

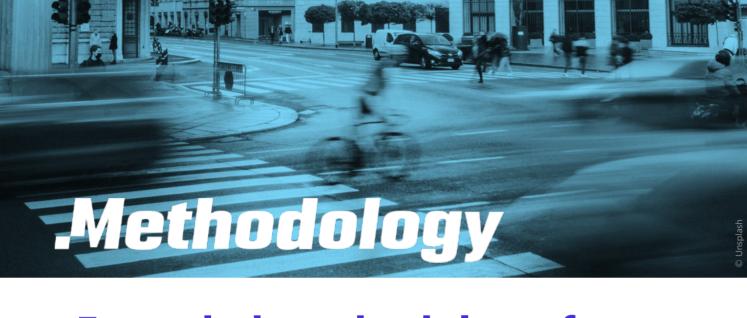
Evaluation plan for assessing the impact of high automation on the user and society

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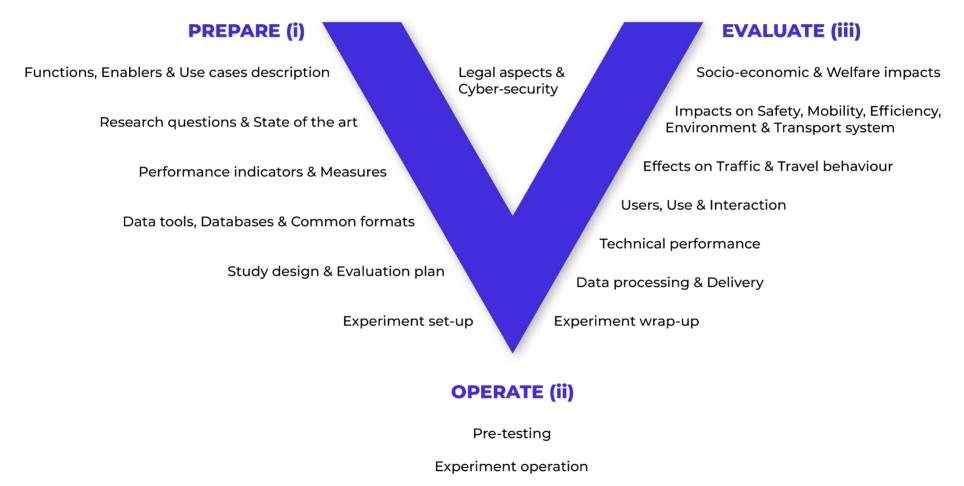




Extended methodology for testing high automation across Europe – from single users and vehicles to the transport system and socio-economics.

Multidisciplinary Methodology
Research Questions & Data
Impact Mechanisms
Experimental Procedures
Evaluation Methods
Common Data Formats

FESTA Implementation plan adapted for Hi-Drive





Process for setting the Hi-Drive Methodology

Drafting phase

- Initial list of research questions
- Data needs for evaluation
- Requirements for experimental design & procedures
- Methods for users & effects evaluation

Dialogue phase

- Dialogue with operation owners & data providers
- Feasibility check for research question

Finalisation phase

- Final list of research questions
- Agreement on data shared for evaluation
- Agreement on experimental design & procedures
- Detailed plan for users & effects evaluation



Dual focus in evaluation

Users

- Acceptance & comfort
- Use of AD
- Interaction between AD & other traffic participants

Effects

- Effect of enablers on availability of AD
- Effects of AD & its enablers on driving behaviour
- Impacts of AD & its enablers after market introduction



User evaluation plan



All users

On-board drivers/passengers

Acceptance & awareness

Comfort & human-like driving

Car sickness

User monitoring

НМІ

Implicit & explicit communication (dHMI & eHMI)

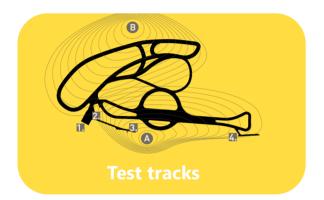
User monitoring

HMI

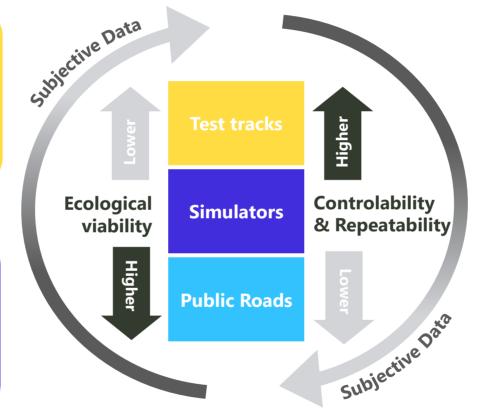
External teleoperators

External road users

User evaluation plan



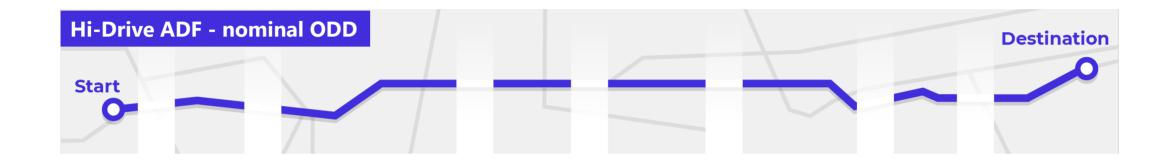




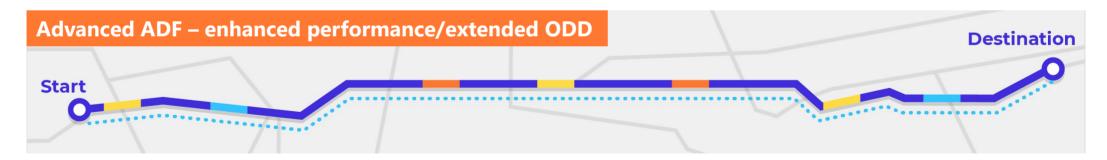




Effects evaluation plan



+ **Enabler:** Connectivity | High-precision positioning | Context learning via ML | Cybersecurity =





Effects evaluation plan

Vehicle data in Hi-Drive common data format

Effect of advanced AD function & enablers on AD availability & performance Effects of advanced AD function & enablers on accidents, CO2 & delays etc. in different scenarios

Performance indicators and time series for selected driving scenarios

Simulation models calibrated with the vehicle data

Impact on safety /
emissions / energy demand /
traffic efficiency /
personal mobility /
transport system / society in EU27



Foundation for successful evaluation

- Multitude of experiments providing evidence that allows extensive evaluation
- Established partnerships between evaluation team, enabler providers and operation owners
- Smooth data flow from experiments via tools to all evaluation methods
- Multidisciplinary evaluation methodology
- Well-defined and tested evaluation plan





THANK YOU FOR YOUR KIND ATTENTION.

Dr. Satu Innamaa VTT Technical Research Centre of Finland Ltd. Satu.Innamaa@vtt.fi Hi-Drive

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