

Change in Mobility

- push for movement in mobility behavior

evolutionm

Bregenz, 14.5.2013

Corporate Technology

Prof. Dr.- Ing. Gernot Spiegelberg CT T P



Smart eCar in smart Traffic Management and smart Grid Connection

SIEMENS

Will eMobility be the future? Where is the business ?



Will this happen ?
Where is the money ?



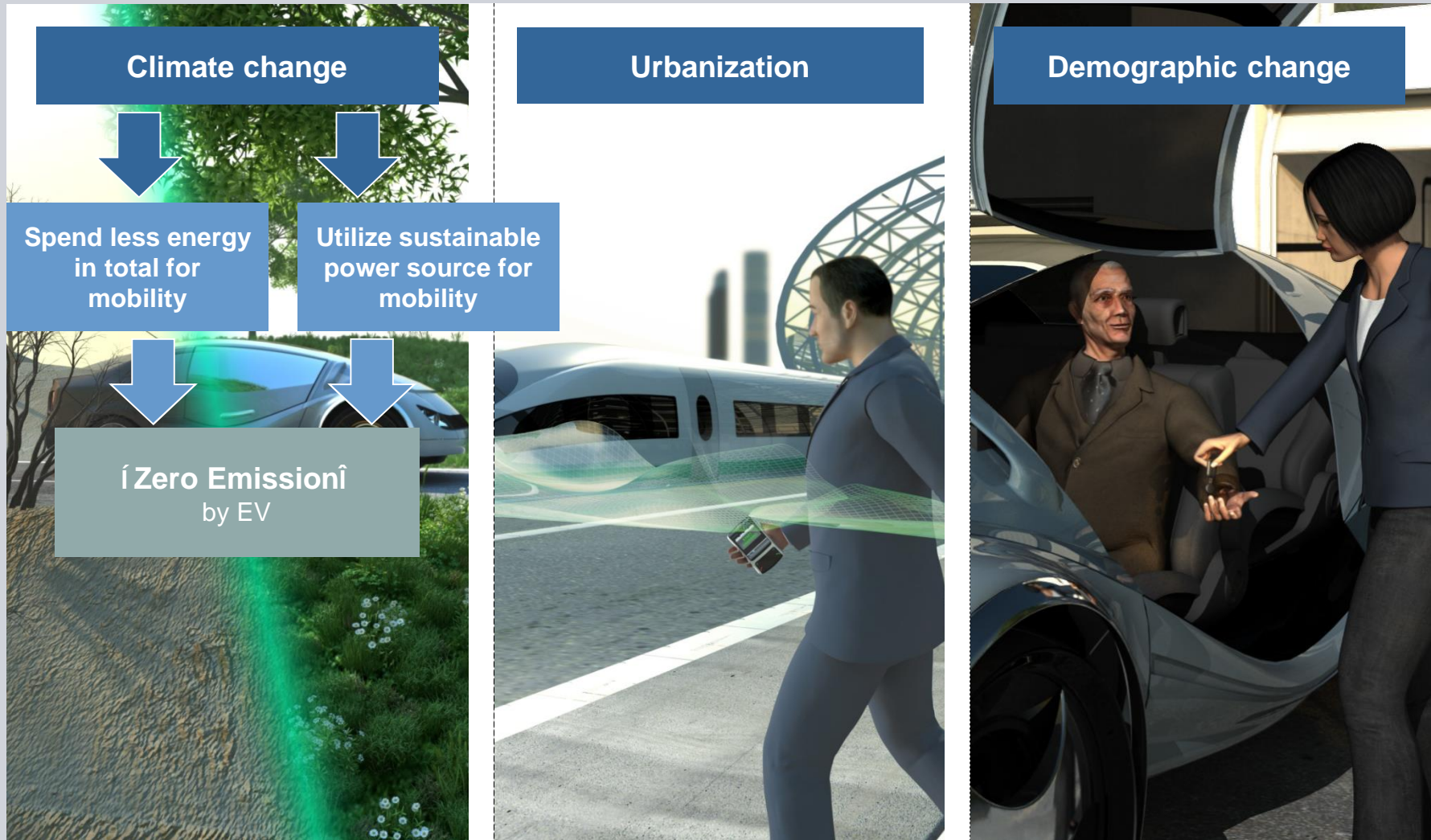
3 requirements :

1. no disadvantage in usage of range (max 150, commuter-car)
2. same price or lower than ICE-car in LCC
3. meet the requirements of global megatrends better than ICE



Global Megatrends strongly influence the future of mobility

SIEMENS



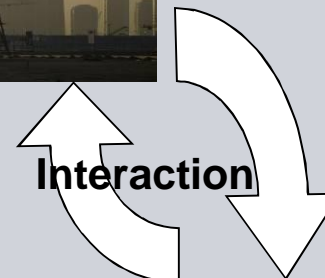
The electric car is changing the relation between automotive industry and utility



Generation of energy



Intelligent energy distribution and transmission

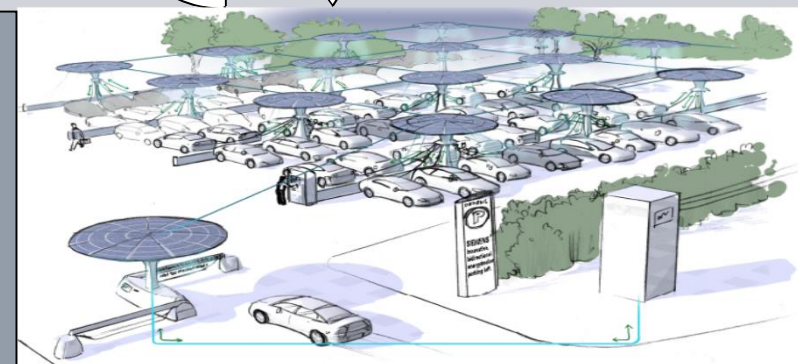


Interaction

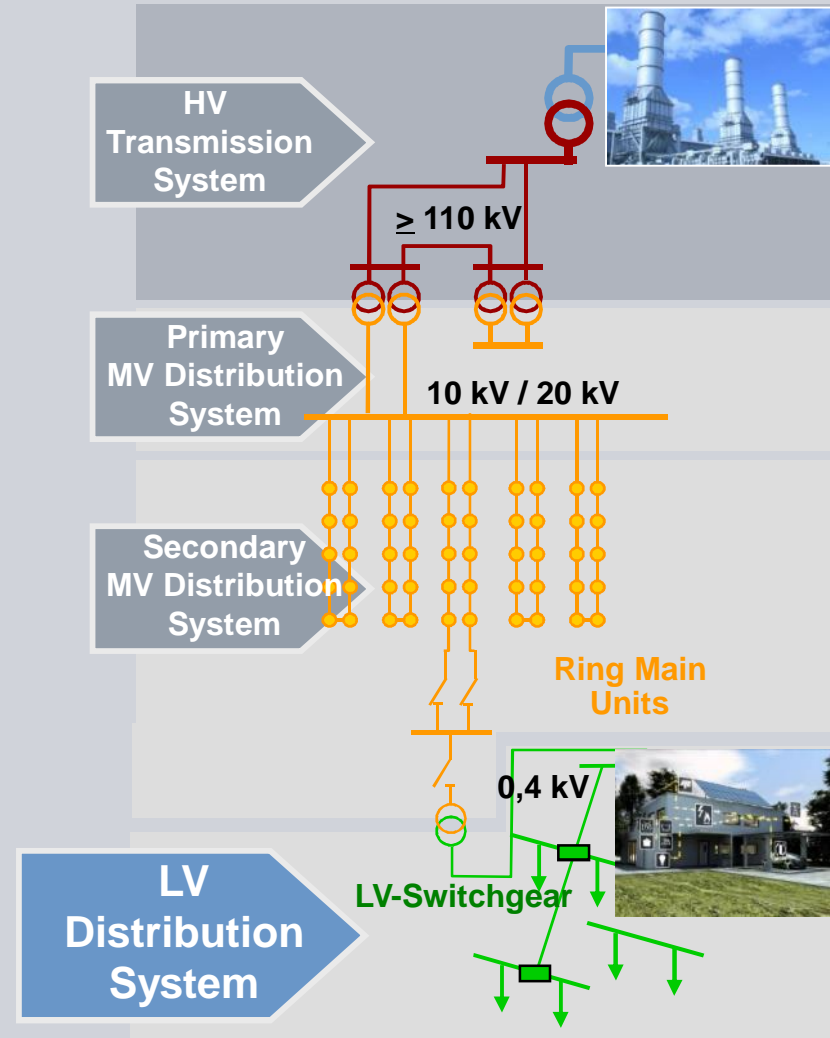
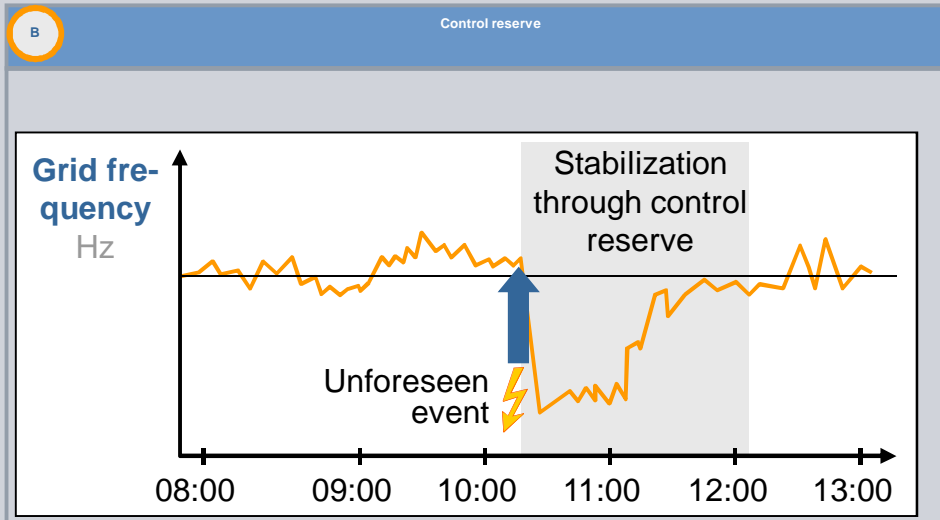
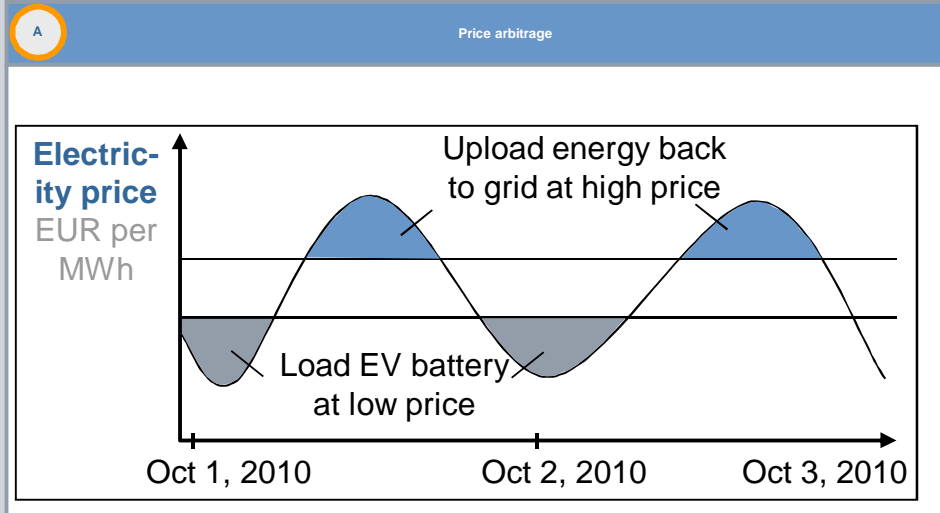


Water pump station

the **battery cost** can be refinanced while connected at parking over LC of battery with **business of grid stabilisation in power peak**



EVs can add value to the grid in 2 different ways \ddot{E} price arbitrage and control reserve on local level



Electromobility Infrastructure for Í smart grid connectionÎ

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AC
Wall Box



AC
Charging Point



AC
Park and Charge



AC Satellite
System



DC Charging
System



Swapping
Station



Inductive
Charging

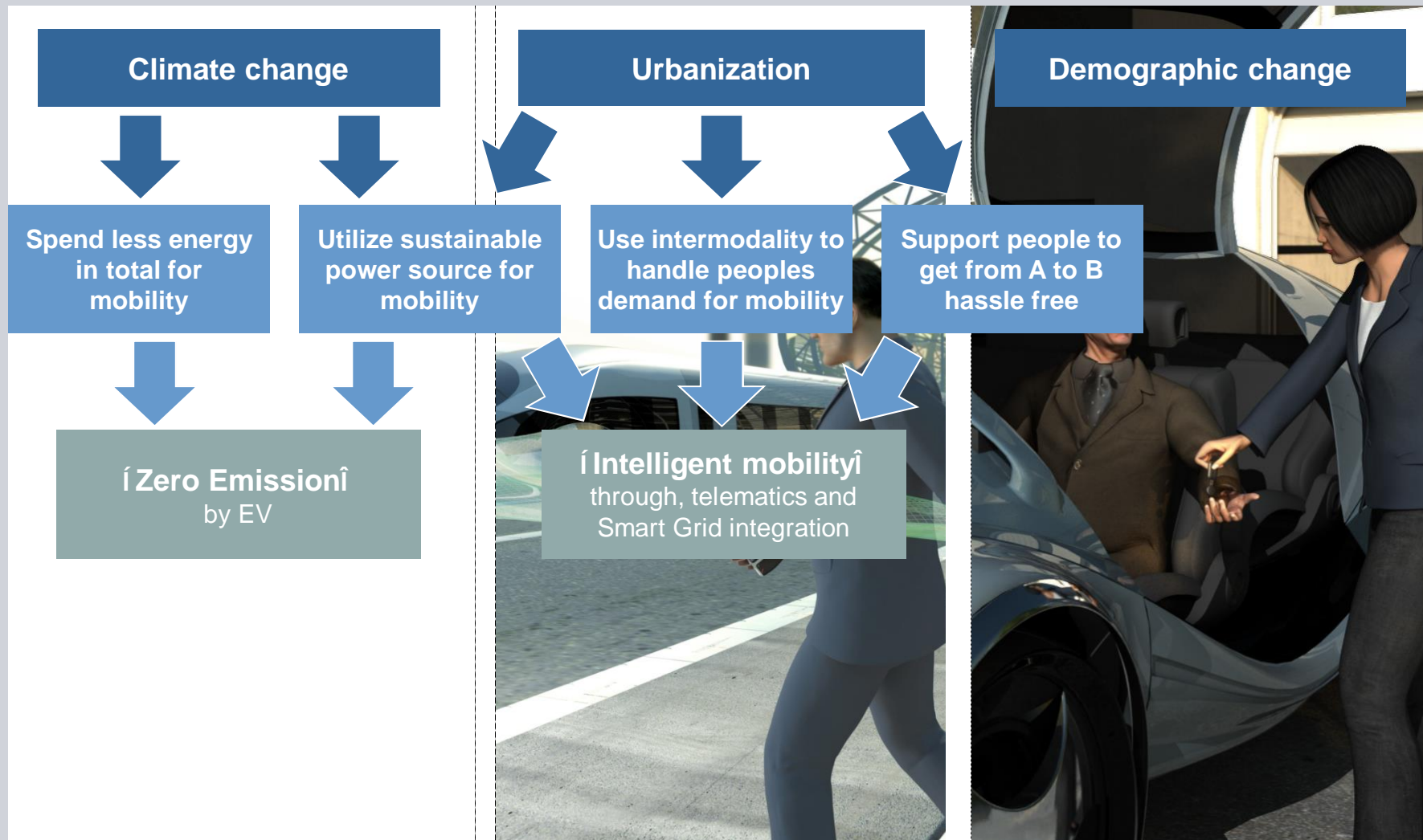


Software &
Services



Integrated Electromobility by Siemens

Global Megatrends strongly influence the future of mobility



Project 4Sustain-eMobility@Siemens (4S)

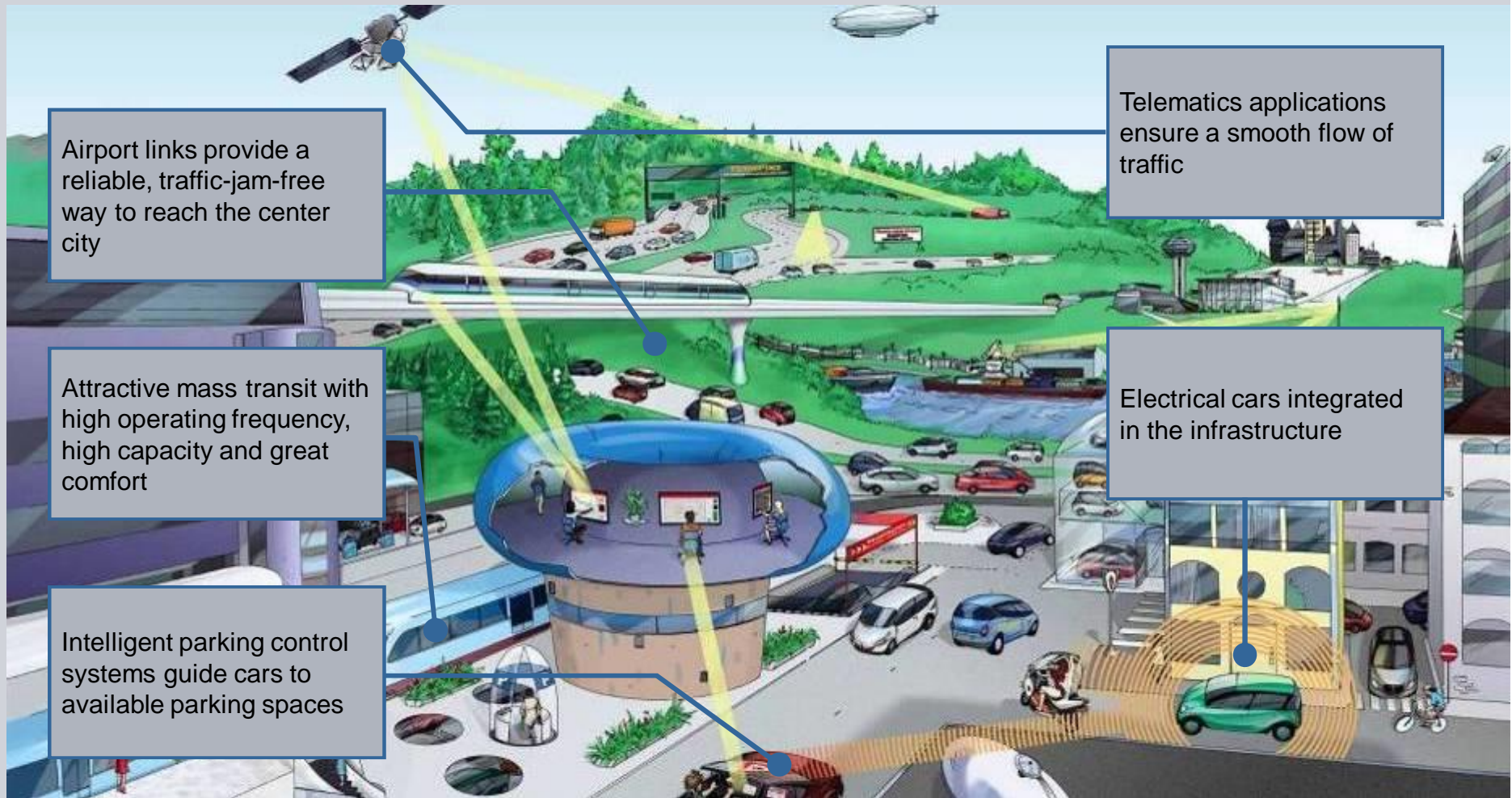
smart eMobility

smart grid connection | smart traffic | smart eMobiles



Smart Traffic: integrated traffic concepts

Solutions to increase traffic and energy efficiency



Airport links provide a reliable, traffic-jam-free way to reach the center city

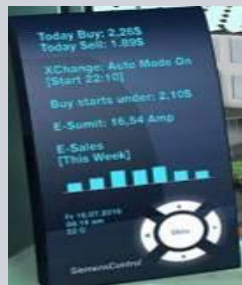
Telematics applications ensure a smooth flow of traffic

Attractive mass transit with high operating frequency, high capacity and great comfort

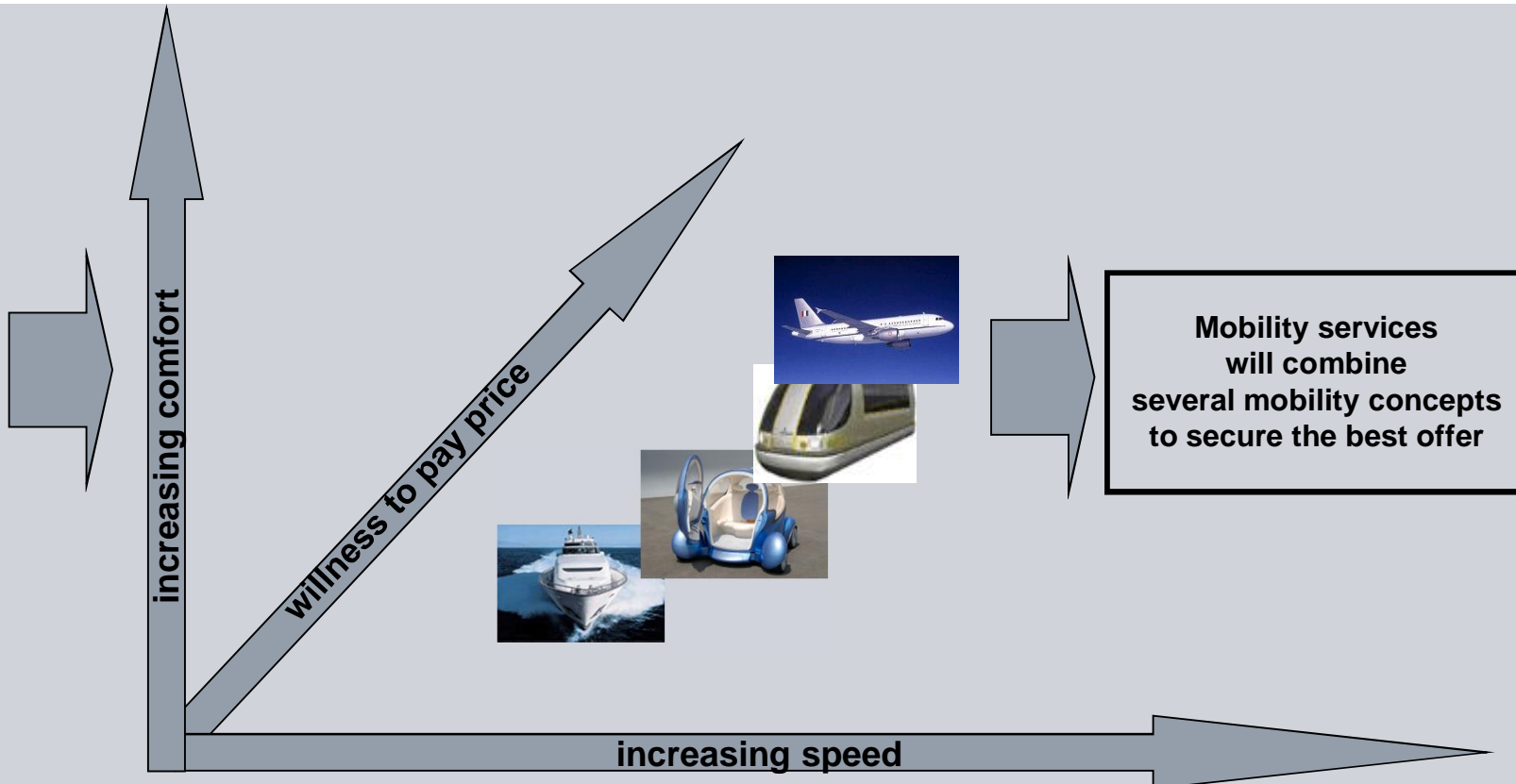
Electrical cars integrated in the infrastructure

Intelligent parking control systems guide cars to available parking spaces

Easy request of personalized mobility service



PDA request



Mobility services will combine several mobility concepts to secure the best offer

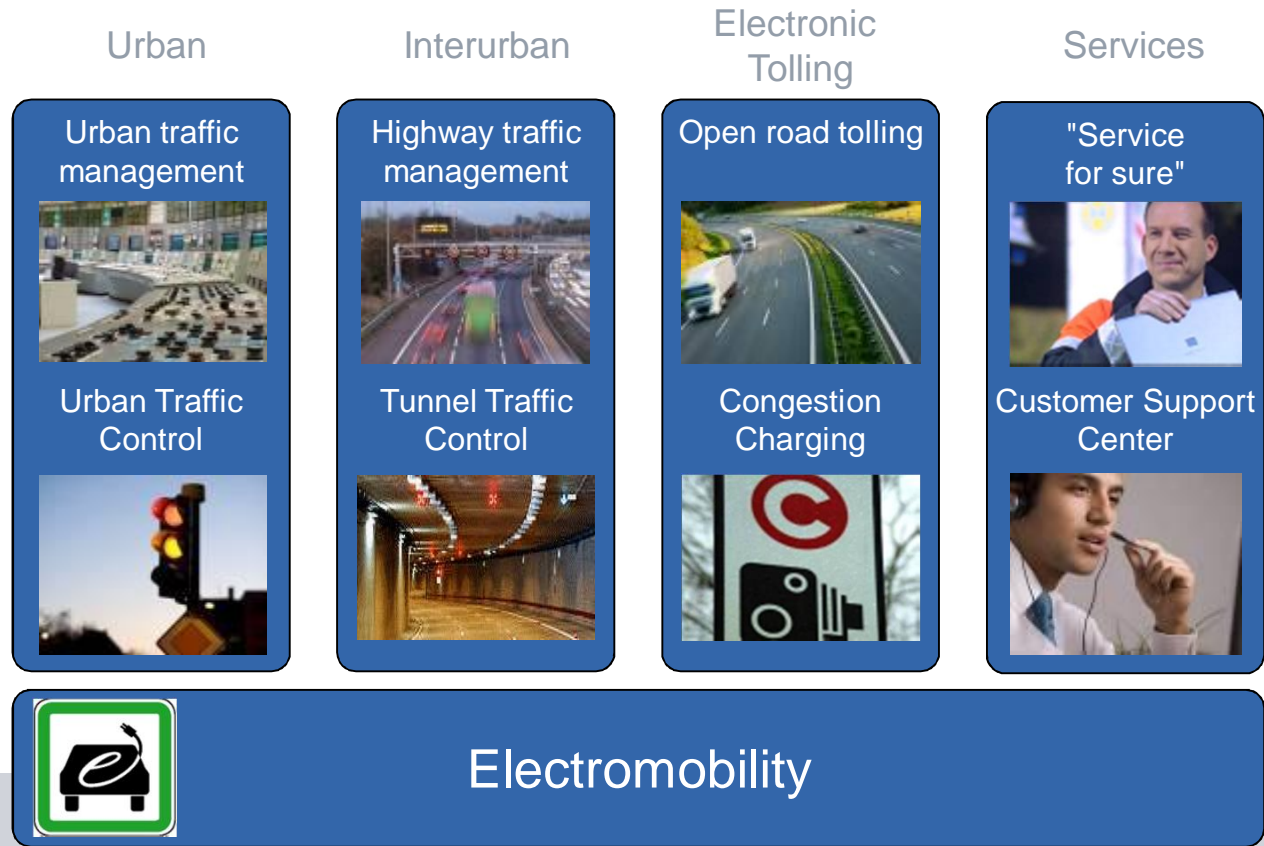
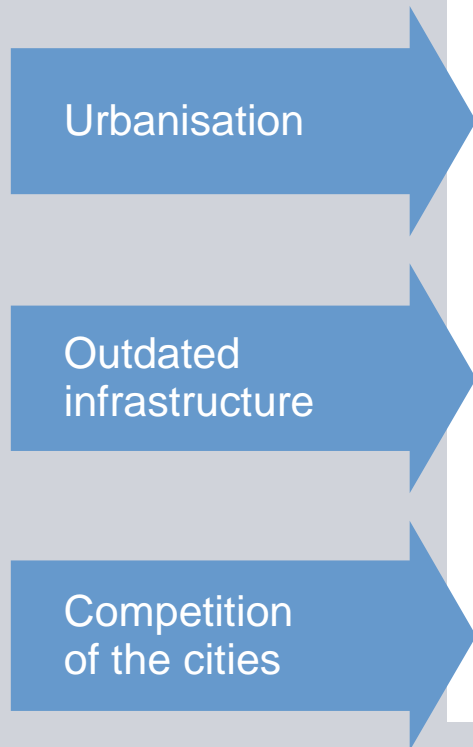
mobility solution = f (price, comfort, speed)

passengers **goods**

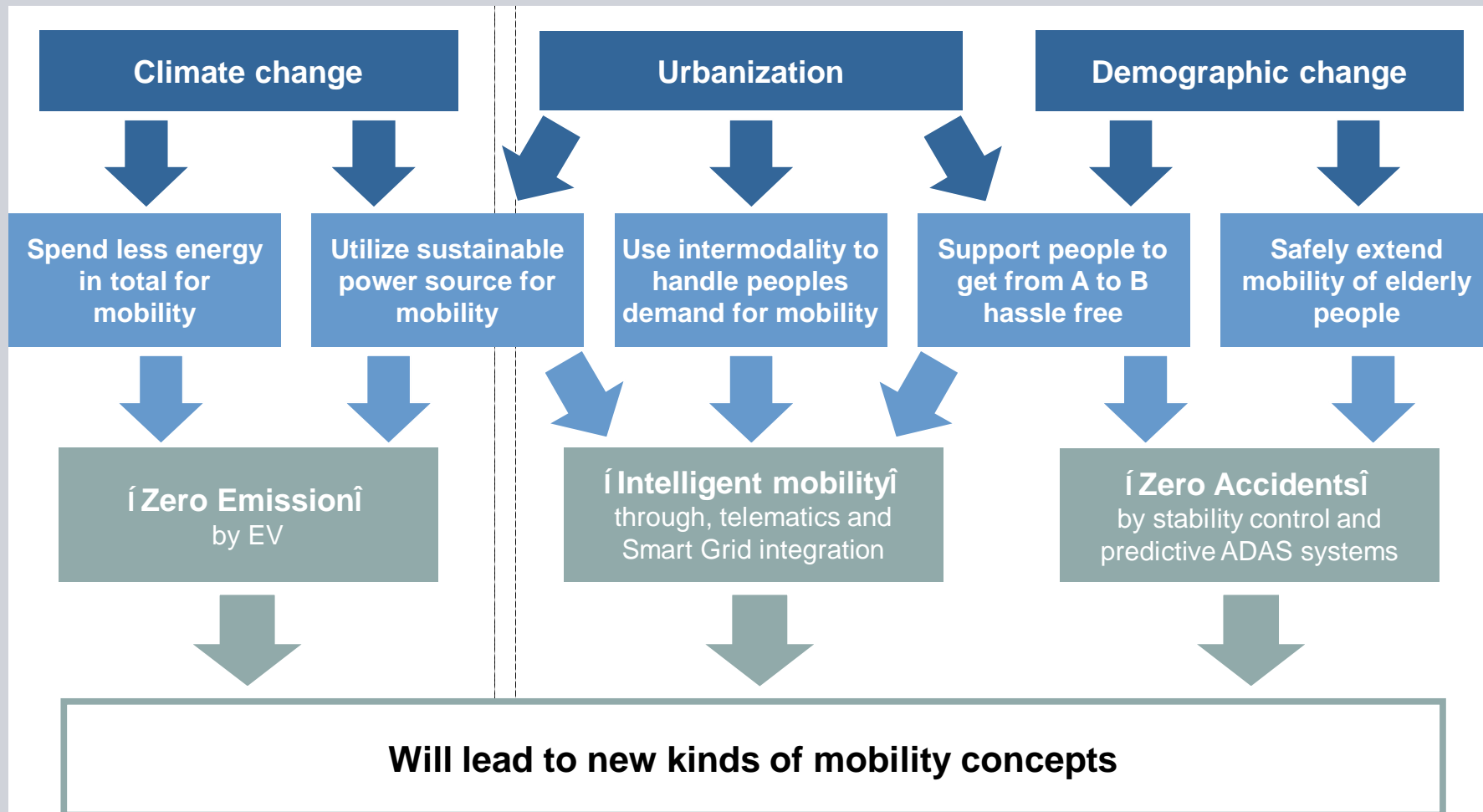
Complete Transportation combined know how for intelligent infrastructure solutions **smart traffic**



Complete Transportation . Intelligent Traffic Systems

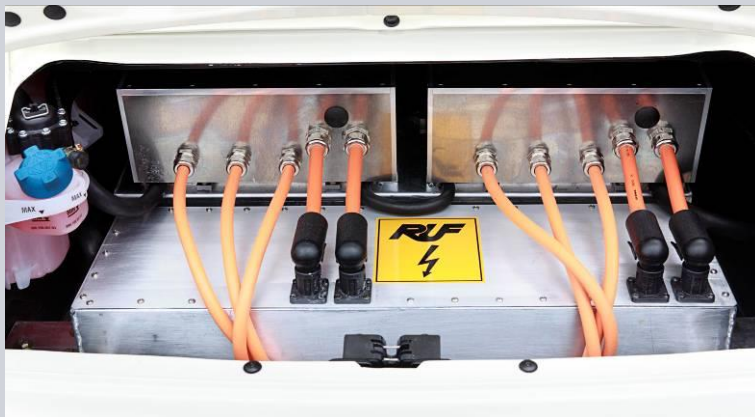


Global Megatrends strongly influence the future of mobility



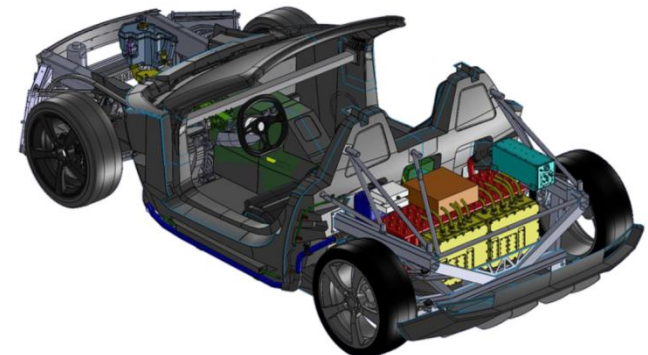
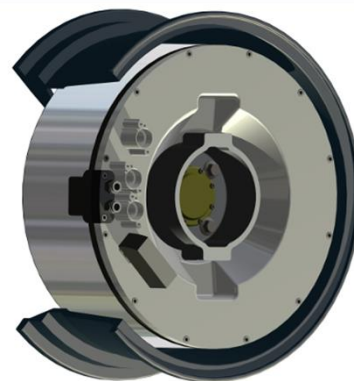
Electrical drivetrain with electronic torque vectoring

SIEMENS



Vehicle with wheel hub motors and w/o mechanical brake on rear axle on testbench to calibrate and measure brake blending

SIEMENS



This is amazing new fun to drive (not feasible for family)



**More functionalities need more technology
in future smart eCars!**

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AUTOnomy Í skateboardÎ chassis



Robot Wheel



re-think the fundamental core architecture of mobility



The real car is looking like this Å .. ?

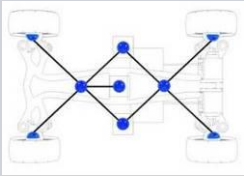
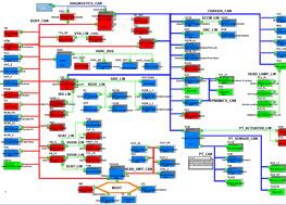
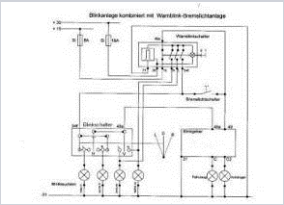


Low Cost
will be made by
high technology,
not
low technology



Time for a change – it happened before

1987 — Today — ?



EVOLUTION

DISRUPTION



Mechanics

Mechatronics

Information processing

1957 — 1977 — Today

Mechanical view

Information processing view

The Project Roadshow of Innovations with Innotruck Í Diesel reloadedÍ

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Technische Universität München



Some impressions of Innotruck



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Project eHighway



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Thanks for your attention