



Societal impacts of automated driving

SIP-adus Workshop 2022, 11-12 October 2022, Kyoto

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Does AD contribute to sustainability of transport?

1. Environment

- Does driving automation reduce emissions and energy consumption?

2. Economy

- Do automated vehicles promote sustainable modal choices?
- Do they improve the efficiency of the transport networks?

3. Society

- Does driving automation improve safety?





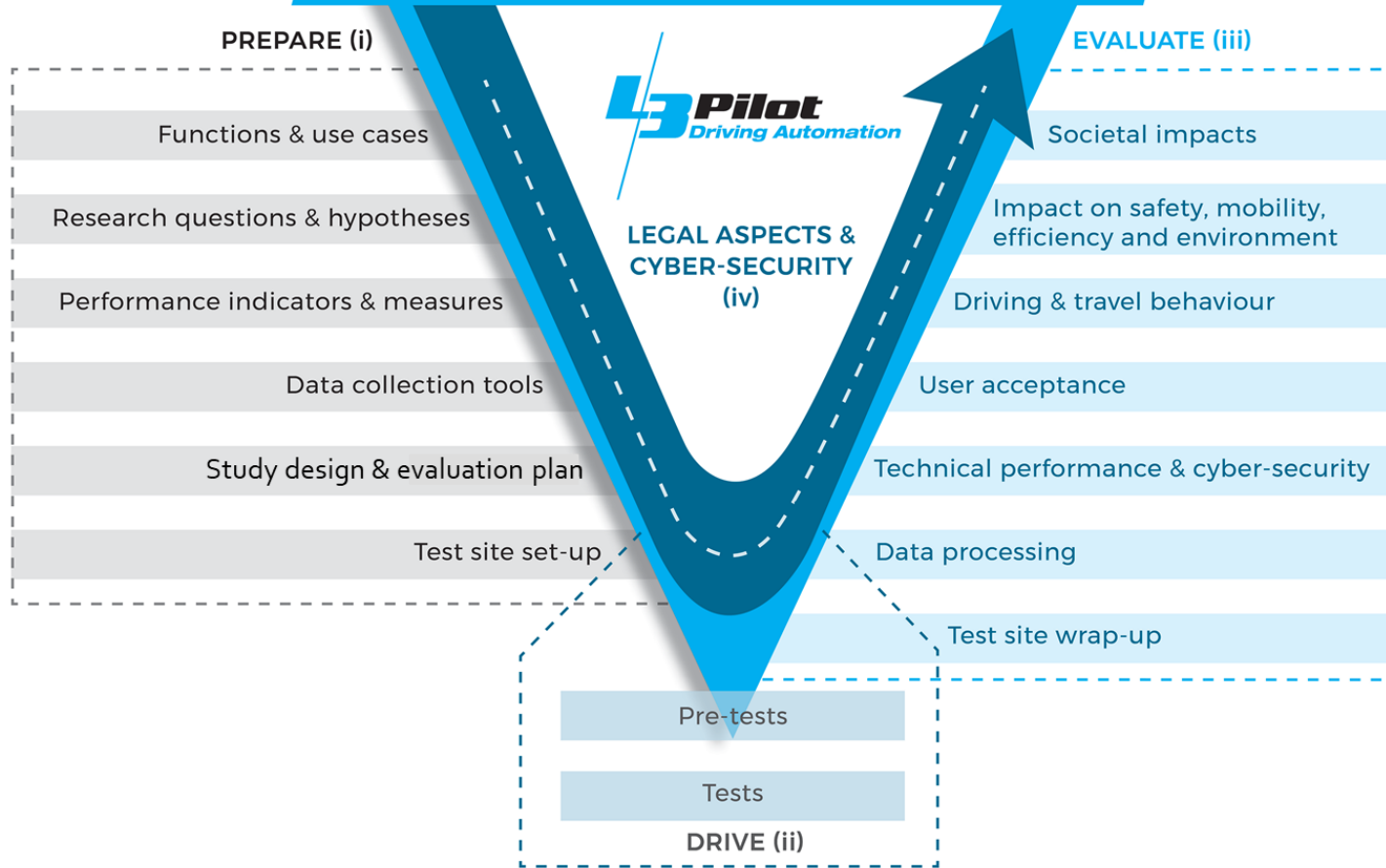
L3 Pilot
Driving Automation

1,000
drivers

100
cars

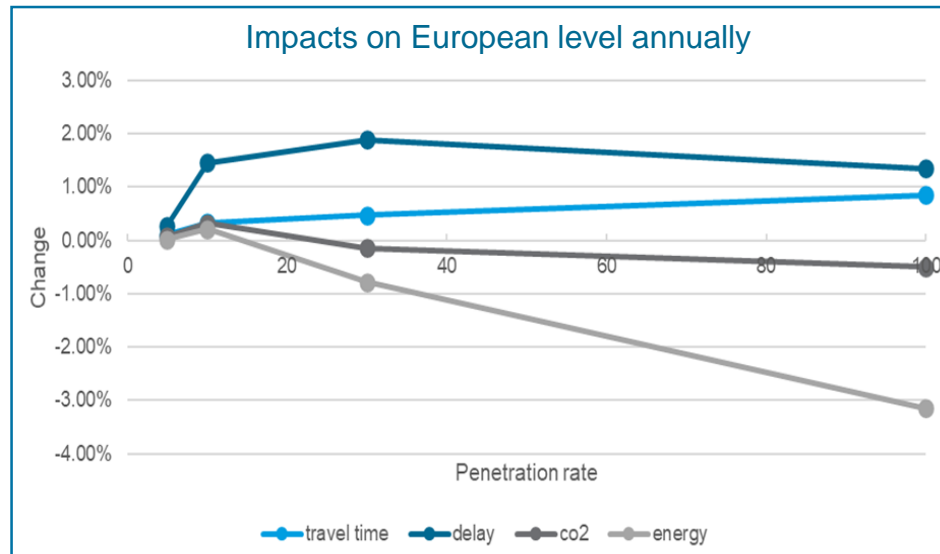
10
countries

FESTA Implementation Plan adapted to L3PILOT



Main findings on efficiency & environmental impacts

- On motorway network, the impacts are largest with high traffic volume and penetration rates
 - Absolute values are lowest with low speed limits and low and moderate traffic volumes



- Effects of ADF on traffic efficiency and emissions on EU-level are rather small
 - Mostly because most driving on EU motorways takes place in low traffic conditions
 - Yet, benefits may be experienced locally, e.g. on urban motorways, by a large number of drivers

Main findings on mobility impacts

Travel quality

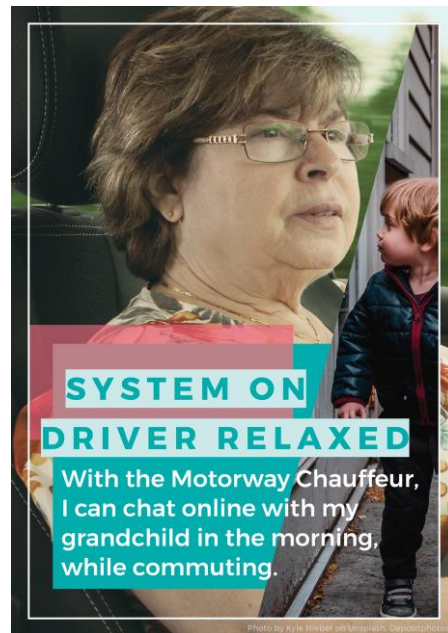
- Travel quality likely to improve (user experience, activities during AD, unmet travel needs)

Travel patterns

- Some drivers prefer routes within ODD even if they were longer
- Driving during the rush hour or under difficult or boring conditions becomes less unpleasant
- Some travellers choose car over public transport more often

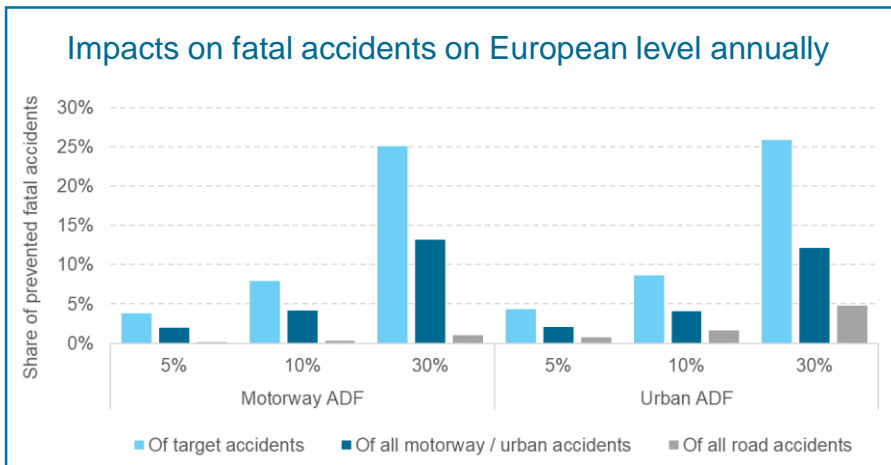
Amount of travel

- Some travellers will travel longer trips or more trips with ADFs
- Car kilometres driven are likely to increase



Main findings on safety impacts

- Both Motorway and Urban ADF are estimated to reduce the number of injury accidents at all penetration rates
 - Reduction is larger for Urban ADF compared to Motorway ADF
- Only few potential new accidents caused by automation annually
- Some additional indirect safety effects can be obtained, for example
 - via sensors working during manual drive (positive effect), and
 - via increase in passenger car km (negative effect)





Hi-Drive
Designing Automation

PUSH TOWARDS HIGHER AUTOMATION

- Robust and reliable automated driving
- Extended and defragmented ODDs
- Interoperability across countries and brands

Hi-Drive

PREPARE (i)

Functions, Enablers & Use cases description

Research questions & State of the art

Performance indicators & Measures

Data tools, Databases & Common formats

Study design & Evaluation plan

Experiment set-up

Legal aspects &
Cyber-security

EVALUATE (iii)

Socio-economic & Welfare impacts

Impacts on Safety, Mobility, Efficiency,
Environment & Transport system

Effects on Traffic & Travel behaviour

Users, Use & Interaction

Technical performance

Data processing & Delivery

Experiment wrap-up

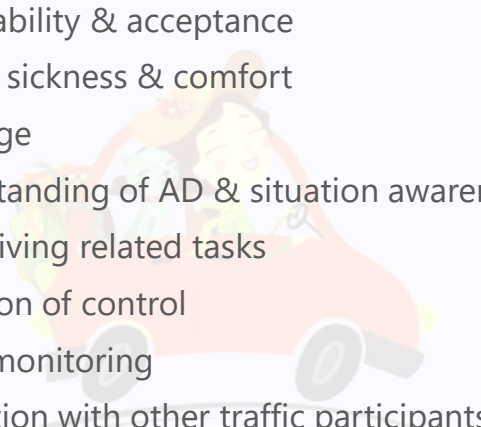
OPERATE (ii)

Pre-testing

Experiment operation

Planned evaluation topics

Users

- Acceptability & acceptance
 - Motion sickness & comfort
 - AD usage
 - Understanding of AD & situation awareness
 - Non-driving related tasks
 - Transition of control
 - Driver monitoring
 - Interaction with other traffic participants
 - Teleoperation
- 
- A stylized illustration of a woman with long brown hair, wearing a yellow top and a green backpack, driving a red car. The car is shown from a side profile, moving towards the right. The background is a light blue gradient.

Effects

- AD performance
 - AD availability
 - Safety
 - Traffic efficiency
 - Energy efficiency
 - Personal mobility
 - Transport system
 - Socio-economics
- 
- A stylized illustration of a city street scene. In the background, there's a red train on an elevated track. Below it, a red bus is on the road. A red car is driving on the street. A person is riding a bicycle. In the foreground, a person is walking, and another person is standing on the sidewalk. There are trees and buildings in the background. The scene is set in a city environment.

Does AD contribute to sustainability of transport?

Hi-Drive results will provide new insights on societal impacts of automated driving in 2025!

1. Environment

- Does driving automation reduce emissions and energy consumption?

- Yes, but likely only in congested conditions when penetration rate is high

2. Economy

- Do automated vehicles promote sustainable modal choices?
- Do they improve the efficiency of the transport networks?

- No, trend towards more passenger car use if the service level of other modes is unaffected
- Yes, but likely only in congested conditions when penetration rate is high

3. Society

- Does driving automation improve safety?

- Yes, reduction both in number of accidents and their severity

Methodological lessons learned and best practices found



+ many more

Common evaluation methodology for CCAM (EU-CEM)

- Made by FAME project (2022-2025)
- Provides guidance on how to set up and carry out an evaluation or assessment of direct and indirect (wider socio-economic) impacts directed at different user groups
- Aiming at
 - Transferability of results of CCAM pilots for future research, development and testing
 - Better evaluation of CCAM pilots and demonstrations
 - Better excellence and progress of research and innovation on CCAM
 - Projects can provide **high quality input for decision and policy making**

First full draft expected in 2024, final version in 2025