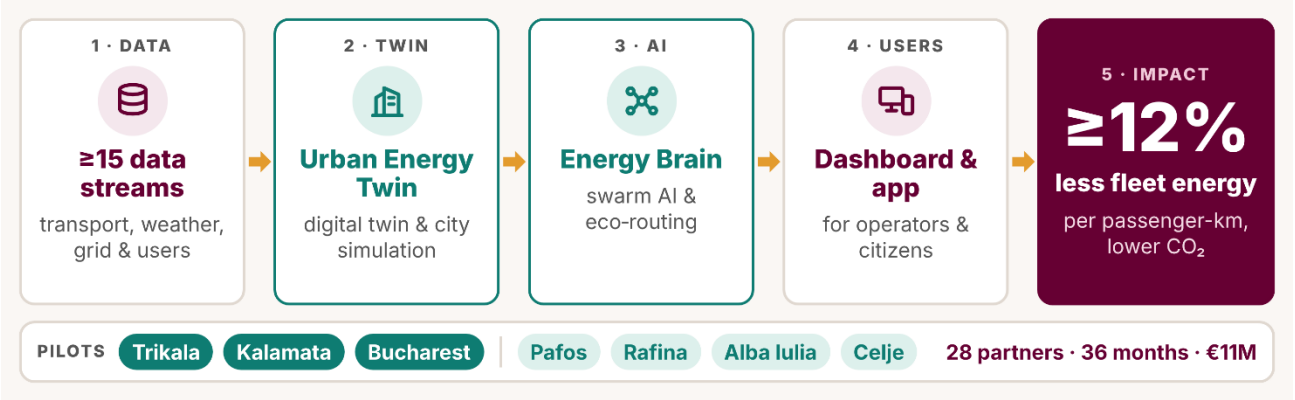
Epsilon	2026	ENERGYSWARM: Adaptive Urban Energy-Oriented Mobility through Swarm Intelligence, Urban Energy Twins and Integrated Urban Electromobility Orchestration						
	Country	Contract value (€)	% by Epsilon	Staff # provided	Client	Origin of funding	Date (start/end)	Consortium Members
	Malta	€10,966,819	2.25% (€246,250)	6	European Commission	Horizon Europe	36 months	28 partners · Coord.: NKUA (EL)

The Project (2026)

ENERGYSWARM is a Horizon Europe Innovation Action proposal under the Climate-Neutral and Smart Cities Mission that advances energy-efficient, accessible and climate-aware urban and peri-urban mobility by connecting public transport, shared mobility and energy planning. It responds to fragmented data, weak coordination between operators and uneven service provision, which currently limit sustainable travel choices and the electrification of transport fleets.

The proposal aims to develop an integrated platform built on three layers: a Data and Fusion Layer harmonising at least 15 heterogeneous transport, weather, environmental, infrastructure, charging and behavioural data streams; a Service and Intelligence Layer, where the Urban Energy Twin and the Urban Mobility Energy Brain combine Local Digital Twins, simulation, Graph Neural Network surrogates and swarm-intelligence optimisation to anticipate demand and disruptions and compare mobility and charging scenarios; and a role-aware interface. Through a dashboard, authorities and operators will assess schedules, routes, fleet electrification and charging options with explainable recommendations on energy, emissions, accessibility and cost, while a personalised multimodal app will guide citizens towards low-energy travel options and collect their feedback.

The solutions will be demonstrated in three lead cities (Trikala, Kalamata, Bucharest) and four follower cities (Pafos, Rafina, Alba Iulia, Celje) under normal and disrupted conditions, targeting at least 12% lower fleet energy consumption per passenger-km. Bringing together 28 partners from 12 countries, ENERGYSWARM will deliver validated tools, impact evidence, policy guidance, open-source toolkits and a replication pathway for at least ten further European cities.



Services to be provided by EPSILON

EPSILON contributes 27 person-months across all seven work packages, bringing expertise in integrated energy–environment modelling, policy analysis, life-cycle assessment and GIS/Earth-observation data processing. Its main services are:

- **Ethics and EU alignment (WP1):** support to the Ethics Board on GDPR and AI Act compliance, and to collaboration with CIVITAS and the Cities Mission Platform.
- **Baseline assessments (WP2):** energy-grid readiness assessment for fleet electrification and charging; mapping of policies and financial instruments (low-emission zones, SUMPs, procurement, incentives); user-needs and inclusivity research.
- **Modelling and AI (WP3–WP4):** policy and energy scenarios for the synthetic scenario factory; energy-aware surrogate model extensions (energy per passenger-km, charging demand, renewable signals); surrogate validation and uncertainty analysis; data fusion, privacy and governance services.
- **Service design and policy (WP5):** participatory service design with stakeholders, input to the role-aware interface and journey planner, behavioural incentives, stakeholder value propositions and policy recommendations on public space, regulation and zero-emission procurement.
- **Impact assessment (WP6):** KPI framework and multi-criteria trade-off tool; integrated impact assessment covering lifecycle and ecological footprint, rebound effects and equity.
- **Exploitation and replication (WP7):** communication and dissemination, capacity building and training for authorities and operators, business models and the replication strategy for further European cities.

Throughout the project, EPSILON will help ensure that environmental, energy and social considerations are reflected in the platform's recommendations, and that pilot evidence is translated into practical guidance for cities, operators and policy makers.

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