

Mobility 3.0: for a smaller footprint

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Growing world population



Resource shortages



Greenhouse gas emissions and climate change



More of the same?





thinking the future

Spirit Design

Mission Statement

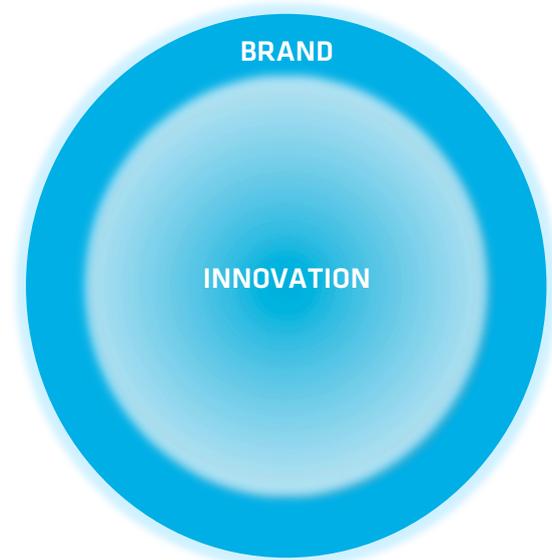
We are strategic *consultants* and *designers*.

We develop meaningful innovations and brands.

We create *visions* and bring them to *life*.

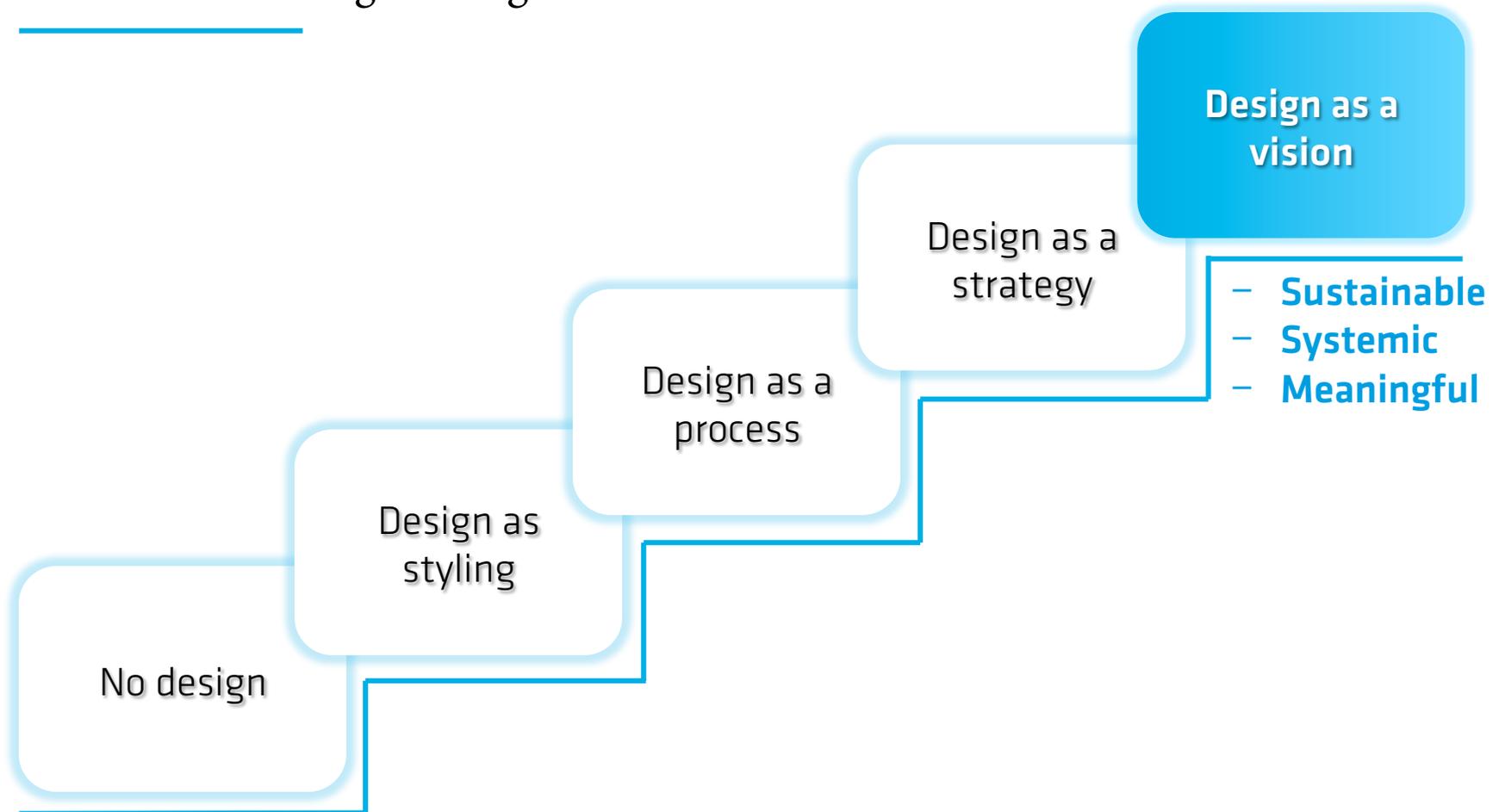
We design innovative *products*, *services* and *brands*.

We help to manage *innovation* and *brand processes*.



Thinking the future

Our understanding of design



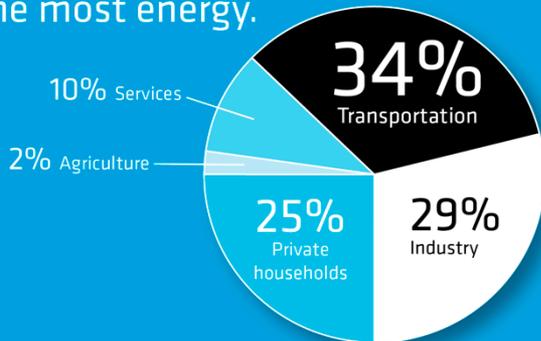
Sustainability on the basis of system innovations

Examples of urban and rural mobility

Transportation as a global epidemic

Energy consumption

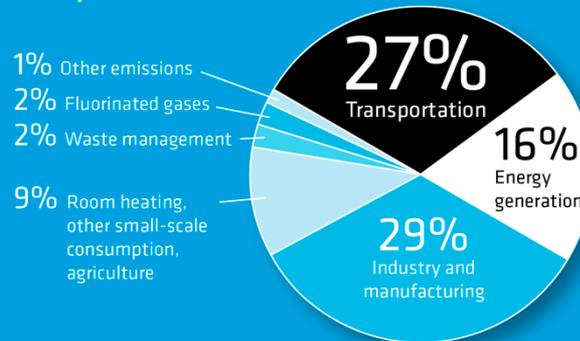
Global energy consumption has doubled since 1970. The transport sector requires the most energy.



Source: Eurostat 2010
Comparison of energy consumption in individual sectors, Austria 2012

Greenhouse gas emissions

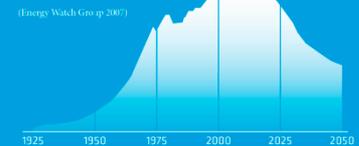
Increase of climate-changing greenhouse gas emissions by 60% since 1990. Transportation is responsible for almost one-third.



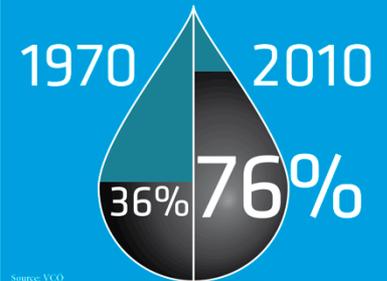
Source: Environmental Agency Austria 2011

Resource consumption

Peak oil: oil production at a maximum in many countries

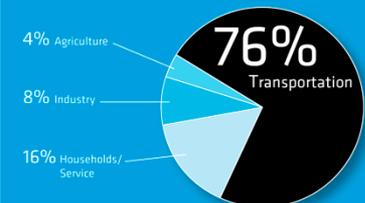


Share of transportation as % of global crude oil consumption



Source: VCO

Traffic is the biggest driver of oil dependency



Source: Environmental Agency Austria 2011
Final energy consumption in Austria (terajoules, 2010)

Goal: 60% reduction in greenhouse gas emissions

compared to 1990, European Commission, Transport White Paper

Pre-requisites for sustainable mobility systems:

- **New form of interaction among citizens, political decision makers and companies**

New form of interaction among citizens, political decision makers and companies

minus 70-90%
potential savings

Knowledge
Behaviour

Citizens

social
responsible
aware
positive

Value shift

innovative

environmentally-
oriented

Companies

socially-oriented

efficient

Energy

Emissions

Resources

minus 60-80%
potential savings

Planning

Compensation

Costs

integrated

brave

farsighted

Politics

open

minus 20-40%
potential savings

Conclusions for the automotive industry

→ Sustainable innovations in the automotive sector

+

→ New services, business models and
a consistent usability design

Sustainable innovations in the automotive sector

Reduction of resource use

- Closed loops/recycling
- Re-use of components
- Material selection and deployment
- Monomaterials
- Renewable materials
- Repair-friendly products
- Downsizing
- Platform strategy and modular design
- Long-lasting products

Enhanced efficiency

- Lightweight construction
- Motor optimisation, electric motors
- Friction minimisation
- Brake energy recovery
- Start/stop
- Better transmissions
- Exhaust gas after-treatment
- Aerodynamics
- Rolling resistance

Alternative fuels

- 2nd generation biofuels
(e.g. biogas and agro diesel,
not from foodstuffs)
- Electricity from renewable energy sources
- Synthetic fuels
- Hydrogen/fuel cells

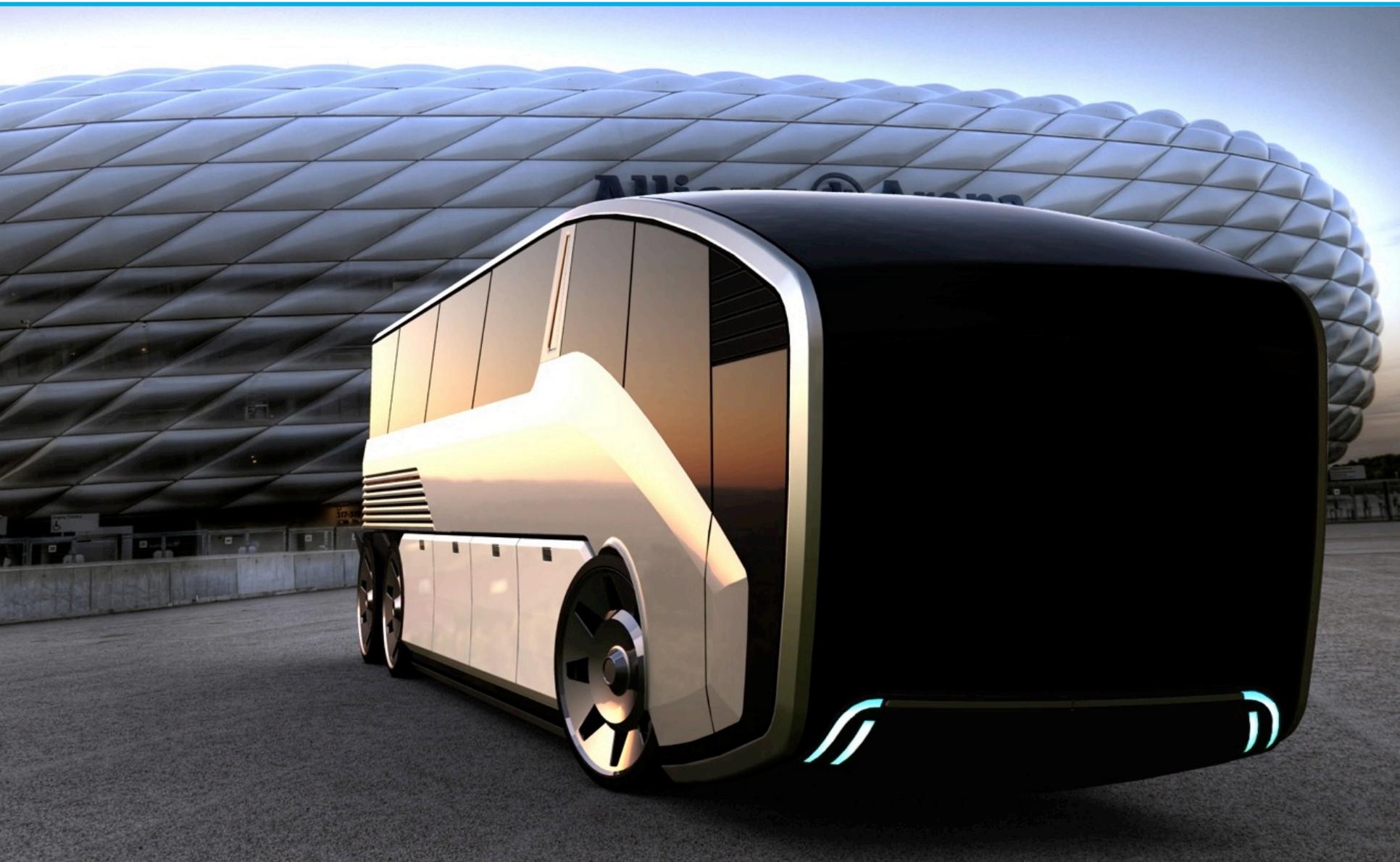
Connected vehicle

- Interface between vehicle and mobility system
 - Vehicle data/Other forms of transport
 - Navigation data
 - Traffic data
 - Environmental data
 - Infrastructure data
 - Local information/weather data
 - Entertainment
- Integration of the smartphone

Design study Cer02

electric bus

spirit design 



Hydrocat

Design study passenger ferry

spirit design 



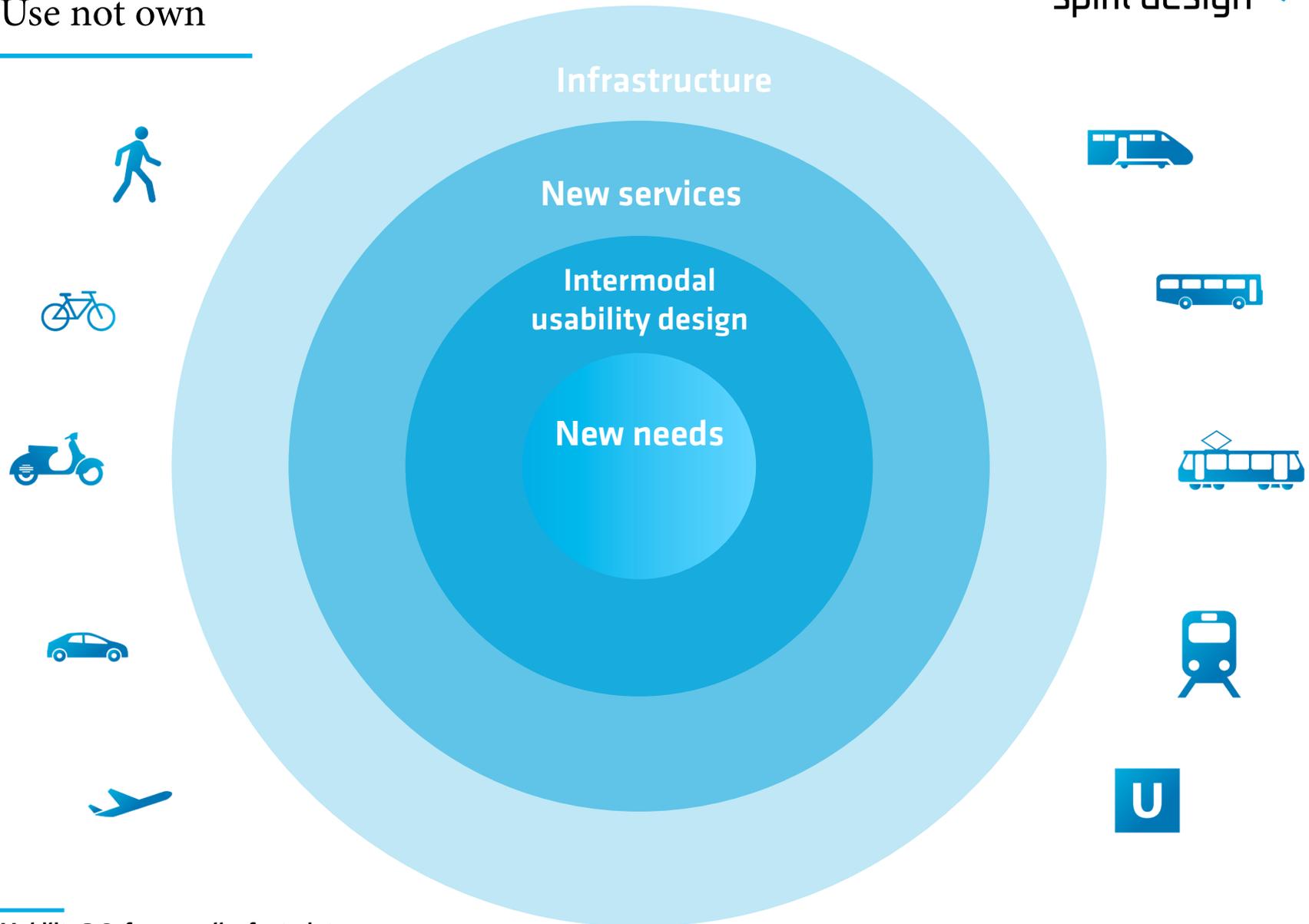
Design study: train of the future

High speeds achieved over long stretches



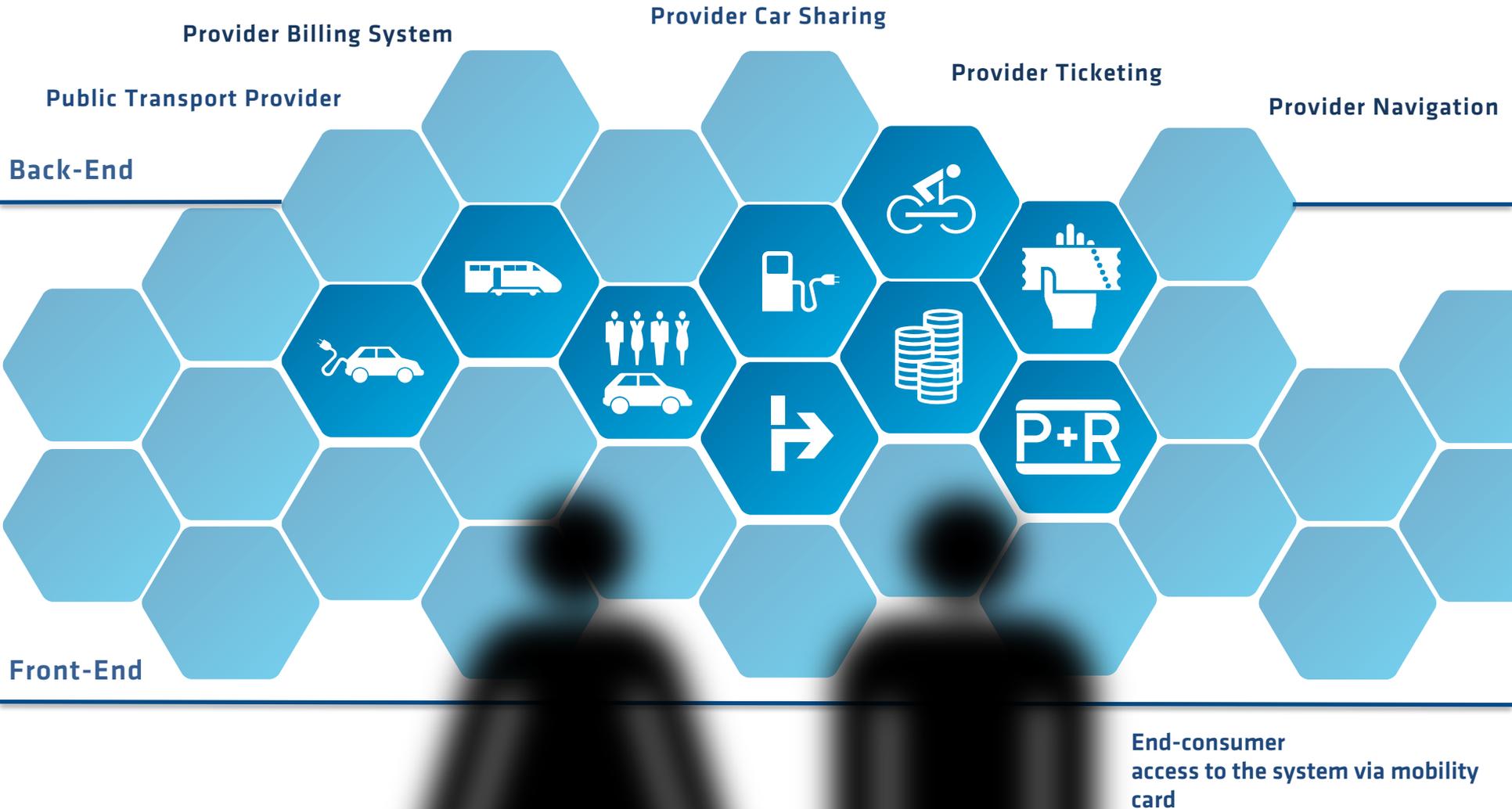
Mobility offering of the future

Use not own



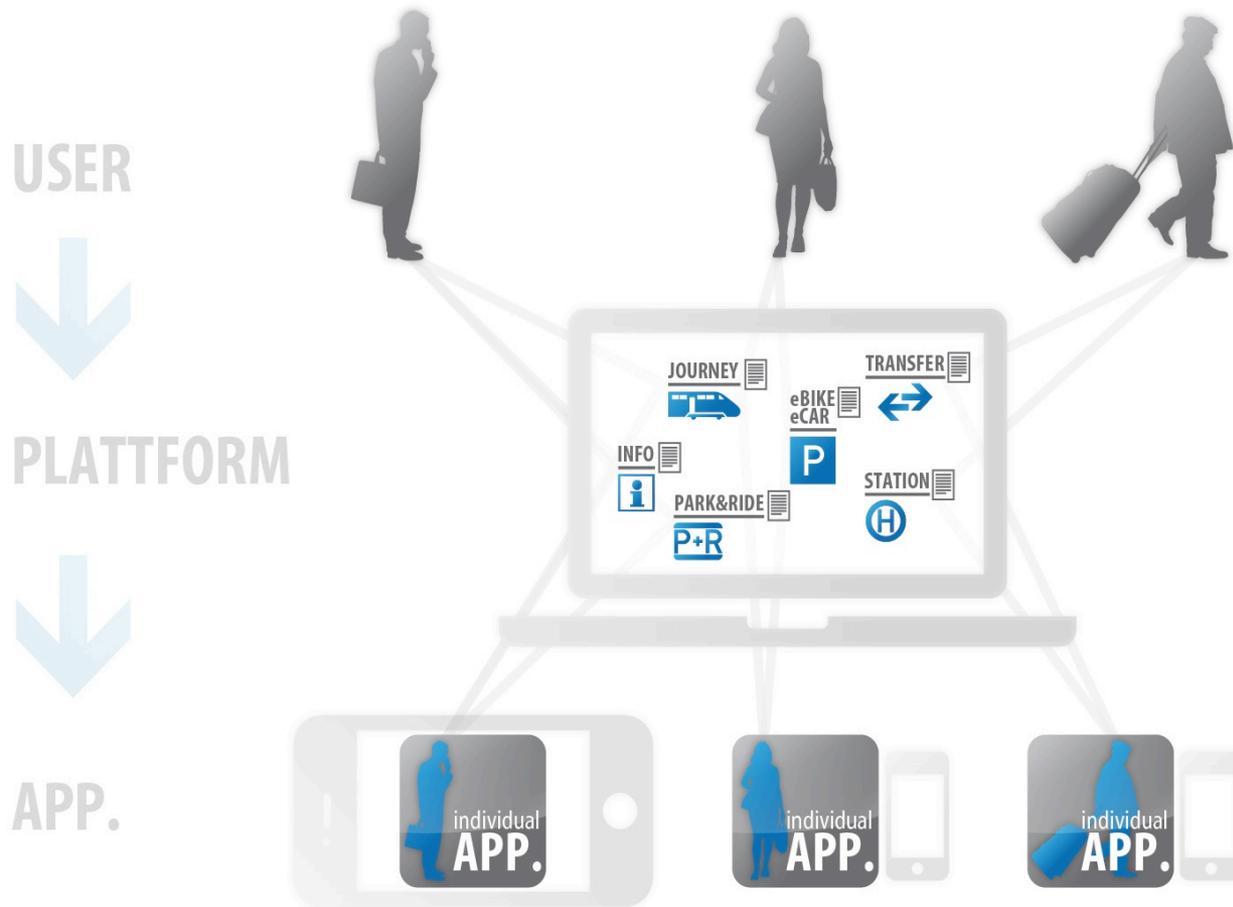
Usability design

Consistent interface



Mobility on demand

Cross-vendor service offering



**Sustainability
based on system innovation –
it is not sufficient to focus on
the vehicle alone!**



thinking the future

Thank you for your attention!

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