Predictive Approaches for Safer Urban Environments: The PHOEBE project
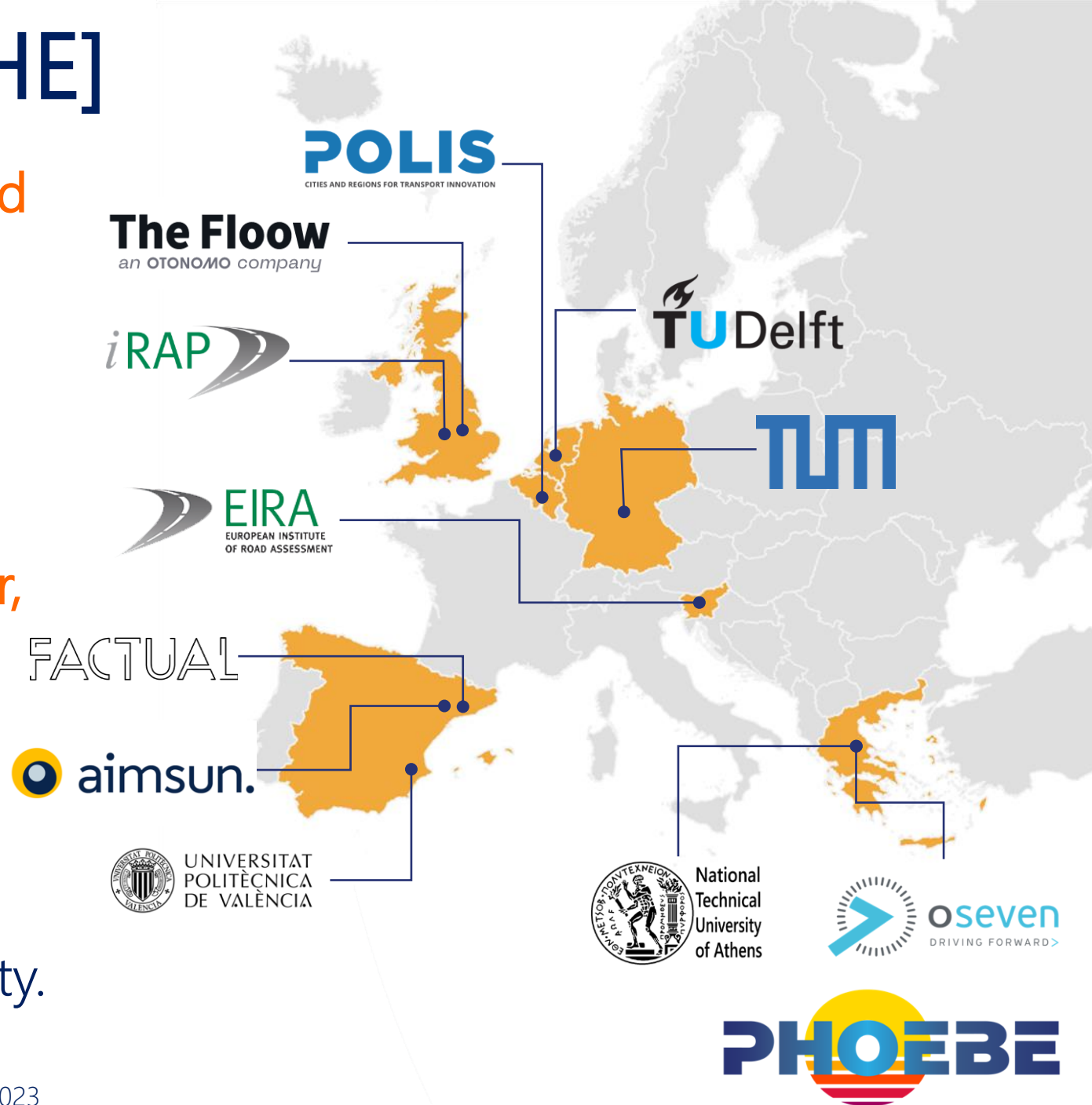
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The PHOEBE Project [HE]

- Develops an integrated, dynamic and scalable human-centred predictive safety assessment framework for all road user types in urban areas.

- Combines traffic simulation, road safety assessment, human behaviour, mode shift and induced demand modelling

- Utilises new and emerging mobility data into a harmonised, prospective assessment framework for road safety.

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Project Objectives

- To develop a new, replicable methodology for dynamic safety prediction and socio-economic evaluation

- To harmonise safety definitions in traffic simulation models

- To develop enhanced and integrated urban risk assessment models and tools

- To embody social components into risk assessments to take into account changes in human behaviour, and mode & trip choices

- To exploit big data and telematics through AI and ML data analysis techniques that are innovative and efficient

- To apply the proposed methodological framework and enhanced and integrated predictive modelling tools in an experimental multi-use-case

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Use Cases [1/2]

ATHENS

VALENCIA

WEST MIDLANDS
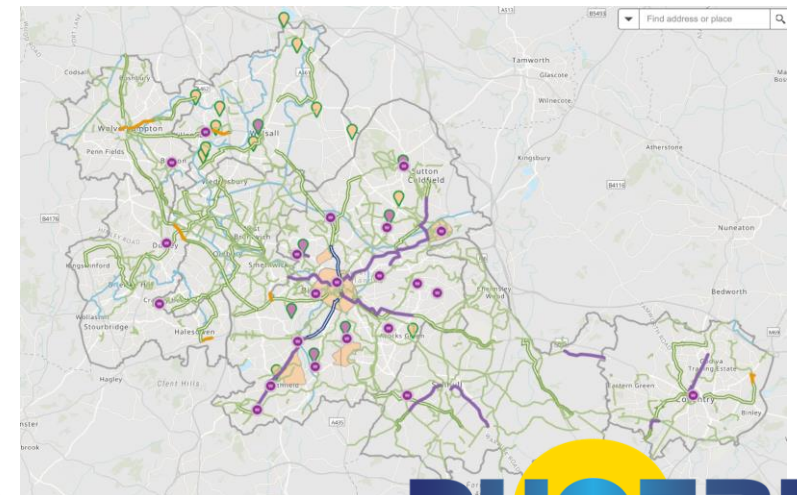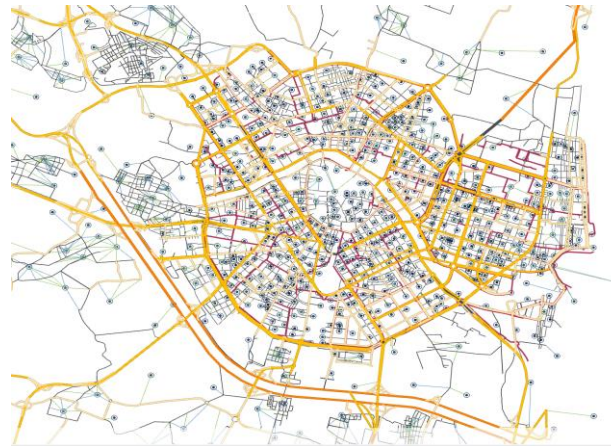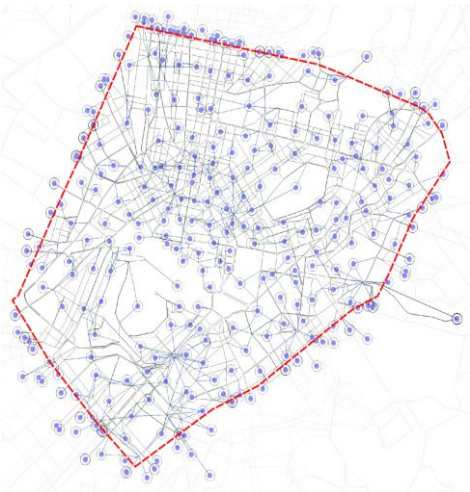
Use Cases [2/2]

	ATH	VLC	WM
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

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The Methodology

Locations are selected for simulation to understand how the changes the city is planning will work in the context of other trends.

The results are then extrapolated to the network-wide level to estimate the overall impact of the forecast changes and impacts are calculated.

Select → **Simulate** → **Evaluate** → **Extrapolate**

Data gathered to establish baseline conditions and then simulate the expected changes to the road environment

The outputs would then be evaluated to produce dynamic safety scores. The results will be used to rerun and refine simulated scenarios and validate the results

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