



Séminaire du CIRRELT Seminar
dans le cadre de la rencontre avec la délégation Atlanstic 2020

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DIAL-A-RIDE PROBLEM WITH EN-ROUTE RECONFIGURATION AND CONSISTENCY CONSIDERATIONS

Abstract: We address the problem of optimizing the daily transportation of people with disabilities from their home to a set of medical and social establishments (called centers). The set of passengers and the fleet of vehicles are heterogeneous. Moreover, the internal layout of vehicles can be modified by moving or folding seats, and this operation can be performed en-route provided the vehicle is empty. We call this optimization problem the dial-a-ride problem (DARP) with en-route reconfiguration. It is solved with a large neighborhood search meta-heuristic combined with a set covering component. The resulting framework is evaluated on real life instances obtained from a company based in the area of Lyon, France. This work is then extended with time consistency considerations. It is observed that passengers requests vary from day to day within one week. Despite this, an ideal transportation plan would visit each passenger roughly at the same hour every day. We propose a bi-objective formulation of the consistent DARP based on the notion of time classes. Another extension of this work is the possibility to adjust the centers' opening hours (a.k.a schoolbell adjustment) in order to favor potential pooling between centers. We present computational results from the same real-life instances.

Bio: Olivier Péton is professor at IMT Atlantique (Nantes, France). He holds a PhD from the University of Geneva (2002). His research focuses on combinatorial optimization problems that arise in innovative logistics and transportation systems: facility location, collaborative supply chain networks, multi-echelon distribution systems, demand responsive transport, city logistics, green supply chain management. He field of expertise is the development of metaheuristics and hybrid exact/heuristic methods for solving these problems. He has more than twenty years of experience of teaching in the field of Operations Research and Supply Chain Management.

JEUDI / THURSDAY
10 octobre 2019 /
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Salle / Room 5441
Pavillon André-Aisenstadt
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Organisateur / Organizer
Martin Trépanier