# VORTRAG

## "A Metaheuristic for the Multi Trip VRP with Time Windows and Release Dates"

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Abstract:

In this presentation, we introduce the Multi Trip Vehicle Routing Problem with Time Windows and Release Dates (MTVRPTWR) and propose a memetic algorithm for its heuristic solution. This problem arose in the context of the MODUM project, founded by the French National Research Agency. In MODUM the development of an efficient system of mutualized distribution is studied. Carriers allowed to enter city centers (vans in the following) are parked at platforms located aroundthe beltway where trucks continuously arrive during the day and are unloaded. Synchronization is needed between trucks and vans since goods need to be available at the platform before being loaded in vans for the last mile delivery. However, trucks arrival times are exogenous data. This justify the introduction of the concept of release date associated with the merchandise. Precisely, the release date represents the time merchandise is available at the platform for final delivery. The MTVRPTWR is an extension of the Multi Trip VRP with Time Windows (MTVRPTW, [1]) that is in turn an extension of the Multi Trip VRP [3]. An adaptation of the Split procedure introduced by Prins [2], in the VRP context, is used to evaluate chromosomes and obtain MTVRPTWR solutions from them. A set of instances for the MTVRPTWR is introduced and the efficiency of the procedure is proved by result comparison on MTVRPTW instances.

[1] F. Hernandez, D. Feillet, R. Giroudeau, and O. Naud. A new exact algorithm to solve the Multi-trip vehicle routing problem with time windows and limited duration. Tech. Rep., 2011

[2] C. Prins. A simple and eective evolutionary algorithm for the vehicle routing problem. In Computers & Operations Research, 31(12):1985{2002, 2004.

[3]   E.D. Taillard, G. Laporte, M. Gendreau. Vehicle Routing with multiple use of vehicles. In Journal of Operational Research Society, 47 :1065{1070, 1996.