

Welcome to the workshop series

DRIVEN by DATA

The mFUND Workshops Series about Mobility in Europe

Workshop No. 13

Safe Mobility for All: Paving the Way to Vision Zero

Federal Ministry for Digital and Transport

Division DP 20

26.02.2025



www.linkedin.com/groups/12778505





mFUND Workshop Safe Mobility for All: Paving the way to Vision Zero
26 February 2025

Brussels, 30th January 2020

Update on Road Safety R&I under Horizon Europe

Patrick Mercier-Handisyde
European Commission
DG Research & Innovation
Directorate Clean Planet
Future Urban and Mobility Systems

Safety & resilience – per mode and across all transport modes



EU Road Safety Policy:

- Transport Safety is one of the 10 key actions areas of the Sustainable and Smart Mobility Strategy's action Plan.
- Furthermore, the New Urban Mobility Framework emphasises the importance of safety of transport (public transport, micro and shared mobility,..) as means of achieving a shift towards greener transport.
- The Transport Policy objective of Vision Zero is to have near-zero fatalities or serious injuries in EU Roads by 2030.

EU Policy Framework: the “Safe System” approach



Safety & resilience – per mode and across all transport modes



- **Three parts in Horizon Europe Cluster 5 Destination 6:**
 1. Safety in Urban Areas/Road Transport Safety,
 2. Waterborne Safety and Resilience,
 3. Aviation Safety and Resilience.
- R&I will underpin the **three safety pillars**: technologies, regulations and human factors.
- Risk-based and **systemic approach**: including vehicles, infrastructure and interfaces and the environment and the various actors.
- **Total budget: 190 M€** (EU contribution)

Road Transport Safety topics in WP 2021-2022 (1/4)



- **Expected impacts for Road Transport Safety:**

- 50% reduction in serious injuries and fatalities in road crashes by 2030.
- Improved reliability and performance of systems (avoiding risks and collisions and reducing consequences of crashes).
- Drastic reduction of road fatalities and serious crash injuries in low and medium income countries in Africa.
- Better design principles of future road transport systems enabling also better traffic flow in big cities.

- **Total budget: 33 M€** (EU contribution) – Call deadlines: 19/10/21 (Call 2021) and 12/01/22 (Call 2022)

Road Transport Safety topics in WP 2021-2022 (2/4)



- **HORIZON-CL5-2021-D6-01-10: Testing** safe **lightweight vehicles** and improved safe **human-technology interaction** in the future traffic system → *22 proposals received in total*

Two separate sub-topics:

- Area A: Testing safe lightweight vehicles → *10 proposals received, 2 funded*
 - **SALIENT** (CTAG, Spain)
 - **Flexcrash** (EURECAT, Spain)
- Area B: Safe human-technology interaction in the future traffic system → *12 proposals received, 1 funded*
 - **HEIDI** (Virtual Vehicle Research GmbH, Austria)
- Budget available: 12 M€ (3.5-4 M€ per proposal)
- Start date of the 3 projects was 01/09/2022

Road Transport Safety topics in WP 2021-2022 (3/4)



- **HORIZON-CL5-2021-D6-01-11:** Radical **improvement of road safety** in low- and medium-income countries in **Africa**
 - 9 proposals received, 2 funded
 - **AfroSafe** (Lund University, Sweden)
 - **Trans-Safe** (Technical University of Berlin, Germany)
 - Median requested funding: 4 M€
 - Budget available: 8 M€
 - Start date of the 2 projects was 01/09/2022

Road Transport Safety topics in WP 2021-2022 (4/4)



- **HORIZON-CL5-2022-D6-01-06: Predictive safety** assessment framework and safer urban environment for **vulnerable road users**
 - **Two separate sub-topics:** → *20 proposals received in total*
 - Area A: Predictive safety assessment framework
 - *5 proposals, 2 funded*
 - **V4Safety** (TNO, Netherlands)
 - **PHOEBE** (EIRA, Slovenia)
 - Area B: Safer urban environment for vulnerable road users
 - *15 proposals, 1 funded*
 - **SOTERIA** (IntraSoft, Belgium)
 - Budget available: 13 M€
 - Start date of the 3 projects was Oct/Nov 2022

Road Transport Safety topics in WP 2023-2024 (1/2)



2 topics opened under Call 2023 (Opening: 04 May 2023 -
Deadline(s): 05 Sep 2023) - Total budget of EUR 18.00 million:

- **HORIZON-CL5-2023-D6-01-10:** Better **infrastructure safety** on urban and secondary rural roads throughout a combination of adaptable monitoring and maintenance solutions.
 - iDriving (CERTH, Greece)
 - EvoRoads (ERTICO, Belgium)
 - CAMBER (EURORAP, Slovenia)
- **HORIZON-CL5-2023-D6-01-12:** New ways of **reducing serious injuries** and the long-term consequences of **road crashes**.
 - ProtAct-Us (Virtual Vehicle Research, Austria)
 - IMPROVA (IDIADA, Spain)

Road Transport Safety topics in WP 2023-2024 (2/2)



2 topics opened under Call 2024 (Opening: 07 May 2024 -
Deadline(s): 05 Sep 2024) - Total Budget of EUR 14.00 million:

- **HORIZON-CL5-2024-D6-01-11:** Effects of **disruptive changes** in transport: towards resilient, safe and energy efficient mobility.
- **HORIZON-CL5-2024-D6-01-12:** A new framework to improve **traffic safety culture** in the EU.

Planned topics WP 2025 (budgets tbc)

1. Road Safety Topic - title: Safe Human-Technology Interaction in the Coming Decade - 8M€ - 2projects - IA
2. Road Safety Topic - title: Safety of Cyclists, Pedestrians and Users of other Micro-mobility Devices - 4 M€ - 1 project- RIA
3. Road Safety Topic - title: Predicting and avoiding crashes based on AI and big data - 10 M€ - 2 projects - RIA
4. Aviation Safety Topic - title: Icing in the context of sustainable aviation - 4M€ - 1 project - RIA

Thank you !

HorizonEU

<http://ec.europa.eu/horizon-europe>

PHOEBE Project - Predicting impact of changes for safer urban environments

Dr. Ing Santhanakrishnan Narayanan, TU Munich

Arunava Putatunda, MSc, TU Munich



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)



Federal Ministry
for Digital
and Transport



PHOEBE

Project overview



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

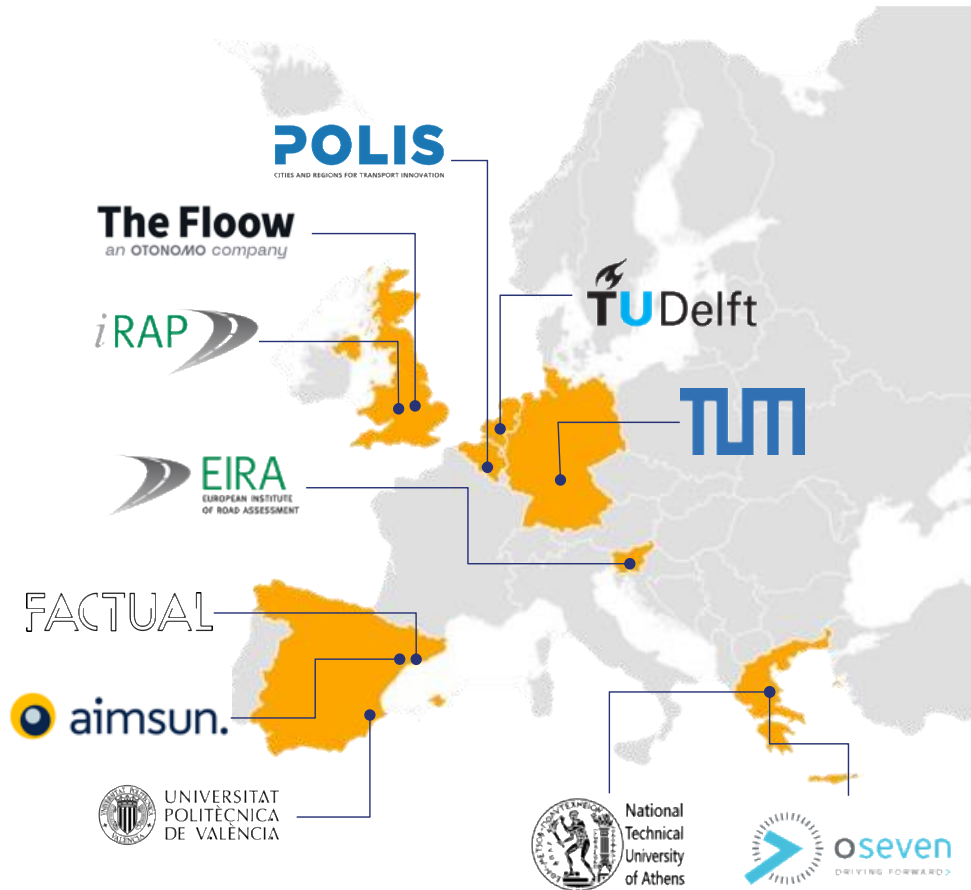
UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Flow)



Federal Ministry
for Digital
and Transport



PHOEBE



- **Call:** HorizonEurope
- **Duration:** 45 months (Nov'22 – July'26)
- **Funding:** €3.4 million
- 11 European partners

Status: M27

- Model enhancements and integration testing

Expected achievements:

- Safety assessment framework to understand the impact of urban changes

Follow PHOEBE and stay updated !



www.phoebe-project.eu



[@Project_PHOEBE](https://twitter.com/Project_PHOEBE)



[PHOEBE-project](https://www.linkedin.com/company/phoebe-project)



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)



Project Objectives

- 1 To develop a new, replicable methodology for **dynamic safety prediction and socio-economic evaluation**
- 2 To **harmonise safety definitions** in traffic simulation models
- 3 To develop **enhanced and integrated urban risk assessment models and tools**
- 4 To **embody social components into risk assessments** to take into account changes in human behaviour, and mode and trip choices
- 5 To **exploit big data and telematics** through AI and ML data analysis techniques that are innovative and efficient
- 6 To apply the proposed methodological framework and enhanced and integrated predictive modeling tools in an **experimental multi-use-case**

Outputs

- A predictive safety assessment methodological framework: 1 **(completed)**
- # of knowledge products produced: min. 3 **(ongoing)**
- # of health and safety, environmental and economic indicators which the framework can evaluate: min. 2 per area. **(ongoing)**
- Road safety module incorporated in the traffic simulation software: 1 **(ongoing)**
- # of enhanced tools for dynamic results: min. 1. **(ongoing)**
- # of urban-specific risk factors: min. 3. **(ongoing)**
- Number. of behavioural modelling products: 2 **(ongoing)**
- # of data sources exploited: min. 3. Number of data suppliers accredited: min. 1. **(ongoing)**
- # of use cases: 3 **(ongoing)**
- # of workshops: 3 per use case **(to start)**
- # of pilot evaluation and assessment reports: 3 **(ongoing)**



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)



PHOEBE

Results



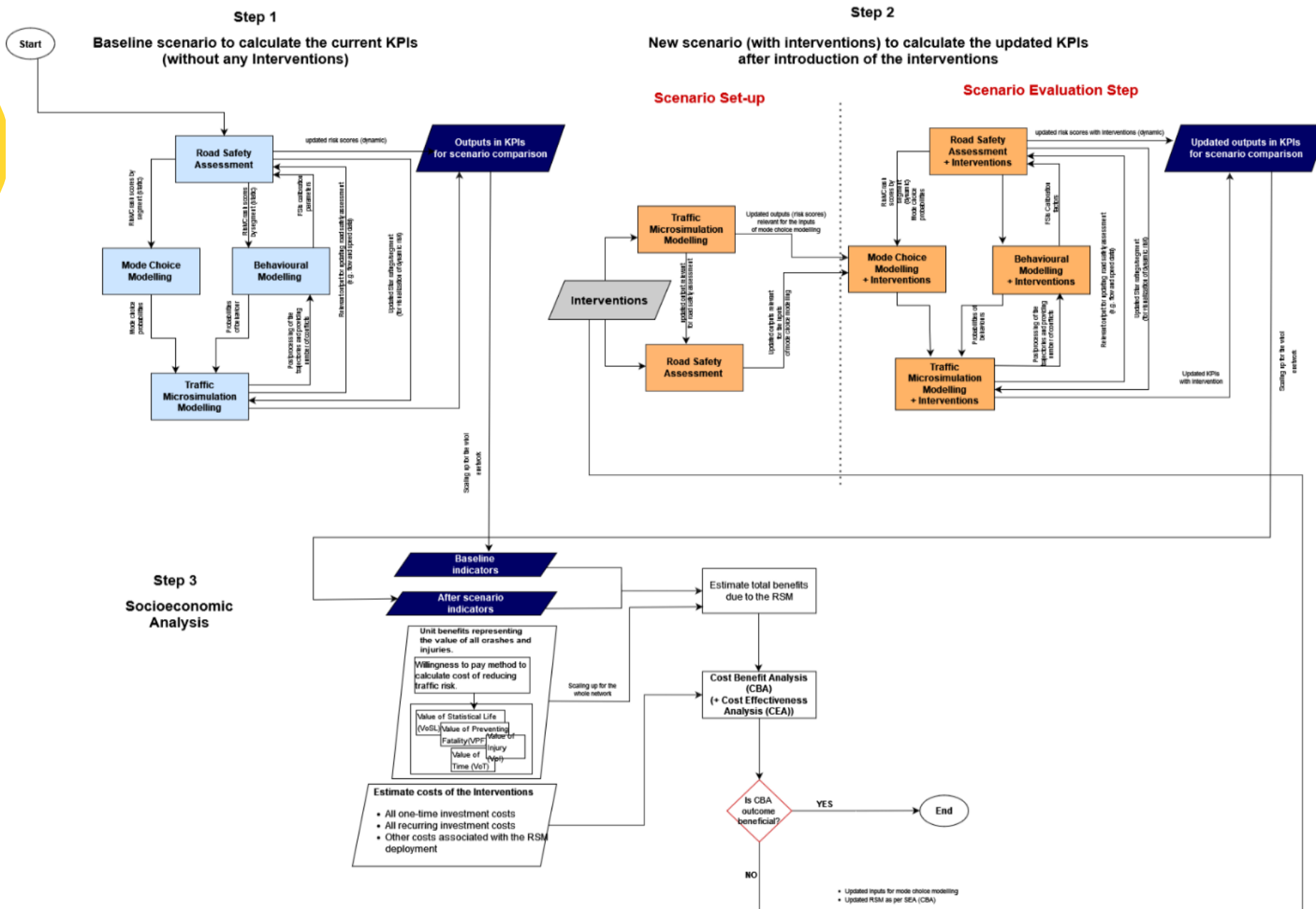
This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Flow)



Federal Ministry
for Digital
and Transport





This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)



Federal Ministry
for Digital
and Transport



Use-cases



Type of intervention

Enhanced VRUs space
Optimised parking arrangements
Speed management

Micromobility facilities update
Speed management
Increase in e-scooter usage

Changes to speed limits
Active travel and micro-mobility
Bus services
Autonomous vehicles

Scope of analysis

Area

Corridors

Intersections + corridor

Validation

Before and after analysis

Control sites

Forecast

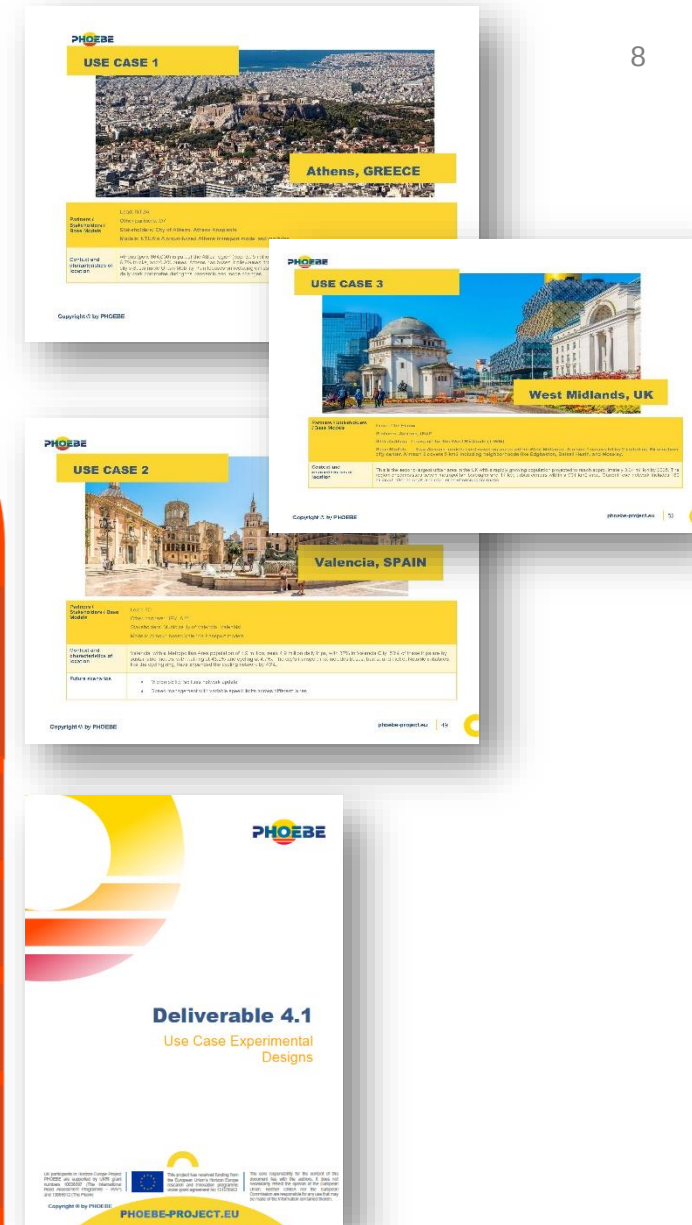
Model availability

Ready to use

Need development in
the micro level

Ready to use

Simulated scenarios



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)



Framework testing Individual results

Behaviour
probabilities

Risk
Assessment

Road Safety Assessments Static Results ATHENS – Star Rating Results

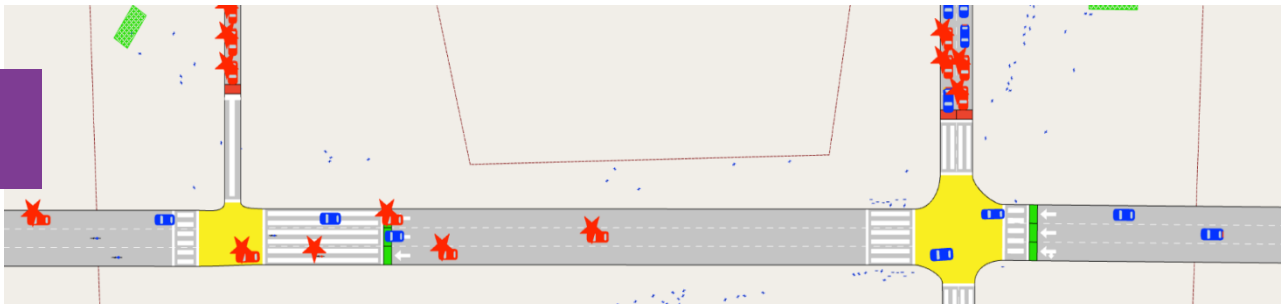


This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Flow)

PHOEBE

Simulation
Enhancements



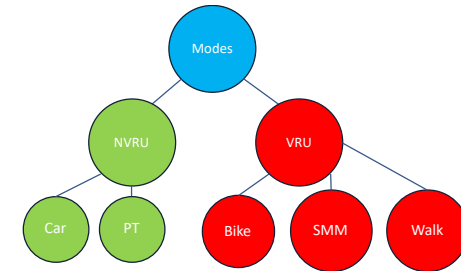
$$P(\text{speeding}) = 1 - \frac{1}{1 + e^{-(3.339 - U)}}$$

where

$P(\text{speeding})$ is the probability of (proportion of traffic) going over the speed limit, and

$$U = -0.460 \times \text{Traffic} - 1.408 \times \text{Speed Camera} - 0.184 \times \text{Speed Limit (30mph)} - 0.456 \times \text{Speed Limit (40mph)} + 0.268 \times \text{Sex} - 0.020 \times \text{Social Value Orientation} - 1.054 \times \text{Past Behaviour: Speed Limit Violations}$$

Mode shift and
induced demand



$$V_{Car} = \beta_{TC.NVRU} * TC_{Car}^{Damped} + \beta_{IVT.NVRU} * IVT_{Car}^{Damped} + \beta_{AWET.NVRU} * AWET_{Car}^{Damped} + \beta_{Risk.NVRU} * Risk_{Car}$$

$$V_{PT} = asc_{PT} + \beta_{TC.NVRU} * TC_{PT}^{Damped} + \beta_{IVT.NVRU} * IVT_{PT}^{Damped} + \beta_{AWET.NVRU} * AWET_{PT}^{Damped} + \beta_{Risk.NVRU} * Risk_{PT}$$

$$V_{SMM} = asc_{SMM} + \beta_{TC.VRU} * TC_{SMM}^{Damped} + \beta_{IVT.VRU} * IVT_{SMM}^{Damped} + \beta_{AWET.VRU} * AWET_{SMM}^{Damped} + \beta_{Risk.VRU} * Risk_{SMM}$$

$$V_{BK} = asc_{BK} + \beta_{TC.VRU} * TC_{BK}^{Damped} + \beta_{IVT.VRU} * IVT_{BK}^{Damped} + \beta_{AWET.VRU} * AWET_{BK}^{Damped} + \beta_{Risk.VRU} * Risk_{BK}$$

$$V_{WK} = asc_{WK} + \beta_{TC.VRU} * TC_{WK}^{Damped} + \beta_{IVT.VRU} * IVT_{WK}^{Damped} + \beta_{AWET.VRU} * AWET_{WK}^{Damped} + \beta_{Risk.VRU} * Risk_{WK}$$



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Flow)



Where we currently stand

Integration

- In/out specifications
- Interaction matrixes
- Interface scripts
- Integration framework flowchart

Interaction with other projects

- Sister PROJECTS (V4SAFETY and SOTERIA)
- EU Projects Advancing Road Safety and Automated
- Mobility in Complex Urban Environments (- AI4CCAM, HEIDI, EVENTS, PHOEBE, FRODDO, and SOTERIA)

Information	Corresponding Data	Producers	Status	URL	Access	Coverage	Use-Case	Is the data going to be used?
85th speeds motor traffic	Aggregated telematics data	O7	Accessible	No	Use-Case Leader	Whole	Athens	Yes
Crossing mode	iRAP Survey	iRAP	Accessible	No	In project	Partial	Athens	Potentially
Crossing quality	iRAP Survey	iRAP	Accessible	No	In project	Partial	Athens	Potentially
Crossing quality	Aggregated telematics data	O7	Potential	No	In project	Whole	Athens	Yes
Crossing type	iRAP Survey	iRAP	Accessible	No	In project	Partial	Athens	Yes
Crossing type	Aggregated telematics data	O7	Potential	No	In project	Whole	Athens	Yes
Degree of Curvature	OSM	OpenStreetMap Foundation	Potential	No	Open	Whole	Athens	Yes
Degree of Curvature	iRAP survey	iRAP	Available	No	In project	Partial	Athens	Yes
Distance to threats	NTUA Measurements	National Technical University of Athens	Potential	No	Use-Case Leader	Partial	Athens	Yes
Incident Locations	SANTRA	National Technical University of Athens	Accessible	No	Use-Case Leader	Partial	Athens	Yes
Incident Severity	SANTRA	National Technical University of Athens	Accessible	No	Use-Case Leader	Partial	Athens	Yes
Intersecting route volume	Aggregated telematics data	O7	Accessible	No	In project	Whole	Athens	Yes
Intersection Quality	iRAP Survey	iRAP	Accessible	No	In project	Partial	Athens	Yes
Intersection Quality	Aggregated telematics data	O7	Accessible	No	In project	Whole	Athens	Yes
Intersection Type	iRAP Survey	iRAP	Accessible	No	In project	Partial	Athens	Yes
Intersection Type	Aggregated telematics data	O7	Potential	No	In project	Whole	Athens	Yes
Location of Property access points	OSM	OpenStreetMap Foundation	Potential	No	Open	Whole	Athens	Yes
Location of Property access points	iRAP survey	iRAP	Available	No	In project	Partial	Athens	Yes
Location of Property access points	NTUA Measurements	National Technical University of Athens	Potential	No	Use-Case Leader	Partial	Athens	Potentially
Location of School Zone Warning	OSM	OpenStreetMap Foundation	Accessible	No	Open	Whole	Athens	Yes
Location of School Zone Warning	iRAP survey	iRAP	Available	No	In project	Partial	Athens	No
Location of School Zone Warning	NTUA Measurements	National Technical University of Athens	Potential	No	Use-Case Leader	Partial	Athens	No



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)



More info available at...

<https://phoebe-project.eu/>



ABOUT ▾ NEWS & EVENTS PHOEBE FRAMEWORK PILOT CITIES ▾ LIBRARY ENGAGE



SUBSCRIBE TO
NEWSLETTER

D1.1 State-of-the-art and end-user needs review

This deliverable describes the PHOEBE Framework as a methodological approach designed for cities to improve understanding of the safety implications of future changes in the transport systems.

Download now

D1.2 Theoretical principles and methodological approach of the PHOEBE framework and selection of tools

This deliverable presents the overall methodological framework in PHOEBE and provides the theoretical principles and methodological approaches pertaining to each component within the framework.

Download now

D4.1 Use Case Experimental Designs

This deliverable aims to set the stage for the demonstration of the application of the methodological framework and validation of its outputs within the urban mobility and safety context.

Download now

D6.1 Dissemination, communication and exploitation plan

This deliverable outlines the dissemination and exploitation plans, including social media, the PHOEBE homepage, as well as the organisation of physical and virtual events.

Download now

Follow **PHOEBE** and stay updated !



www.phoebe-project.eu



[@Project_PHOEBE](https://twitter.com/Project_PHOEBE)



[PHOEBE-project](https://www.linkedin.com/company/phoebe-project)



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)



PHOEBE

Mid and long-term impacts



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Flow)



Federal Ministry
for Digital
and Transport



Mid and long-term impacts

- Harmonisation of road safety indicators and measures to be able to benchmark, report, track, and compare
- New and enhanced tools (risk assessment and simulation software)
- Introduction of road safety in formal modelling framework
- Scenario visualization
- Detailed socio-economic impact of safety measures



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)



Target

50% reduction in serious injuries and fatalities in road crashes by 2030.

- data and tools they need to make informed decision making and investments
- data science and social science
- Forecasting and simulations

Improved reliability and performance of systems

- enhancement of current traffic simulation software
- Incorporation of a safety module
- crash-related impacts on travel time reliability, congestion and emissions

Better design principles of future road transport systems

- new infrastructure parameters and risk factors focused on urban areas
- behaviour models into the risk assessment and simulation structure
- immediate visibility of the safety impacts
- before and after analysis of designs



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)



Federal Ministry
for Digital
and Transport



Some of our journal publications

- Narayanan, S., Makarov, N., & Antoniou, C. (2024). Graph neural networks as strategic transportmodelling alternative - A proof of concept for a surrogate. IET Intelligent Transport Systems. <https://doi.org/10.1049/itr2.12551>
- Kalliga, V., Narayanan, S., & Antoniou, C. (2024). Who does new trips and why?: An analysis towardthe modeling of induced demand. Transportation Letters, 1–9. <https://doi.org/10.1080/19427867.2024.2333647>
- Makarov, N., Narayanan, S., & Antoniou, C. (2025). Advanced graph neural network architectures -An investigation through the development of a surrogate for strategic transport planning. Journal of Intelligent Transportation Systems, Under review. <https://arxiv.org/abs/2408.07726>
- Ghazal, A., Narayanan, S., Adeniran, I. O., Kehrt, C., & Antoniou, C. (2025). Analysis of logistics measures of CEP service providers for the last-mile delivery in small- and medium-sized cities: A case study for the Aachen city region. *European Transport Research Review*, 17(1). <https://doi.org/10.1186/s12544-025-00706-z>
- Kalliga, V., Narayanan, S., & Antoniou, C. (2025). Trip generation dynamics under the introduction of shared mobility. *Journal of Transport Geography*, 123. <https://doi.org/10.1016/j.jtrangeo.2025.104135>



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)





<https://www.linkedin.com/in/santhanakrishnan-narayanan-52b7a35>

THANK YOU!

Dr. Ing Santhanakrishnan Narayanan, TU Munich
(santhanakrishnan.narayanan@tum.de)
Arunava Putatunda, MSc, TU Munich



This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101076963

UK participants in Horizon Europe Project PHOEBE are supported by UKRI grant numbers 10038897 (The International Road Assessment Programme – iRAP) and 10056912 (The Floow)





On the way to Vision Zero

HarMobi (mFUND) – Harmonizing Mobility for increased safety

Driven by Data, mFUND Workshop - 26.02.2025

Increased risk for vulnerable road users (VRU)

Ensuring a safer mobility transition to achieve “Vision Zero”



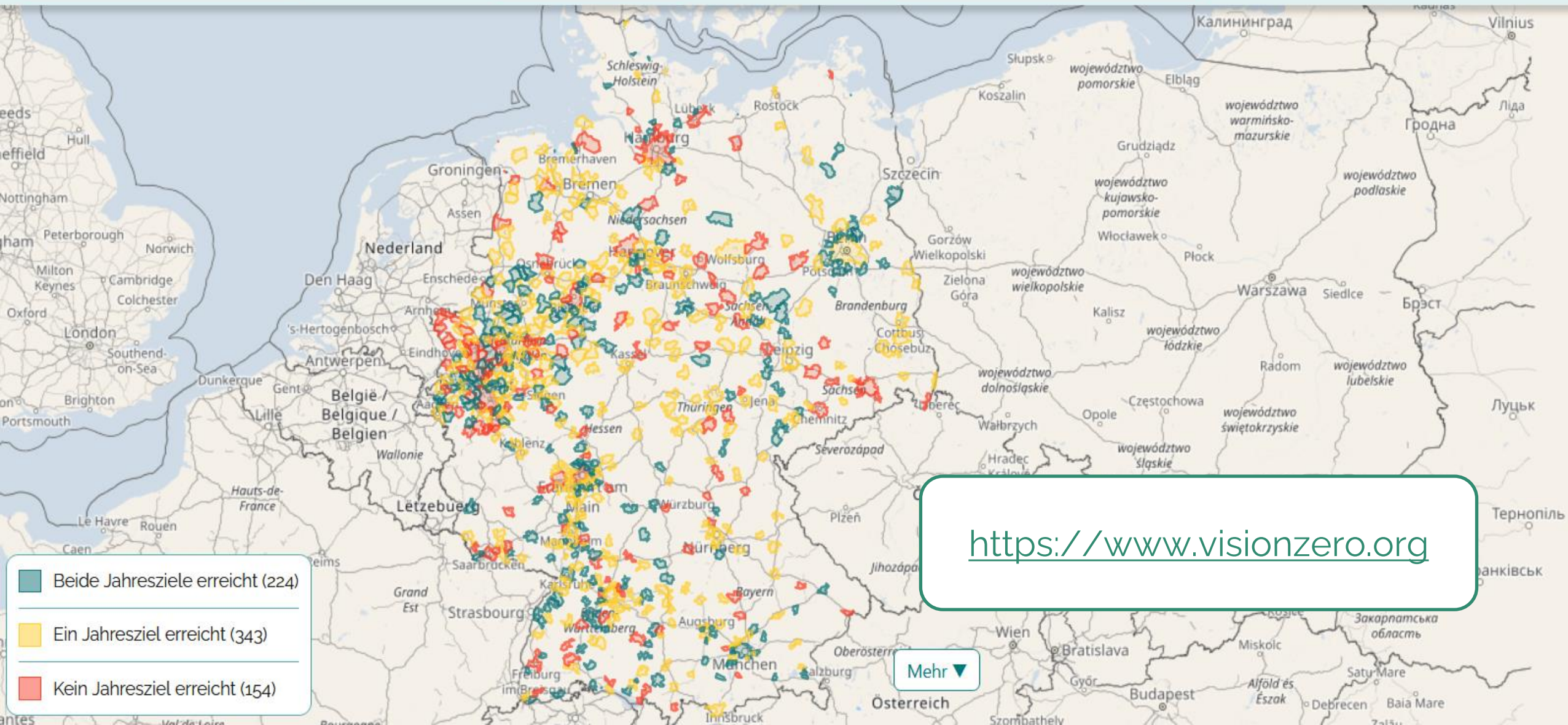
Stadtsuche

Unfallkategorie

Gesamt ▾

Städtekategorie

Alle ▾

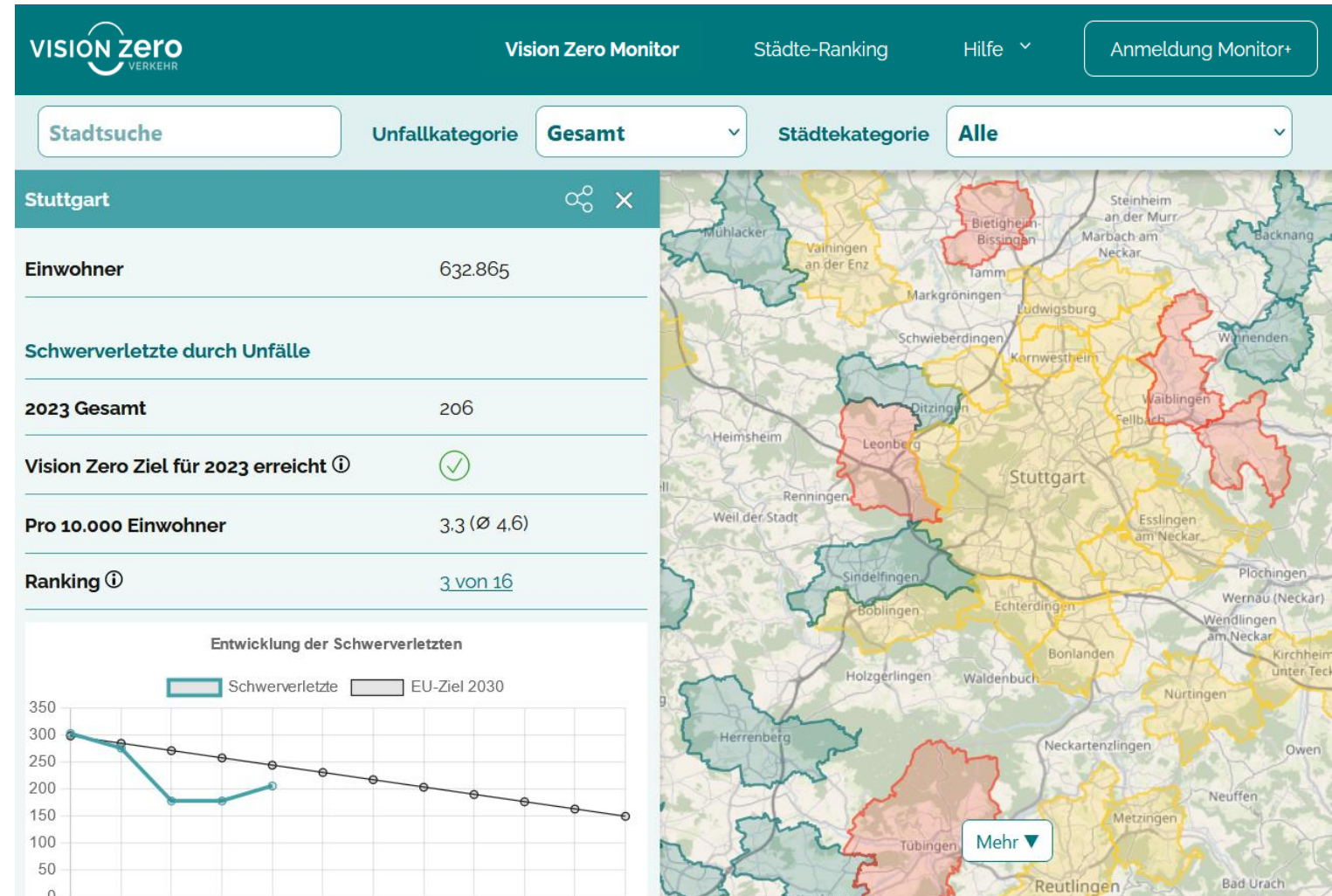


<https://www.visionzero.org>

Mehr ▾

Vision Zero Monitor – Detailed Statistics

- Special analysis by the Federal Statistics Office for German cities with more than 20,000 inhabitants.
- Ranking of the 720 cities in their category (by regional class).
- Comparison with Vision Zero target of 50% reduction by 2030. Time series from 2019 to 2023.
- Graphic representation of fatalities, serious injuries, rankings etc.
- Special section (Monitor+) with more detailed insights on light injuries and data broken down by road user groups and by age class.
- All data can be accessed for free.



Digital Road Safety Map

Core Feature for several other Use Cases

INITIATIVE FOR
safer-roads.org

- Road network all over Germany covered for urban roads as well as national roads and highways
- Segmentation of road network into small sections or nodes of 25 meters or less (in urban areas)
- Implementation of the approach in 2-3 neighbouring countries starting in 2025 (e.g. France, Austria)
- Scientifically sound methodology thanks to various university partners & traffic/transport experts

[Public version available on gefahrenstellen.de](https://www.gefahrenstellen.de)

Excellence in
Road Safety
AWARDS

WINNER

02/2025

INITIATIVE FÜR
sichere-strassen.org

ISAC
Institut für
Straßenwesen

RWTH AACHEN
UNIVERSITY

Deutsche
Hochschule der Polizei

DTV
DEUTSCHER VERKEHRSSCHUTZ
VERKEHRSCONSULT GMBH

PTV GROUP
the mind of movement

gefördert durch:

Bundesministerium
für Digitales
und Verkehr

mFUND
Das Startkapital für die Mobilität 4.0

Assoziierte Partner:

Polizei Bremen

stadt aachen

Central Data Platform

Reactive & proactive data sources



Police
Accident Data



gefahrenstellen!de

User Reports on
Danger Spots



Kinematic Data on
Near Misses/Harsh Braking

Infrastructure Data



Network Structure
& Risk Factors



Mobility Urban Safety Intelligent Cloud

Context Data



Validation of Methodology

Ensuring relevance and validity on several levels

- 5 years of research with renown University Partners: RWTH Aachen and German Police University
- Proven methodology with several int. scientific publications and presentations e.g. PIARC World Road Congress



- More than 300 site inspections to review and validate the risk scoring and forecast indicators 'on the spot' in various cities in Germany



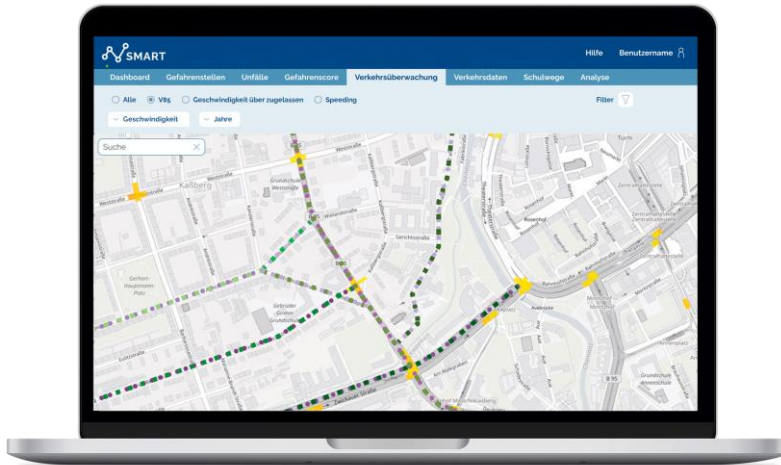
- Camera observations at critical spots in order to review behaviours in detail and to confirm outcomes from other data sources



Use Cases

Data Portal - SMART

Backend for cities and authorities with detailed analysis options



All input data can be viewed, filtered, analysed and aggregated in the SMART portal for authorized entities

Before and after analysis

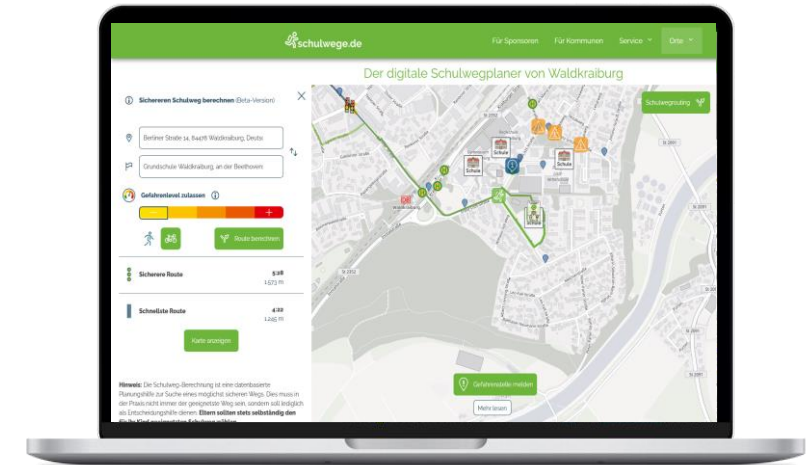
Measuring the impact of a traffic infrastructure measure



The combination of several data sources enabled the initial assessment of a traffic situation just 4 months after implementation

Digital school route planner

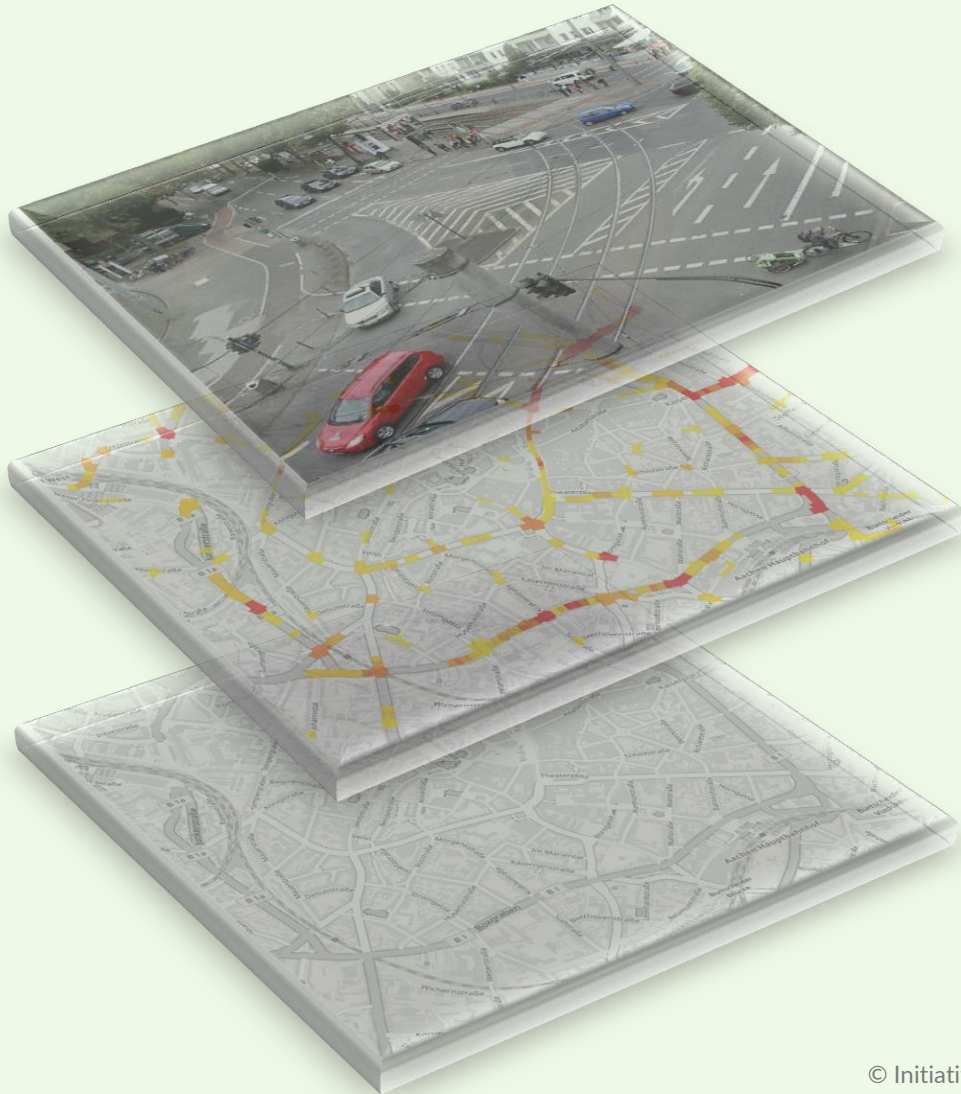
Use of existing data to simplify the development of school route plans



Danger zones and infrastructure data are automatically imported and supplemented by information from the municipalities or schools

Concept of Data Layers

Currently working on layer for “Conflict Situations”



3rd layer > *HarMobi*

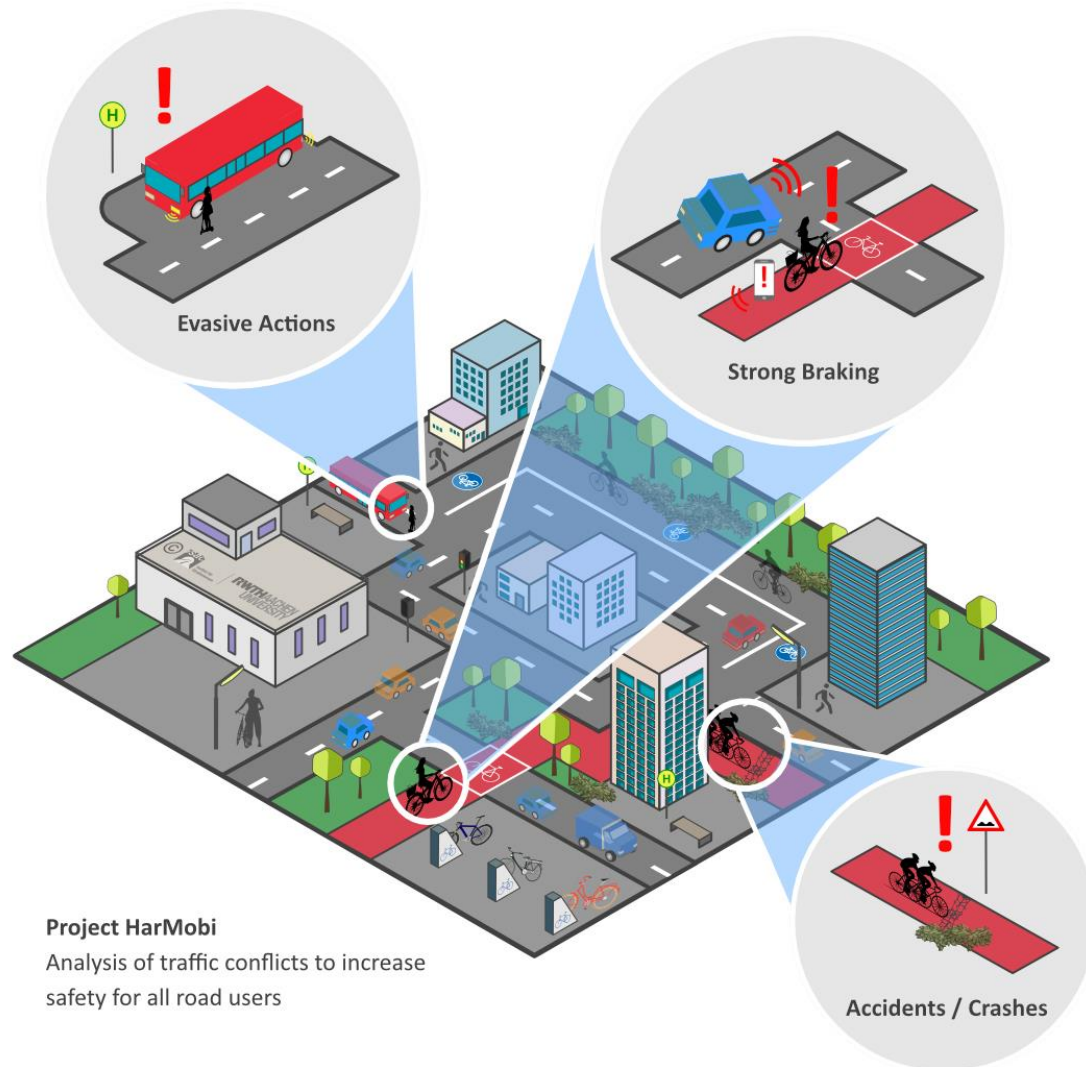
Conflict situations: traffic flows, safety-critical manoeuvres, movement patterns

2nd layer

Risk score: level of risk, road user types, directions

1st layer

Road characteristics: type, traffic light, crossing, width, lanes, cycling lane etc.



Harmonisation of data from different road users to better understand types of conflicts

Sensor and traffic flow data from:

- Bicycles / Pedelecs
- E-scooter
- Motor vehicles (cars, trucks, transporters)
- (Pedestrians)

Project HarMobi

Analysis of traffic conflicts to increase safety for all road users



INITIATIVE FÜR
sichere-strassen.org



Medizinische Hochschule
Hannover

Camera observation

Conflicts confirmed via video observation by RWTH Aachen

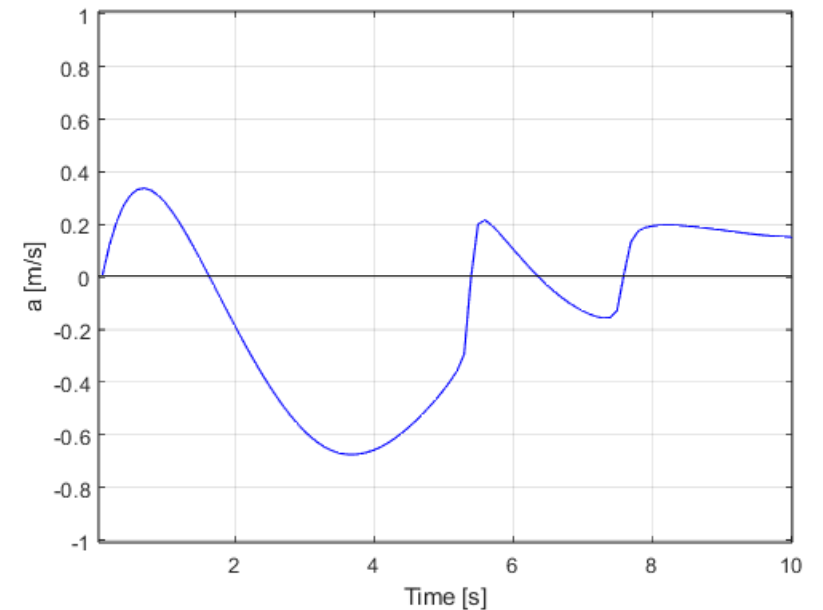
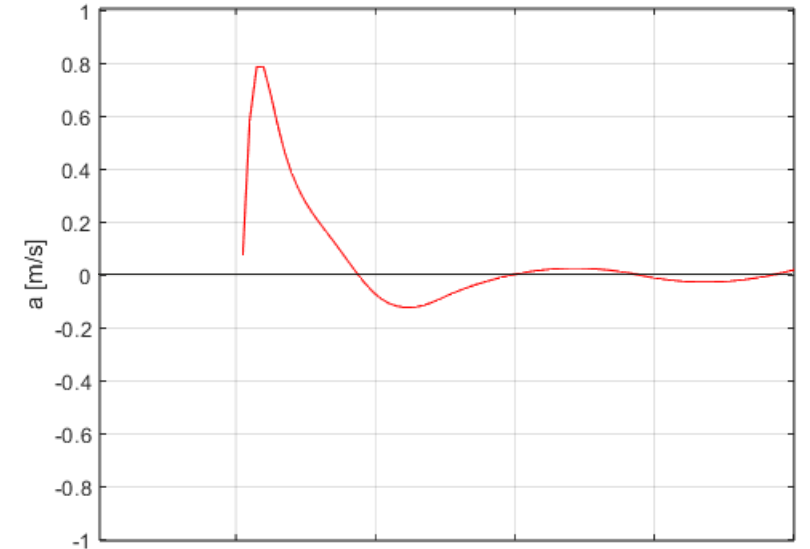


Data from Road Users



● Bike
Lateral
Acceleration

● Car
Longitudinal
Acceleration



Capture of Critical Cycling Events

Testing Phase ongoing

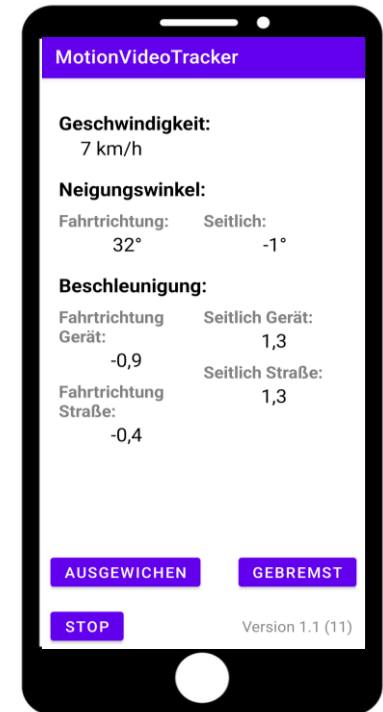
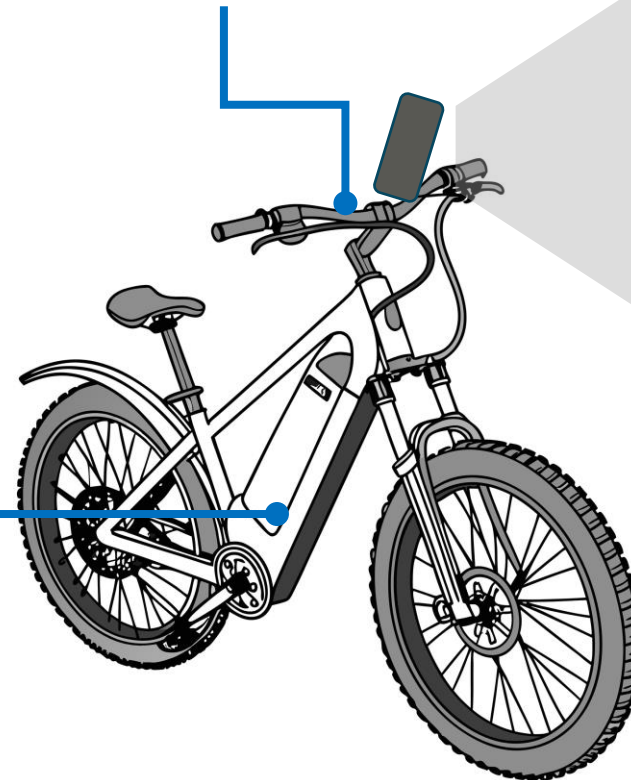
- Development of Motion Tracker App
- Testing phase of App until late 2024
- Review of ebike-sensor capabilities and road safety relevance
- Test rides with app & ebike sensors to synchronize data and validate app functionality and accuracy

Driving Data:

- Acceleration
- Breaking
- Speed
- Torque ...

Context Data:

- Weather
- Gradient ...



Modelling of Conflicts

- Connection between infrastructure design and road safety
- Consideration of the various influencing variables such as
 - Permitted maximum speed
 - Lane width, number of lanes
 - Type of cycling facility
 - Markings (lines, symbols, areas)
 - Radius of bends
 - Traffic regulation
 - ...



Research Partners

e.g. FeGiS+ and HarMobi Project



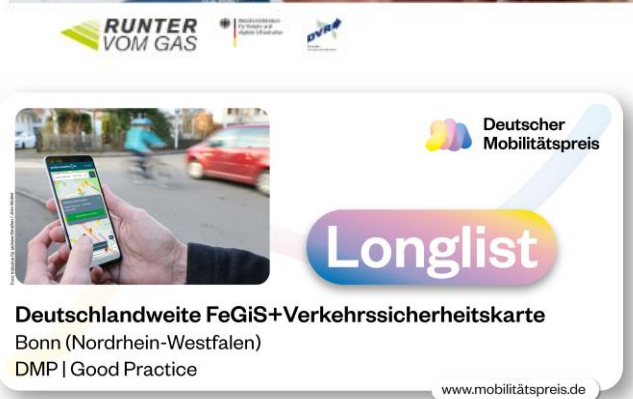
..... sowie weitere
assoziierte Partner

Gefördert durch:



Recognition & Support

embedded in national & international initiatives



Thorsten Schröder
Tageschausprecher und Moderator



Sebastian Puffaff
Kabarettist und Moderator



Anika Meenken
VCD-Sprecherin für Radverkehr und Mobilitätsbildung



Wulf Hoffmann
Vorstandsmitglied der Verkehrsunfall-Opferhilfe Deutschland e.V. (VOD), Polizeidirektor a.D.



Contact

We look forward to hearing from you!

Arno Wolter
Initiative for safer roads
Tel. +49 - 228 - 76 38 69-12
a.wolter@safer-roads.org



*Join us on the road
to Vision Zero ...*



Federal Ministry
for Digital
and Transport



Workshop series

DRIVEN by DATA

The mFUND Workshops Series about Mobility in Europe

27.03.2025

**12:30 – 14 h
(CET)**

SAVE THE DATE!

Workshop No. 14

Intelligent Paths, Smart Destinations: Creating Smart and Sustainable Tourism in Europe

Registration: tuvrheinland.webex.com/weblink/register/r0239e8737ae5896dbbfa3de047814f43

Federal Ministry for Digital and Transport

Division DP 20



www.linkedin.com/groups/12778505

