Innosuisse grant for the DS&OR group of the University of Fribourg

The Decision Support & Operations Research (DS&OR) group of the University of Fribourg received a 495'000 CHF grant from Innosuisse for the three-years project "Decision support for efficient and sustainable waste collection". Bernard Ries, Reinhard Bürgy and Vera Fischer from the DS&OR group are conducting this project together with the waste management company Schwendimann AG and the International Institute of Management in Technology from the University of Fribourg.

The project considers the municipal solid waste collection process, which typically causes high fuel consumption, emissions and noise. The objective is to improve this process by designing efficient and sustainable waste collection strategies targeted to the needs of the municipalities. This objective is pursued through the following three components. First, new waste collection concepts are proposed using modern physical waste collection elements, such as electric vehicles and containers with compressors. For example, small, agile vehicles may bring the garbage bags to larger containers in intermediate depots and large vehicles may then regularly discharge these containers. Second, mathematical models and optimization algorithms are developed for deciding how to design a waste collection concept for a given municipality in the best possible way. Typical decisions are about the locations of the waste collection points, the types of vehicles used to collect the waste at all collection points and the routing of each vehicle. Third, an interactive decision support tool is developed. It enables to specify the inputs, such as the street network and the waste quantities, and to display the results of the optimization algorithms for all alternatives. This tool will help the decision-makers to choose the best waste collection concept for their municipality.

Image source: www.kyburz-switzerland.ch