VTT Technical Research Centre of Finland

Impacts of conditional automation of passenger cars

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Impacts of conditional automation of passenger cars

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L3Pilot
Driving Automation
1,000
drivers
100
cars
10
countries

Facts

Supported by eucar EUROPEAN COUNCIL FOR AUTOMOTIVE R&D

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 723051.

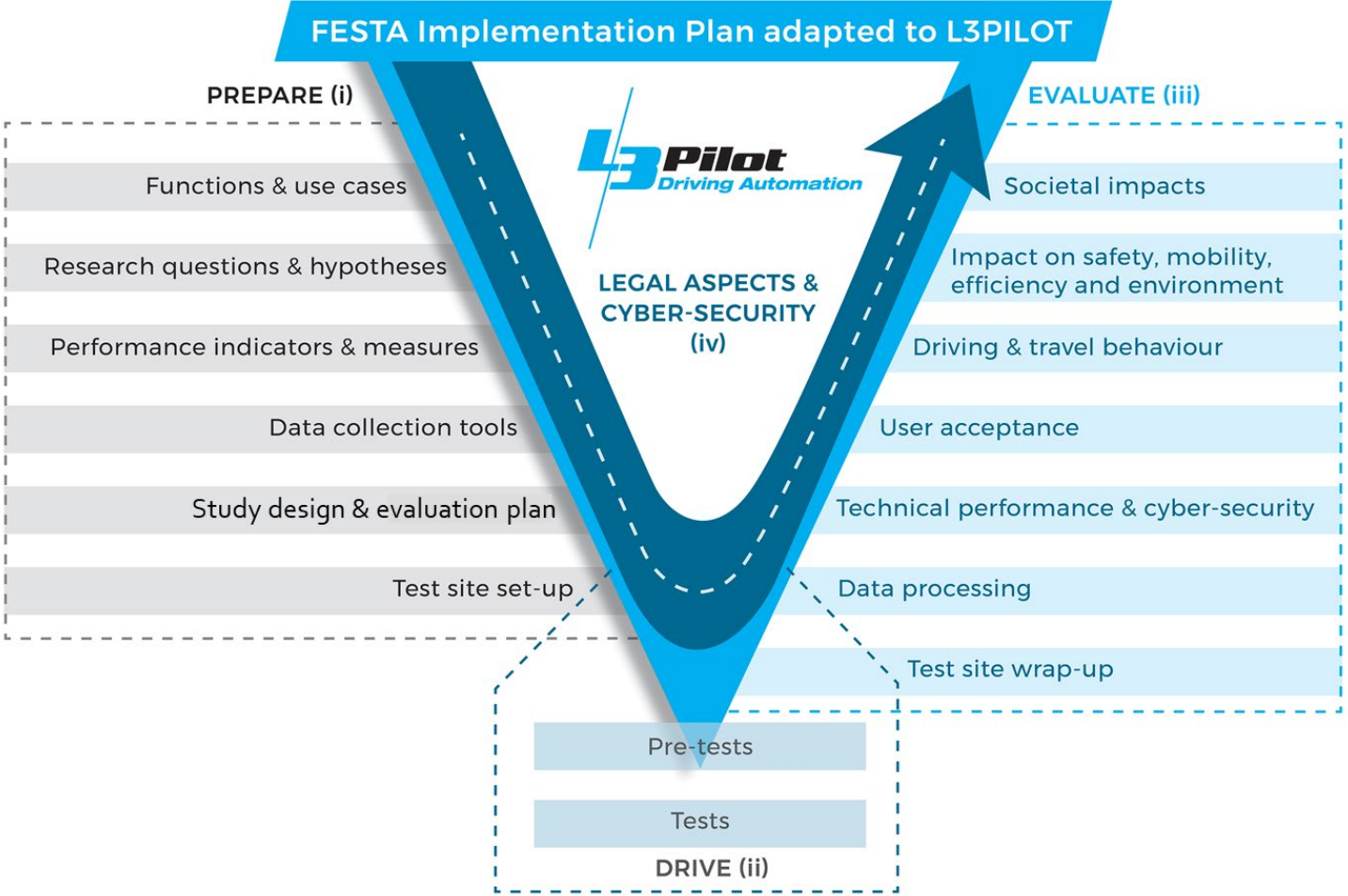
€68 million BUDGET

50 months DURATION, starting in September 2017

€36 million FUNDING

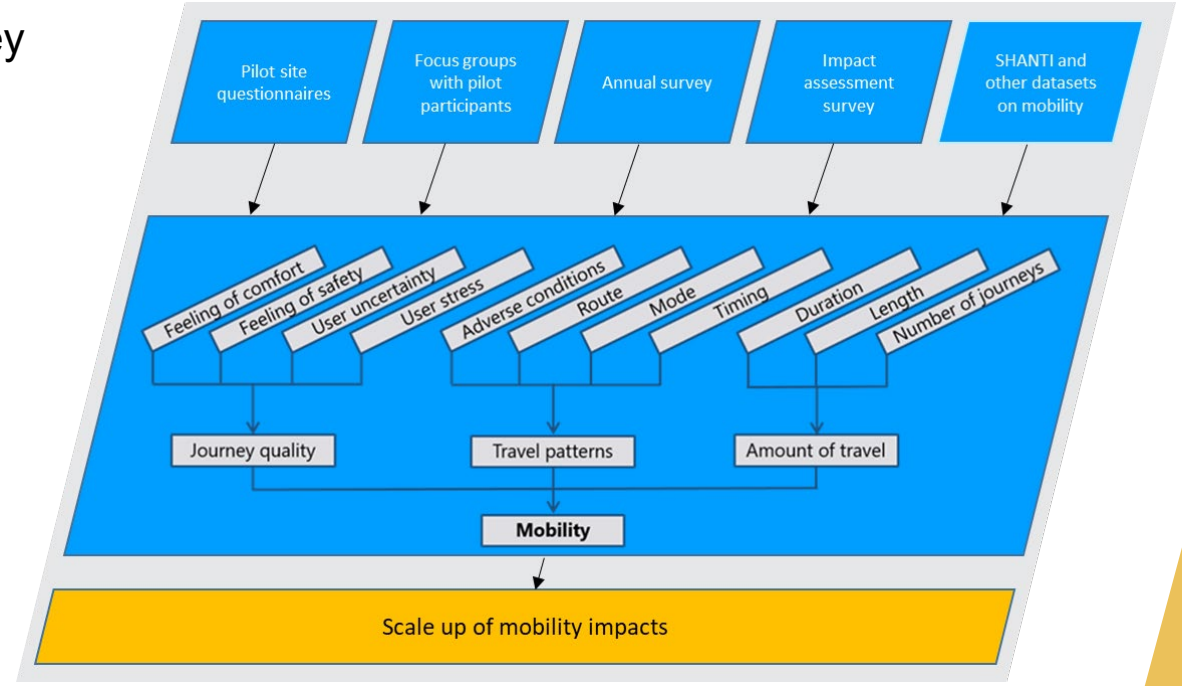
34 PARTNERS, among them OEMs, suppliers, research, SMEs, insurers, authorities and user groups

12 COUNTRIES involved: Austria, Belgium, France, Finland, Germany, Greece, Italy, Netherlands, Norway, Sweden, Switzerland, UK


FESTA Implementation Plan adapted to L3PILOT
PREPARE (i)
Functions & use cases
Research questions & hypotheses
Performance indicators & measures
Data collection tools
Study design & evaluation plan
Test site set-up
L3Pilot Driving Automation
LEGAL ASPECTS & CYBER-SECURITY (iv)
EVALUATE (iii)
Societal impacts
Impact on safety, mobility, efficiency and environment
Driving & travel behaviour
User acceptance
Technical performance & cyber-security
Data processing
Test site wrap-up
Pre-tests
Tests
DRIVE (ii)

Method for mobility impact assessment

- Potential impacts on journey quality, travel patterns and amount of travel
- User's current travel behaviour vs. SAE 3
- Based on
  - **Questionnaires**
  - **Surveys**
  - **Focus groups**
  - **European datasets**



Main findings

Mobility impacts

Travel quality

- Travel quality is likely to improve with ADFs (user experience, activities during AD, possibility to address unmet travel needs)
- Value of travel time with ADFs is lower

Travel patterns

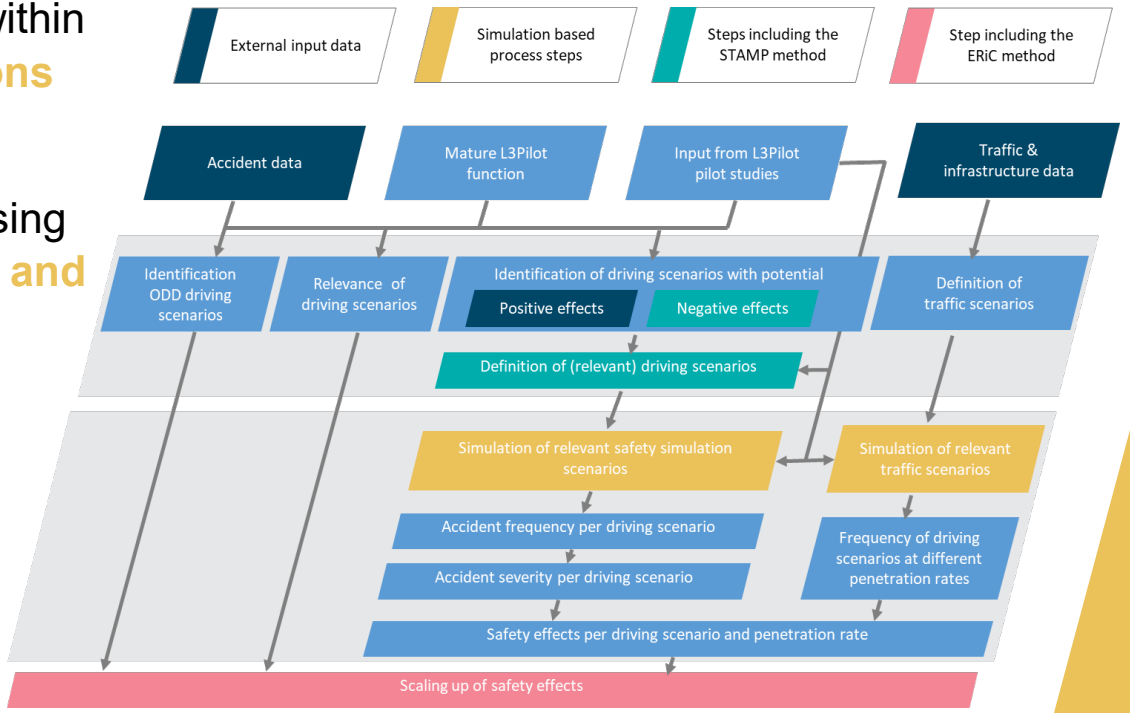
- Some drivers will prefer routes within ODD even if they were longer
- Driving during the rush hour becomes less unpleasant
- Some travellers will choose car over public transport more often
- ADFs can make driving under difficult or boring conditions less unpleasant

Amount of travel

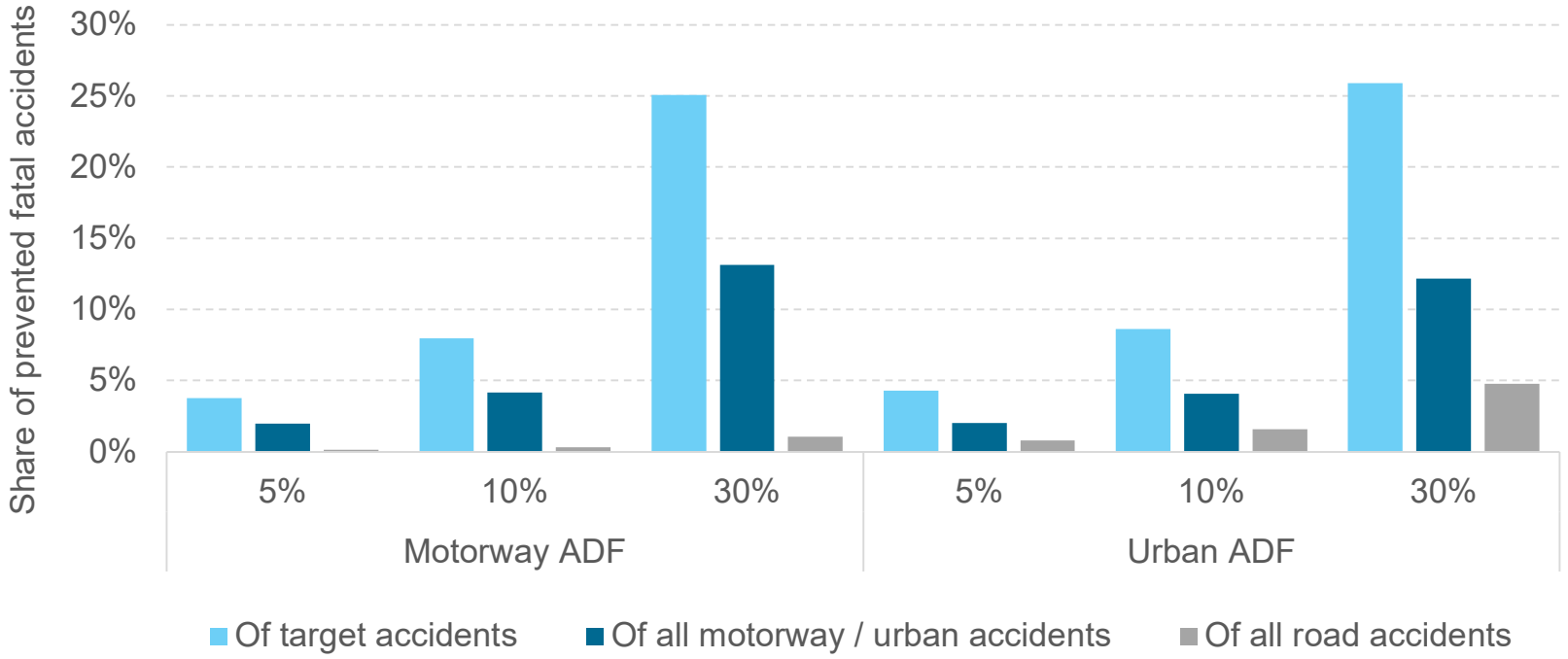
- Some travellers will travel longer trips with ADFs
- Some travellers will travel more trips with ADFs
- Car kilometres driven are likely to increase

Method for safety impact assessment

- Potential impact on accidents within single scenarios with **simulations**
  - Risk, severity, frequency
- Scaling up to European level using **European wide accident data and in-depth accident databases**
- Manual driving vs. SAE 3 in ODD

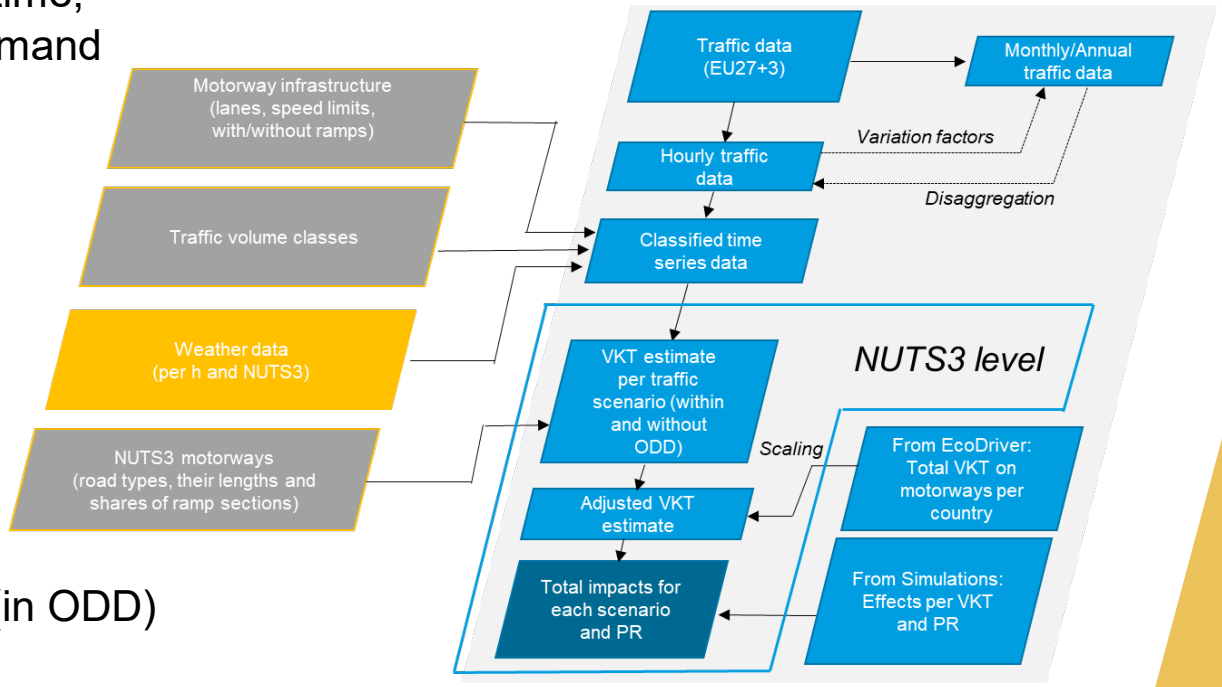


Safety impact by penetration rate for EU27+3 – Fatal accidents



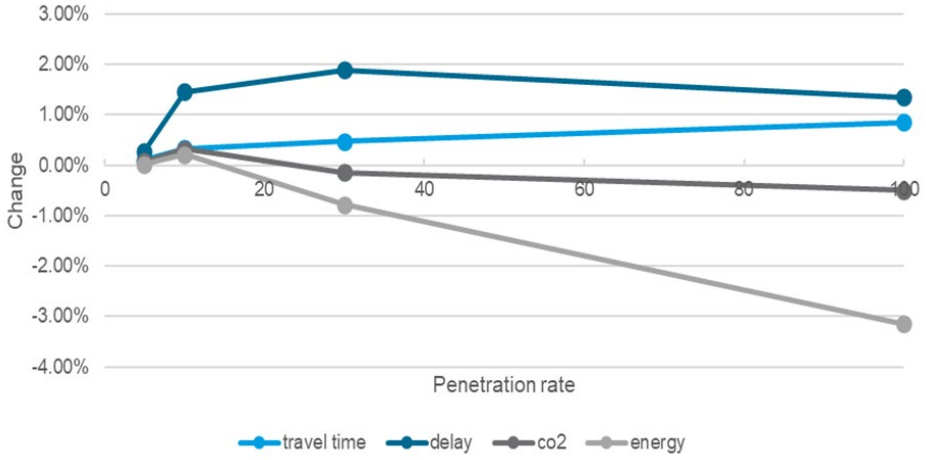
Method for efficiency & environmental impact assessment

- Potential impact on travel time, delay, CO2 and energy demand
- Effect per vehicle-km driven within different traffic scenarios with **simulations**
- Scale-up to European level with **European-wide traffic, map and weather data**
- Manual driving vs. SAE 3 (in ODD)



Main findings

- Trade-offs exist between efficiency and 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 driving on EU motorways takes place in low traffic conditions
  - However, benefits may be experienced locally, e.g. on urban motorways, by a large number of drivers

More information at website **L3Pilot.eu**

L3Pilot.eu/downloads

- Full L3Pilot Methodology (Deliverables D3.x & additional publications)
- All evaluation results (Deliverables D7.x & additional publications)

L3Pilot.eu/data

- Open data

Thank you for your kind attention.

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