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The European Commission's science and knowledge service

Joint Research Centre

Yo, Driverless Car

Reinventando la experiencia de conducción

UX Spain 2017, 12-13 Mayo 2017

María Alonso Raposo

Joint Research Centre

Rinspeed XchangE, 2014

Viajando al UXSpain 2030…

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Tecnología
Legislación

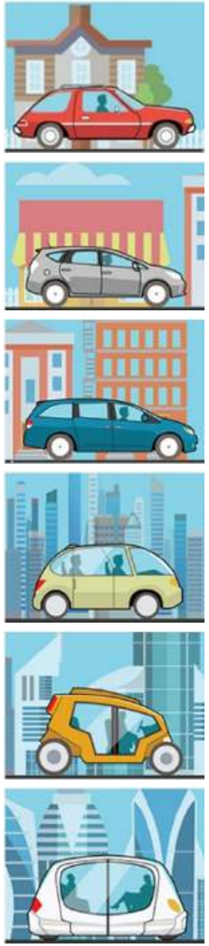

Tecnología
Legislación
Usuarios

European Commission

Tec

SAE J3016, 2016

SAE level	Name	Narrative Definition	Execution of Steering and Acceleration/ Deceleration	*Monitoring* of Driving Environment	Fallback Performance of *Dynamic Driving Task*	System Capability *(Driving Modes)*
***Human driver* monitors the driving environment**						
0	**No Automation**	the full-time performance by the *human driver* of all aspects of the *dynamic driving task*, even when enhanced by warning or intervention systems	Human driver	Human driver	Human driver	n/a
1	**Driver Assistance**	the *driving mode*-specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the *human driver* perform all remaining aspects of the *dynamic driving task*	Human driver and system	Human driver	Human driver	Some driving modes
2	**Partial Automation**	the *driving mode*-specific execution by one or more driver assistance systems of both steering and acceleration/ deceleration using information about the driving environment and with the expectation that the *human driver* perform all remaining aspects of the *dynamic driving task*	**System**	Human driver	Human driver	Some driving modes
***Automated driving system* ("system") monitors the driving environment**						
3	**Conditional Automation**	the *driving mode*-specific performance by an *automated driving system* of all aspects of the dynamic driving task with the expectation that the *human driver* will respond appropriately to a *request to intervene*	System	**System**	Human driver	Some driving modes
4	**High Automation**	the *driving mode*-specific performance by an automated driving system of all aspects of the *dynamic driving task*, even if a *human driver* does not respond appropriately to a *request to intervene*	System	System	**System**	Some driving modes
5	**Full Automation**	the full-time performance by an *automated driving system* of all aspects of the *dynamic driving task* under all roadway and environmental conditions that can be managed by a *human driver*	System	System	System	**All driving modes**



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Yo, Robot, 2004 (ambientada en 2035)


Volvo Concept 26, 2015

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Faraday Future FF91, 2017

Exponential Technologies: Machine Vision (LIDAR Sensors)

2012 Google announced that the cost of technology in its self-driving car was ~$150k

LIDAR Sensor (for Machine Vision) was $70k

By the end of 2013 The next generation LIDAR was $10k

By Oct 2014 A SV Startup company announced LIDAR for $1k

2015 GEN 1 LIDAR $1,000

2016 GEN 2 SOLID STATE LIDAR $250

Tony Seba, 2016

Leg

Seguridad vial - *1968 Vienna Convention on Road Traffic*
Responsabilidad – *Dir. 2009/103/EC, Dir. 85/374/EEC*
Privacidad y protección de datos - *GDPR*
Permiso de conducción - *Directive 2006/126/EC*

Iniciativas CE/UE: GEAR 2030, C-ITS Platform, Declaration of Amsterdam, Oettinger Round table, LoI Rome…

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Usu

Confianza, aceptación, adopción
Tiempo y calidad de reacción (Nivel 3)
Ineficiencias de comunicación

Toyota Concept-i, 2017

Yo, Robot, 2004 (ambientada en 2035)

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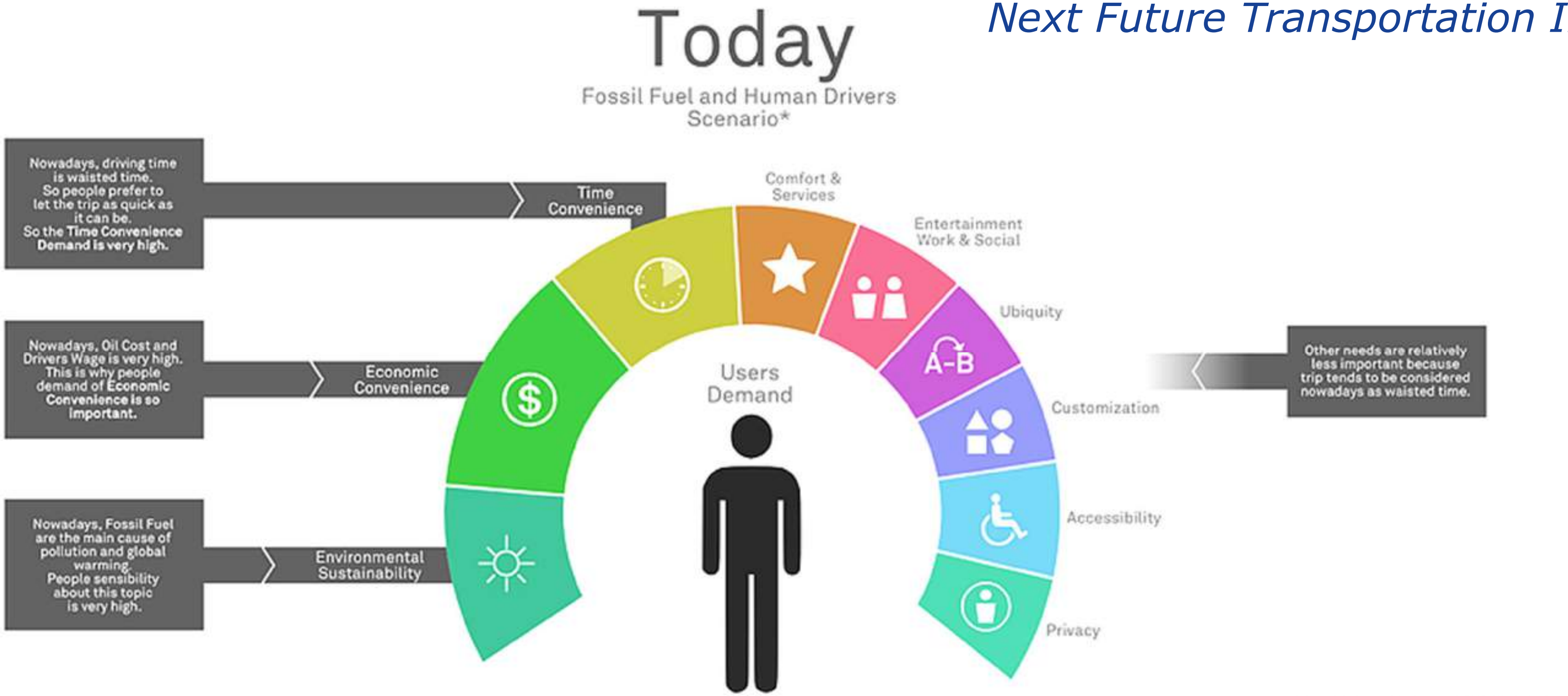
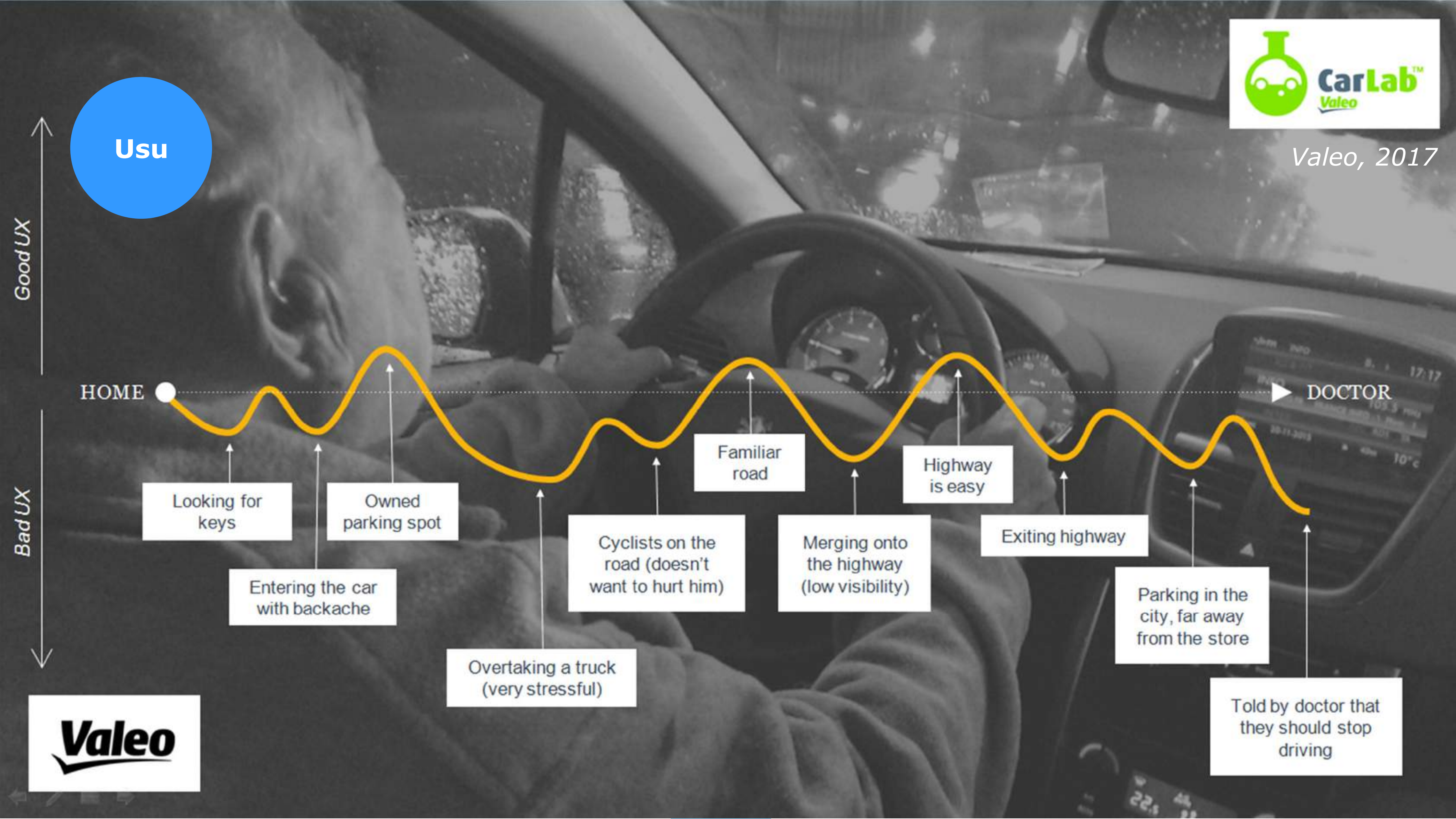
Usu

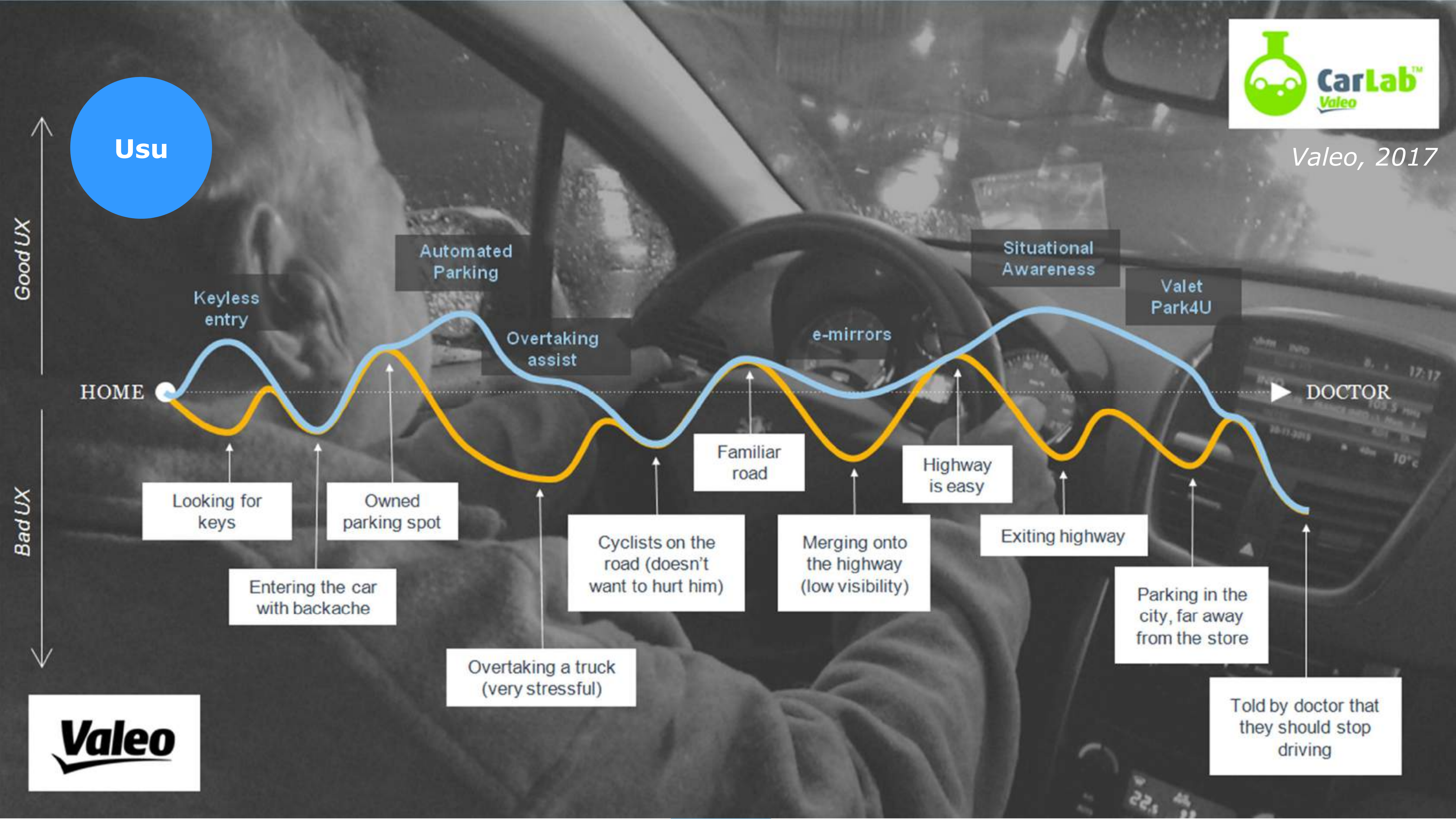
Next Future Transportation Inc.



Usu

Next Future Transportation Inc.


Usu
Valeo, 2017
Good UX
Bad UX
HOME
DOCTOR
Looking for keys
Entering the car with backache
Owned parking spot
Overtaking a truck (very stressful)
Cyclists on the road (doesn't want to hurt him)
Familiar road
Merging onto the highway (low visibility)
Highway is easy
Exiting highway
Parking in the city, far away from the store
Told by doctor that they should stop driving


Usu
CarLab™
Valeo
Valeo, 2017
Good UX
Bad UX
HOME
DOCTOR
Keyless entry
Automated Parking
Overtaking assist
e-mirrors
Situational Awareness
Valet Park4U
Looking for keys
Entering the car with backache
Owned parking spot
Overtaking a truck (very stressful)
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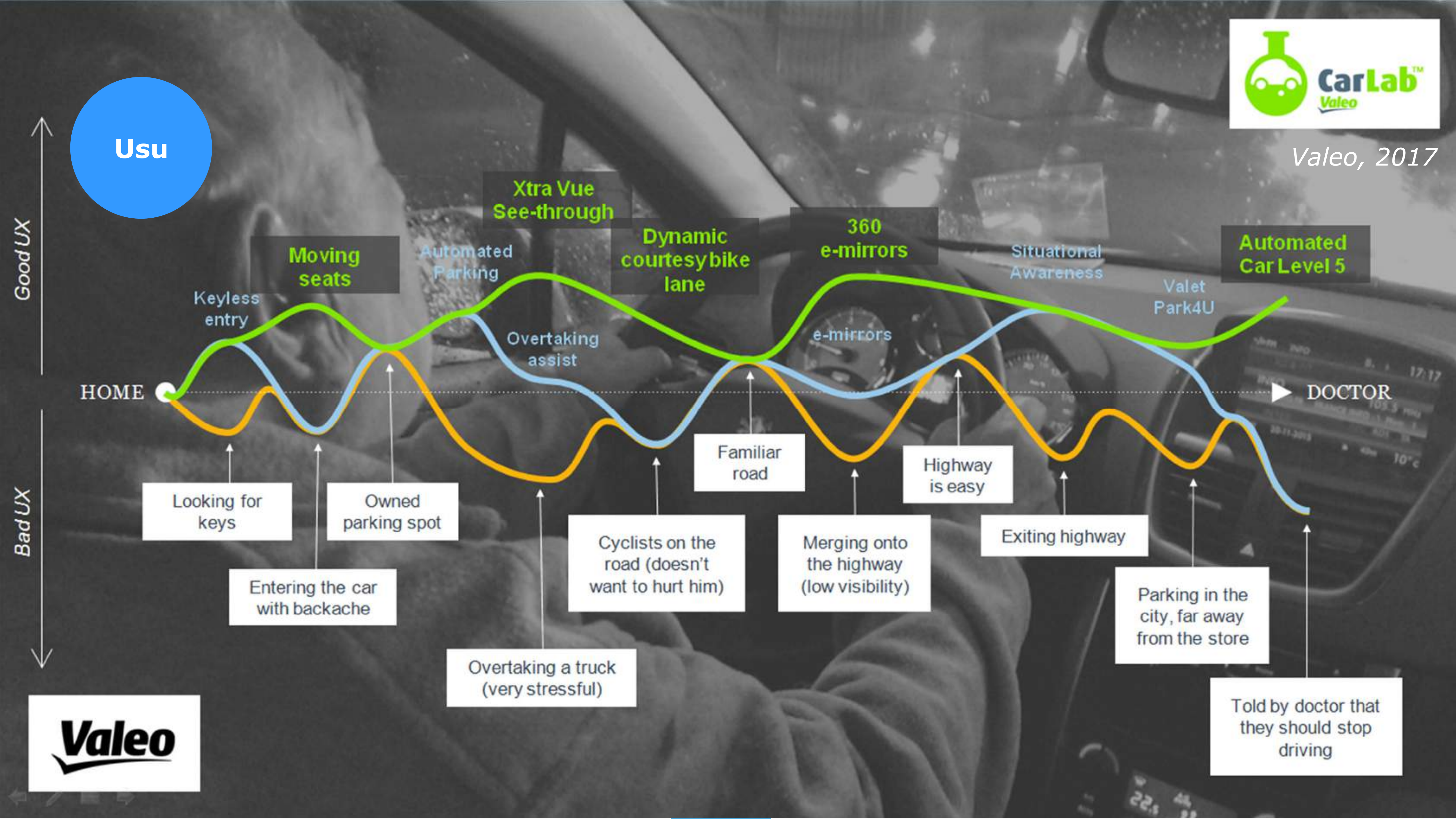
Usu

Valeo, 2017




Google self-driving car, 2014


China, Octubre 2015

Rebound effect: ↑ demanda de viaje

- Mayores, discapacitados, jóvenes…
- Confort, productividad
- Menor coste

Movilidad compartida: ↓ demanda de viaje

- Mobility as a service (Maas)

App de UBER

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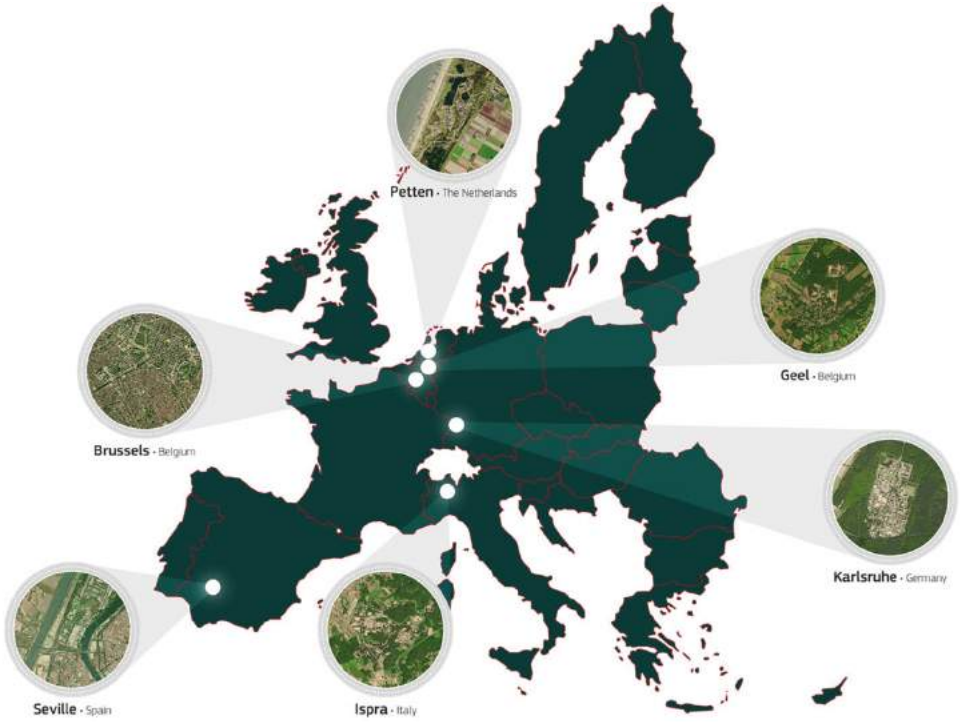
- **3.000 empleados**, sede central en Bruselas e instalaciones de investigación en 5 Estados Miembros.

- **Rebound effect:** Nuevo enfoque para la gestión del tráfico



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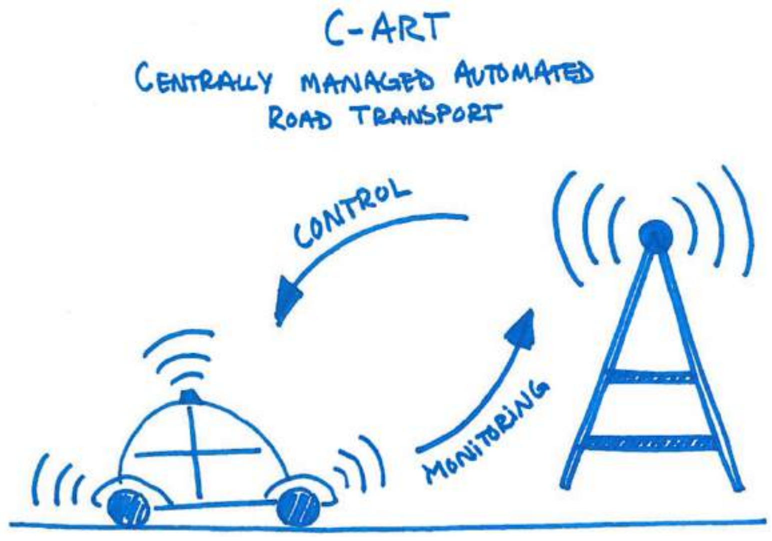


Green Driving Tool

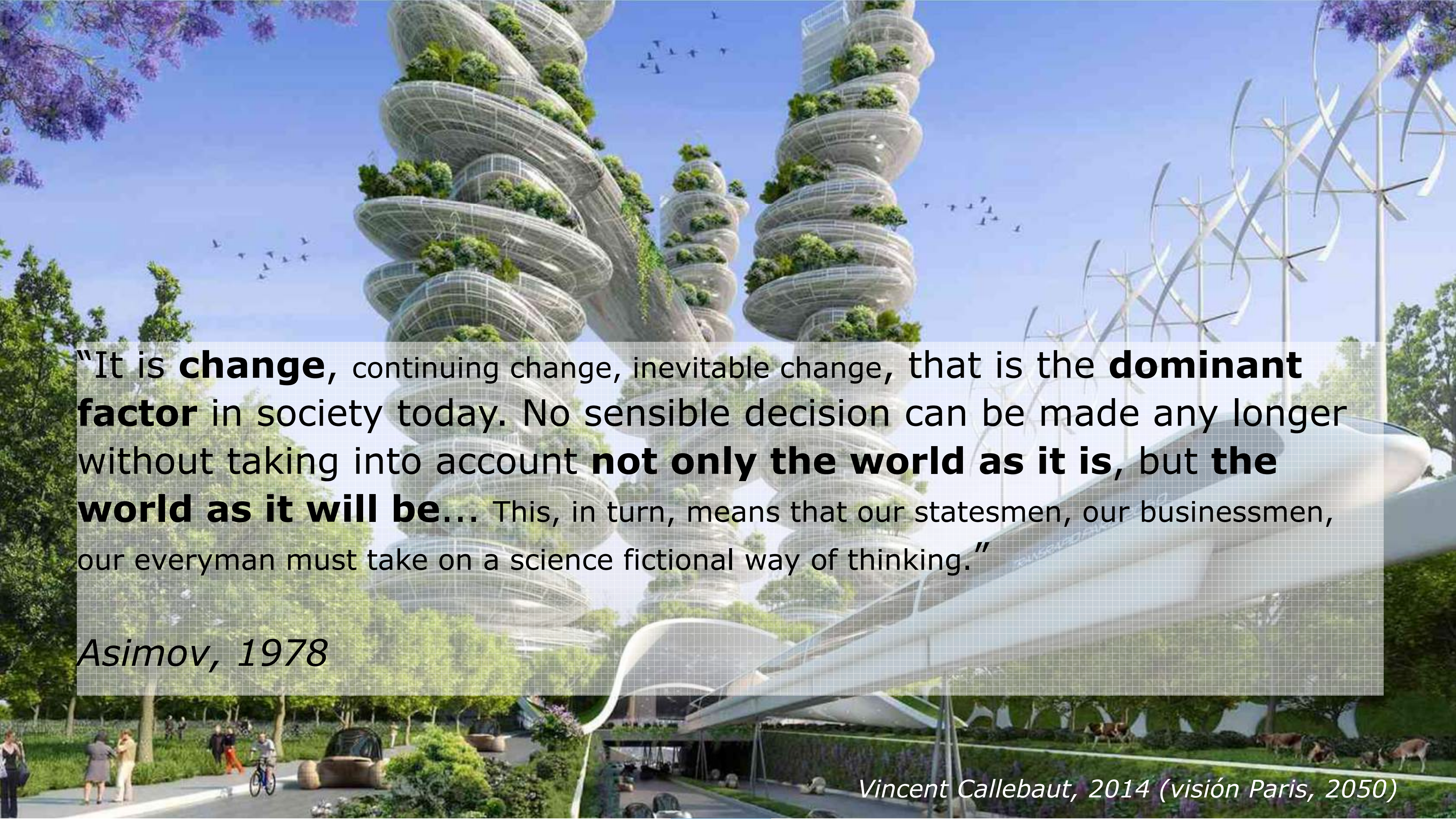
https://green-driving.jrc.ec.europa.eu/#/

C-ART 2030

Porcentaje reducido de vehículos autónomos, sin mejoras en seguridad y con una reducción en la capacidad de las carreteras.

C-ART 2050

Cantidad significativa de vehículos autónomos, cercana al 100%, aumento de la demanda de viaje y de la capacidad de las carreteras aunque comprometiendo la capacidad en algunos momentos/puntos de la red.


"It is change, continuing change, inevitable change, that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be… This, in turn, means that our statesmen, our businessmen, our everyman must take on a science fictional way of thinking."
Asimov, 1978
Vincent Callebaut, 2014 (visión Paris, 2050)

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