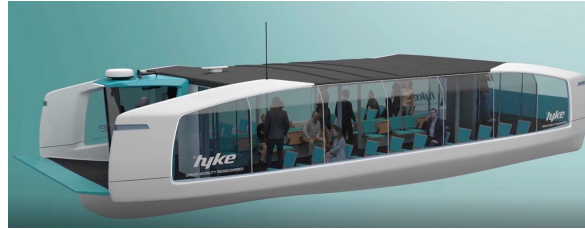# Rebalancing idle delivery bike with Hyke!

Problem description

In this thesis, the aim is to use waterways to relocate the idle bikes for an instant delivery service. Idle bikes cost for the delivery platform and reallocating them in time helps satisfy demand when there is a spike in different zones of an urban area. Usually, the road network is used to reallocate these bikes. In SINERGI (JPI-ERANET project) we aim at investigating whether autonomous boats can be used instead of trucks for rebalancing the empty bikes.

Hyke is offering innovative solutions for waterborne logistics and mobility, promising to alleviate congestion, eliminate emissions and enable sustainable waterfront redevelopment. Hyke's solutions include electric ferries, automatic charging jetties, autonomous vessel control, and fleet management solutions. Moreover, Hyke's solutions are designed to enable passenger and logistics operations, enabling economies of scale and increasing vessel utility and revenues.

Assignment

The project will involve the following steps:
- Identify different and charging demand scenarios.
- Identifying the overload and deficit zones for these bikes.
- Introduce a real-time operational plan rebalancing the idle fleet.

Candidate

- Should have: coding skills in Python, reinforcement learning and simulation.
- Good to have: stochastic programming, knowledge of optimization and heuristics methods.

Research group

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