



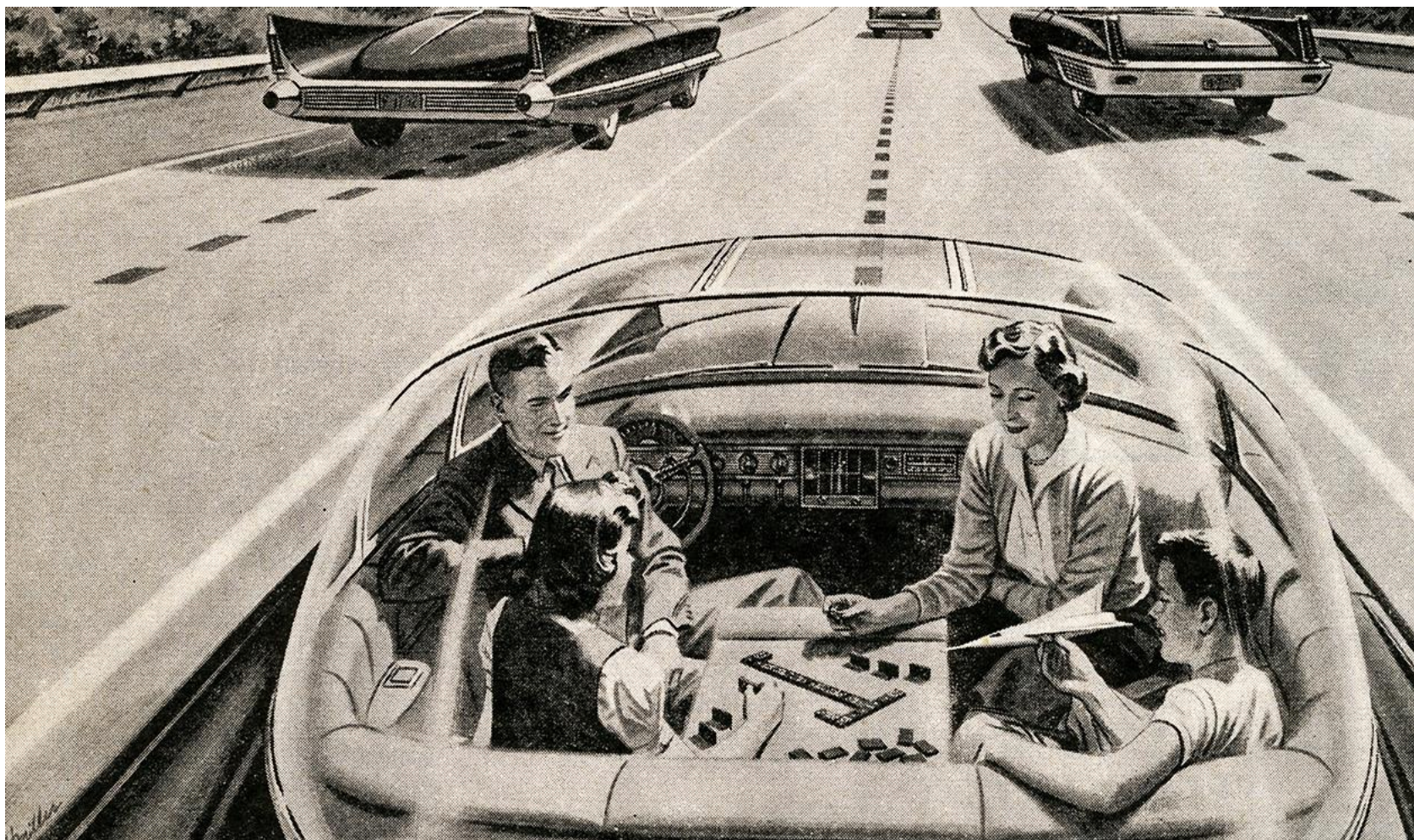
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FIAR 2018 – Motor Conference

Motor Insurance Markets: The Impact of Telematics & the German Case

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with kind support of
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Motor insurance markets: the impact of Telematics



Introduction/ Background

Automated vehicles come hand-in-hand with anticipated reliefs such as

- Increased safety level (daily 3.500 fatalities on average worldwide, which is in over 90% of the cases caused by human-error)
 - Additional free time while driving
 - Increase of mobility especially for elderly and young people
 - Improvement of traffic efficiency resulting in less congestions and low emission values
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- ❖ However, the advent of automated vehicles will change the insurance landscape sustainably: a decrease of likelihood of occurrence will directly influence the development of motor insurance premiums

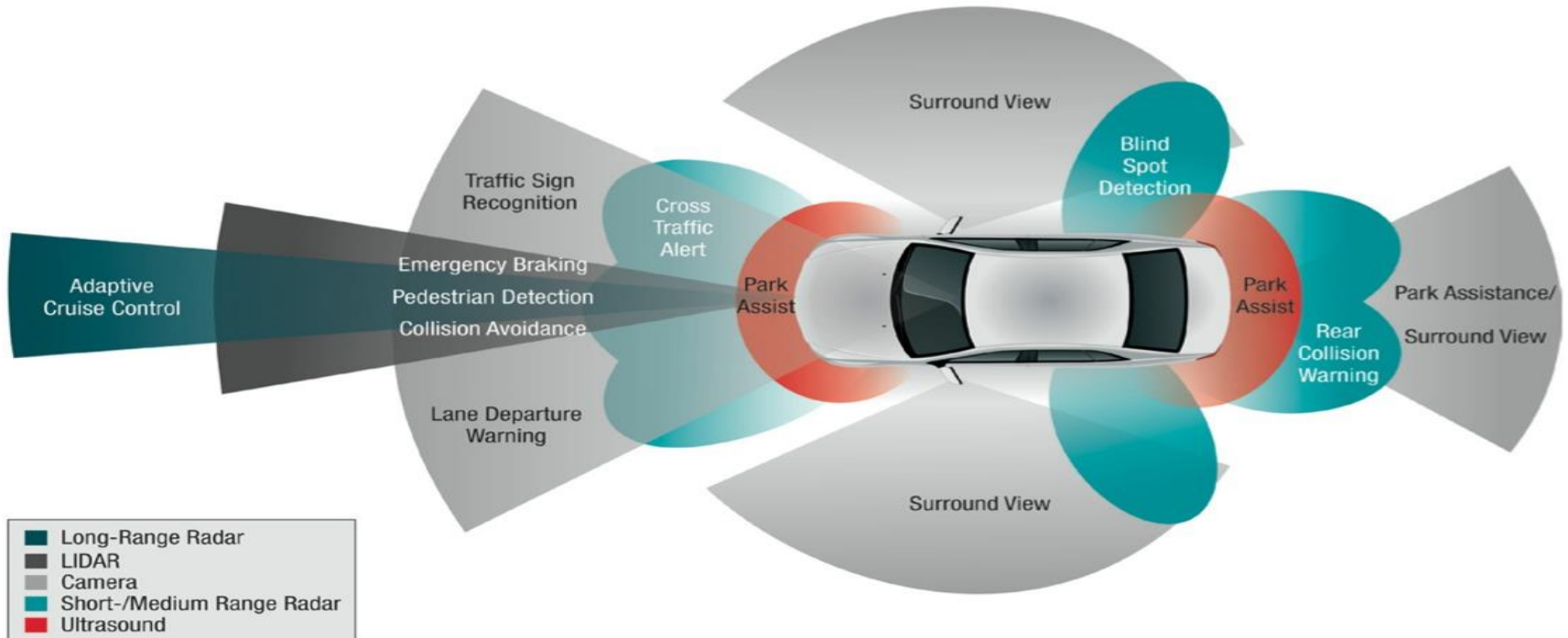
Current status quo

0	1	2	3	4	5
 The driver constantly performs all aspects of the dynamic driving task. No systems intervene – only those that warn the driver.	 The system can take over either steering or acceleration / deceleration. The driver must continuously carry out the other.	 The system takes over both steering and acceleration / deceleration in a defined use case.	 The system takes over both steering and acceleration / deceleration in a defined use case. It is capable of recognizing its limits and notifying the driver.	 The driver can hand over the entire driving task to the system in a defined use case.	 The system can take over the entire dynamic driving task in all use cases.
 The driver must constantly monitor the drive.	 The driver must constantly monitor the drive. He must be ready to resume full control immediately.	 The driver must constantly monitor the drive. He must be ready to resume control immediately.	 The driver does not need to monitor the drive, but be ready to resume control within a given time frame if the system so requests.	 The driver would not be required at all during these cases – neither for monitoring, nor as backup.	 The driver is no longer required at all.

Levels of automation according to SAE; Source: 2025AD; <https://www.2025ad.com/latest/the-levels-of-automation/>.

Current status quo

- ❖ Machinery perception of driving environment by connected automated vehicles (CAV)



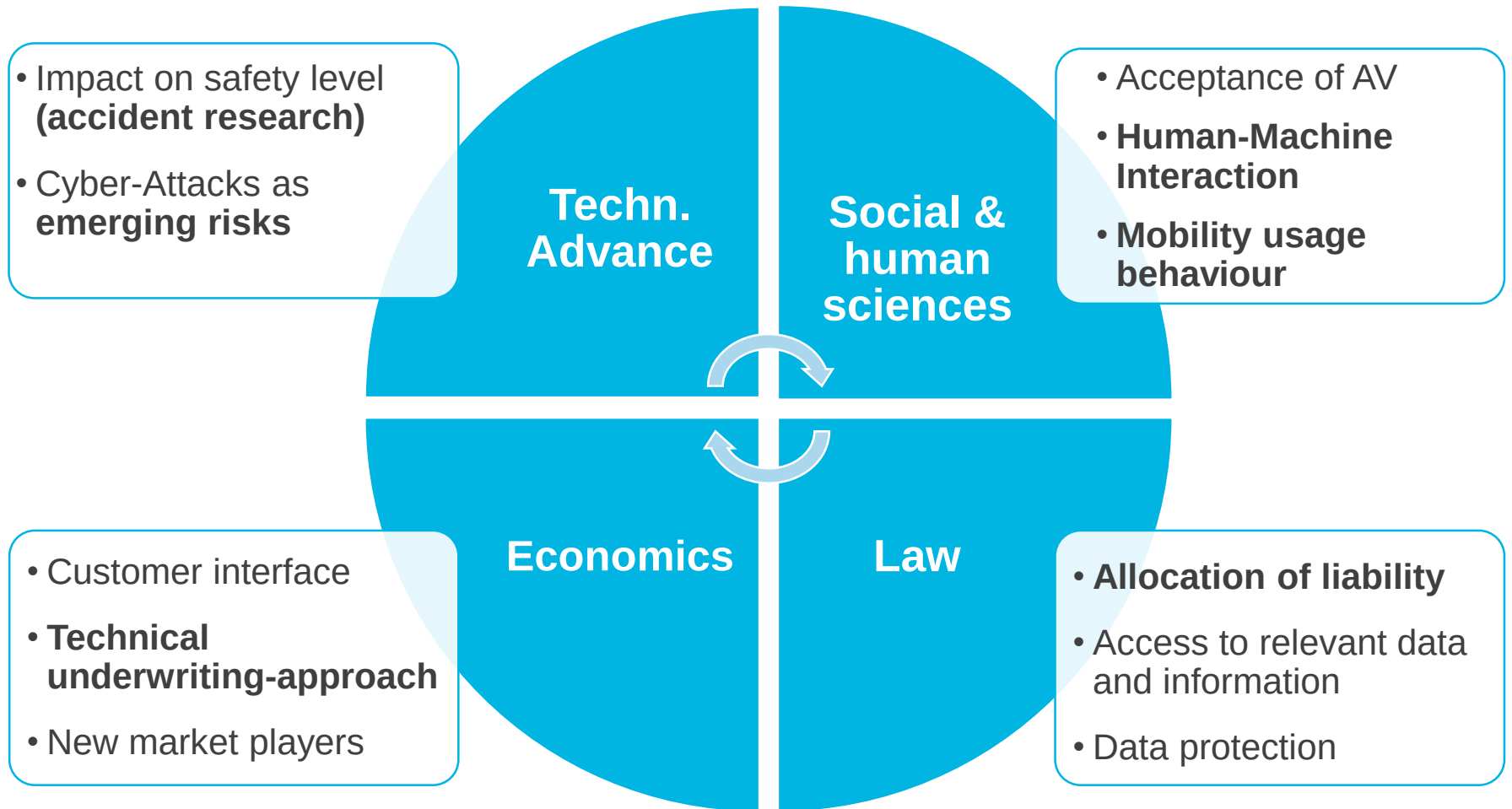
In addition:

- Cameras and sensors within the vehicle
- V2X-communication

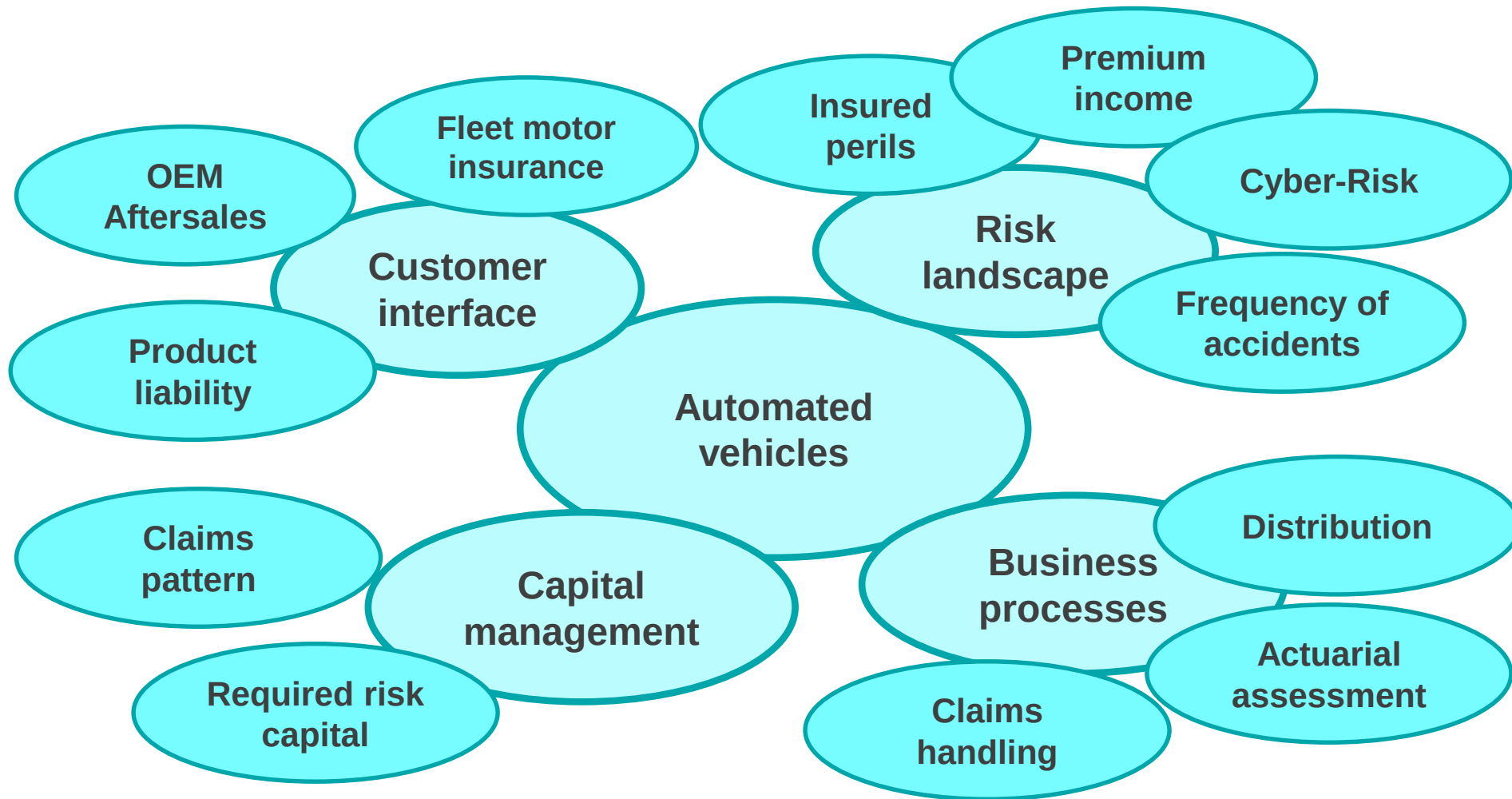
Current status quo

- ❖ Necessary conditions for automated vehicles to work optimally
 - Sufficiently precise sensors (cf. Uber accidents)
 - Decent computing power within the vehicle (Nvidia: 20 TOPS (trillion operations per second))
 - Stable, broad and adequate network access (cf. 5G internet)
 - Sufficient and adaptable algorithms (cf. ethics)

Motor insurance markets: the impact of Telematics



Motor insurance markets: the impact of Telematics



Motor insurance markets: the impact of Telematics

- ❖ The advent of automated vehicles is already taking place and will change the respective motor markets and corresponding insurance sector sustainable.
- ❖ This transformation will take place at different paces depending on the characteristics of the underlying market and country.

Implications on the German Motor Market

- ❖ Major Original Equipment Manufacturers (OEMs) are situated in Germany
 - 17 OEMs and over 500 suppliers
- ❖ Certain legal background (8th law amending Road Transportation Law)
 - Automated vehicles up to Level 4 are governed
 - Vehicle keeper remains liable in the sense of strict liability
- ❖ Easy accessible and sufficient data
 - GDV, DeStatis, Kraftfahrt-Bundesamt, etc.

- ❖ Overall, Germany is one of the leading automotive nations, especially in terms of its' industrial performance (OEM-activities and conducted research)

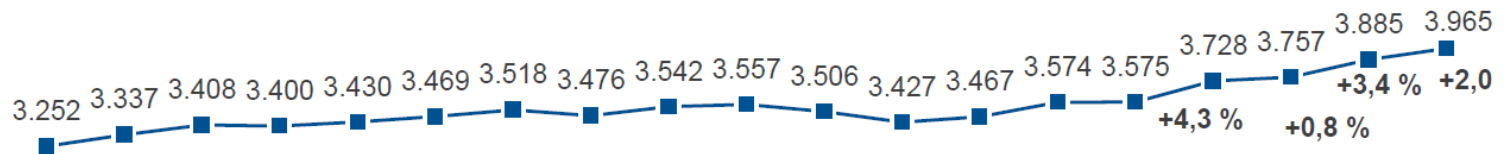
Implications on the German Motor Market

Motor Third-Party Liability

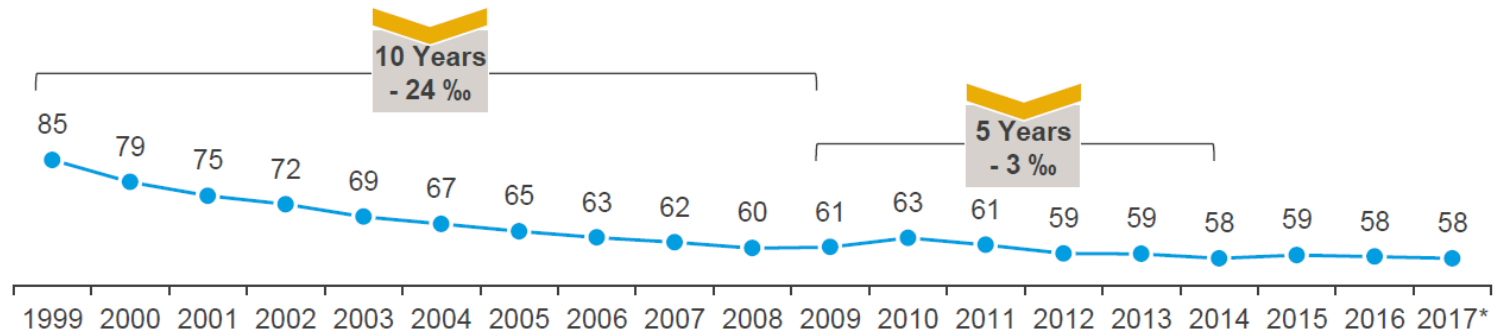
Frequency and Severity of losses

Per 1.000 vehicles

in EUR



+9,9 % in 14 years → ca. +0,7 % p.a. (R/Z-Verhältnis 1999 und 2013 jeweils 0,84)



—●— Frequency

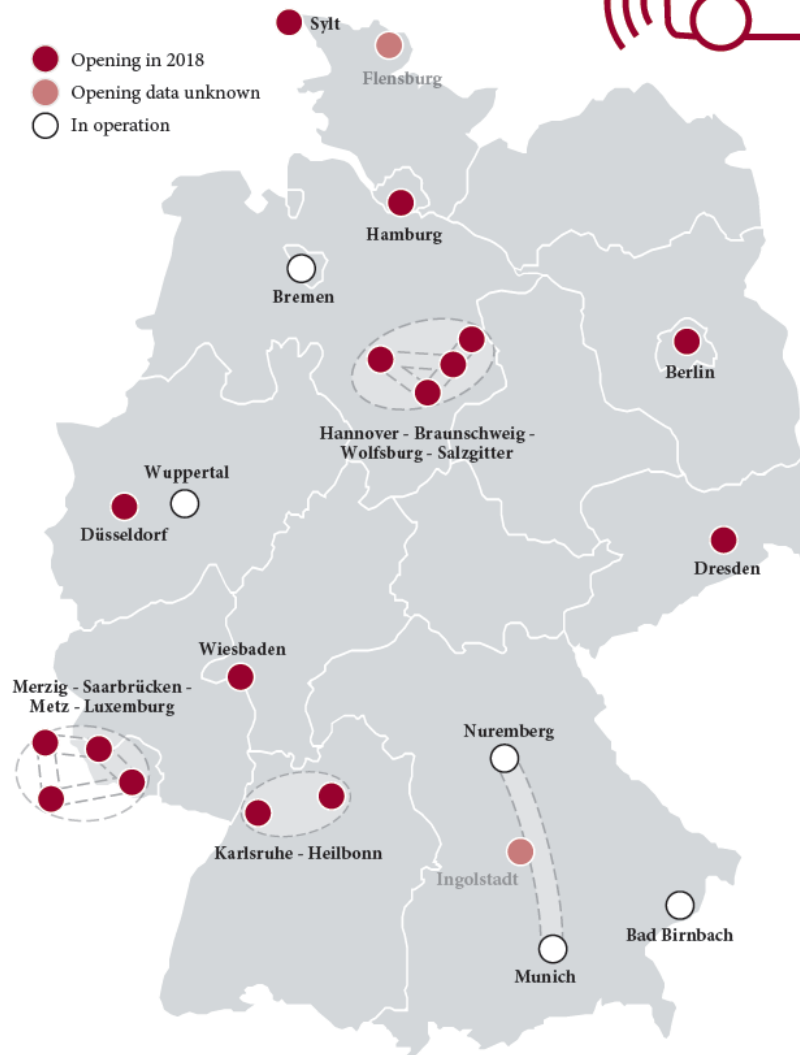
—■— Severity

Source: GDV; * E+S Re

Implications on the German Motor Market

New test tracks for automated driving

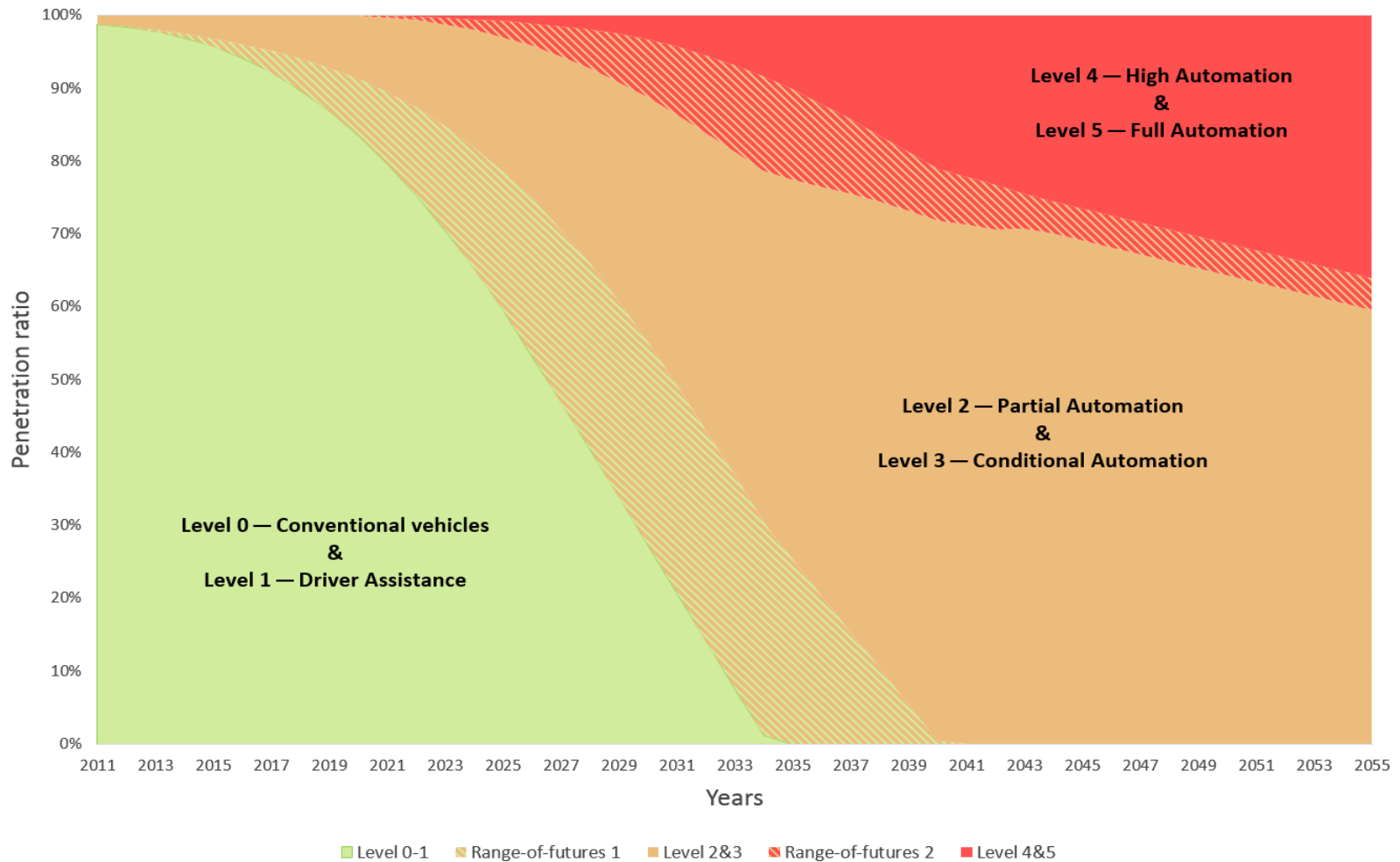
In 2018, new test tracks are going into operation in German cities and provinces



Implications on the German Motor Market

- ❖ Considerations regarding penetration:
 - Base scenario providing the “range-of-futures”
 - ✓ Historical penetration of anti-lock bracking system (ABS) and electronic stability program (ESP)
 - Delayed introduction in the respective vehicle class segments
 - Costs of technology
 - Required 5G internet access

Implications on the German Motor Market

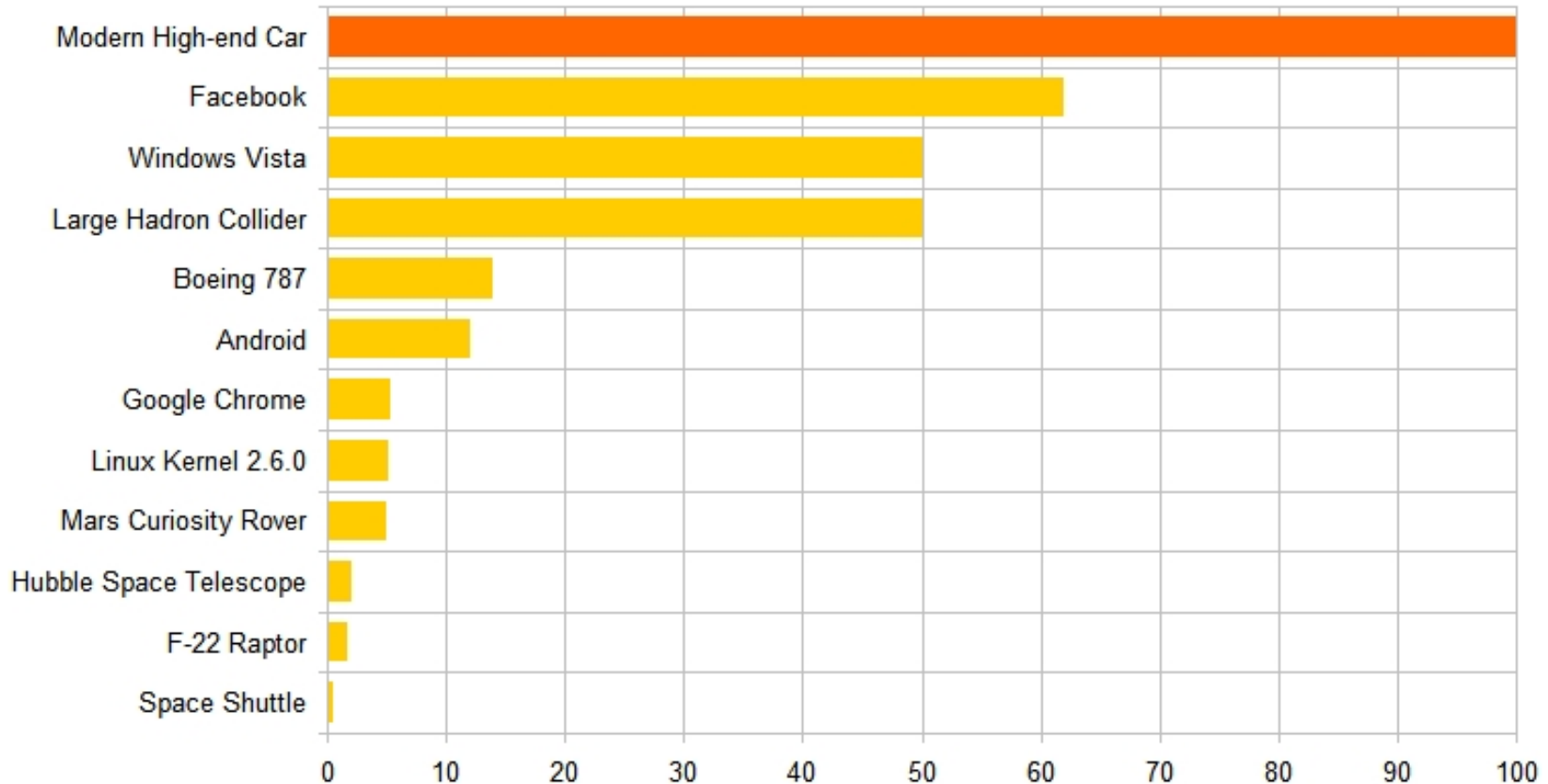


Implications on the German Motor Market

- ❖ Considerations regarding change in premia:
 - Base scenario providing the “range-of-futures”
 - ✓ Analysis of accident categories for police/ statistical records provide avoidable, mitigable and non-avoidable claims
 - Differentiation between types of coverages
 - Emerging risks emanating from AV & residual risks
 - Degree of technological perfection

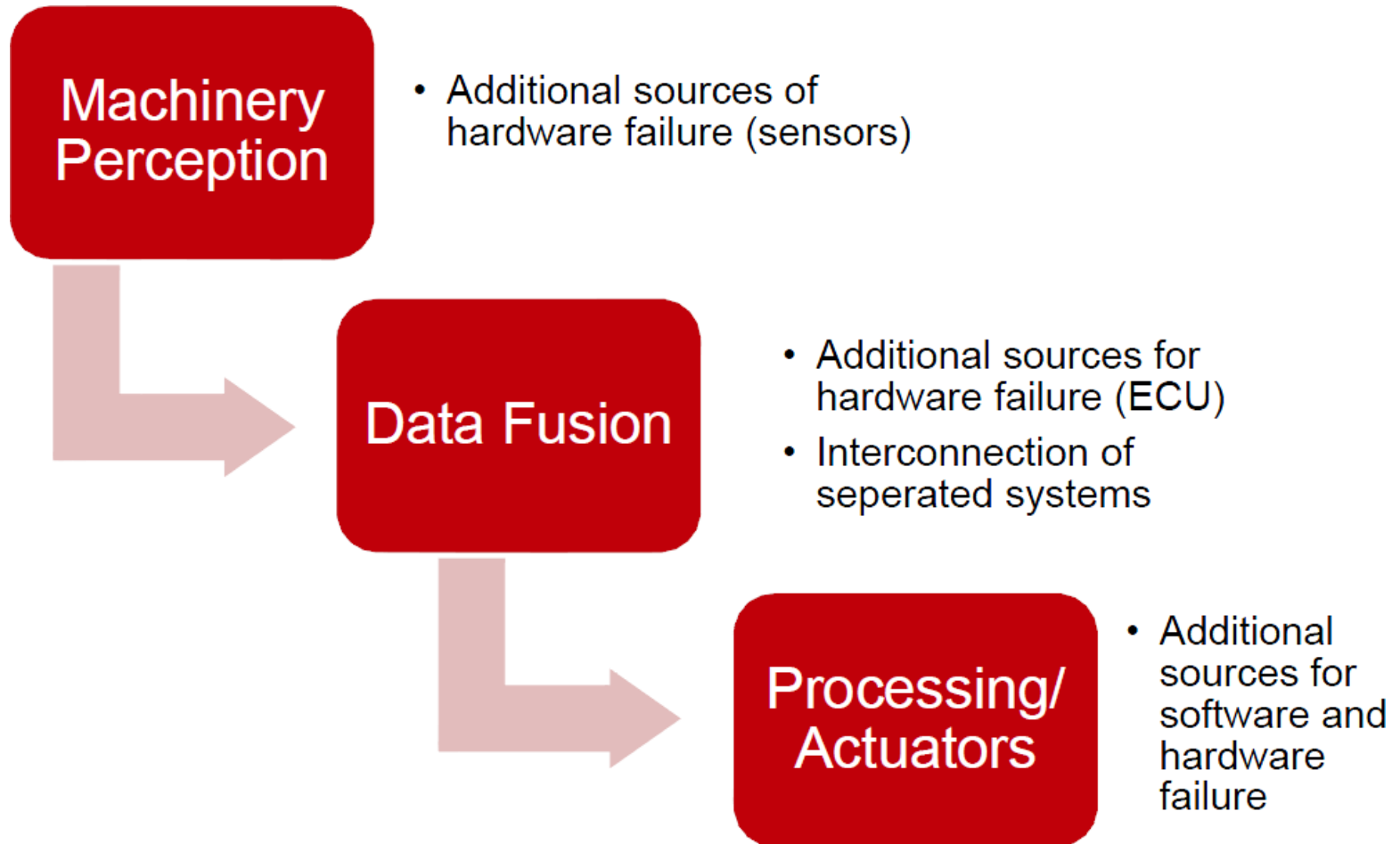
Implications of AV on Product Liability and Product Recall-Events

Software Size (million Lines of Code)



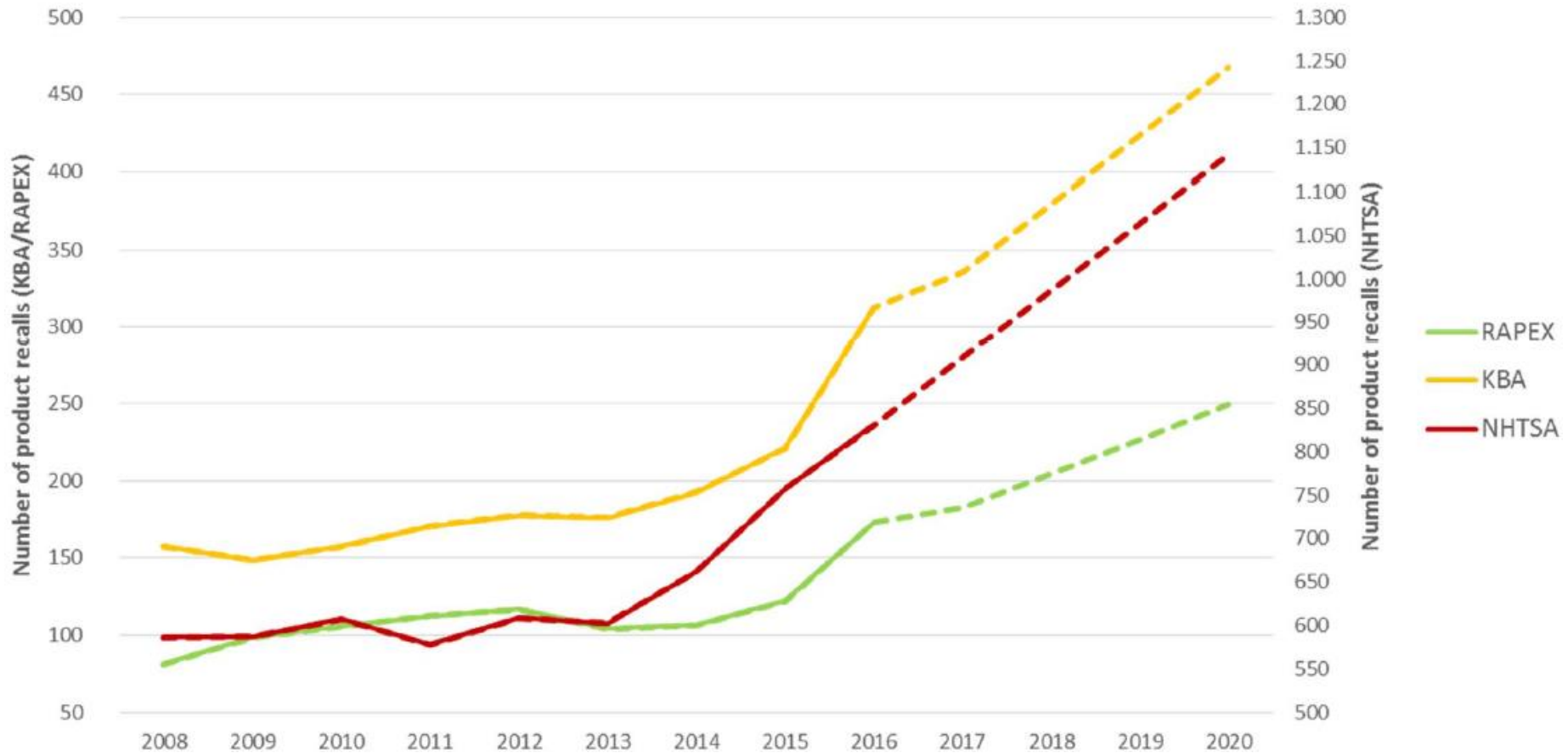
Software size of technology; Source: AASDN, <http://www.aasdn.com.au/driven-by-code>

Implications of AV on Product Liability and Product Recall-Events (cont.)



Implications of AV on Product Liability and Product Recall-Events (cont.)

Development of overall product recalls



Conclusion

- ❖ Automated vehicles do not represent the end of motor insurance business, but will change it sustainable due to a transformed risk landscape. However, this advent is already taking place.
- ❖ Different levels of automation require different pre-conditions whereas jurisprudence and (digital) infrastructure are most crucial ones. These factors directly influence the acceptance and hence, the penetration of AV in the respective markets.
- ❖ Systems are evolving over years until a certain degree of technological perfection is reached. The respective degree implies the performance of systems and hence, the required risk premium for AV.

Conclusion

- ❖ Insurers need to distinguish between the respective Levels of automation to ensure homogeneity within the portfolio and provide an adequate underwriting-approaches customized for each Level of automation. By focusing only on fully autonomous vehicles and hence, the final stage of this technological progress, risks which evolve over the intervening years could be overlooked. Even lower levels of automation already have an impact on the frequency and severity of losses and could lead to an unknown accumulation of risks.