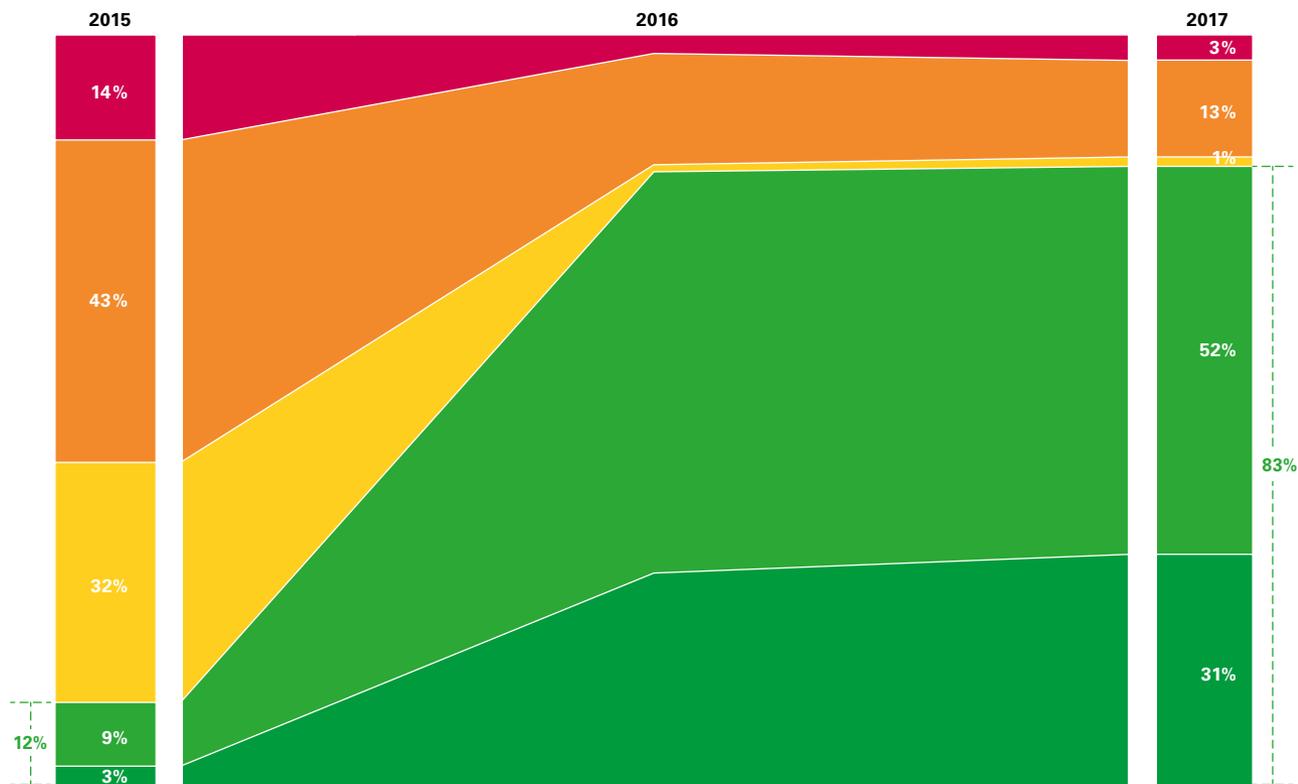
ix35 Fuel Cell



ACEA, 28 sept 2017

In de eerste helft van dit jaar zijn er in de vijftien grootste EU-markten meer nieuwe benzineauto's verkocht dan nieuwe diesels. Het is voor het eerst sinds 2009 dat benzineauto's meer in trek waren.

Is disruptive change likely?



Answer

- Extremely likely
- Somewhat likely
- Neutral/Don't know
- Somewhat unlikely
- Not at all likely

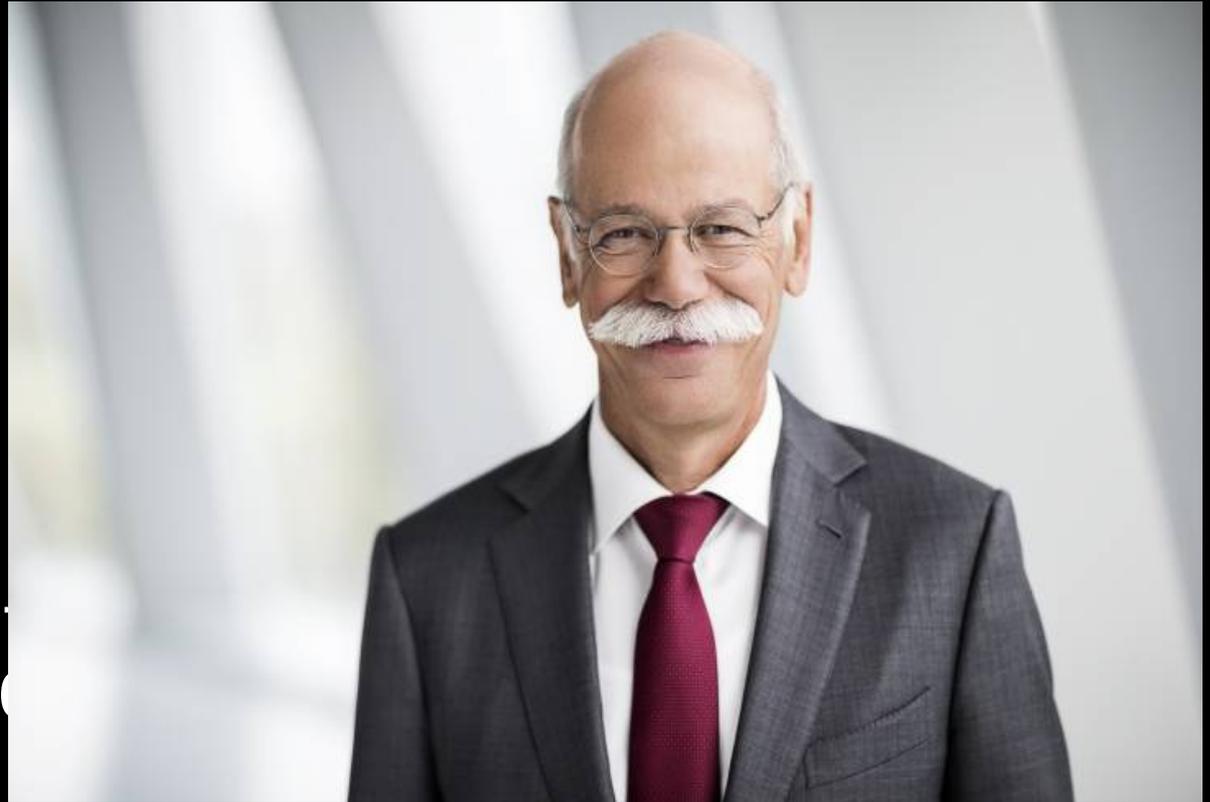
Dieter Zetsche, CEO Daimler

“What is important for us is that the brain of the car, the operating system, is not iOS or Android or someone else but it’s our brain.”

“We do not plan to become the Foxconn of Apple.”

Dieter Zetsche, CEO Daimler

“What is
brain of
is not i



“We do not plan to become the Foxconn of
Apple,”

Startup Autobahn

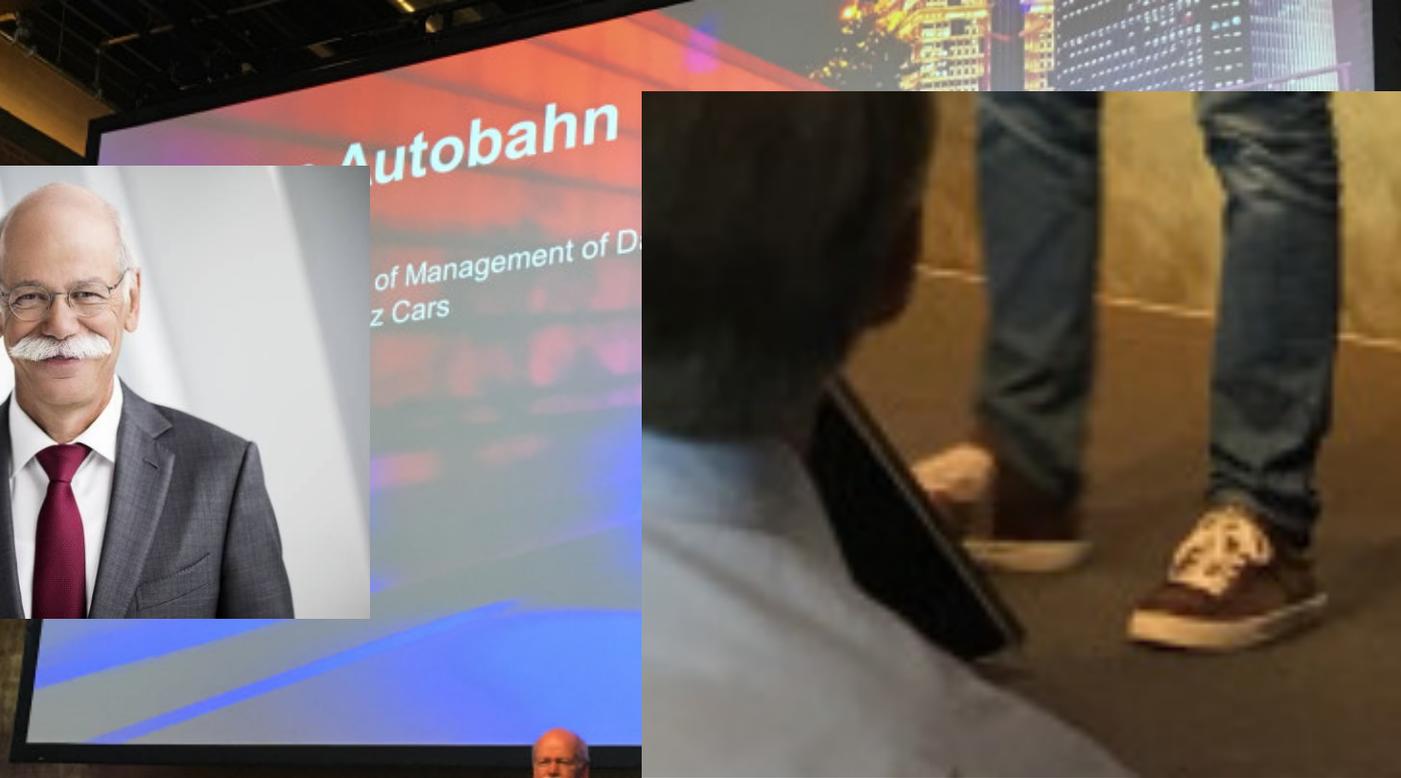
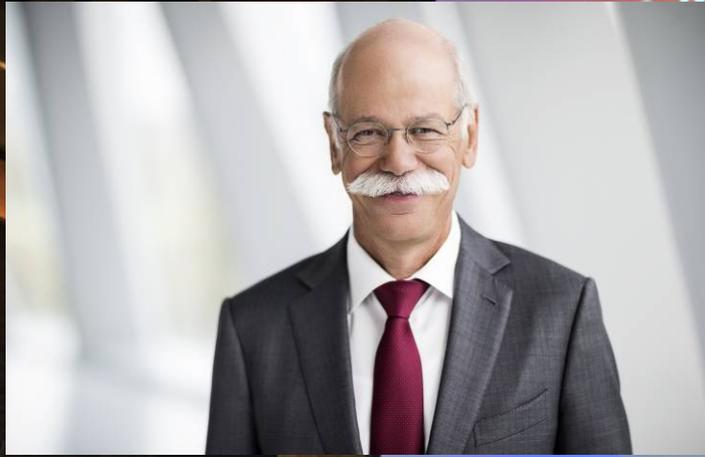
Dr. Dieter Zetsche
Chairman of the Board of Management of Daimler AG
Head of Mercedes-Benz Cars



Startup Autobahn

Dr. Dieter Zetsche
Chairman of the Board of Management of D
Head of Mercedes-Benz Cars





.....

“IF GOVERNMENTS HAD KEPT UP WITH THE TECHNOLOGY LIKE THE COMPUTER INDUSTRY WE WOULD BE LIVING IN A SOCIETY WITHOUT CONGESTION, WITHOUT POLLUTION AND WITH UNLIMITED ACCESS TO AUTONOMOUS CARS TO SOLVE EVERY MOBILITY PROBLEM”

Wat is uw reactie?



Roland Berger

THE AUTOMOTIVE INDUSTRY IS SUBJECT TO "REAL" DISRUPTION

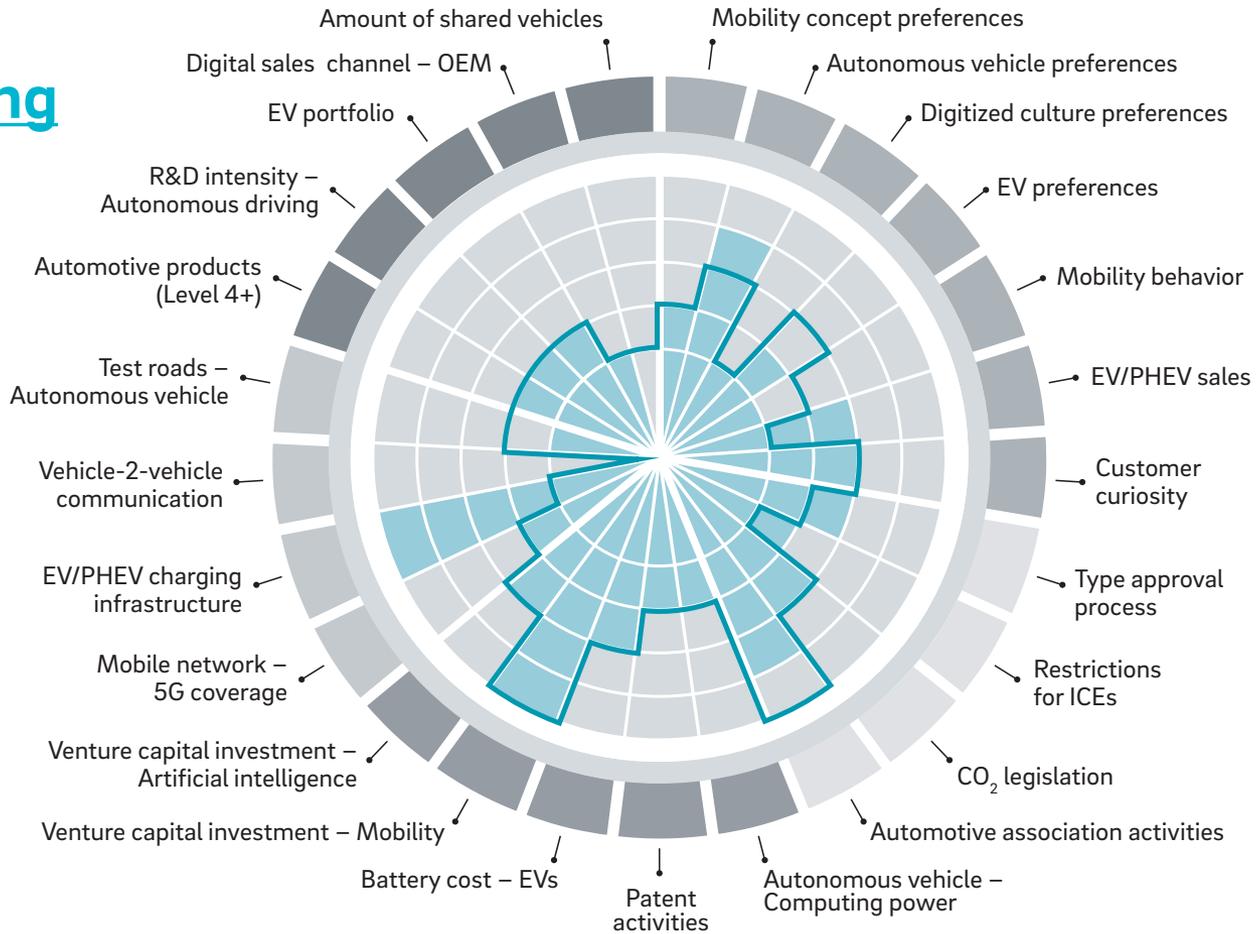
- Over the past 130 years, the automotive industry has followed a very "linear" development path. But due to the parallel emergence of four megatrends in the last 2 years (MADE – Mobility, Automated driving, Digital experience, Electrification), the industry is likely to be reshaped in the next 10 to 15 years."

Country ranking



#1 The Netherlands

A winning combination: The Netherlands has comparatively high electronic vehicle sales, a very good EV charging infrastructure and a strong interest in autonomous driving.







**YOU ARE WHAT
YOU SHARE.**

18 september 2017

***STEEDS GROTER AANTAL
AUTOBEZITTERS DEELT ZIJN AUTO MET
DE BUREN VIA ONLINE PLATFORMEN***

18 september 2017

**IN HET VOORJAAR VAN 2017 WAREN
ER 30.697 DEELAUTO'S IN NEDERLAND.
DIT BETEKENT WEER EEN STERKE GROEI
VAN 23% (RUIM 5.700 AUTO'S) TEN
OPZICHTE VAN 2016**



STEL JE PRIVATE LEASE PAKKET SAMEN

← [KIES EEN ANDERE UITVOERING](#)



ROSSO CORALLO

Pastel

€ 0,- p/mnd

Standaard uitgerust met

Bumpers in kleur carrosserie, Opbergvakken in de portieren, Dashboard sierstrip in kleur carrosserie, In carrosseriekleur gespoten deurgrepen, 14" stalen velgen incl. wielsierdeksels, Centrale portiervergrendeling met afstandsbediening incl. ontgrendeling achterklep, Dual drive stuurbekrachtigt ... [MEER](#)

Looptijd contract

JOUW OVERZICHT

500 POPSTAR TWINAIR 60PK



PRIVATE LEASE PAKKET



199,00 / MAAND

CONTACT OPNEMEN



- ✓ 100% vrijblijvend
- ✓ Dealer in de buurt
- ✓ Sneller reactie



CHAT

Is dit jouw Mazda MX-5?

Bekijk de Mazda MX-5 S en pas deze verder aan naar jouw wens. Het is ook mogelijk een motor en transmissie te kiezen of [direct naar een overzicht voor deze uitvoering te gaan](#).

Mazda MX-5 - S TS TS+ GT-M

1. Exterieur 2. Interieur 3. Motor & transmissie 4. Overzicht Dealeropties

Mazda MX-5 S

1.5l, benzine, handgeschakeld



Basisprijs € 31.880,-
Extra opties € 0,-

Adviesprijs ⓘ € 31.880,-

Private lease ⓘ € 449,- p/m

Private finance ⓘ [Bereken prijs](#)

Offerte private lease



EXTRA SCHERP GEPRIJSD

ACTIE



Audi A4-Limousine

Basis

€ 425 p/m

Toon autogegevens +

Toon volledige uitrusting +

Mogelijke extra opties:

Te kiezen in de volgende stap

Winterbanden

Direct vervangend vervoer

€ 425 p/m

Deze auto samenstellen >

EXTRA SCHERP GEPRIJSD

ACTIE



Audi A4-Limousine

Lease edition

€ 480 p/m

Toon autogegevens +

Toon volledige uitrusting +

Mogelijke extra opties:

Te kiezen in de volgende stap

Winterbanden

Direct vervangend vervoer

€ 480 p/m

Deze auto samenstellen >

EXTRA SCHERP GEPRIJSD

ACTIE



Audi A4-Limousine

S line edition

€ 520 p/m

Toon autogegevens +

Toon volledige uitrusting +

Mogelijke extra opties:

Te kiezen in de volgende stap

Winterbanden

Direct vervangend vervoer

€ 520 p/m

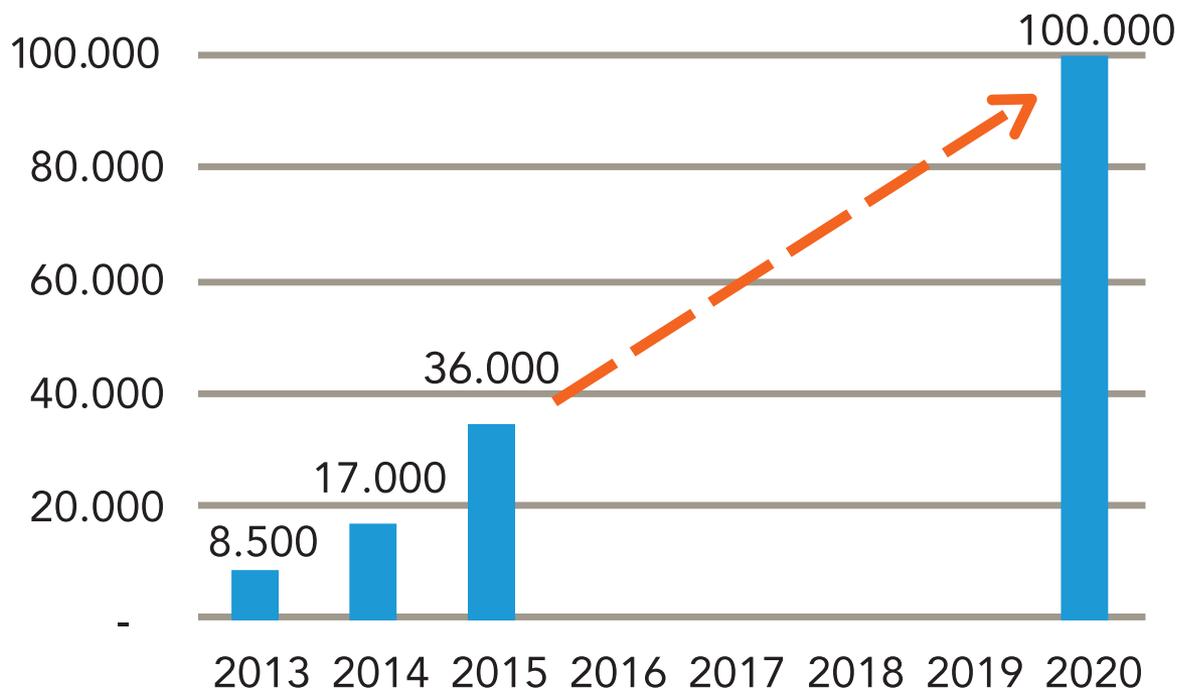
Deze auto samenstellen >



Heeft u een vraag?

Ontwikkeling private leasecontracten 2013-2020

Aantal private lease contracten



Bronnen: VNA. Bewerking 2013, 2014 en 2015 door Justlease.nl.
Raming 2020 door ING Economisch Bureau

80 €/maand????





Smart Mobility

Een trend?

Heilige Graal?





Smart Mobility

Denk aan de business case én de gebruiker

KORTENOORD 10 K.M.

ROTTERDAM 4 K.M.
SCHIEDAM 9 K.M.

UTRECHT 5 K.M. V.H.
NEDERKESCH 10 K.M.

Deze toegif van de afleverende KROEG-vergadering
is op 24 oktober 1984 geïnterd bij het gemeentelijk van het
100-jarig bestaan van de afdeling Bestuurlijke van de KROEG

De eerste vergadering werd in oktober 1984 aflever geïnterd
langs de route Rotterdam - Utrecht.



Wegwijzers, moeten we dat nou wel doen? De ANWB-top is verdeeld. Het plaatsen van borden zou de verkoop van ANWB-kaarten in de weg zitten.

Er klinkt ook een educatief bezwaar: toeristen moesten vooral goed leren kaartlezen. Wegwijzers zou ze lui maken.

Amsterdam Group

Typical V2V

- Hazardous location warning
- Slow vehicle warning
- Stationary vehicle warning
- Emergency Brake Light
- Emergency vehicle warning
- Motorcycle approaching indication

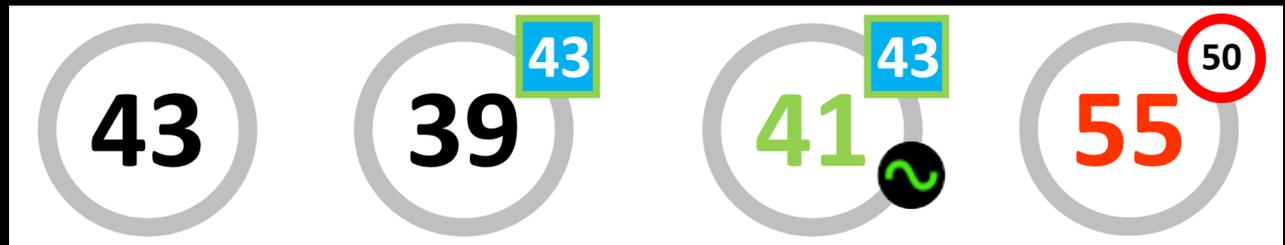


I2V provided by infrastructure 'front runners'

- Road works warning
- In-vehicle signage/information
- Signal phase and time of traffic lights
- Probe vehicle data (Floating Car Data)



Talking Traffic en I-VRI





45% of executives still believe that they need no **offer anything to consumers in exchange** for their data.

84% of consumers want direct **monetary benefits** in exchange for their data.



Executive



Consumer

2016

2017

2016

2017

Direct monetary benefits

82%

89%

82%

84%

Consumer incentive schemes

88%

90%

75%

74%

Individualized service & customer experience over the whole customer lifecycle

88%

89%

71%

74%

No benefits offered

43%

45%

30%

20%

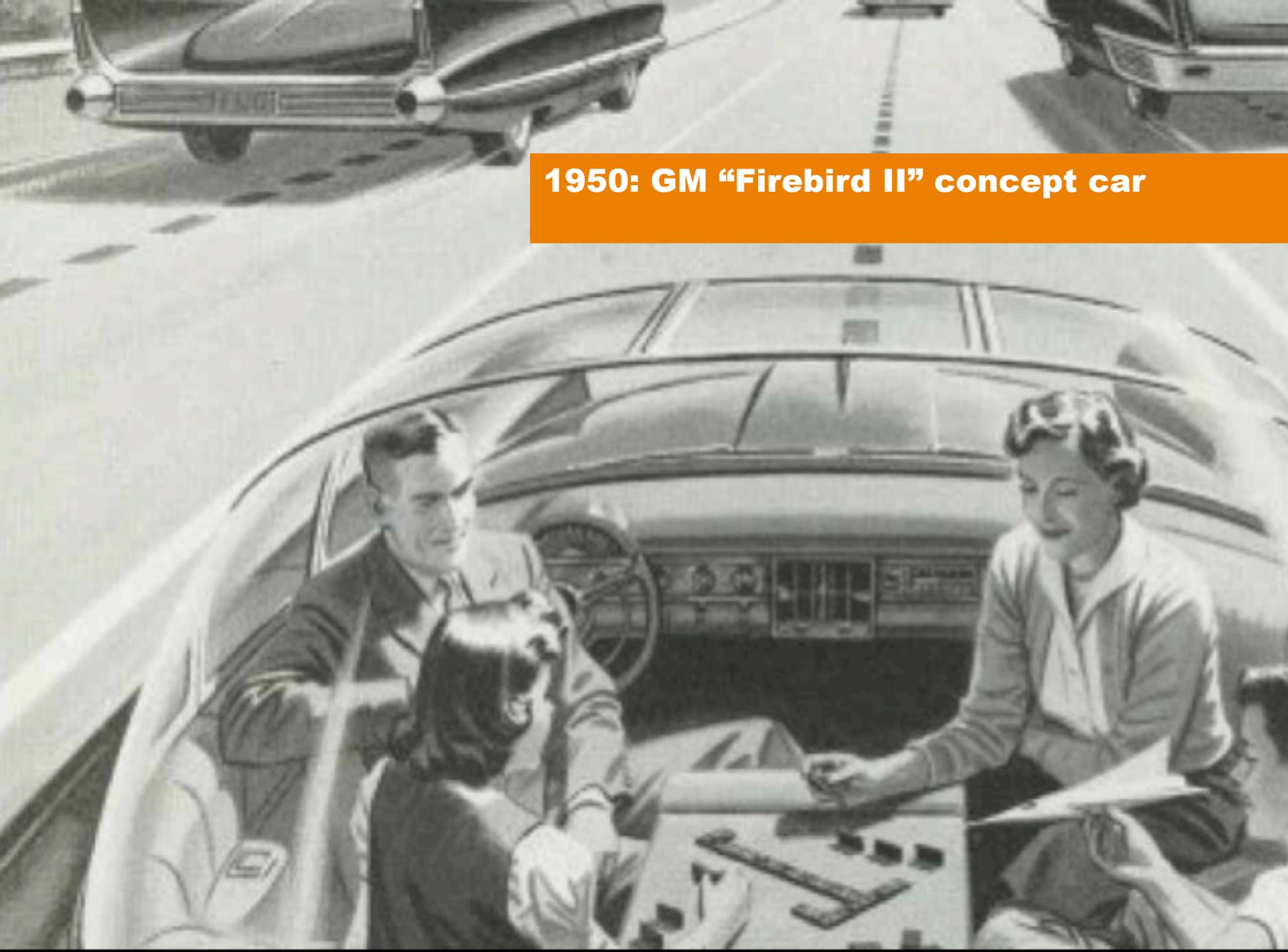


Access to In-vehicle Data and Resources

Final Report

Written by Authors M McCarthy, M Seidl, S Mohan, J Hopkin, A Stevens, F Ognissanto
Project Manager N Kathuria
Technical Referee R Cuerden
[May - 2017]



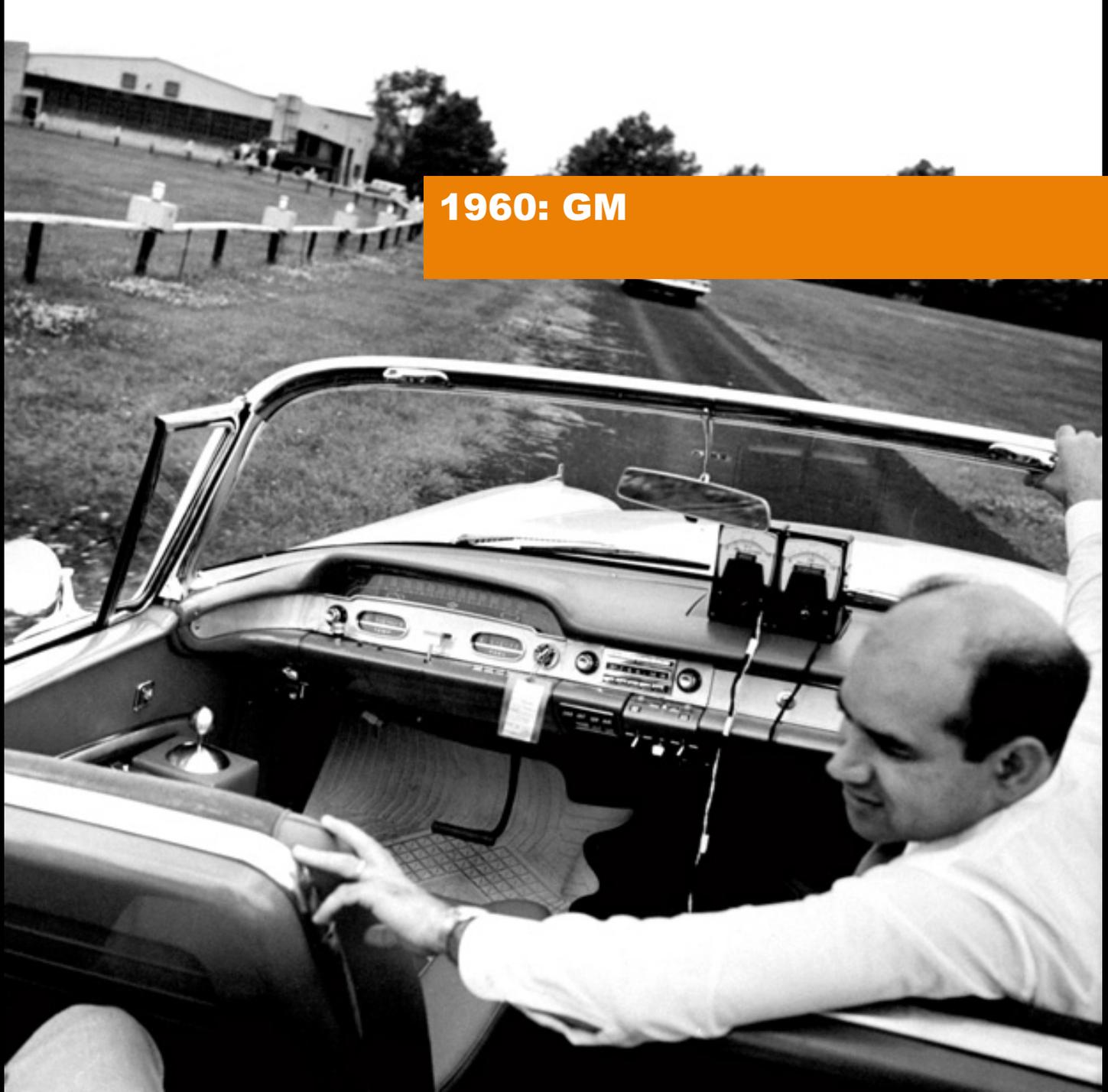


1950: GM “Firebird II” concept car

1960: Plymouth



1960: GM



1990: Mercedes



Kay Stepper, head of the automated driving unit at Bosch

“Technologically, we will be ready
for automated driving within this
decade”

“But it will take well into the
next decade to convince consumers.”

Level	Example Systems	Driver Roles
1	Adaptive Cruise Control OR Lane Keeping Assistance	Must drive <u>other</u> function and monitor driving environment
2	Adaptive Cruise Control AND Lane Keeping Assistance Traffic Jam Assist (Mercedes)	Must monitor driving environment (system nags driver to try to ensure it)
3	Traffic Jam Pilot Automated parking	May read a book, text, or web surf, but be prepared to intervene when needed
4	Highway driving pilot Closed campus driverless shuttle Driverless valet parking in garage	May sleep, and system can revert to minimum risk condition if needed
5	Automated taxi (even for children) Car-share repositioning system	No driver needed

Much Harder than Commercial Aircraft Automation

Measure of Difficulty – Orders of Magnitude

	Factor
Number of targets each vehicle needs to track (~10)	1
Number of vehicles the region needs to monitor (~10 ⁶)	4
Accuracy of range measurements needed to each target (~10 cm)	3
Accuracy of speed difference measurements needed to each target (~1 m/s)	1
Time available to respond to an emergency while cruising (~0.1 s)	2
Acceptable cost to equip each vehicle (~\$3000)	3
Annual production volume of automation systems (~10 ⁶)	-4
Sum total of orders of magnitude	10





Bundesministerium
für Verkehr und
digitale Infrastruktur

ETHIK-KOMMISSION

AUTOMATISIERTES UND VERNETZTES FAHREN

BERICHT
JUNI 2017

WWW.BMVI.DE

1.

Teil- und vollautonome
heit aller Beteiligten
tätigkeitschancen und die
horcht dem Prinzip der
heit.

Verbesserung der Sicher-
Steigerung von Mobili-
che Entwicklung ge-
ortlicher Handlungsfrei-

1. Teil- und vollautomatisierte Verkehrssysteme dienen zuerst der Verbesserung der Sicherheit aller Beteiligten im Straßenverkehr. Daneben geht es um die Steigerung von Mobilitätschancen und die Ermöglichung weiterer Vorteile. Die technische Entwicklung gehorcht dem Prinzip der Privatautonomie im Sinne eigenverantwortlicher Handlungsfreiheit.

Zuerst:

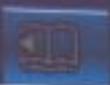
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SICHERHEIT

 Details

11:43 am

 BBC R2

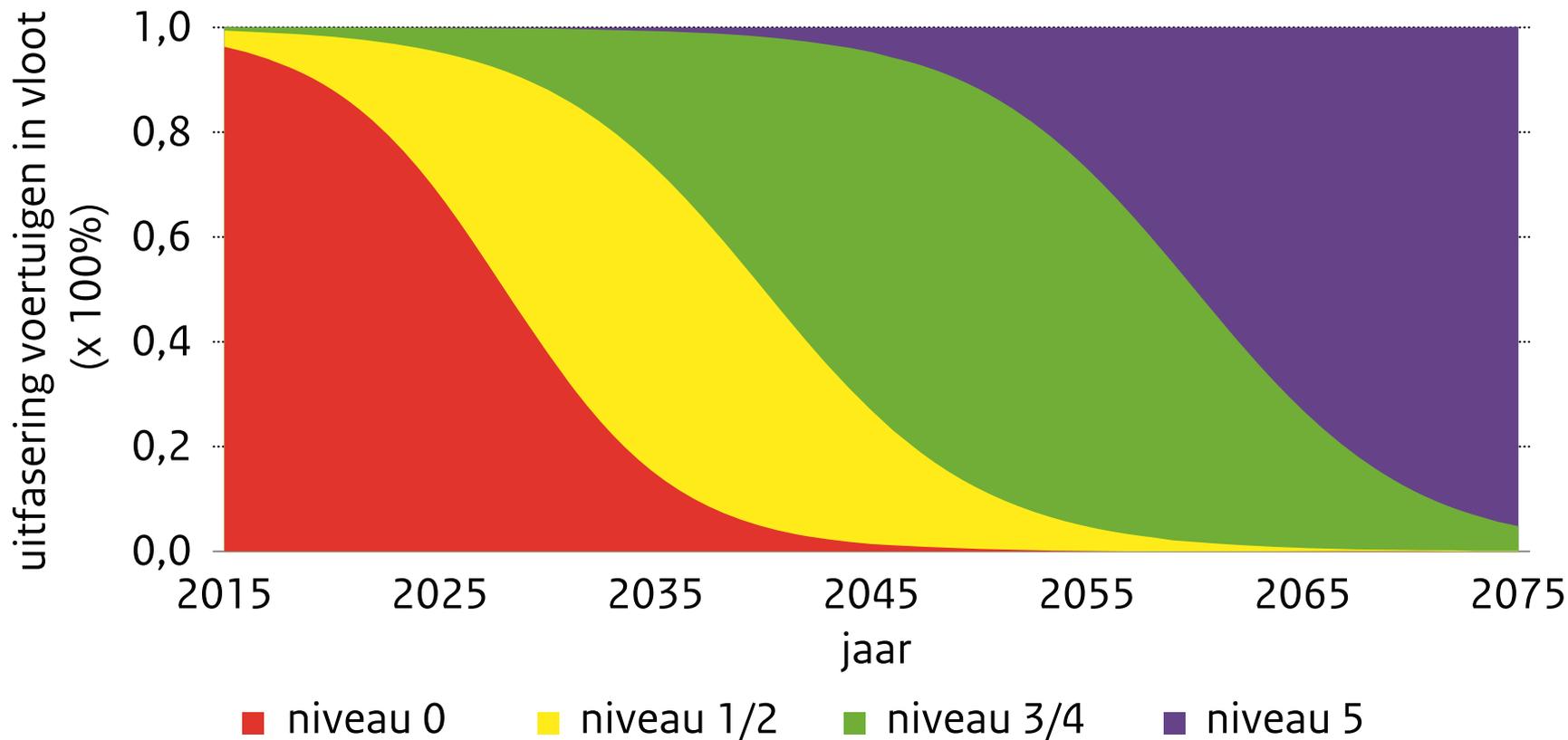


Active Cruise Control

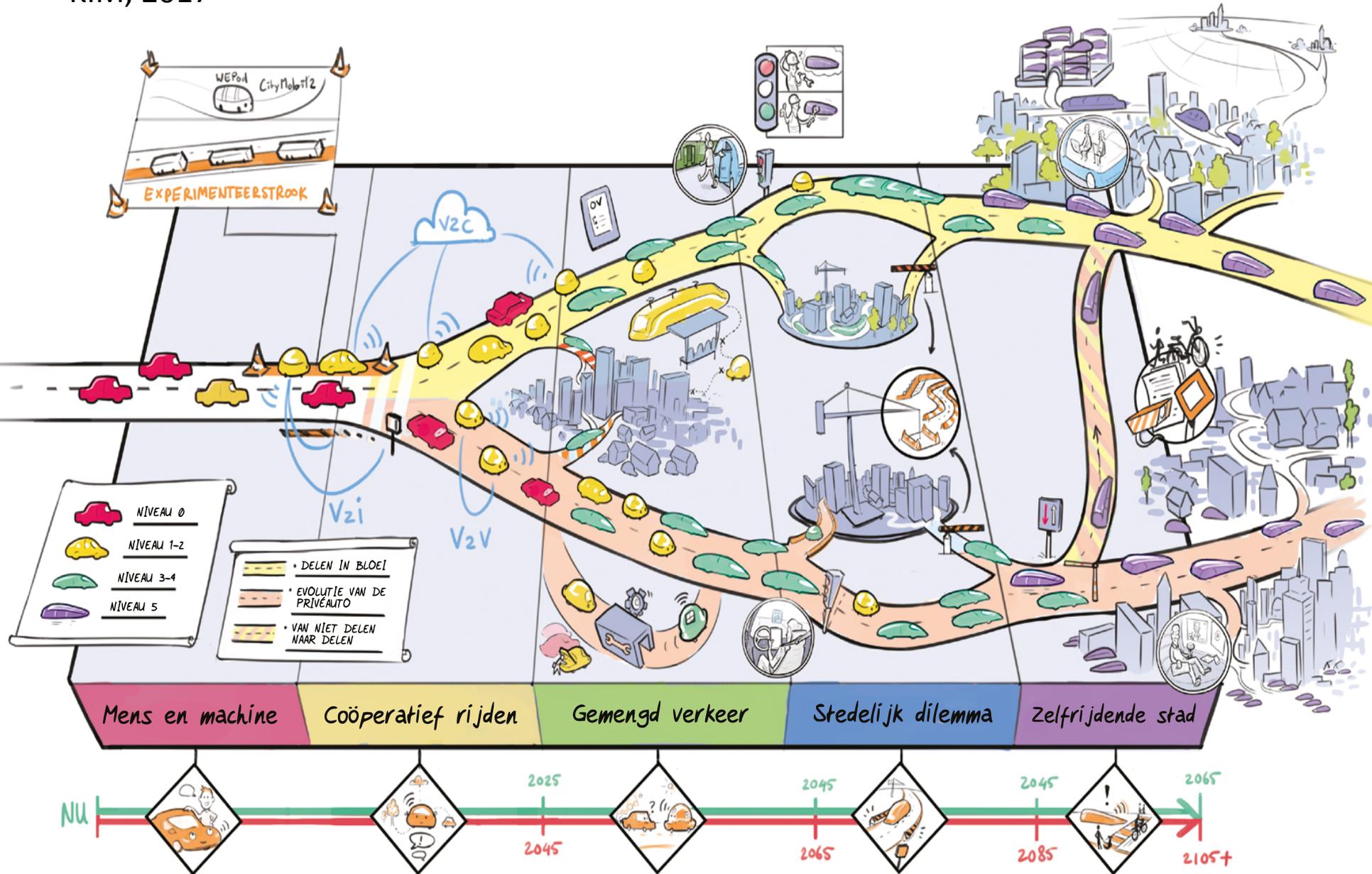
Active Cruise Control deactivated.
Keep your distance.

Temporary restriction caused by system limits.
Reactivate Active Cruise Control when required and
if the driving situation allows.





KIM, 2017 (Taede Tillema, George Gelauff, Jan van der Waard, Jaco Berveling, Saeda Moorman)

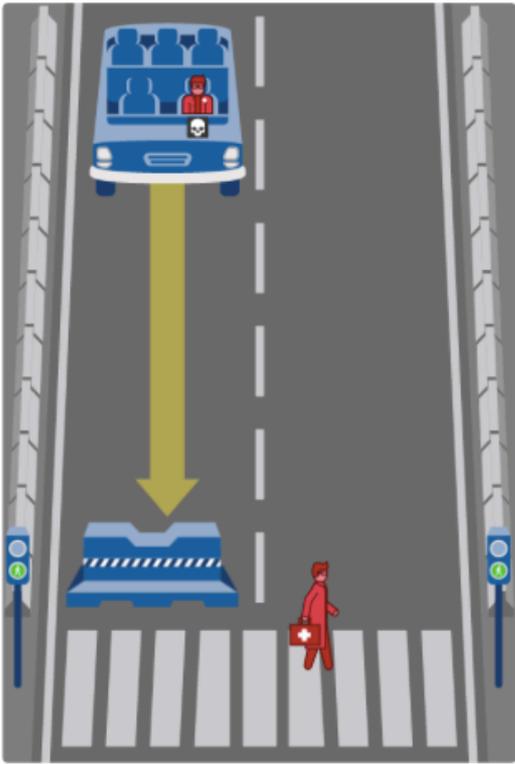


‘Overgang van mens naar zelfrijdende techniek duurt 30 jaar’

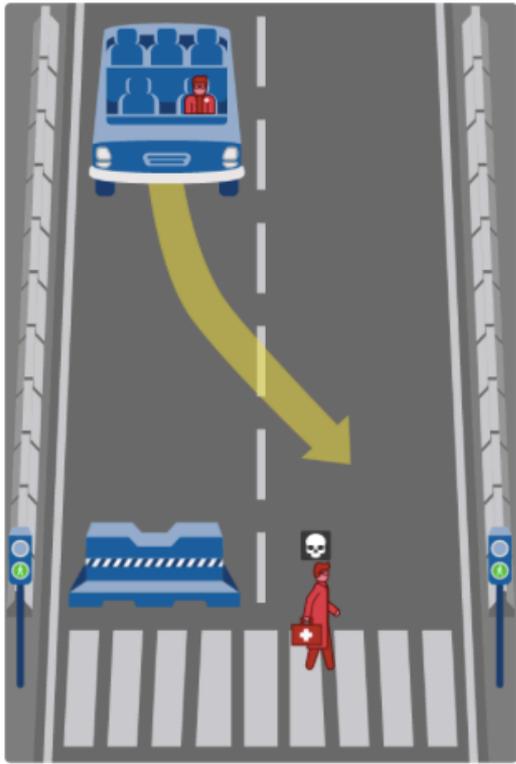
“Stel je voor dat je een maand lang elke dag in de auto zit, die jou volledig zelfstandig naar je bestemming brengt. Je aandacht verslapt, want je verwacht dat de dag erna je auto ook weer foutloos rijdt.”

Chris Urmson vreest dat er ongelukken gebeuren, zodra mensen volledig vertrouwen op zelfrijdende techniek als deze nog niet volwassen is.

[Share](#) [Link](#) [5 Likes](#) [Random](#)



Show Description



Show Description

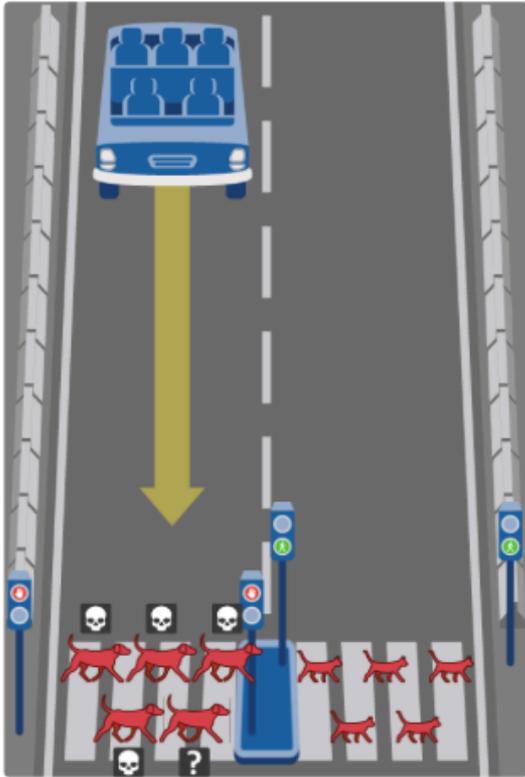


Share

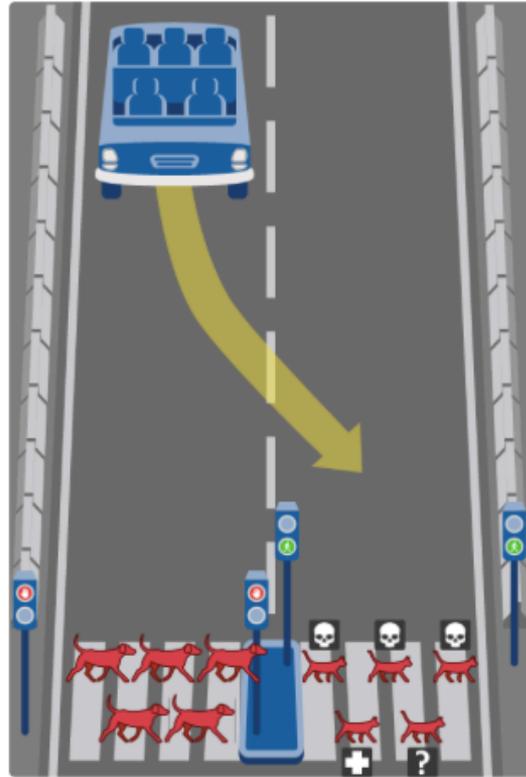
Link

14 Likes

Random



Show Description



Show Description

Tot Slot: Smart Mobility

- Smart Mobility
 - Veel potentieel en interessante technologie
 - Het gebeurt al op straat
- Beide benen op de grond
 - Het kan nog lang duren
 - Business case belangrijk
 - En waak voor technology push?

(Smart) Mobility

Trends, Feiten en Verwachtingen

Dr ir Frans Tillema

