

**A GRASP for the three-dimensional loading vehicle routing problem with split pickup and time windows under real-time disruptions**

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Logistics service providers (LSPs) have to respond to the growing demand from their customers, who offer increasingly widespread e-commerce services. This work focuses on pickup operations, meaning that, real-time changes, such as the arrival of new customers, can be accommodated as the vehicle is initially empty and progressively filled up.

The problem under study is a vehicle routing problem with split pickup, time windows and three-dimensional loading constraints, namely, geometric, vertical stability, orientation, and multi-load constraints.

Throughout the day, the LSP is likely to face real-time changes, called disruptions, and needs to quickly adapt his ongoing routes to accommodate as many disruptions as possible while minimizing costs. We will present a greedy randomized adaptative search procedure (GRASP) to deal with two types of disruptions: the arrival of a new customer and the addition of boxes to a planned customer request.