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Service Support Development

Sales and market potential through autonomous and automated driving: Case study of Baden-Wuerttemberg

EVS 32: A World of E MOTION

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Experience in Smart Mobility since 2009

bIT-EV Fleet (as of 03/2019):

36 BEV

3 PHEV

2009 2010 2012 2013 2014 2015 2016 2017 2018 2019

MeRegio Mobil

crome

HUBJECT

izeus

smart grid integration

IMEI

STUTTGART SERVICES

schaufenster elektromobilität

EVS 28

e3 mobility

EVS 29

automechanika FRANKFURT

STUTTGART

caritas

STADT MANNHEIM

VanAssist

EVS 32

Own activities

Solutions

Research- & Development Projects

Governmental Projects

Cooperations (excerpt)

intelligent move

Internet der Energie BDI initiativ

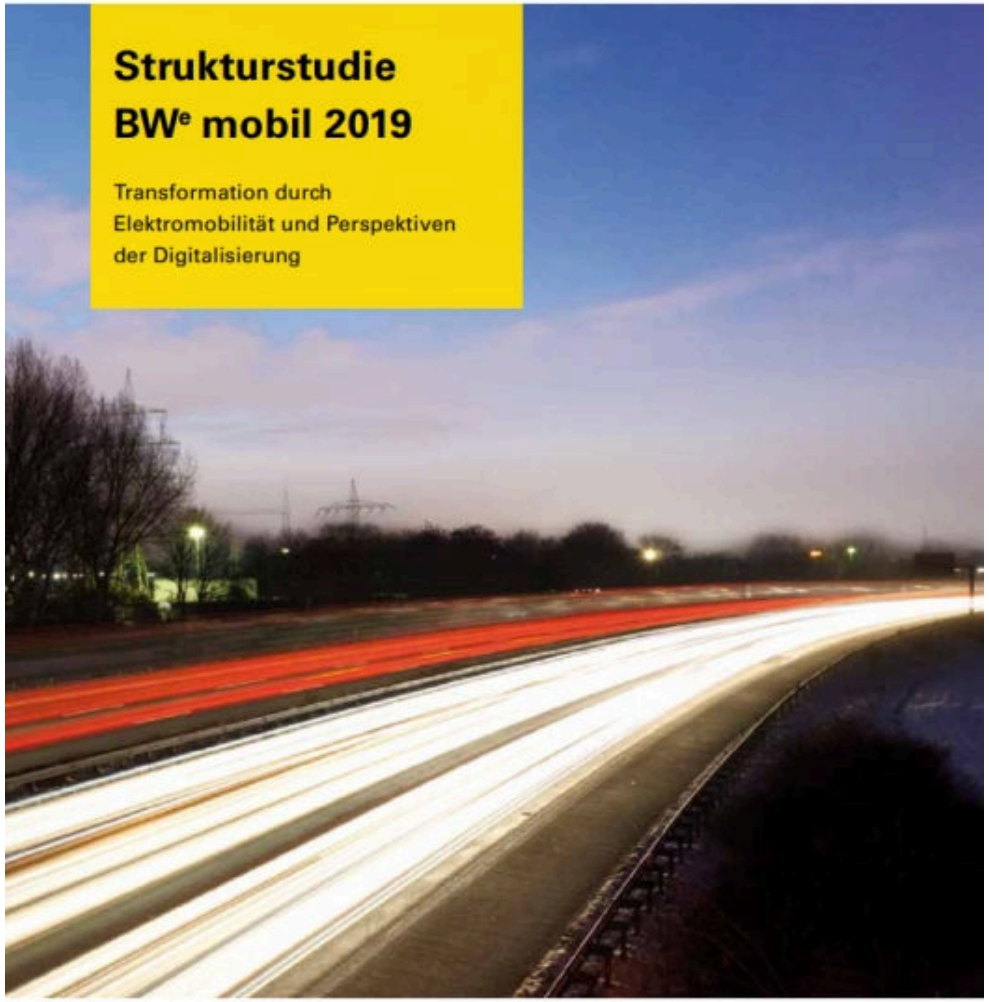
strategiedialog automobilwirtschaft BW

elektromobilität süd-west

CIVITAS

"The future belongs to automated and networked driving. Automated driving is an important driver for innovation and added value and therefore of great importance for the automotive location of Germany as a whole. It is important for the German automotive industry to maintain its leading position. "

Federal Minister of Economics Sigmar Gabriel, 2015



Authors of the study

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e-mobil BW
Landesagentur für neue Mobilitätslösungen und Automotive Baden-Württemberg

EVS 32
A world of E MOTION

Why is autonomous and automated driving so important for Baden-Württemberg?

Automotive Cluster in Baden-Württemberg

- Ca. 470.000 employees
- 79,8 Billion turnover in the automotive sector
- 1/3 of complete industry revenue in Baden -Württemberg

Technology and Trends

- Electrification, Digitalisation & Automatization
- climate protection plan 2030: 42% CO_2 reduction in automotive

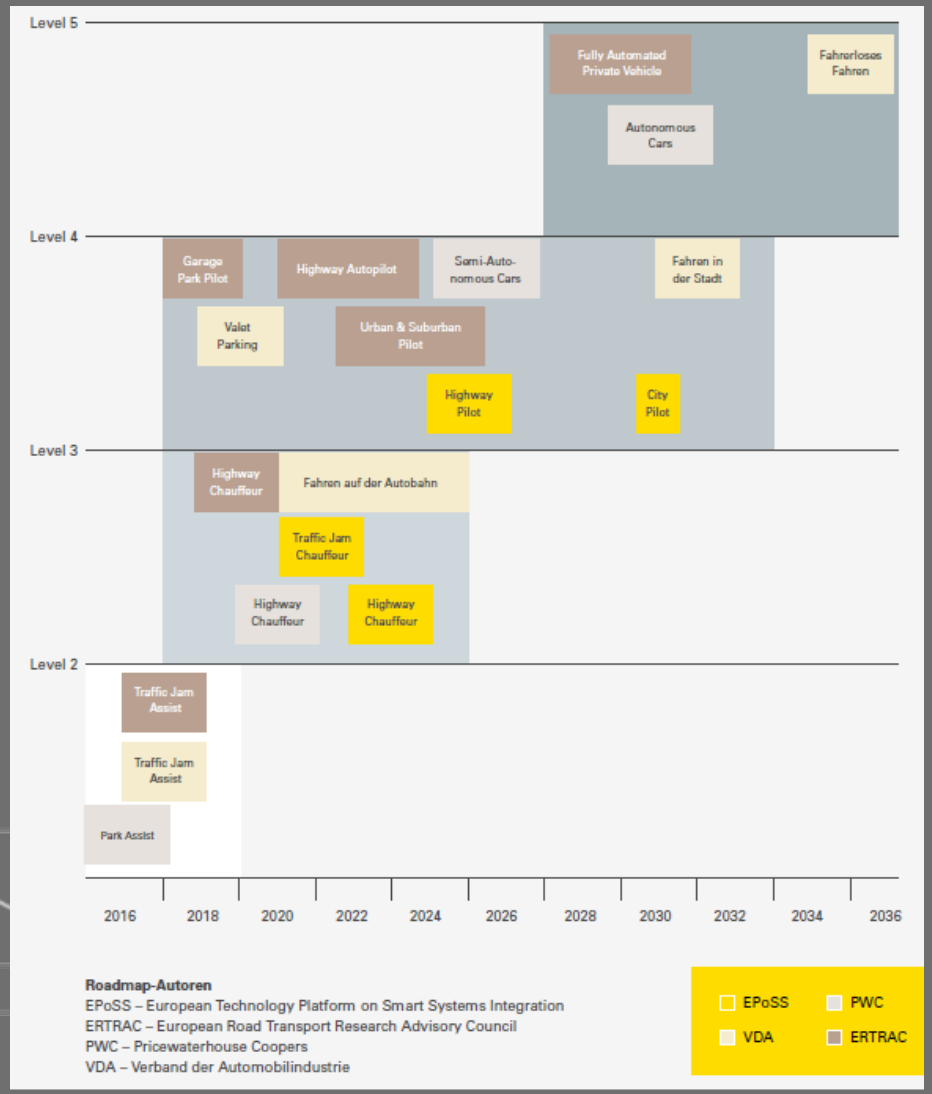
Difference in Definition of Levels of autonomous driving between BASt, VDA & SAE

Level	BASt	VDA	SAE
0	Driver Only	Driver Only	no automation
1	Assisted	Assisted	Driver assistant
2	partially Automated	partially Automated	partially Automated
3	highly automated	highly automated	Conditional automation
4	fully automated	fully automated	High automation
5	Not defined	driverless	Full automation

"The real challenge is not technological, but legal and social. Regulators play a crucial role in this. We note that in most countries, the authorities do not want to be in the way of technical development. "

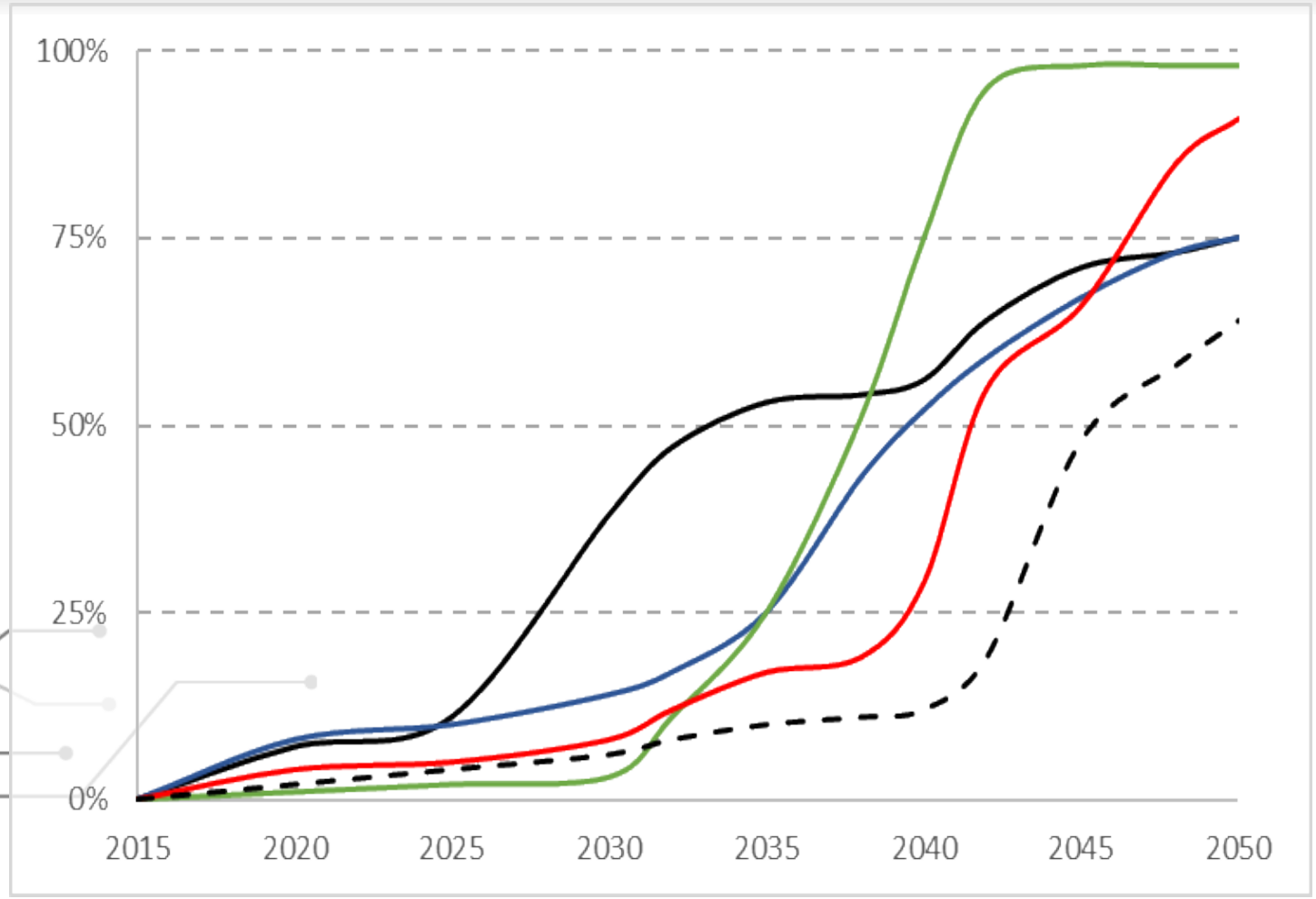
Amnon Shashua, Mobileye, 2017

Expected course of the penetration of autonomous driving



- Phase I to 2025: preparation by research and real tests with various industrial scale applications (e.g., airport, agriculture, etc.)
- Phase II to 2030: Specification of business models and restructuring of the legal framework as well as adjustments to the infrastructure and production networks (especially internationally driven).

Expected course of the penetration of autonomous driving



- Phase III until 2035: Rapidly increasing number of autonomous vehicles.
- Phase IV until 2040: The vast majority of mobile operations (people and goods) are carried out by autonomous vehicles.

Subjective assessment of the penetration of autonomous driving

Factors influencing the market penetration of autonomous driving

#	influence	name
1.1	Legal framework & policy	EU-wide regulations
1.2		Legal Framework - Legislation (Federal, State)
1.3		Promotion and prohibitions
1.4		Insurance
2.1	Acceptance	Trust (Technology & Legal Aspects)
2.2		Security
2.3		Acceptance in society
2.4		Linking old and new world of mobility
2.5		Jobs
3.1	Technology	Reliability of the technology
3.2		Development of artificial intelligence
3.3		Data usage
3.4		Technology in general
4.1	Price / Cost	Cost Autonomous Features / Mobility
4.2		Cost models

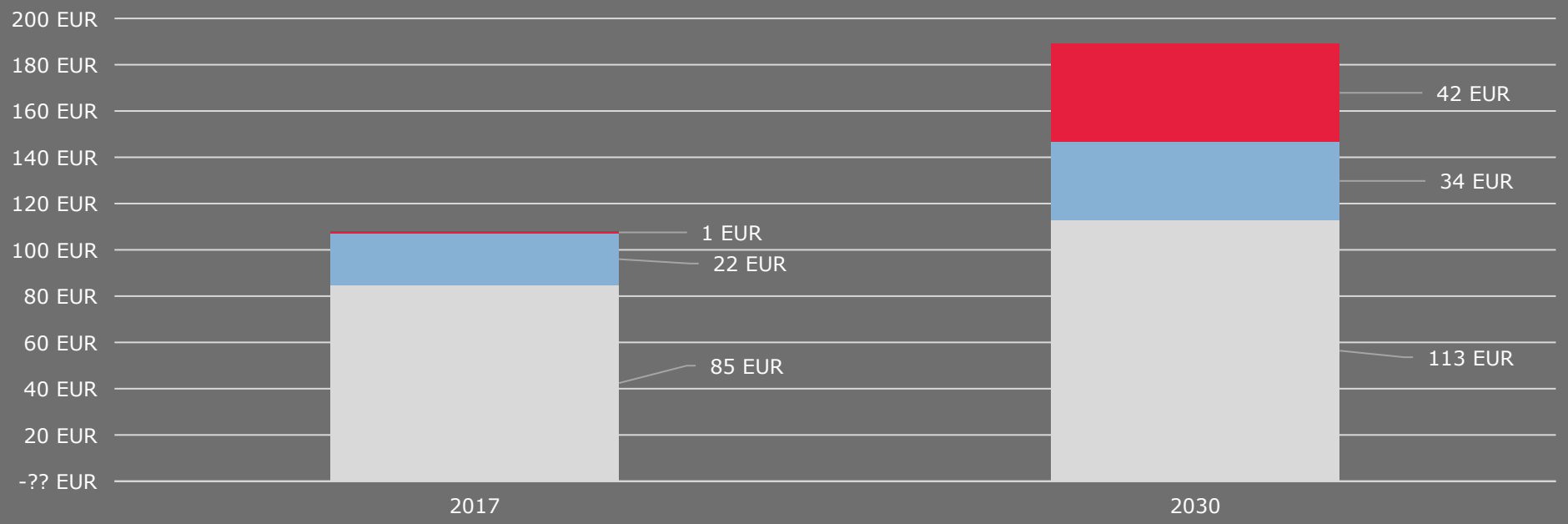
#	influence	name
5.1	Infrastructure	Infrastructure
5.2		Energy supply of autonomous vehicles
5.3		Financing Infrastructure
6.1	Purpose	Spatial allocation (city, country, separate purpose)
6.2		Elimination of stationary traffic
6.3		Commutes
7.1	Need	For simplicity of use
7.2		For flexibility in use
7.3		Climate & Environment
7.4		Motivation for change (hype?)
8.1	Business model	New customers
8.2		Mobility Added value
8.3		New offers
8.4		Internationality

User behavior and megatrends

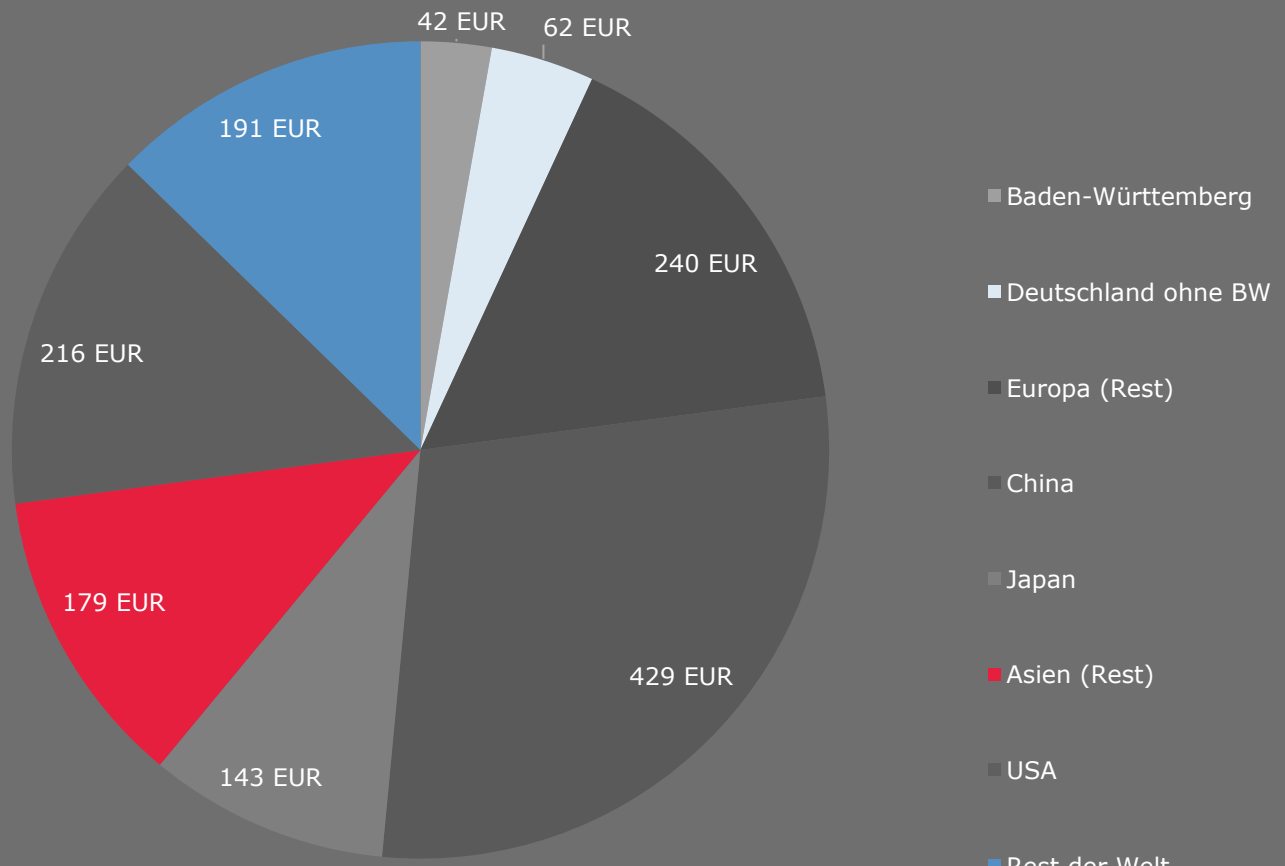
Consumer Trends	Implications for mobility
Multigraphy	Life plans are becoming more and more fragmented. Needs are becoming more situational. "Products from the life stage" become more important than target group strategies (age, social class, ...).
Downaging	Consumers feel much younger than their actual biological age. No ghetto products, but exciting products for the "second dawn"
Family 2.0	Network, patchwork and fragment families have high and highly differentiated mobility requirements that cannot be met by the Family VAN, SUV or station wagon.
Neo-Cities	Auto-mobility that adapts to the requirements of green cities of the future (zero-emission cities).
Greenomics	Auto-mobility, which does justice to a healthy and at the same time pleasure-oriented lifestyle. Mobility solutions that are ecologically correct but also sustainable for the consumer.
New Luxury	Products that improve your own quality of life. Tendency to turn away from status and prestige thinking.
Simplify	Simplification; time saving; simplicity, invisibility of technological processes.
Deep Support	Support services that adapt individually to the needs of the individual. Infrastructures for micro-services that organise life between home and work.
Cheap Chic	Affordable, "smart" products that still satisfy the desire for exclusivity, design and luxury.

Impact on sales potential, value added and employment

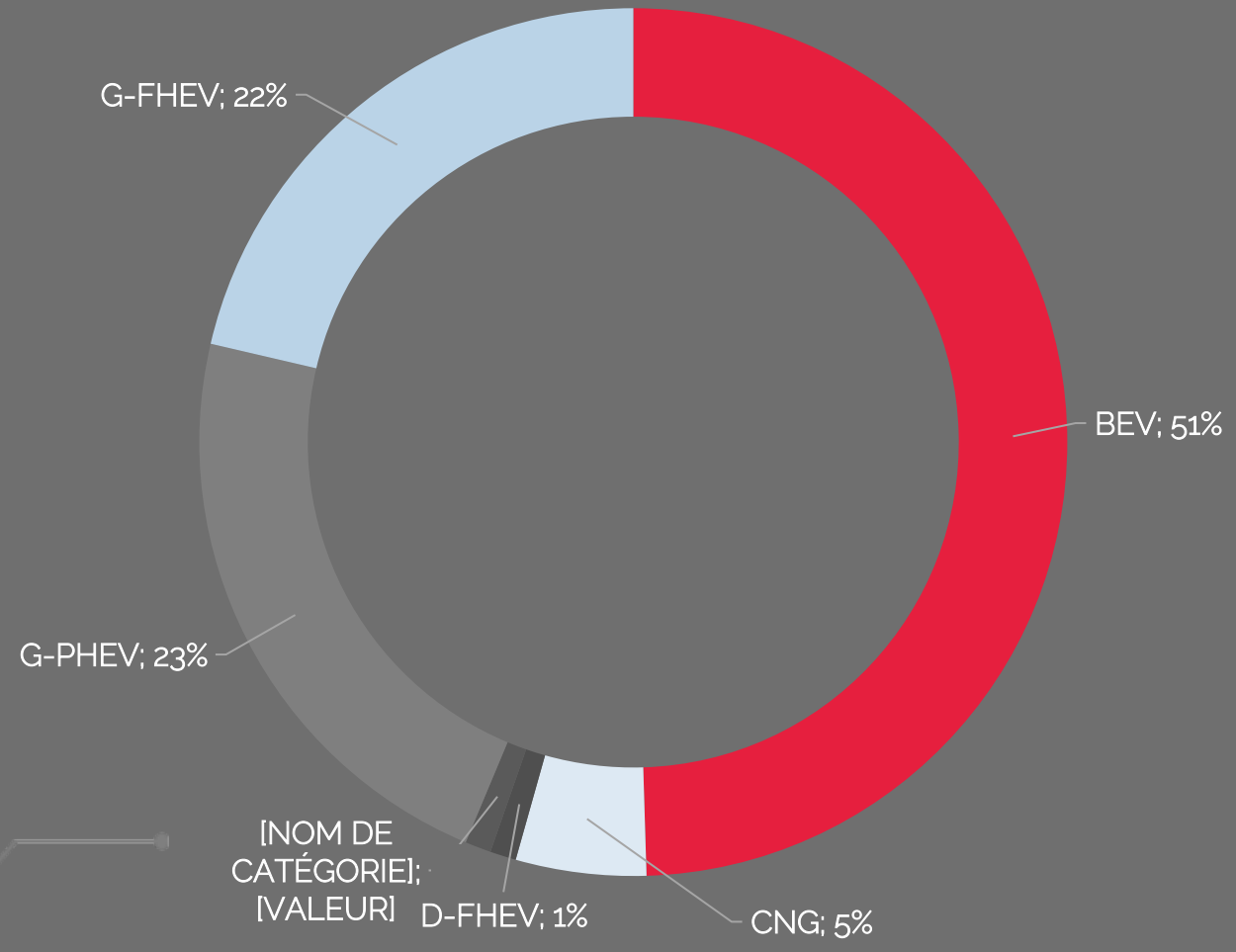
Sales Potential Automotive Industry Baden-Württemberg in billion €



Distribution of sales potential through digitization of the automotive industry in 2030 in Billion EUR



Expected development of EV market ramp-up until 2030



Assumed framework conditions

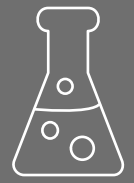
- Fleet consumption target 50g CO_2
- Positive price development
- Charging station supply level 75%

Employment effects of electromobility in the entire automotive cluster BW

Sectors	Employees 2016	Overall effects 2030
OEM	121.000	-3.800
Automotive supplier	95.500	-8.800
Automotive suppliers from other industries	68.000	-7.300
Mechanical and plant engineering	44.000	-5.800
Development service provider	15.000	100
Temporary workers	16.000	-1.500
In-house services	8.000	-800
Other services	15.000	-2.000
Total value-added clusters (excluding motor vehicle trade)	382.500	-29.900

Conclusion: What should be the next steps?

Adapt legal framework

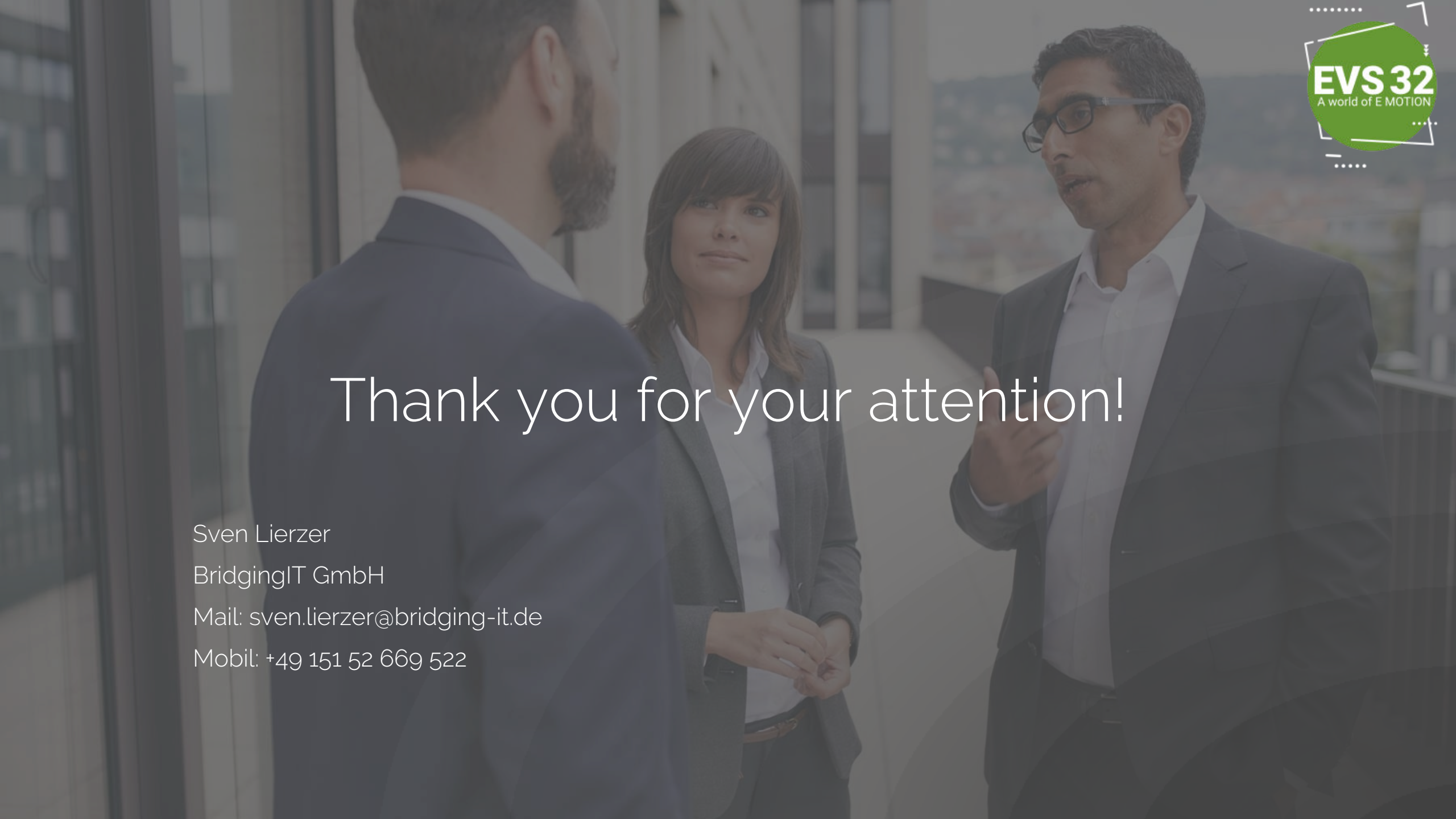


Create experimental spaces

Use IoT, 5G and AI

Create user acceptance

Making Baden-Württemberg fit for the future as a business location



Thank you for your attention!

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