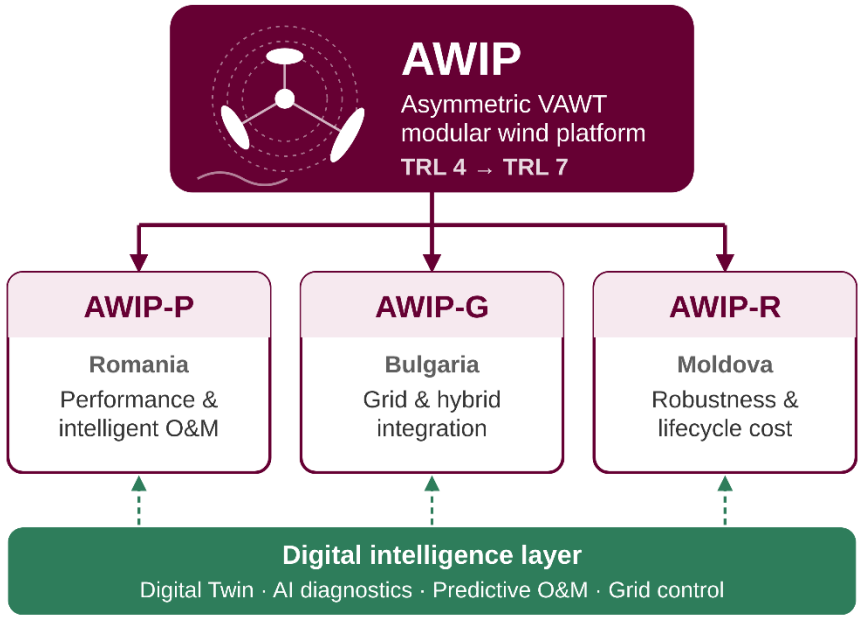
Epsilon	2026	AWIP – Adaptive Wind Intelligence Platform					
Country	**Contract value (€)**	**% by Epsilon**	**Staff # provided**	**Client**	**Origin of funding**	**Date (start/end)**	**Consortium Members**
Malta	**40,552,311**	2.6% (€1,059,625)	5	EC (CINEA)	Horizon Europe (Cluster 5)	60 months (from GA)	12 partners from RO (coord.), SE, BG, MD, MT, FR, EL, AT, TR

The Project (2026)

AWIP – Adaptive Wind Intelligence Platform: Modular, Scalable and Intelligent VAWT Systems for Distributed Wind Energy (Horizon Europe, HORIZON-CL5-2026-09-D3-03, Innovation Action, 60 months) will develop and demonstrate a new generation of modular, intelligent wind energy systems based on an innovative asymmetric Vertical Axis Wind Turbine (VAWT). Building on a concept already validated through numerical and laboratory experiments, AWIP takes the technology from **TRL 4 to TRL 7**, turning the aerodynamic concept into a complete system ready for operation under real conditions.

The project combines aerodynamic, structural and multi-physics optimisation with advanced composite materials and manufacturing, sensing, Digital Twin technologies, Artificial Intelligence, predictive maintenance and grid integration. Rather than designing one turbine for a single application, AWIP explores the trade-offs between performance, loads, reliability, manufacturability, maintainability and cost to deliver **three complementary configurations**: AWIP-P (performance and intelligent O&M) at the COMOTI Black Sea Testing Facility, Romania; AWIP-G (grid and hybrid-energy integration with storage) at an industrial site in Silistra, Bulgaria; and AWIP-R (robustness and lifecycle cost) in an inland continental environment in Moldova. Each demonstrator operates for at least six months, and results are compared through a common KPI and cross-site validation framework.



A €24 million **FSTP programme** opens the project to external innovators with breakthrough technologies and validation activities. The outcome is a field-validated distributed wind platform, with the digital tools and industrialisation pathway needed for certification and scale-up.

Services to be provided by EPSILON

EPSILON leads **WP5 – Digital Twin, Sensing, AI & Intelligent O&M** (292 person-months across the consortium), developing the digital intelligence layer of the AWIP platform with 166 person-months of its own effort. Its main services and responsibilities include:

- **Digital Twin architecture (T5.1):** modular, interoperable architecture linking each demonstrator, its sensors, physics-based and reduced-order models, AI services and O&M functions, with common data models, KPIs and cybersecurity provisions.
- **Sensing & data acquisition (T5.2):** sensor suite and DAQ system providing synchronised, quality-controlled measurements of wind, loads, vibration, rotor speed, torque and power quality across AWIP-P/G/R.
- **AI/ML diagnostics & forecasting (T5.3):** data-driven and physics-informed models for anomaly detection, fault classification and degradation forecasting, targeting ≥90% diagnostic accuracy.
- **Control & grid interaction (T5.4):** turbine control strategies, electrical/grid models and power-quality assessment, tested in the Digital Twin before field deployment, with AWIP-G as the hybrid storage validation case.
- **Digital platform & O&M toolkit (T5.5):** cloud/edge dashboards for real-time condition, KPIs, alerts, maintenance prioritisation and remaining-useful-life estimation, tailored to asset managers, maintenance staff and operators.
- **Field validation (T5.6):** calibration and cross-site validation of the Digital Twin and AI models against field data, targeting ≥90% model agreement and assessing transferability between sites.
- **Demonstration & uptake support (WP6–WP12):** prototype instrumentation and integration, support to the three field demonstrations in Romania, Bulgaria and Moldova, cross-site validation, exploitation and market-replication planning, and the evaluation and selection of FSTP open-call projects.