



# Towards the legal admission of automated vehicles

Some thoughts on automated driving from a vehicle authority

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# Agenda



1. A New World...
2. Dutch Admittance Procedure
3. Some thoughts on automated driving

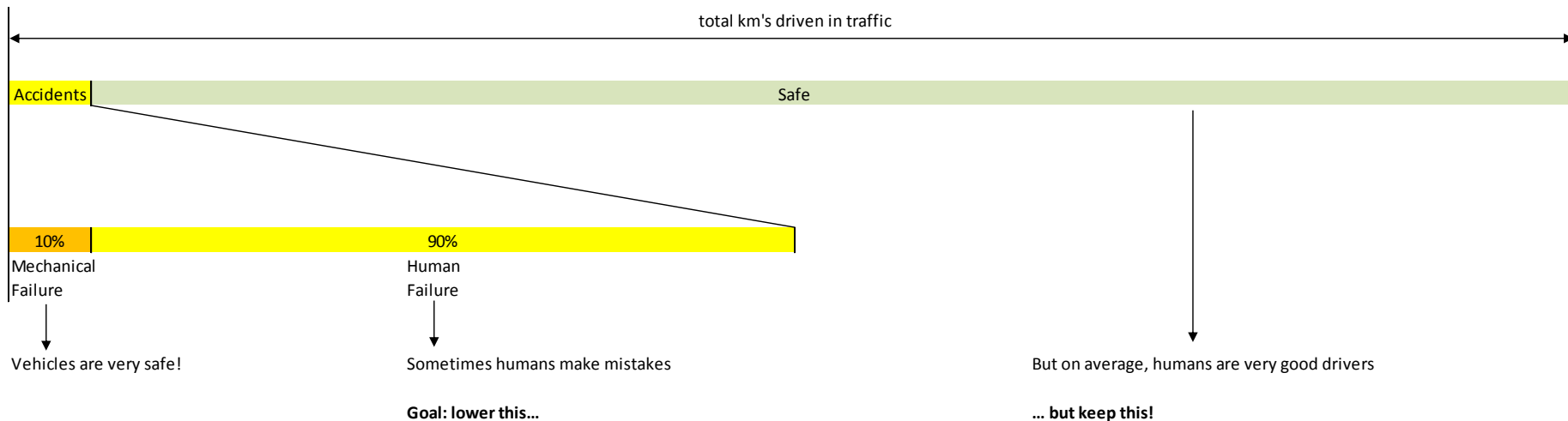
# 1. A New World...



- Two worlds colliding:
  - › The world of mechanics (“quantative measures, harmonisation, mass production”)
  - › The world of traffic behaviour (“qualitative measures, ambiguity, human error, local differences”)
- Gaining knowledge: Learning by doing approach
- Some realism: within five years:
  - › Solutions for public transport
  - › Highway pilot (all vehicles)
  - › Valet parking
  - › (Truck platooning?)
  - › (Automated vehicles in cities? “the Amsterdam Challenge”)

# About the 90%...

□ The world of traffic behaviour:



## 2. Towards a Dutch admittance procedure for Automated Driving

- Combining existing building blocks:
  - › Legal Basis:  
law granting exemptions and Experimentation law
  - › European Type Approval:  
robustness mechanics
  - › Vehicle Safety & Security Framework (VSSF):  
robustness software
  - › Vehicle Driving License Framework (VDLF):  
robustness automated driving
  - › Monitoring:  
automated driving behavior



# The Vehicle Driving License Framework

1  
Virtual  
Environment

2  
Scale  
Modelling

3  
Proving  
Ground

4  
Driving  
Exam

5  
Driving  
License

6  
In Service  
Conformity

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# The Vehicle Driving License Framework



- Think different:
  - › When the vehicle takes over all driving tasks, the vehicle should get the driving license
  - › Human drivers will be on the road for the coming decades
  - › It's about showing safe and predictable automated driving behavior related to human performance, in open traffic
  - › The vehicle also has to anticipate to uncertain and unforeseen circumstances
  - › VDLF takes the traffic system as a starting point, not the vehicle (behaviour, vehicle, infrastructure (ODD))
  - › Admittance: a few maybes could make a right

### European Type Approval:

	No	Yes
Part directive 1		X
Part directive 2		X
Part directive 3		X
...		X
...		X
...		X
...		X
...		X
...		X
...		X
...		X
Part directive ...		X

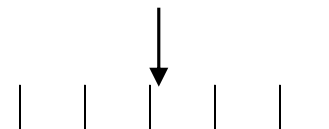
WVTA:

Yes
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### VDLF:

	0%	100%
Virtual Environment		
Scale Modelling		
Proving Ground		
Driving Exam		
Driving License	(dossier exam)	

Driving License:  
capability scale



In Service Conformity	
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# HEADSTART Partners



### 3. Some thoughts on automated driving

- The next years will be a bumpy ride
- Shifting panels!
  - › From mechanics – to behaviour
  - › From compliance based – to performance based
  - › From worldwide or European admission – to tailor made national admission
  - › From an emphasis on admission – to continuous monitoring (learning!)
  - › From a ‘Yes/No’ decision – to admitted but with more or less restrictions
- Dealing with uncertainties!

# In closing

- We are in this together!
- Restricted admission is actually faster learning
- With mutual agreement on the basic principles, we can move forward

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User group





תודה  
 Dankie Gracias  
 Спасибо  
 شكراً  
 Merci Takk  
 Köszönjük  
 Terima kasih  
 Grazie Dziękujemy Dėkojame  
 Ďakujeme Vielen Dank Paldies  
 Kiitos Täname teid 谢谢  
**Thank You** Tak  
 感謝您 Obrigado Teşekkür Ederiz  
 Σας Ευχαριστούμ 감사합니다  
 ขอบคุณ  
 Bedankt Dėkujeme vám  
 ありがとうございます  
 Tack

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