



Modular pods fleet management for combined passenger and freight transport

Problem description

At the heart of this project are small automated vehicles (pods) that seamlessly transport both passengers and freight. Pods mount on a moving infrastructure. These pods can operate independently or couple into trains (concept referred to as modularity). The end goal is to synchronize pods operating on roads and rail to create a seamless intermodal freight transport. In this thesis, we focus on **pods4Road**.

Objectives and assignment

This project extends existing research on modular vehicle concepts. The objective is to develop an optimization framework for managing the circulation and storage of pods and their availability at major points of interest (e.g. railway stations and main delivery points) considering their empty circulation. This will be in synchronization with the availability and schedules of the moving infrastructure to carry the pods, ensuring that their combination is readily available at points of interest. This should consider factors such as demand patterns, vehicle capacities, delivery and pick up time windows and operational costs. Through scenario analysis and validation, the thesis intends to showcase the practical applicability of this innovative approach, providing valuable insights for enhancing intermodal transport.

Candidate background

TTE or TIL Students who have knowledge and interest in both passenger and freight transport and have affinity with data analysis and related optimization problems.

Research group

This is a joint work between the Freight and Logistics Lab and Smart Public Transport Lab, Transport & Planning Department

External support

The project is performed in cooperation with the PoDs4Rail European Project.

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