



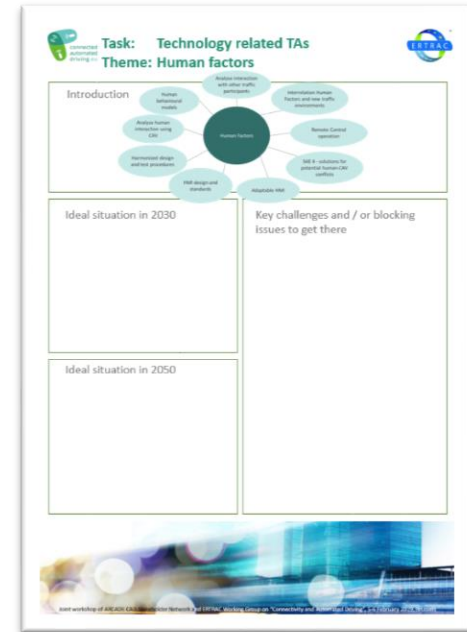
Day 2: Joint workshop of ARCADE CAD Stakeholder Network and ERTRAC WG on CAD



Welcome back and Good Morning !

Today's set-up

- 3 sets of parallel breakouts
 - 09:30 – 10:00 Breakouts: Society related TA's
 - 10:00 – 10:30 Breakouts: System and Services related TA's
 - 10:30 – 11:00 Breakouts: Technology related TA's
- Pitch of first DRAFT scenarios on task level (Technology, System & Services, Society) to stimulate discussions
- Discussions on thematic area level around posters
- 11:00 Coffee break
- 11:15 Consolidation
- 12:15 Closure of the meeting & lunch



What we would like you to do today....

- Pick 1 Thematic Area per breakout session: What would be...
 - ... the ideal situation for this topic in 2030 and 2050?
 - ... challenges to be overcome / issues to be solved to achieve this situation?
- Take a minute to look at our surveys with key uncertainties per Thematic Area (open till 15/02):

Technology



System & Services



Society



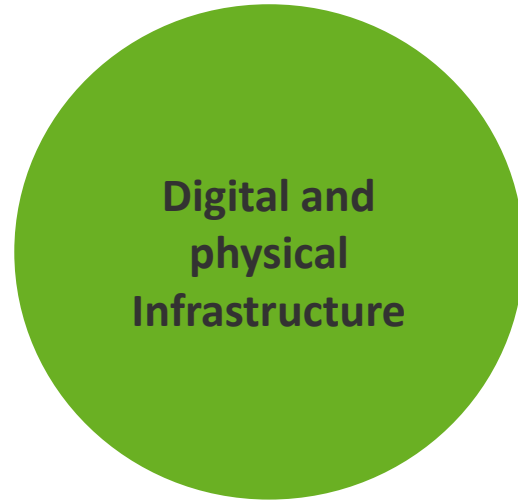
... And than what?

- ARCADE WP3 on Thematic Areas will provide one report per task on challenges and scenarios by the end of year 1
- Today:
 - gather input to define 2-3 overarching scenarios per ARCADE WP3 task
- After the workshop:
 - consolidation of input to define scenarios
 - Investigation of overarching scenarios by different thematic areas

Pitch: Technology related thematic areas (BMW, Bosch)



Pitch: System and services related thematic areas (UITP, VDC)



stakeholders involvement

market introduction

scenarios

business models

ethical, societal and legal challenges

sustainable operations

raising awareness

data sharing

security

real-time infrastructure maintenance



Initial Thematic Areas included in Task 3.3

- **Digital and physical Infrastructure** (ATE/DLR)
 - Address real-time infrastructure maintenance, security, economic feasibility, business models and the specific problems in the transition phase towards full connectivity and automation.
- **Big data, artificial intelligence and their applications** (TNO/APTIV).
 - Go beyond the clear technical challenges in Big Data and AI and analyse the views of diverse stakeholders on ethical, societal and legal challenges, including data sharing. It will work on consensus and principles for sharing data.
- **New Mobility Services including Public Transport** (UITP/VEDECOM)
 - Involve additional diverse stakeholders to explore the most suitable framework conditions for successful market introduction and sustainable operations of such new mobility services in urban and rural areas.
- **Freight and logistics** (IRU/Volvo)
 - Contribute beyond the SoTA and towards full implementation of autonomous freight and logistics vehicles by raising awareness and depicting clear and accepted scenarios.

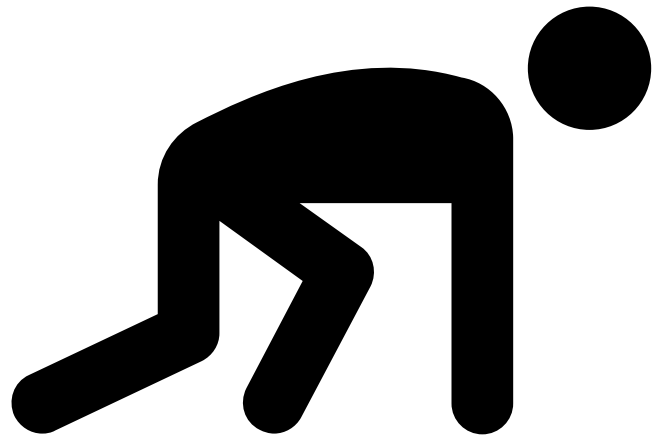
Pitch: Society related thematic areas (Leeds, IRU)



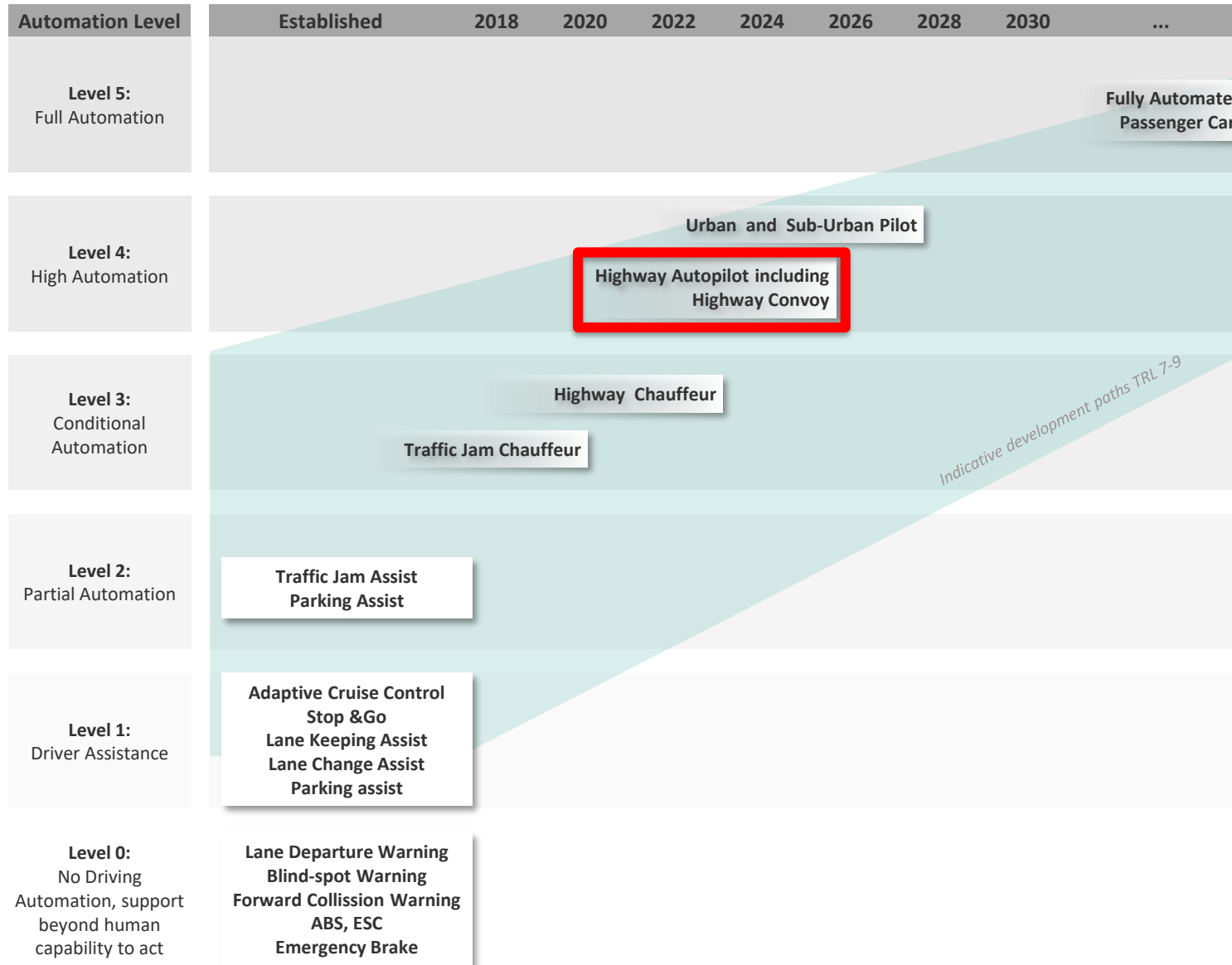
HEADSTART project introduction



Lets get started!



Automated Passenger Car Development Paths



Highway Autopilot L4



First-Introduction-Approach:

Further development of a Maximum-Customer-Benefit Highway Chauffeur (L3) with slight updates

In the case of a non-takeover by the driver, not always safe and permanent parking is possible.

→ Driver is still necessary.

Maximum-Customer-Benefit--Approach:

New development of extended fail-operational-System (energy and data availability), sensors und algorithms

Usage for driving and parking on parking spaces as well as on rest areas.

→ Driverless operation will be possible, no driver necessary.

Customer function and benefits:

Driving on multilane roads with a constructional separation. In case of very rare system boundaries during a journey, the driver takes over (awake or waked up), unless the car parks on a highway parking bay or after the motorway exit at the roadside (extremely uncommon).

In a first-introduction-approach, the car could in extreme single cases also rest on the hard shoulder or traffic lane with activated hazard lights. The probability of the occurrence of a fault or unforeseeable system boundaries will be significantly reduced in comparison to the highway chauffeur. The customer's take-over time due to sideline activities or sleeping will be infinite, including further extensions of the alarm cascade.

Highway Chauffeur and AutoPilot build on the same technologies.



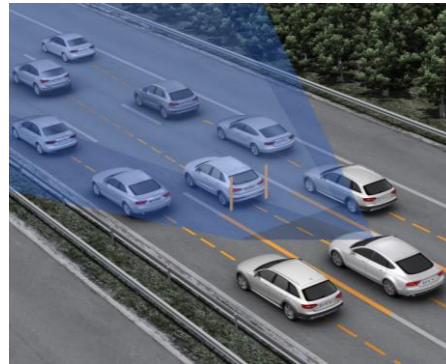
Highway Chauffeur



- System relieves driver and potentially enhances safety in annoying traffic jam scenarios.
- Driver must deliberately activate system and can override/switch off the system at any time.
- Longitudinal and lateral control are accomplished by the system during the use case scenario.

Traffic Jam Chauffeur

- 0 to 60 km/h in traffic jam scenarios
- System can be activated if traffic jam scenario is present, meaning that slow driving vehicles must be detected in front.



Motorway Chauffeur

- 0 to 130 km/h on each lane of a highway from entrance to exit.
- Overtaking of slower vehicles
- Handle roads with complex course including junctions, tunnel, toll station, construction sites, accident scenes
- compliance with traffic rules incl. comfortable keeping to all speed limits, cooperative behavior at motorway entrance

Breakout session 3: Technology related thematic areas



Your choice of Thematic Areas

- Human Factors
- In-vehicle technology enablers
- Deployment
- Connectivity



Scenario 2030: System and services



PDI

Technically solved
Costs still high



New Mobility Service

- Operating and Infrastructure costs high and not completely deployed
- User acceptance solved
- Operational and business models defined
- Political support uncertain

Data&AI

Standards
Technically solved
(collaboration, V2X)
Common Policy framework

Freight

Drivers still needed
Infrastructure not ready

Breakout session 2: System and services related TAs



Your choice of Thematic Areas

- New mobility services, shared economy and business models
- Big data, artificial intelligence and their applications
- Physical and Digital Infrastructure
- Freight & logistics



Breakout session 3: Society related scenarios 2030 and beyond



Safety:

- CAD vehicles will be dependable (safe, secure, robust), and periodically approved along its lifecycle
- Methods of validation for (AI based) CAD functions are available and supported by standards
- Users accept CAD vehicles are "safe enough"

Policy and regulation:

- Authority or industry driven, public-private collaboration
- EU-wide as well as national orientations, roadmaps and/or national guidelines
- Technical regulation needed and traffic laws to be amended

Acceptance:

- Cautious but enthusiastic public support to automated vehicles & mobility services
- Shared mobility is widely seen as an attractive option

Socio-economic impact:

- Integrated public transport, shared mobility, and walking & cycling
- Accessibility for all: different groups have improved mobility
- Far less land use for traffic, more space for walking and cycling



Breakout session 3: Society related thematic areas



Your choice of Thematic Areas

- User awareness, users and societal acceptance and ethics, driver training
- Policy and regulatory needs, European harmonisation
- Socio-economic assessment and sustainability
- Safety validation and roadworthiness testing

Consolidation of today

- Next steps for ARCADE:
 - Definition of scenarios (WP3 task leaders involving TA (co-)leaders)
 - Discussion with ARCADE WP3 Task (co-)leaders on established scenarios 28 February 2019
 - Discussion with ARCADE WP3 TA (co-)leaders on established scenarios 12 March 2019
 - Fine tuning of scenarios
 - Kick off work for scenario investigation by thematic areas
- Short wrap up per thematic area on today's discussion (~3 minutes per TA)



Consolidation

- Human Factors
- In-vehicle technology enablers
- Deployment
- Connectivity
- New mobility services, shared economy and business models
- Big data, artificial intelligence and their applications
- Physical and Digital Infrastructure
- Freight & logistics
- User awareness, users and societal acceptance and ethics, driver training
- Policy and regulatory needs, European harmonisation
- Socio-economic assessment and sustainability
- Safety validation and roadworthiness testing

