Empty circulation of autonomous modular vehicles

Problem description

At the heart of this project are small automated cars (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 transportation. In this thesis, we focus on **PoDs4Rail**.

Objectives and assignment

In this thesis, the objective is to develop an optimization framework for managing the movement (and storage) of the *pods*. This will be in synchronization with the requirements of pods circulation, ensuring that their combination is readily available at points of interest. This should take into account 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 freight transportation.

Candidate background

T&P or TIL Students who have knowledge and interest in road freight transportation, and have affinity with data analysis and related optimization problems.

Research group

This research is done at the Freight and Logistics Lab, Transport & Planning Department.

Information

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