PERSONAL PUBLIC VEHICLE

–

The ultimate BEV for future shared mobility

Speaker:

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Conference - Zero CO_2 Mobility

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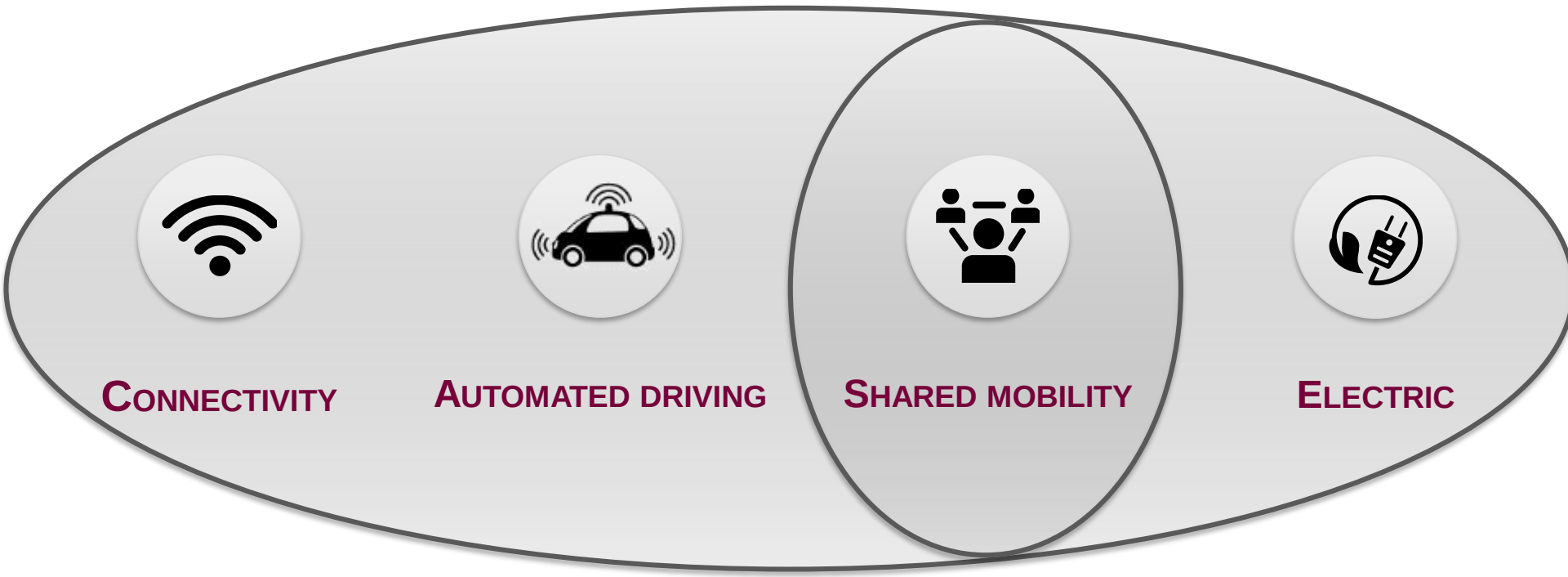
MOBILTY IS CHANGING

…

SHARED MOBILITY AS A KEY FACTOR

FOUR DISRUPTIVE TRENDS WILL CHANGE MOBILITY IN THE LONG TERM



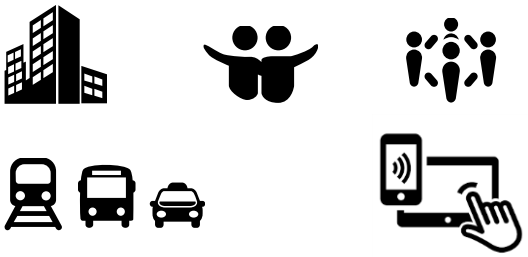
» High disruptive impact on stakeholders
(OEMs, suppliers, cities and energy suppliers)

SHARED MOBILITY AS AN ENABLER FOR NEW BUSINESS MODELS

share2drive®

WORLDWIDE TRENDS

- Continuous urban sprawl
- Sharp decrease in new car buyers between 18 and 29 years old
- Worldwide >90 % on the days private cars are unused
- Intermodal mobility



NEW MOBILITY SERVICES

CarSharing

Flinkster · stadtmobil · car2go · DriveNow · zipcar

RideSharing

BlaBlaCar · CleverShuttle · waze CARPOOL

E-Hailing

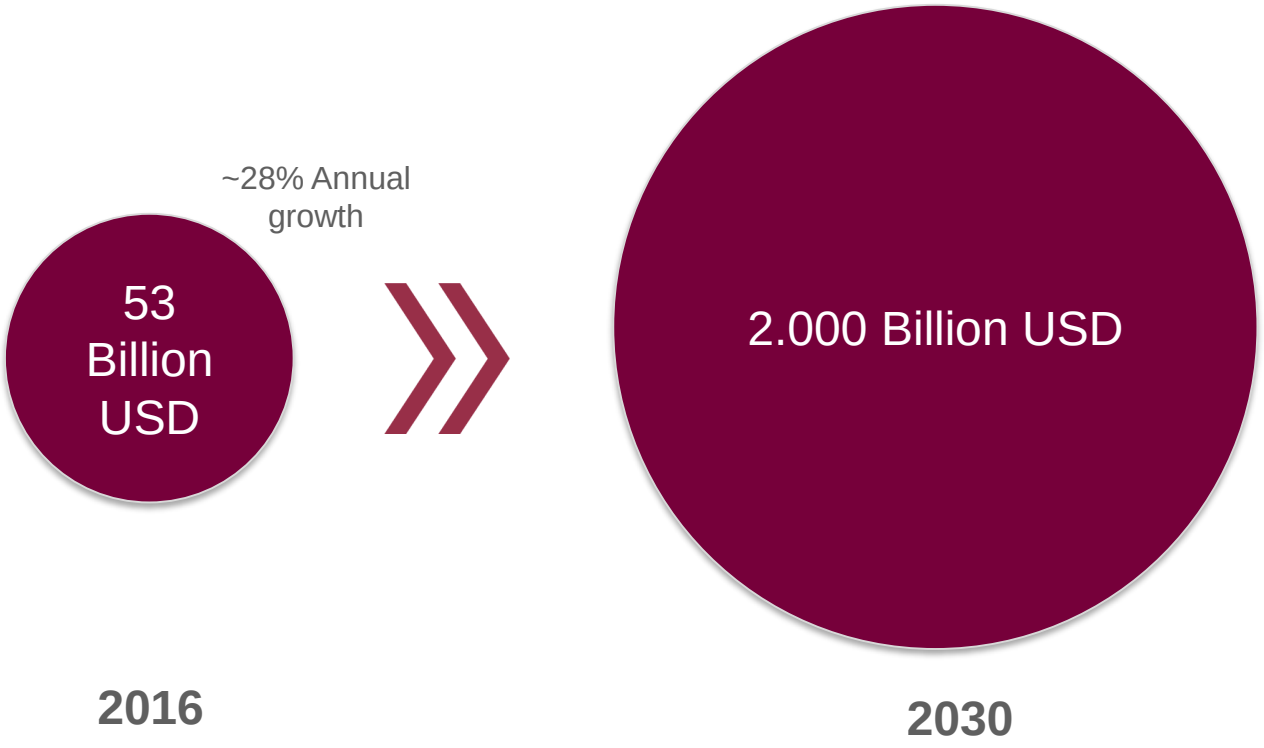
UBER · DiDi · lyft · Gett

Mobility as a service

moovel · Qixxit Einfach. Unterwegs. · from A to B

IN 2030, 10-16% OF THE SOLD VEHICLES WILL BE USED FOR MOBILITY SERVICES

WORLDWIDE SALES VOLUME OF MOBILITY SERVICES



Automotive manufacturers and IT companies are investing billions in new mobility services

Source: McKinsey (2017)

SHARED VEHICLES OFFER AN EXCELLENT ENVIRONMENTAL BALANCE IN URBAN MOBILITY

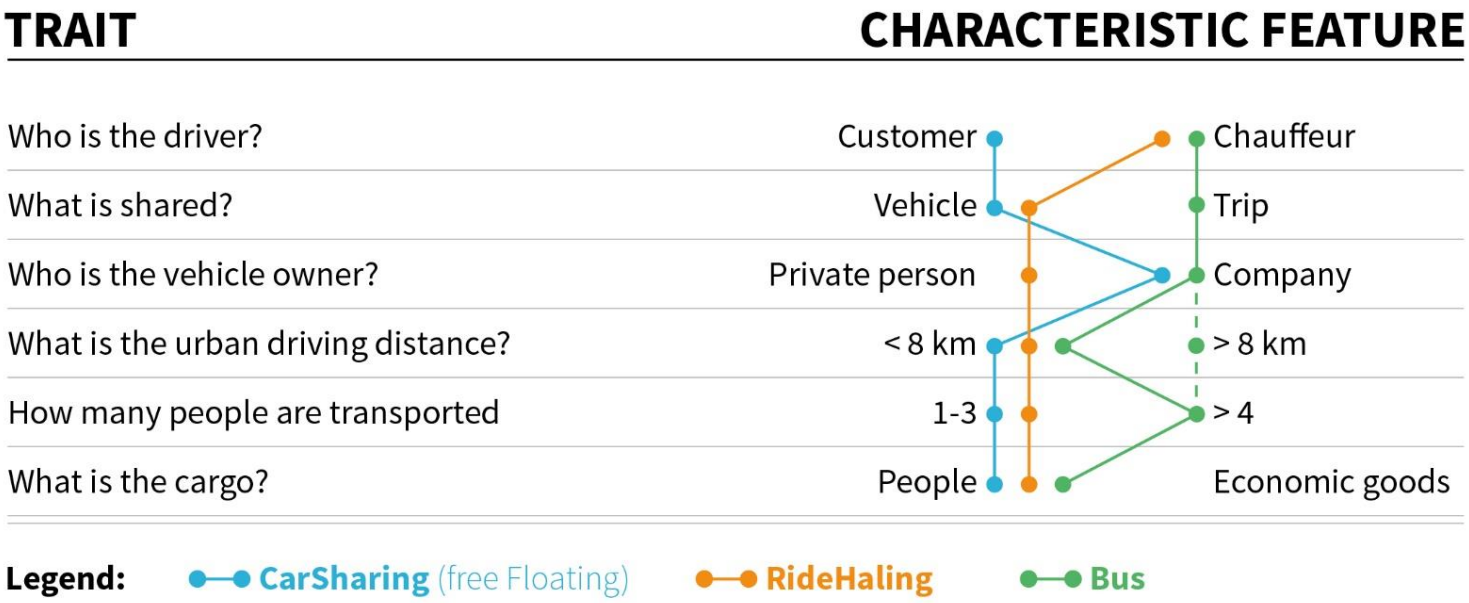
ECOLOGOCAL IMPACTS

Related to emissions EVs are per se better than conventional vehicles with ICE	»	No local emissions!
One CarSharing vehicle replace 3 to 20 private vehicle in cities	»	Less vehicles and more open space in urban areas!
Higher utilization of 50-100% of shared vehicles compared to private owned vehicles	»	Better use of existing resources and assets!
High percentage of EVs (~10%) in shared mobility services compared to private households	»	Wide market diffusion of EV!

VEHICLE CONCEPTS
FOR
FUTURE MOBILITY

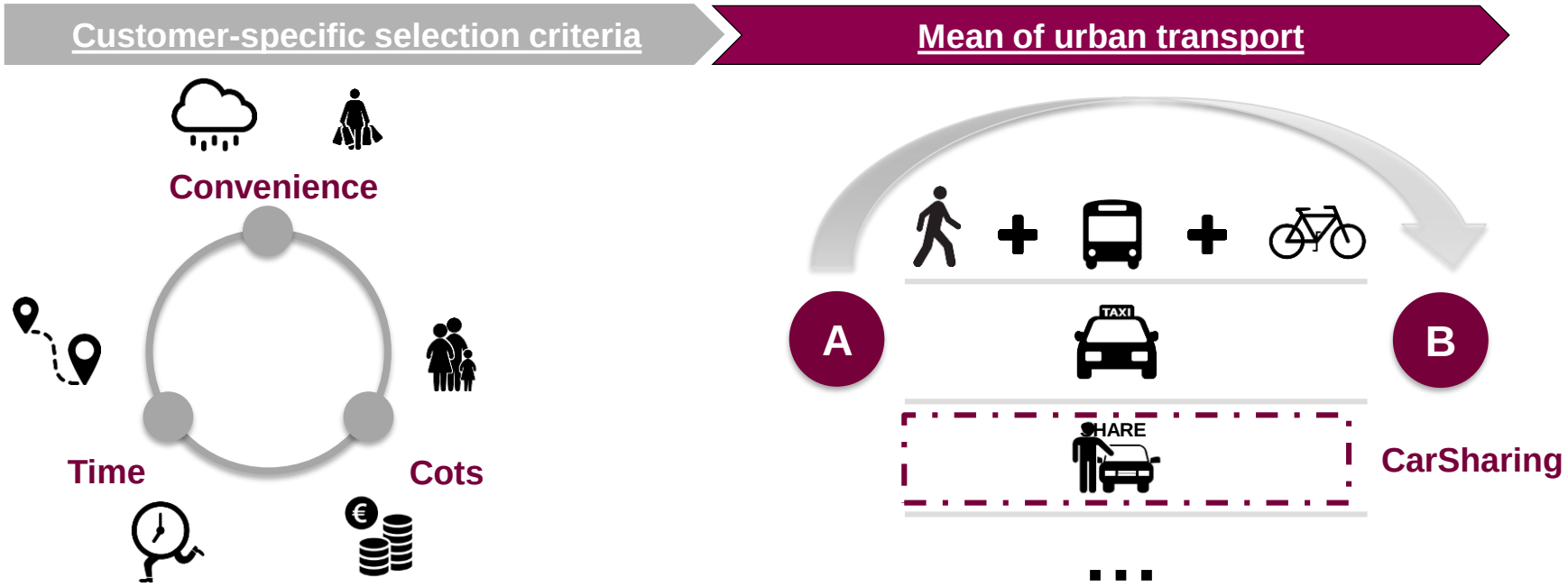
ANY NEW MOBILITY SERVICE CAN BE DESCRIBED BY MEANS OF SIX CRITERIAS

THE URBAN MOBILITY TRAIT (UMT)



New mobility services in the context of UMT will have a disruptive influence on the existing value-added structure within the automotive sector.

THERE ARE MANY WAYS TO GET FROM "A" TO "B" IN URBAN AREAS

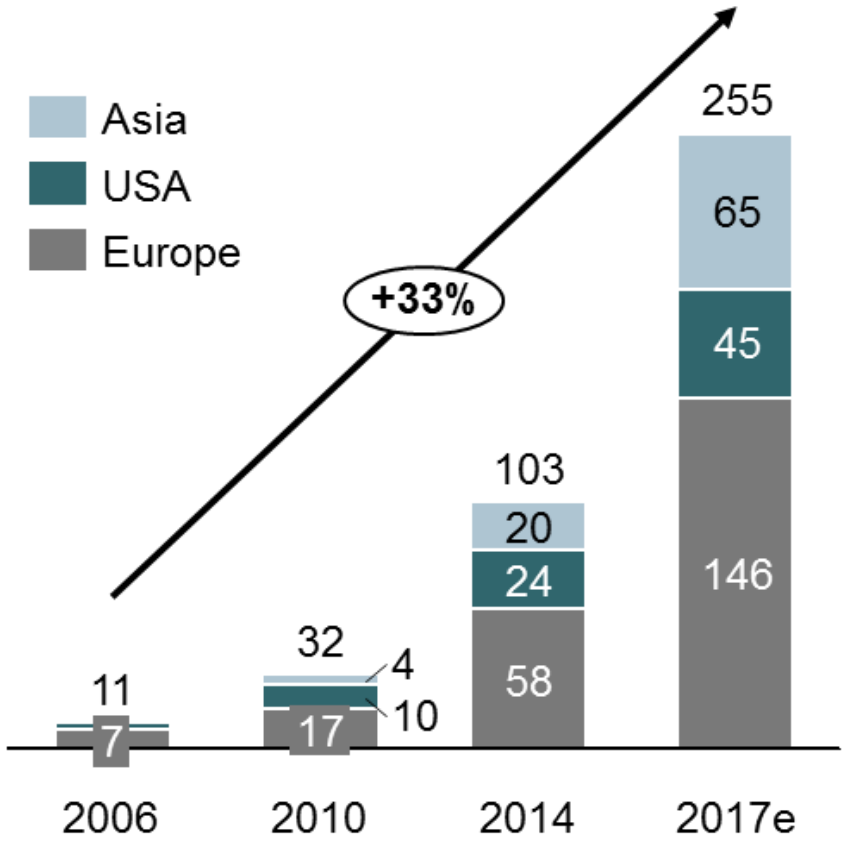


The requirement profile of a "perfect" shared vehicle shouldn't be based on the conventional customer analysis, but rather on a mobility concept as well as a business model

CARSHARING IS A BOOMING MARKET

Lead by Europe – however, currently deployed vehicles are not optimized for typical CarSharing use-cases

CARSHARING FLEET ['000 UNITS]



- CarSharing is booming
- Europe is leading (esp. Germany)
- Multi-bn EUR market by 2025

TODAY ONLY END CUSTOMER CARS ARE USED FOR CARSHARING

Private owner

Key vehicle criteria:

- **Purchase price focus**
- Customization important
- Identification with vehicle: careful usage…

Defines vehicle concepts

CarSharing

Key vehicle criteria:

- **TCR focus**
- Ease of use important
- Low identification with vehicle: careless usage...

Used, but not optimized for carsharing

Vehicles currently used are not optimized for CarSharing

Need for vehicle concept dedicated for CarSharing

PPV

A VEHICLE EXCLUSIVELY DESIGNED FOR CARSHARING

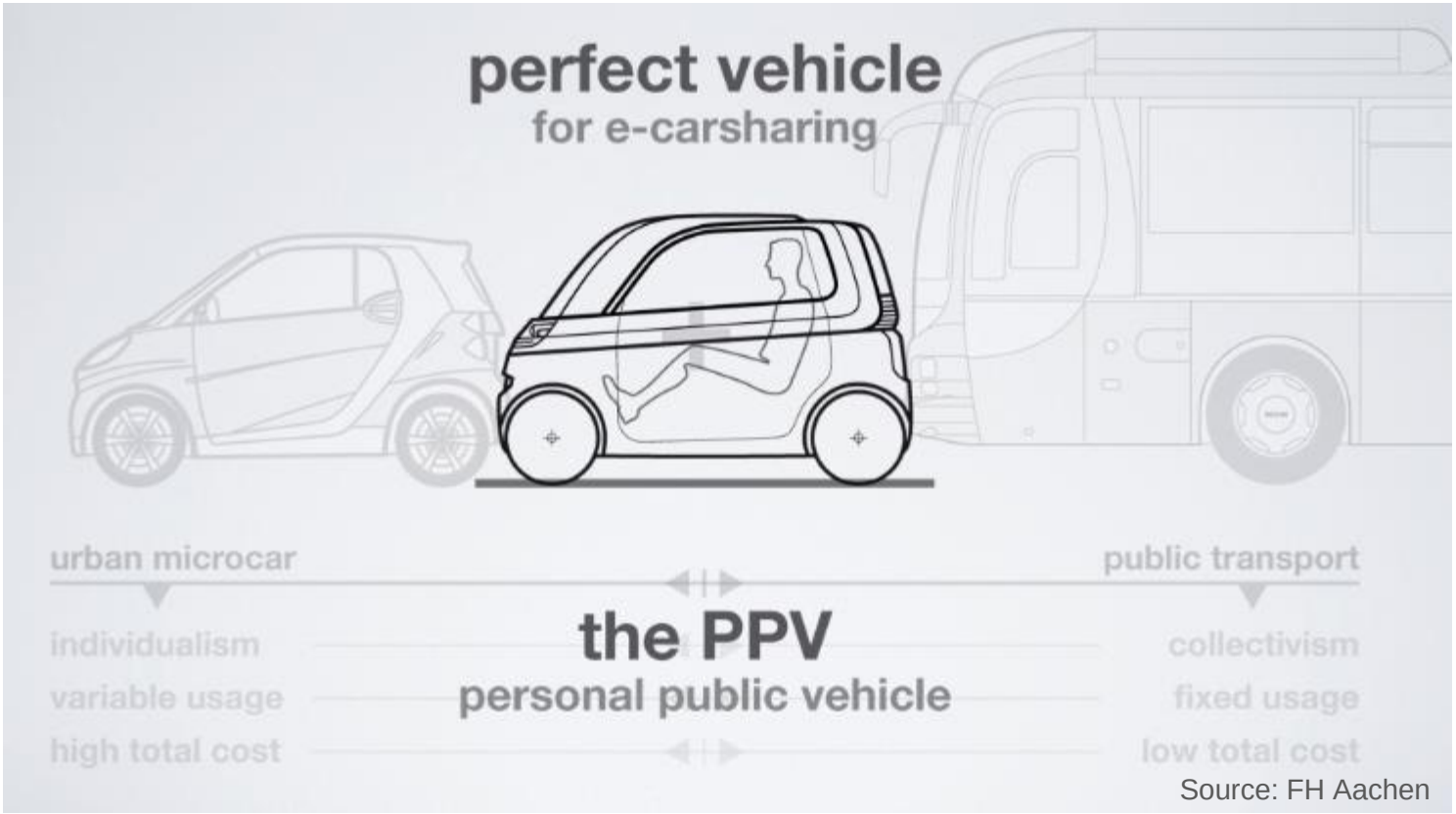
THE MOBILITY CONCEPT REQUIRES NUMEROUS NEEDS….

…which has to be implemented in an dedicated CarSharing vehicle

Requirements from the CarSharing mobility concept		Requirements towards the PPV
▪ Broad target groups (18-40 year olds especially in the focus) ▪ High recognition value ▪ Modern, not playful, conveyance of safety	»	▪ Independent, clear design ▪ Friendly appearance
▪ 80% “single travel” ▪ 95% Rides with max. 3 people ▪ 86% Use to transport purchases ▪ Minimal parking space requirements (cross parking!)	»	▪ 3-seater (1+2) at 2.5 m length ▪ Variable useable space (e.g. baby buggies, bicycle…) ▪ High parking space…
▪ Very broad driver population ▪ …		
…		…

PPV CLOSES THE GAP…..

….between Passenger Cars and Public Transportation



Source: FH Aachen

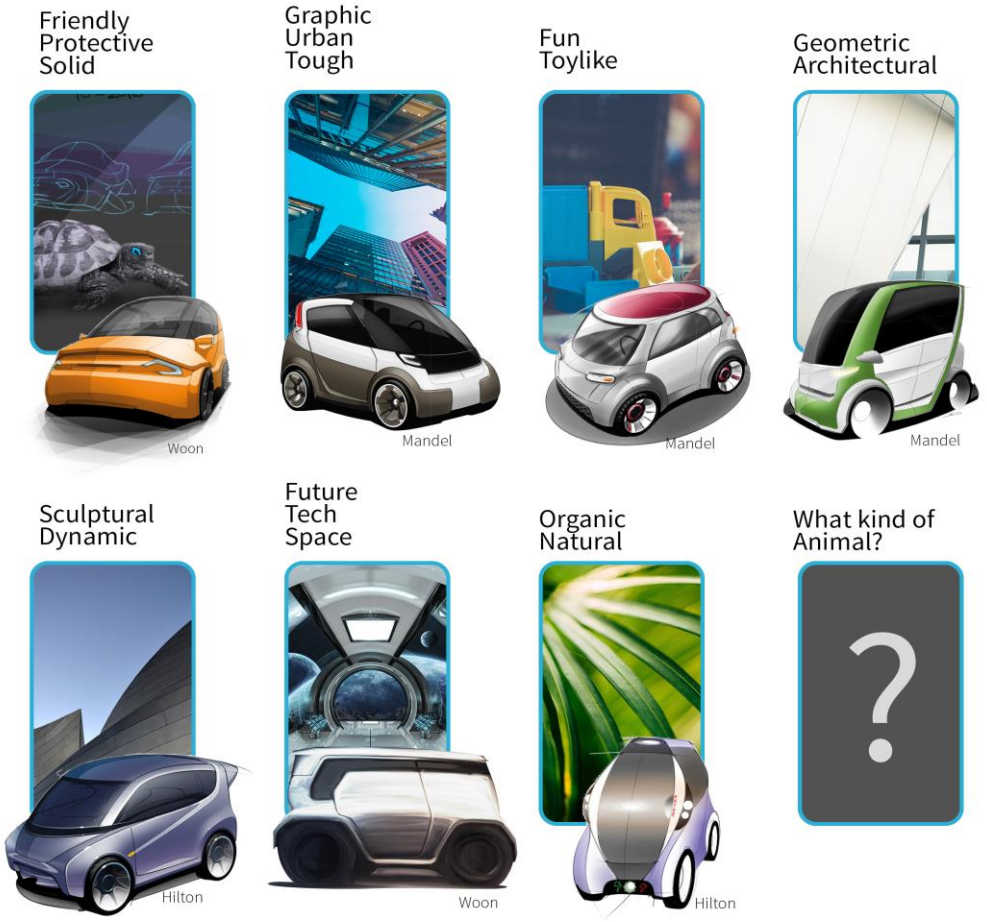
- PPV a part of the mobility concept
- No Sales to end customer!
- A vehicle for everyone and the quick change!

PPV

STYLING STORY

HOW TO DO DESIGN FOR MOBILITY!

WHAT KIND OF ANIMAL?



PPV Design DNA

- Protective
- Friendly
- Serious
- Simple graphic
- Agile
- Swarm

Source: FH Aachen Design by Woon Jung

Selected Associated Design-Environments for the PPV-Design-Development

PPV 1.0 - The worlds smallest Self-Driver-Bus

Source: share2drive & FH Aachen

WHAT MAKES THE PPV 100%-CARSHARING?

THE UNIQUE COMBINATION OF THREE KEY DESIGN PRINCIPLES

share2drive is able to deliver a vehicle, which is superior when used for CarSharing

PPV - UNIQUE SELLING PROPOSITION

Rigorous application of 3 key and unique vehicle design principles:

⚠ **Unique vehicle concept tailored and optimized to the requirements of CarSharing use-case**

The PPV - 100% CarSharing-DNA

Extract of some implemented technologies for the PPV 1.0

Connected

- Cloud Based
- PPV-Community
- Fully integrated in the www and IoT world

Source: Imperia GmbH

Urban Footprint

- 2,48m x 1,7m x 1,65m for 3 People, 2 crates, 1 Bicycle
- “Best in class” parking density

Total Cost of Ride Optimized

- Easy to sustain & clean
- No Damage Round
- Temperature on demand
- Flexible cargo and passenger layout

Getting-In – a real Event

- Self-explanatory, simple HMI
- Broad-spectrum ergonomic design
- Best-in-class door opening (swivel-sliding door)
- Spacious, light-flooded interior

NO COMPROMISES ON VEHICLE SAFETY

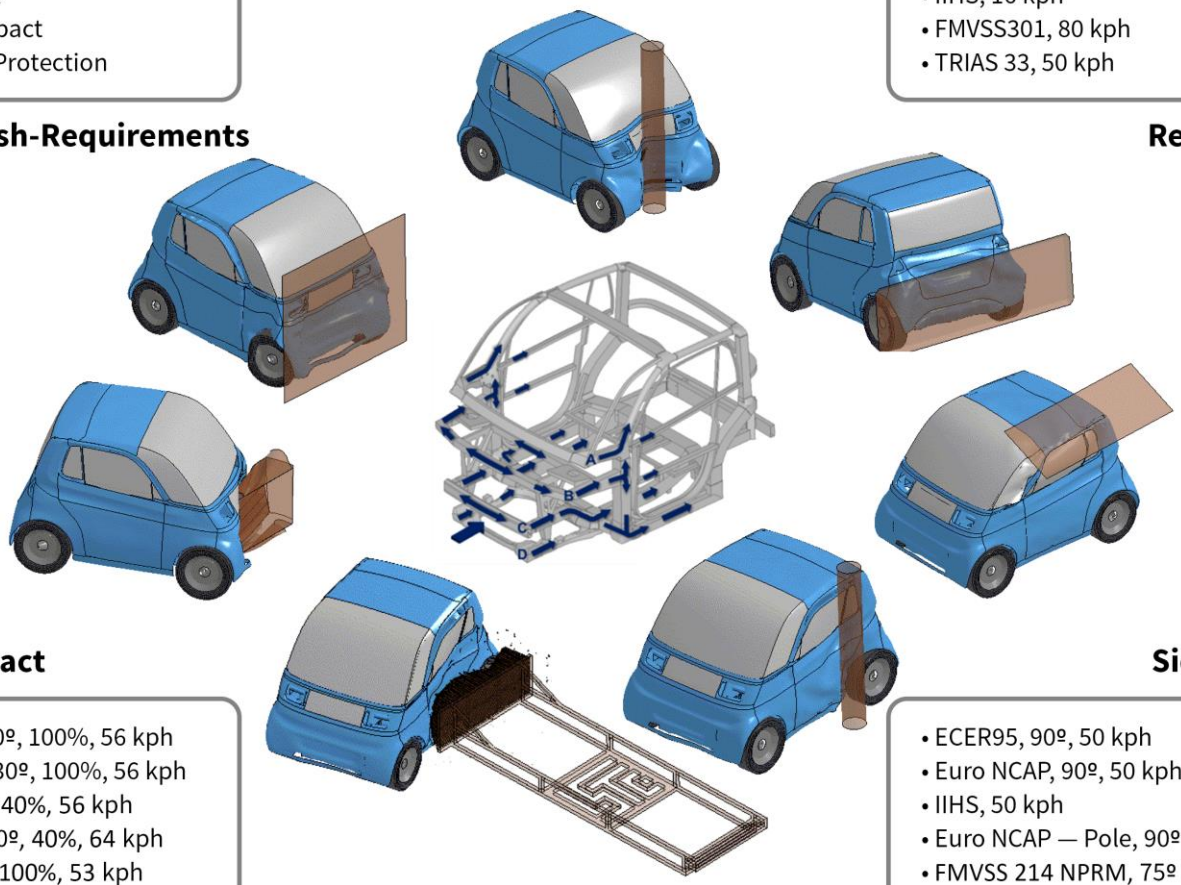
Crash Worthiness of PPV for EU-Market and for additional urban (worldwide) Impact-Scenarios

General Crash-Requirements

- FMVSS216 — Roof Crush
- ATZ & R-CAR
- ECE-R42 Impact
- Pedestrian Protection

Rear Crash

- ECER34, 0º, 100%, 38 kph
- IIHS, 16 kph
- FMVSS301, 80 kph
- TRIAS 33, 50 kph



Frontal Impact

- FMVSS208, 0º, 100%, 56 kph
- FMVSS208, 30º, 100%, 56 kph
- ECER94, 0º, 40%, 56 kph
- Euro NCAP, 0º, 40%, 64 kph
- ECER12, 0º, 100%, 53 kph
- Frontal Pole, 30 kph

Side Crash

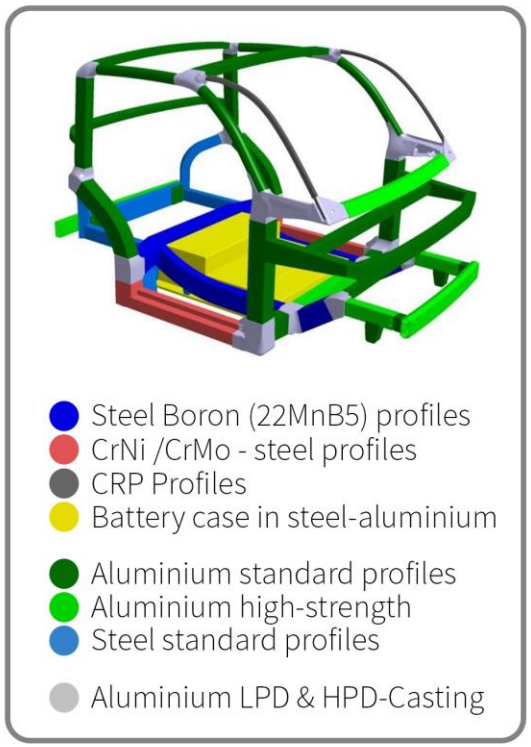
- ECER95, 90º, 50 kph
- Euro NCAP, 90º, 50 kph
- IIHS, 50 kph
- Euro NCAP — Pole, 90º
- FMVSS 214 NPRM, 75º
- FMVSS 214, 90º

Source: FH Aachen

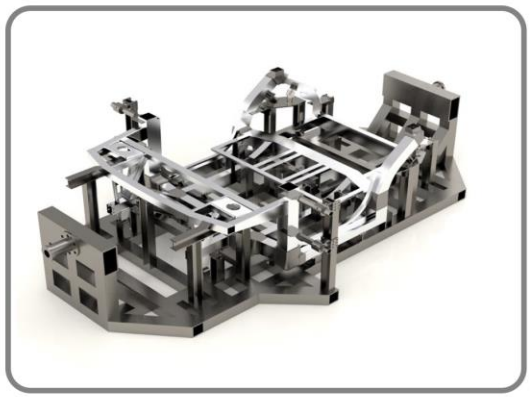
STRUCTURAL CONCEPT FOR A UNIQUE PURPOSE VEHICLE

Light weight Multi-Material-Body with unique low series production process

Construction Principle
FlexBody ©



Material Concept
Multi-Material



Production Concept
Innofix Single-Shot-Fixture

Source: Imperia GmbH

PPV 2.0

COMING SOON…..

PPV 2.0 COMING SOON…..

…. WitKar

PPV 2.0 COMING SOON…..

WitKar

Reality - 1974

PPV 1.0

Vision - 2017-2020

PPV 2.0

2021-2027

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