
An environmental application of multi-agents systems in physical internet context for a water-road terminal

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Résumé

In response to the pressing need for sustainable practices in the logistics industry, this work explores the application of multi-agent systems (MAS) within the context of the Physical Internet (PI) to enhance the environmental efficiency of water-road terminal operations. The PI presents a transformative model for logistics, characterized by its modularity, interconnectivity, and collaborative approach, promising to significantly improve the sustainability of goods movement. Through the deployment of a Netlogo-based simulation at the Port of Lille's Container Terminal Halluin II, we provide a comparative analysis of the environmental impact of PI-containers versus standard containers. The findings, demonstrate that PI-containers can significantly reduce CO2 emissions, thereby underscoring the potential of the PI model for creating more sustainable logistic networks. This research not only bridges the gap in literature pertaining to water-road PI-hubs but also sets the stage for future explorations into the broader applications of PI across various transportation modalities.

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