OpenSwarm

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Deliverable n°5.1: Foundation of the OpenSwarm implementation with corresponding documentation

Work Package n°5: Implementation and Verification of OpenSwarm

WP Lead: INRIA

Task 5.1 Lead : ING

Document information

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Document history

Date	Version	Author(s)	Comments
06/01/2025	0.1	Micael Couceiro (ING)	Proposed a structure to organise the software documentation accordingly.
07/01/2025	0.2	André Araújo (ING)	Revised the structure of the software documentation.
15/01/2025	0.3	Carlos Pizzino (ING)	Released the github wiki as a docusaurus-generated document at https://github.com/openswarm-eu/openswarm-eu.github.io
15/01/2025	0.4	Micael Couceiro (ING)	Created this one-page deliverable with an executive summary describing the deliverable and relevant links.

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Executive Summary

Deliverable *D5.1, Foundation of the OpenSwarm implementation with corresponding documentation*, presents the essential groundwork for the OpenSwarm software code base and its supporting documentation. As a single, easy-to-navigate reference point, this GitHub wiki - created with the open-source Docusaurus framework - underpins the full breadth of swarm technologies developed in the OpenSwarm EU project.

Drawing on three core scientific pillars - orchestrating collaborative smart nodes, collaborative energy-aware AI, and energy-aware swarm programming - this deliverable integrates software enablers and swarm capabilities suitable for both static and mobile robotic platforms. It covers general robotics tasks, such as localisation, path planning, and navigation, as well as specialised swarm strategies, like foraging and coverage. Moreover, it showcases how the OpenSwarm software can run seamlessly on microcontrollers (e.g., Kilobot, DotBot) and on more robust platforms using the Robot Operating System (ROS). In doing so, this documentation becomes not only a foundation for further technological development within OpenSwarm, but also a critical enabler for verification in WP5 and proof-of-concept (PoC) demonstrations in WP6.

To guide readers through the project's architecture, D5.1 is split into two main sections – "Codebase" and "Non-Codebase" - with each broken down by enablers and capabilities for both ROS- and non-ROS-based implementations. This modular structure makes it straightforward for practitioners, researchers, and developers alike to locate the exact resources they need, whether it is swarm-specific algorithms or the underlying building blocks necessary for energy-aware and collaborative AI.

By centralising all relevant technical information in this interactive, Docusaurus-powered documentation, the OpenSwarm community can explore code snippets, design decisions, and best practices in one unified space.

Webpage source code: https://github.com/openswarm-eu/openswarm-eu.github.io

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