

From Maïté Carrive, University of Poitiers, France

Abstract of meetings of MPE group, concerning problem of Zoning System

The group "Mathématiques pour l'entreprise" (MPE) has received on Tuesday November 14, 2006 Mr. Jacques Le Floch of the local company Zoning System, who gave a presentation about a problem of one of the company's clients.

The problem consists of managing the itineraries for garbage collection using multiple vehicles, in a region containing both urban and rural areas. Raw data has been collected using GPS devices mounted on the collection vehicles, indicating how much seconds were spent during garbage collection at each position, with a resolution of 10m x 10m.

Based on these data, a first problem consist of allocating collection zones to each of the given number of vehicles, on every day of the week, in such a way that all places needing garbage collection are visited each week, and that the time required for each zone be approximately equal, and in any case should not exceed a given maximal duration. Here it is assumed that the GPS data give a good indication of the time necessary to collect the garbage at each point in the area considered. The problem of finding detailed itineraries for each zone is considered of secondary importance.