RAHMENBEDINGUNGEN EINER KÜNFTIGEN FTI STRATEGIE MOBILITÄT **INPUT: TECHNISCHE & ÖKONOMISCHE** (& EU) **ASPEKTE**

Dr. Gereon Meyer
VDI/VDE Innovation + Technik GmbH
gereon.meyer@vdivde-it.de
25. November 2019, Wien

DYNAMIK DER WERTSCHÖPFUNG

VDI | VDE | IT

Elon Musk @elonmusk · 7h

🖤❤️💛 GIGA BERLIN 💛❤️🖤

1.705 4.028 41,1K

Elon Musk @elonmusk · 7h

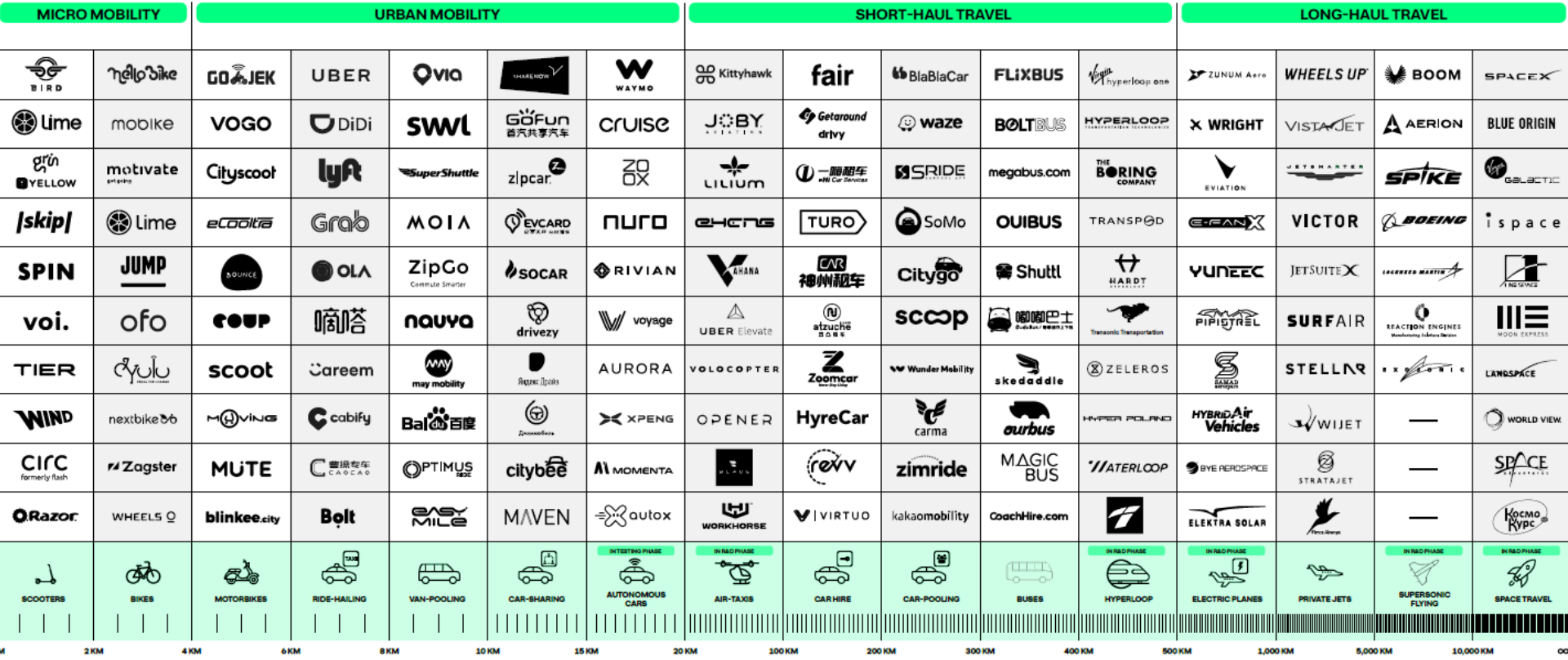
Will build batteries, powertrains & vehicles, starting with Model Y

544 1.021 20,3K

INVESTMENT:
4 MRD. EURO

DIVERSITÄT DER MODI UND AKTEURE

VDI | VDE | IT

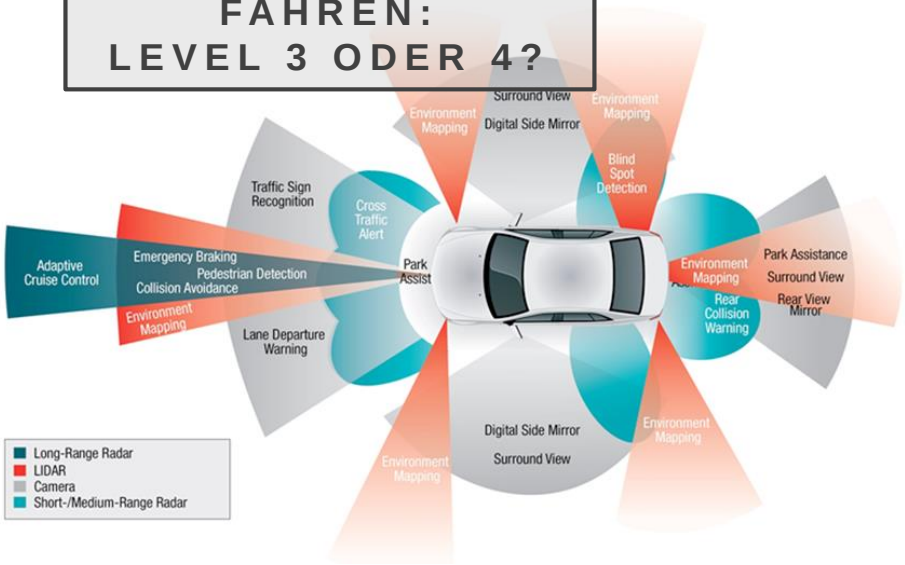


Reichweite

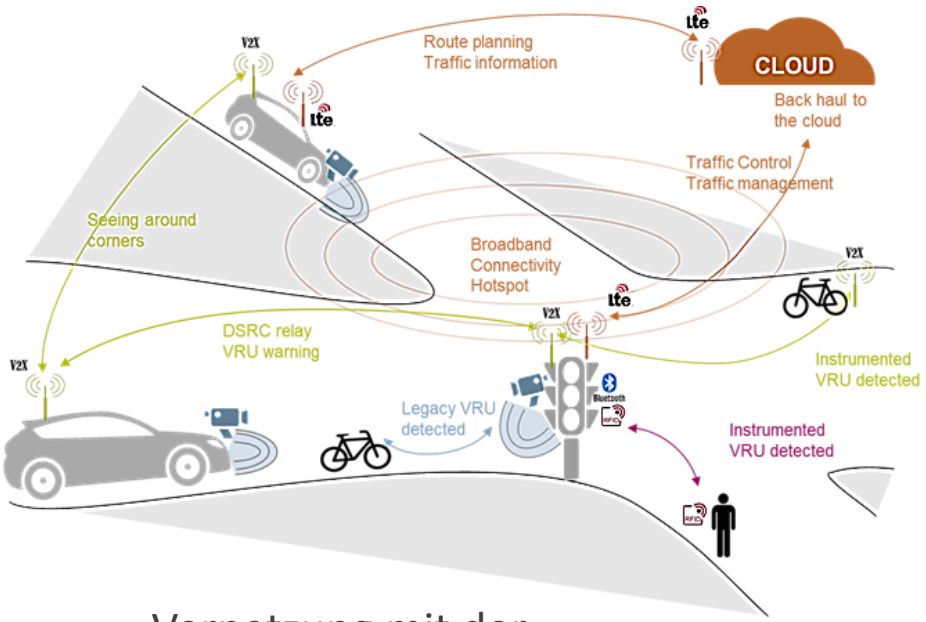
Lufthansa Innovation Hub (2019)

SYSTEMISCHE TECHNOLOGIEOPTIONEN

AUTOMATISIERTES FAHREN: LEVEL 3 ODER 4?

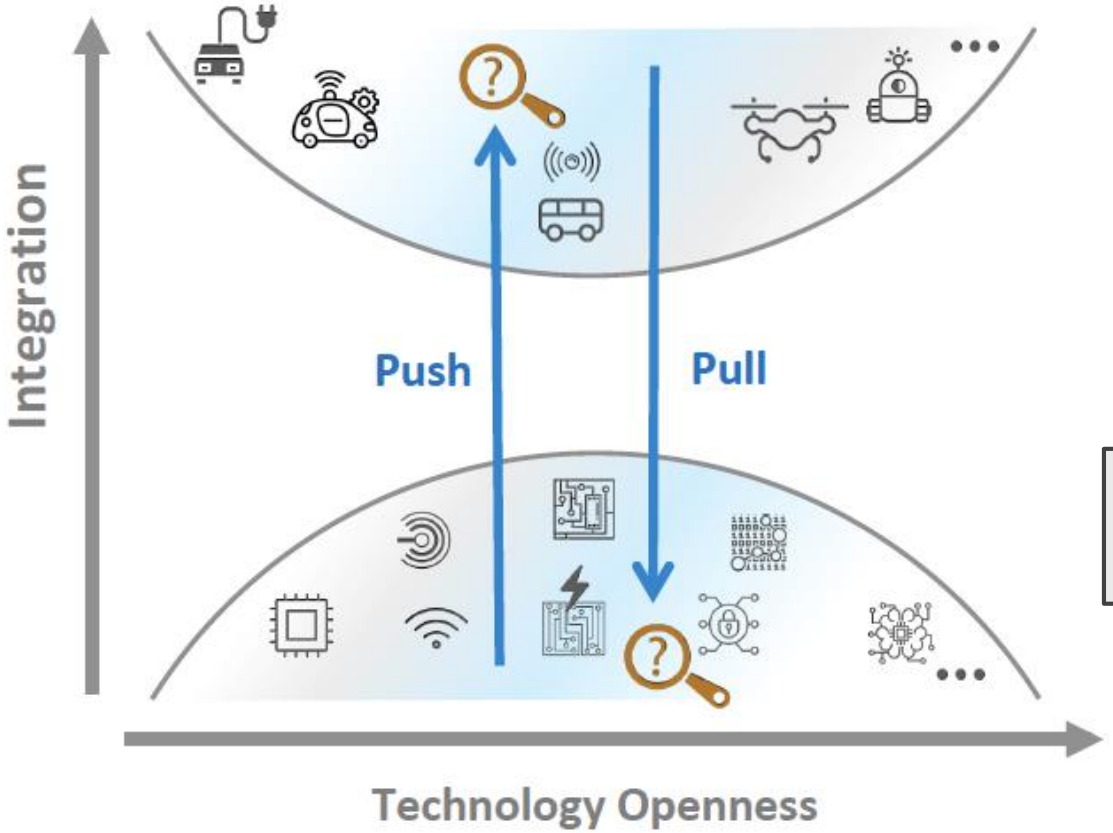


Fahrzeugbasierte Sensorik zur Umfelderkennung (SAE)



Vernetzung mit der digitalen Infrastruktur und KI (NXP)

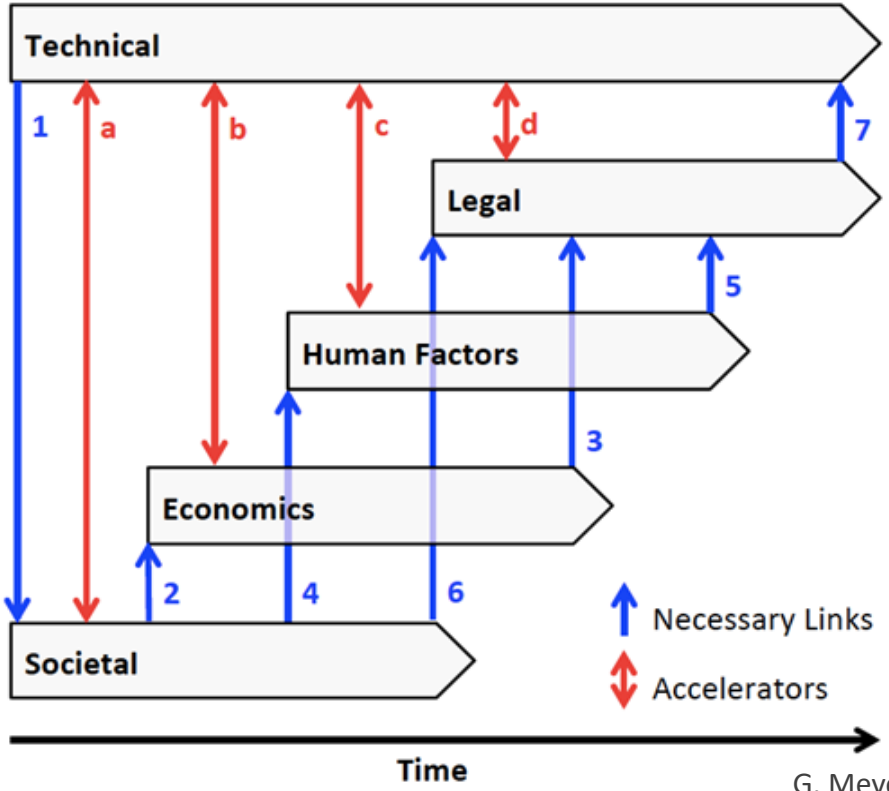
WERTSCHÖPFUNGSSTRUKTUREN



MANAGEMENT
VON
ECOSYSTEMEN

Lighthouse Mobility.E
ECSEL Joint Undertaking (2019)

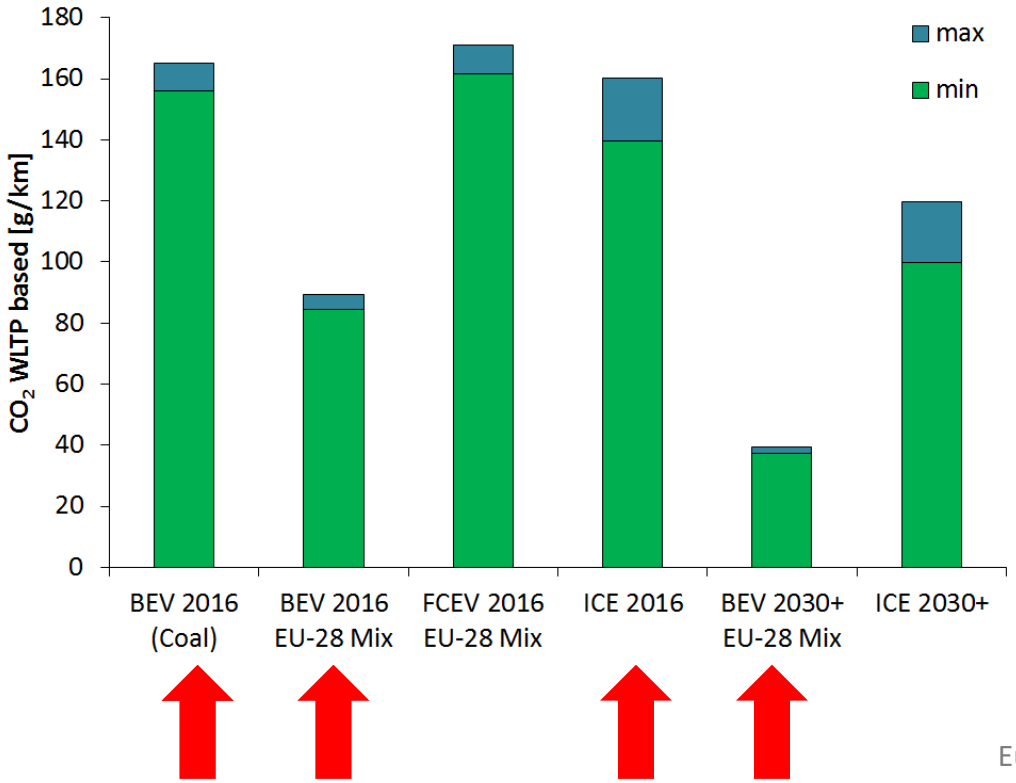
INNOVATIONSPROZESS



INNOVATIONSBARRIEREN VERMEIDEN DURCH AGILE PROZESSE

G. Meyer, European Roadmaps, Programs, and Projects for Innovation in Connected and Automated Road Transport.
In: Road Vehicle Automation 5, ed. by G. Meyer / S. Beiker, Springer 2018

ELEKTROMOBILITÄT

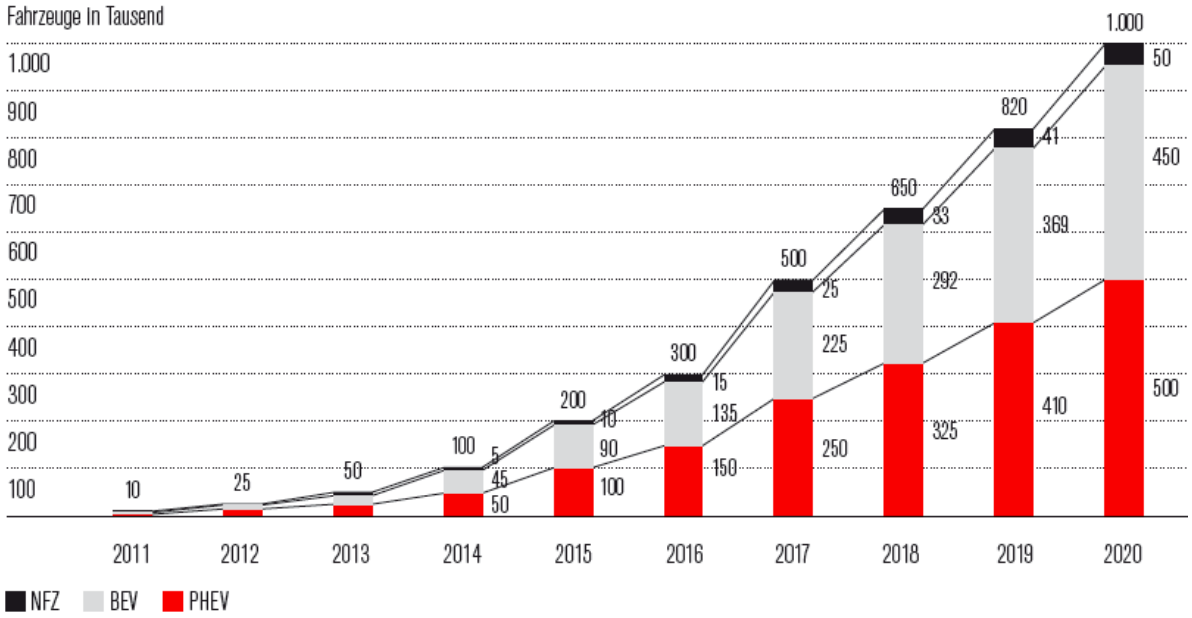


WTW CO2- EMISSIONEN IN ABHÄNGIGKEIT VOM ENERGIEMIX

European Roadmap Electrification of Road Transport (2017)

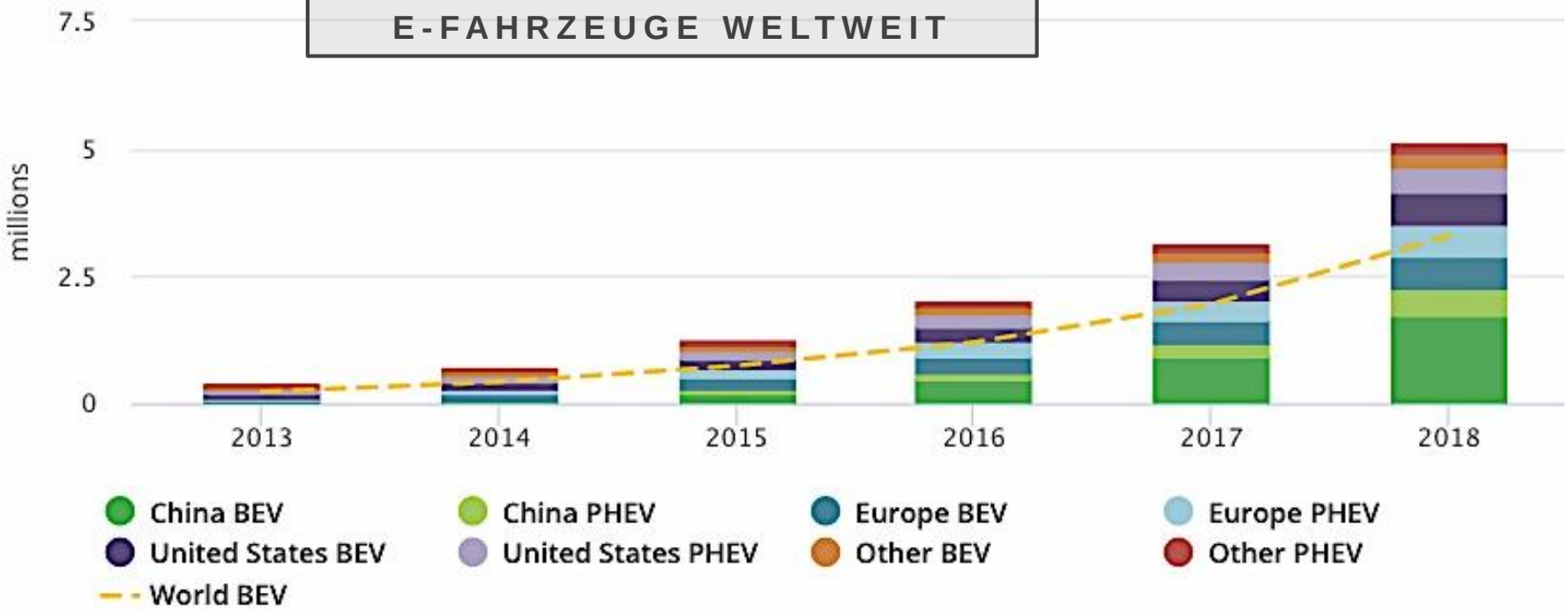
ELEKTROMOBILITÄT

ERWARTETER MARKTHOCHLAUF (D)



STATUS QUO: E-FAHRZEUGE

5 MILLIONEN ELEKTRISCHE E-FAHRZEUGE WELTWEIT



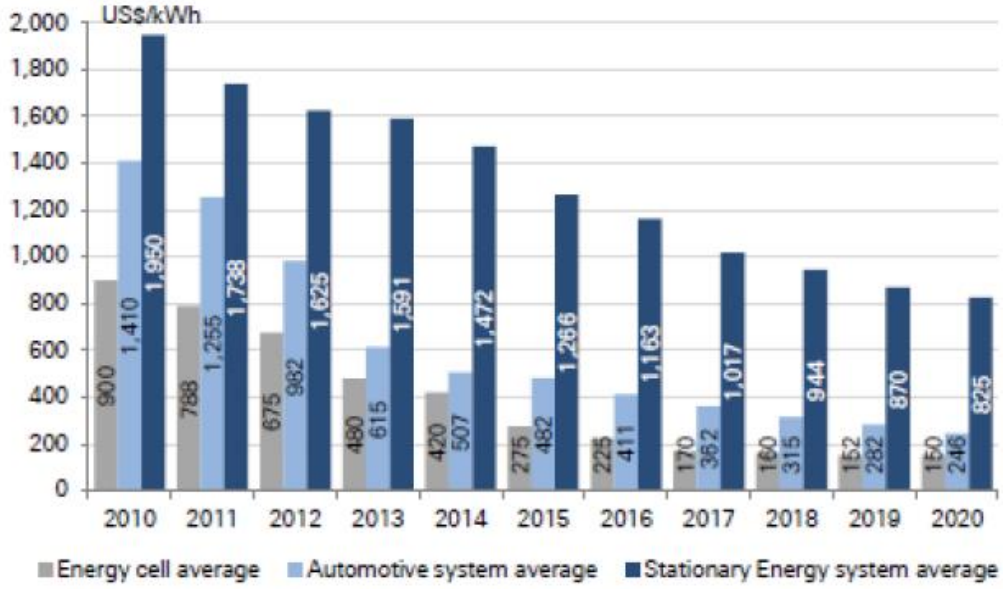
IEA, Global EV Outlook (2019)

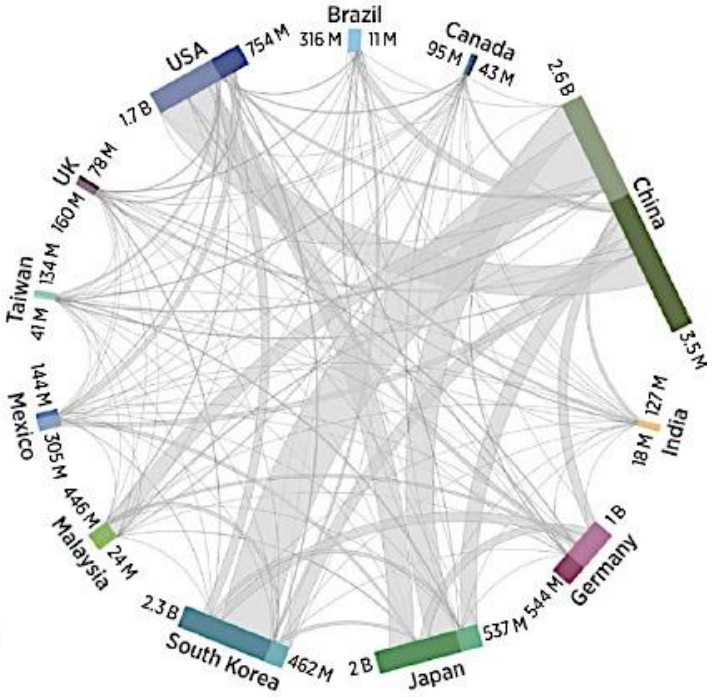
PROBLEM: BATTERIEN

EUROPEAN COMMISSION

VDI | VDE | IT

KOSTENENTWICKLUNG UND MARKTFÜHRERSCHAFT



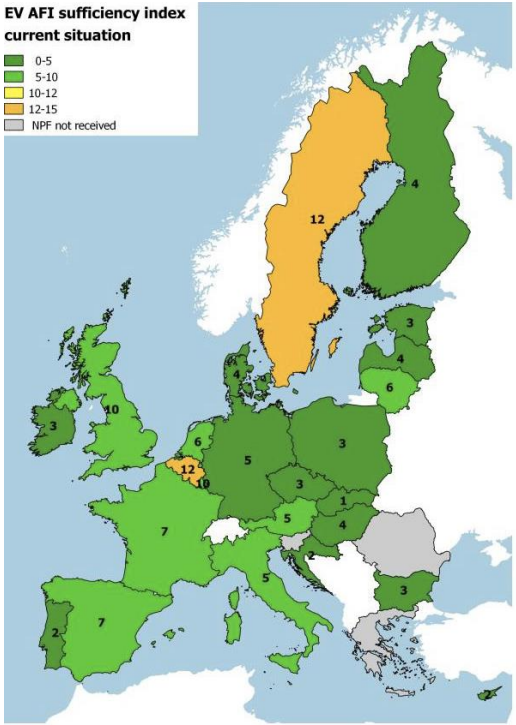


EU Competitiveness in Advanced Li-Ion Batteries
JRC, 2017

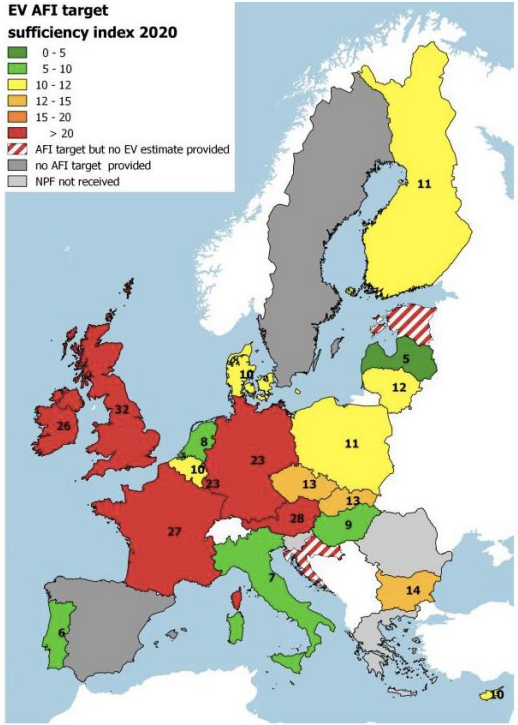
PROBLEM: LADEINFRASTRUKTUR

EUROPEAN COMMISSION

VDI | VDE | IT



2017



2020

ANZAHL E-FAHRZEUGE PRO LADEPUNKT

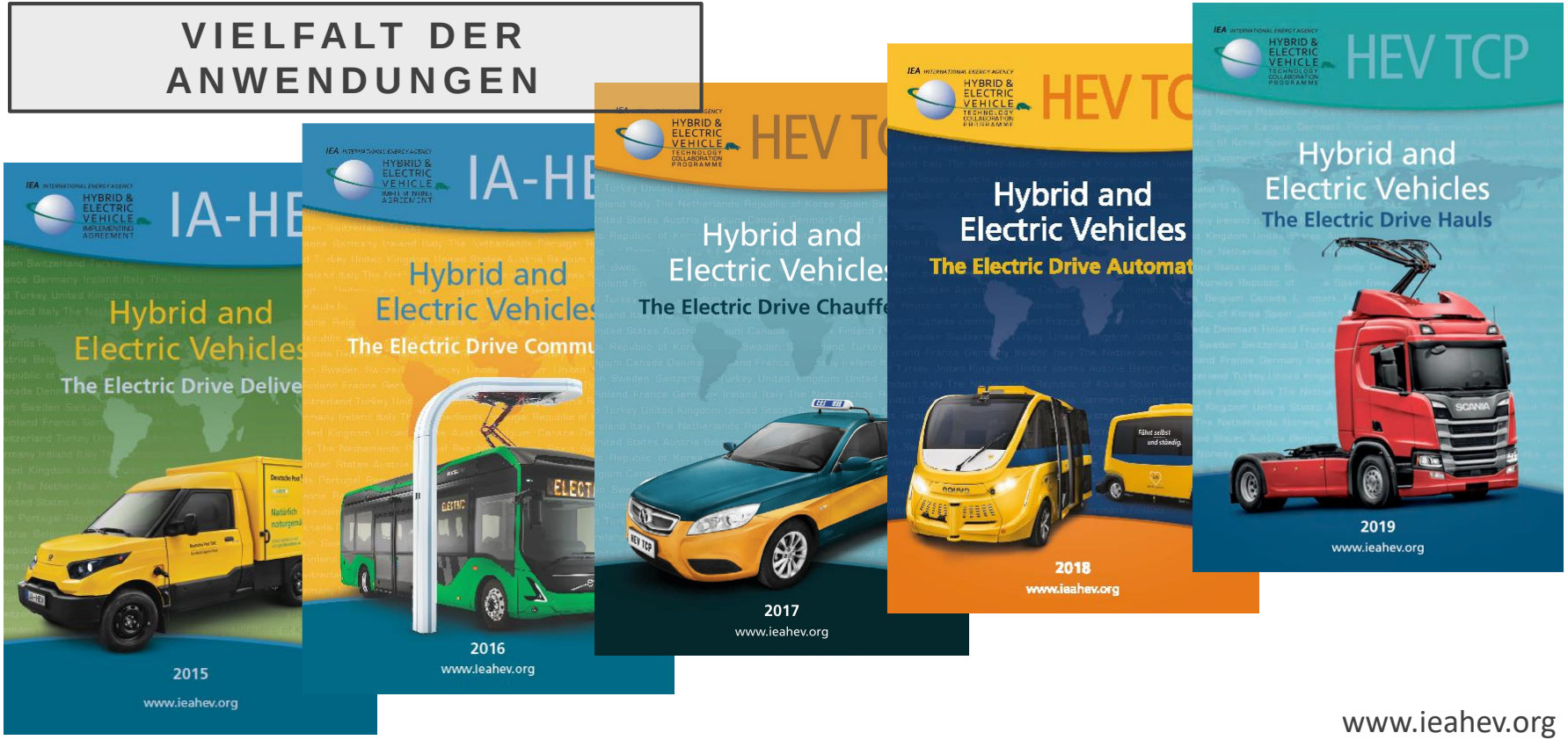
Detailed Assessment of the National Policy Frameworks
European Commission, SWD (2017), 365

ELEKTROMOBILITÄT

IEA INTERNATIONAL ENERGY AGENCY
HYBRID & ELECTRIC VEHICLE TECHNOLOGY COLLABORATION PROGRAMME

VDI | VDE | IT

VIELFALT DER ANWENDUNGEN



www.ieahev.org

AUTOMATISIERTES FAHREN

SCOUT

VDI|VDE|IT

ROAD MAP 1

USE CASE:
LEVEL 4/5 AUTOMATION
AUTOMATED
ON-DEMAND SHUTTLE

SCOUT

STORY MAP

VISION

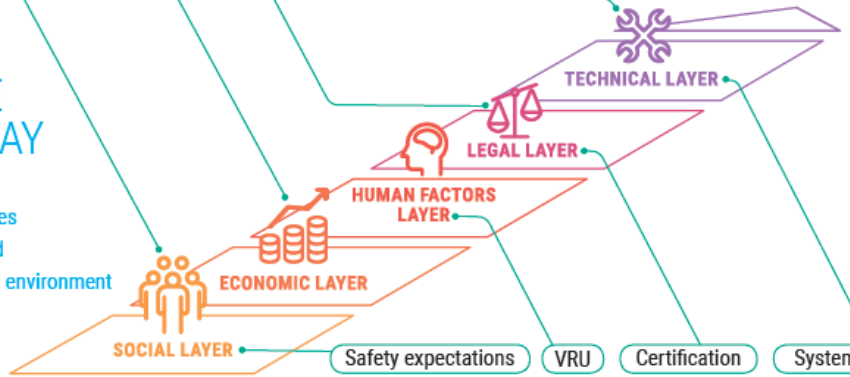
- Fully integrated
- Part of the transport system
- On-demand

Opportunities

Easy access | Cost effective | Rural lab | Transfer to freight

STATE OF PLAY

- First tests
- Fixed routes
- Low speed
- Controlled environment
- Stewards

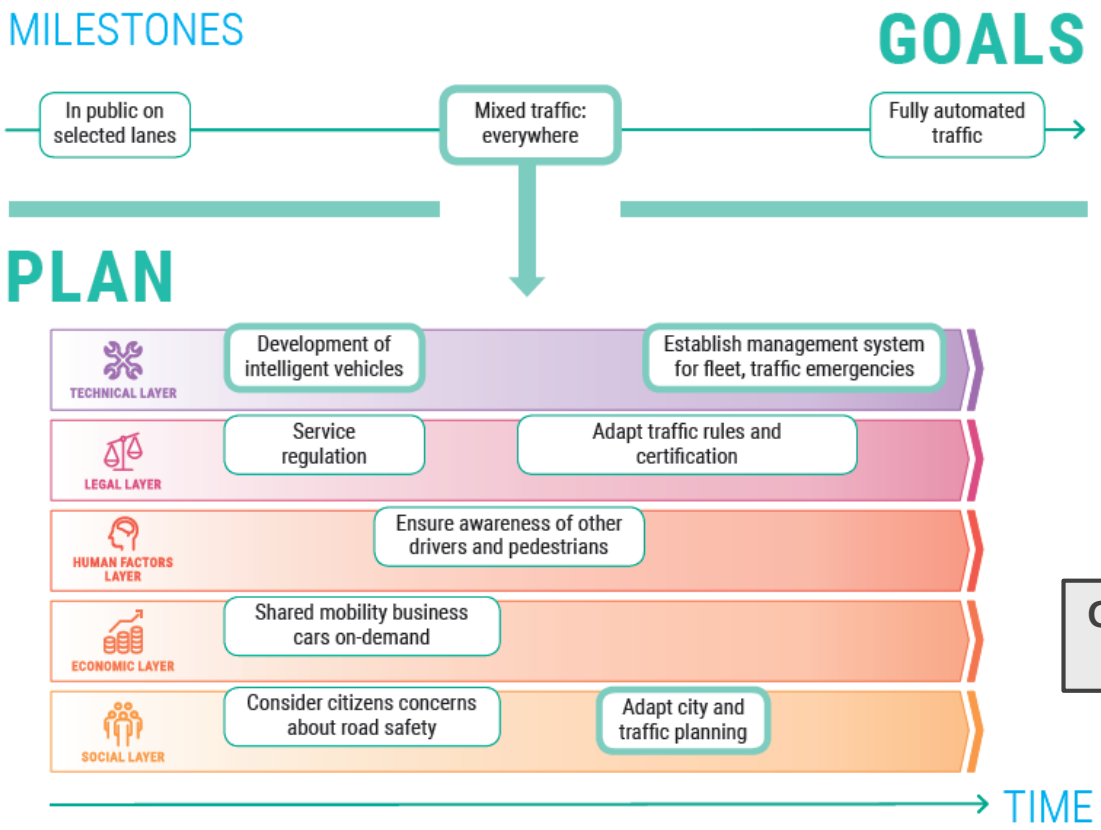


Hurdles

Safety expectations | VRU | Certification | System integration

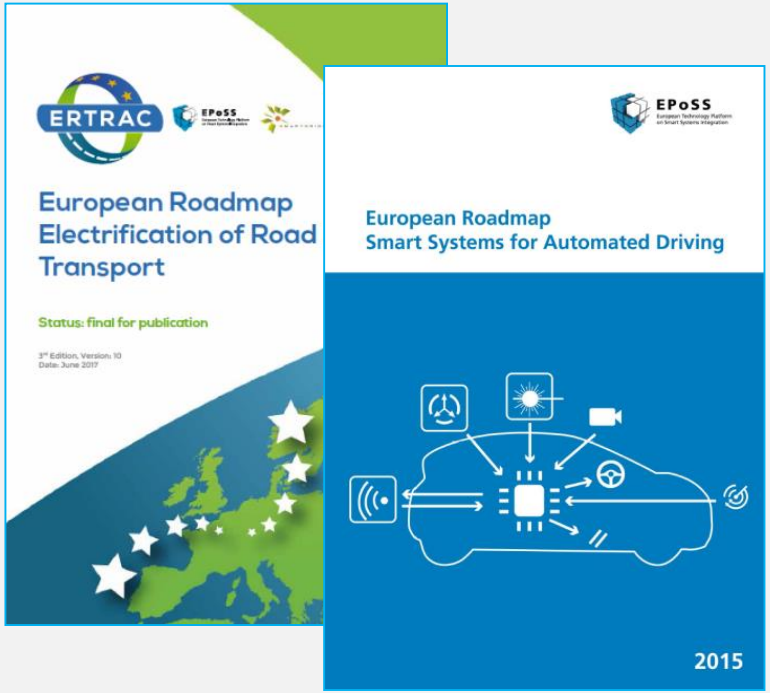
GANZHEITLICHE PLANUNG

AUTOMATISIERTES FAHREN



GANZHEITLICHE PLANUNG

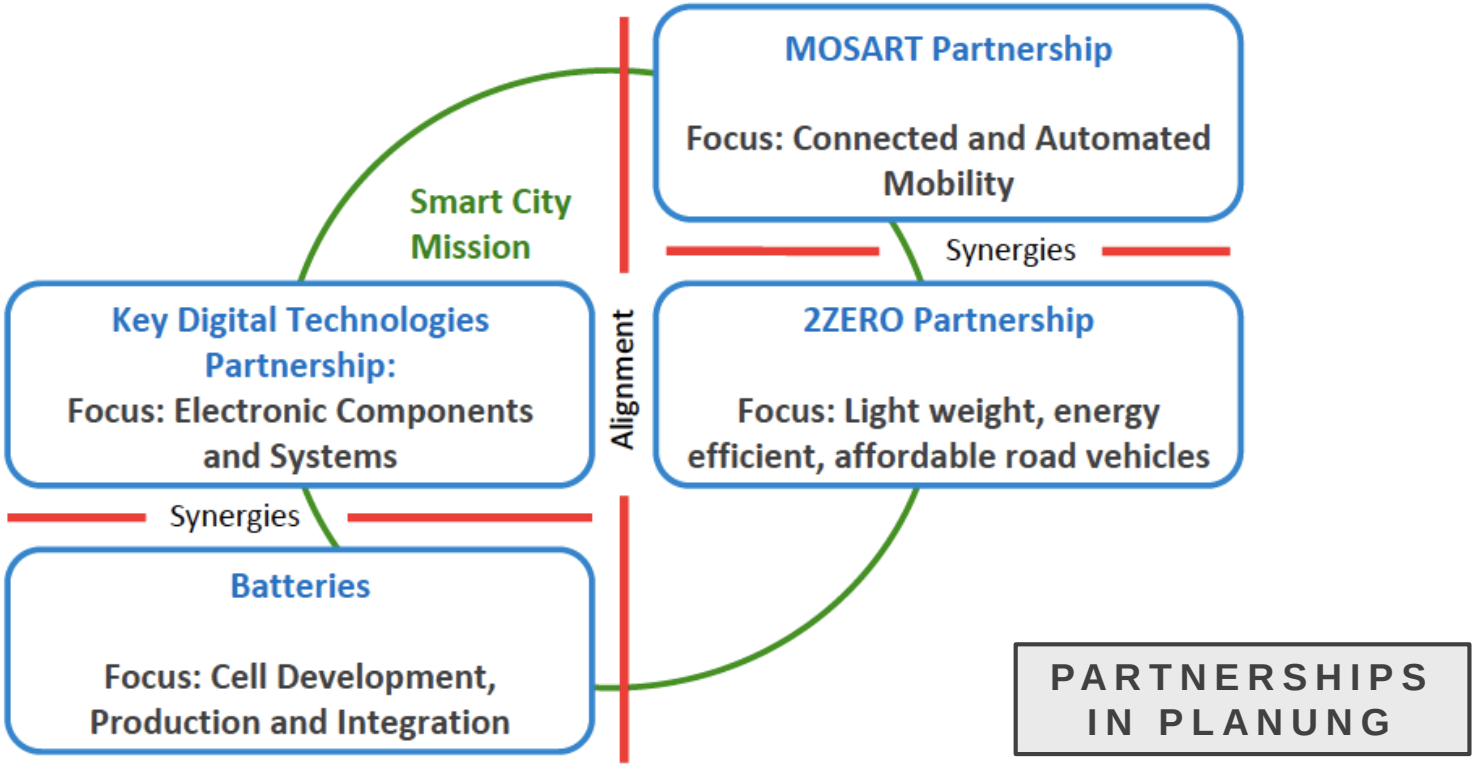
ROADMAPS



Europäische Technologieplattformen

Europäische Kommission

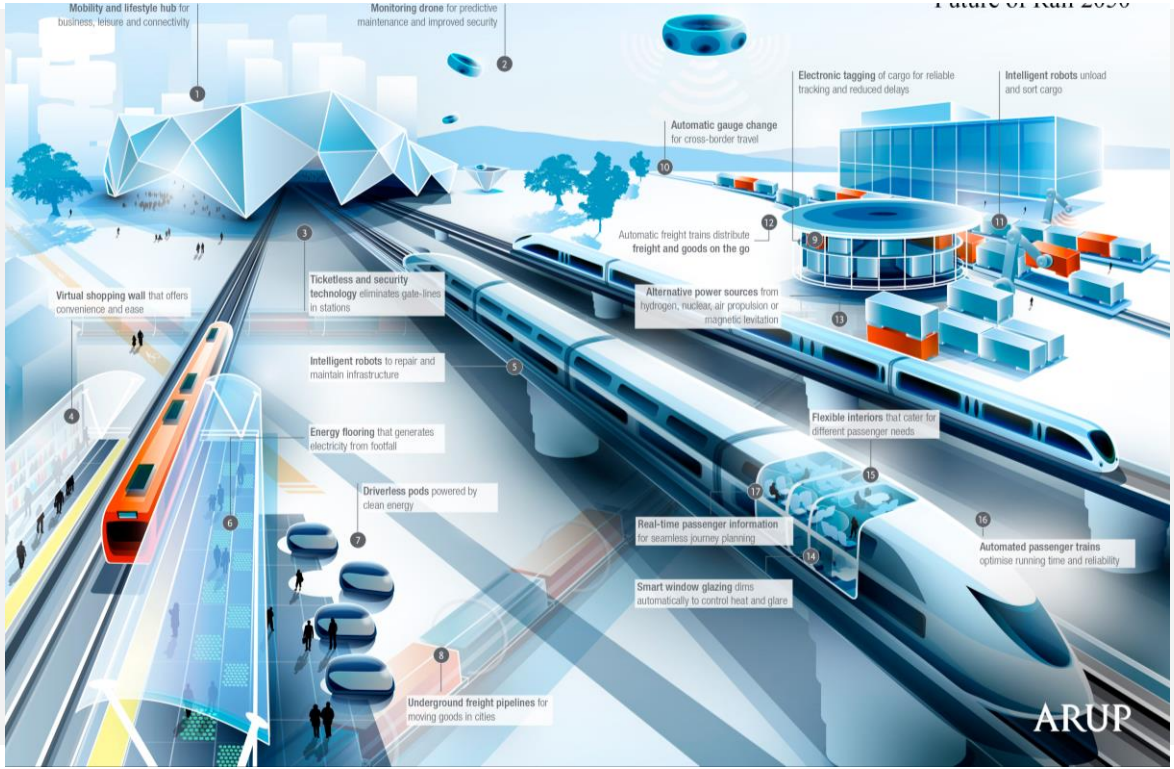
HORIZON EUROPE



TREND: ELEKTRISCHE SCHIFFE

WASSERTAXI
SEA BUBBLES

TREND: DIGITALE EISENBAHN



- Autonomy
- Last Mile Transit
- Digital Platforms
- Artificial Intelligence
- Advanced Manufacturing
- Innovative Diagnostics
- Electrification
- Fuel Cells and Hydrogen

TREND: TAXIDROHNEN

VOLOCOPTER

Roadmap
Smart Systems for
Urban Air Mobility
(in preparation)

Aeronautic → Urban Air Mobility ← Automotive

Technology Resources

- Flight Automation
- Secure V2V/V2I-Communication
- Safety Concepts
- Electrification
- Propulsion & Aerodynamics
- Battery & Charging Management
- Light Weight Materials
- Sensor & Data Fusion

Non-Techn. Rssources

- Flight Safety Regulations
- Platform-based (On-Demand) Business Models
- Certification
- User Acceptance On-Demand Services
- Scaleability

TREND: HYPERLOOP

VERBRAUCH:
50% BAHN
30% E-AUTO
10% FLUGZEUG

HARDT, Hyperloop TT, TUM (2019)

Dr. Gereon Meyer
VDI/VDE Innovation + Technik GmbH
gereon.meyer@vdivde-it.de